

**LOGAN**  
OIL TOOLS



# General Catalog

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## LEGAL NOTICE

*All references to Bowen part numbers in this catalog are used to identify interchangeable tools and parts. Reference to such tools and parts does not imply that Logan Oil Tools is a licensee or is in any way affiliated with National Oilwell Varco. Logan Oil Tools does not sell, nor offer to sell, National Oilwell Varco (Bowen) products.*

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

## Overview

The Overshot is the most versatile and widely used fishing tool in the industry. Designed to engage, pack-off, retrieve, and release various types of fish, it's rugged construction, simplicity, and strength make the Overshot the standard choice of all external catch fishing tools. Logan Oil Tools offers four of the most commonly used Overshots:

- Series 10 Sucker Rod Overshot
- Series 20 Short Catch Sucker Rod Overshot
- Series 70 Short Catch Releasing Overshot
- Series 150 Releasing and Circulating Overshot

Each of the above series of Overshots are coded with one of the following strength designations:

- A = Full Strength (FS)  
For all torsional pulling and jarring strain
- B = Extra Full Strength (XFS)  
For extreme abuse
- C = Semi Full Strength (SFS)  
Maximum strength for special hole conditions
- D = Slim Hole (SH)  
For heavy pulling strains only
- E = Extra Slim Hole (XSH)  
For pick up jobs only

Type A (full strength) Overshots are recommended when casing, hole size, and fish size will permit.

## Overshot Components

### Top Sub

The Top Sub is the uppermost component of the Overshot assembly. It is equipped with a customer specified box connection to assure proper make-up with the fishing string.

### Bowl

The Bowl, the major working component of the Overshot, is located between the Top Sub and the Guide.

The inside diameter features a threaded section that conforms to the exterior threads of the Grapple. This design permits any expansion or compression strain to be evenly distributed over the entire working surface of the Bowl, Grapple, and the fish. Any possible damage to the fish or Overshot is minimized.

## Guide

The lowermost component of the Overshot assembly is the Guide. As its name implies, it guides the fish into the internal gripping mechanism (Grapple) of the Overshot. The Guide also minimizes possible damage to the Overshot by blocking the entry of a fish that exceeds the maximum catch size of the Overshot.

## Grapples

The Grapple fits into the Bowl and is the gripping mechanism of the Overshot. There are two basic types of Grapples: Spiral and Basket.

### Spiral Grapple

The left-handed, helix shape of the Spiral Grapple conforms to the tapered interior wickers of the Bowl. The specially hardened interior wickers of the Grapple assure positive engagement with the fish.

### Basket Grapple

The Basket Grapple is a slotted, expandable cylinder with a wickered interior to engage the fish. Its tapered exterior conforms to the interior of the Bowl.

To meet the needs of various fishing operations, three types of Basket Grapples are available: Plain (standard), Short Catch Stop, and Long Catch Stop.

### Plain Basket Grapple

This type of Basket Grapple is used to retrieve fish with a uniform outside diameter. During fishing operations, the fish passes completely through the Grapple. Wickers running the entire interior length of the Grapple securely grip the fish. The Plain Basket Grapple is standard equipment on all Overshots and will always be furnished unless another type is specified.

### Basket Grapple with Short Catch Stop

This Grapple is used to retrieve couplings that are attached to a ruptured section of pipe that protrudes above the coupling. Two sets of wickers, each with a different inside diameter, are utilized. The smaller diameter threads catch the pipe above the collar and provide a stop so that the coupling can be engaged by the larger set of threads before being packed-off by a Control Packer.

### Basket Grapple with Long Catch Stop

This type of Basket Grapple is designed to retrieve tool joints and collars with sufficient length remaining below the Grapple to allow pack-off with a Plain or Mill Control Packer. The internal shoulder at the upper end of the Grapple prevents the fish from completely passing through it. This shoulder also positions the Basket Control Packer around the fish for optimum pack-off.

## Grapple Controls

A Grapple Control acts as a key that transmits torque from the Overshot Bowl to the Grapple while allowing the Grapple to move vertically inside the Bowl during operation. There are two types of Grapple Controls: Spiral and Basket. Spiral Grapple Controls are used with Spiral Grapples and are always plain — that is, without milling teeth or pack-off mechanism. Basket Grapple Controls are used with Basket Grapples. These may be plain, include a pack-off mechanism, and/or milling teeth.

## Pack-off Mechanism

If circulation is required during the fishing operation, a Pack-off Mechanism is required to assure circulation goes through rather than around the fish. The type of Grapple (Spiral or Basket) being used will determine which type of Pack-off Mechanism is used.

## Type A Packer

The Type A Packer is used on Overshots equipped with Spiral Grapples. The Type A Packer seals its outer diameter against the inside of the Bowl. It has an internal lip that seals around the fish. Each Type A Packer is designed to pack-off the specific catch size of each Spiral Grapple and one should be ordered for each size Grapple.

## Control Packers

A Control Packer is used in conjunction with Overshots equipped with a Basket Grapple. Control Packers are available in two styles: Plain and Mill. The Plain Control Packer is used when the milling operation has preceded the fishing operation. The Mill Control Packer should be used when the fish requires light dressing prior to engagement. Only one Control Packer can be installed in the Overshot assembly at one time.

Control Packers are manufactured to match a specific Basket Grapple size. One Control Packer should be ordered for each size of Basket Grapple that has been ordered.

## Overshot Accessories

Logan Series 150 Overshots can be equipped with a wide range of accessories, including Extension Subs, Oversized Guides, Wallhook Guides, Mill Guides, Inner and Outer Seals for Mill Control Packers, and Type E Mill Control Packers.

## SERIES 10 SUCKER ROD OVERSHOTS

### Overview

The Logan Series 10 Sucker Rod Overshot is a small, rugged tool designed for engaging and retrieving sucker rods, couplings, and other items from inside tubing strings.

The Series 10 Sucker Rod Overshot consists of a Top Sub, Bowl, Grapple, and a Guide. Depending on the diameter of the fish, either a Spiral or Basket Grapple will be used. Fish diameters near the maximum catch limits require the use of a Spiral Grapple and a Control

Guide. Fish diameters that are substantially below the maximum catch limits of the Overshot require a Basket Grapple, a Basket Grapple Control, and a Plain Guide.

### Engaging a Fish

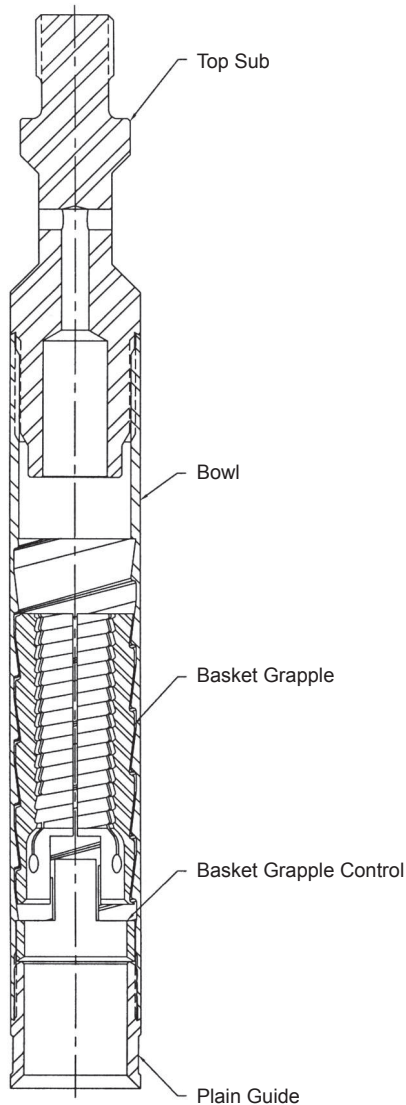
Dress the Overshot with the proper type and size of Grapple. Attach the Overshot to the bottom end of the fishing string and run it into the hole. As the Overshot nears the top of the fish, slowly rotate to the right as the overshot is lowered over the fish. After the fish is engaged, allow right-hand torque to release from the fishing string. Then raise the fish by pulling upward on the fishing string.

### Releasing a Fish

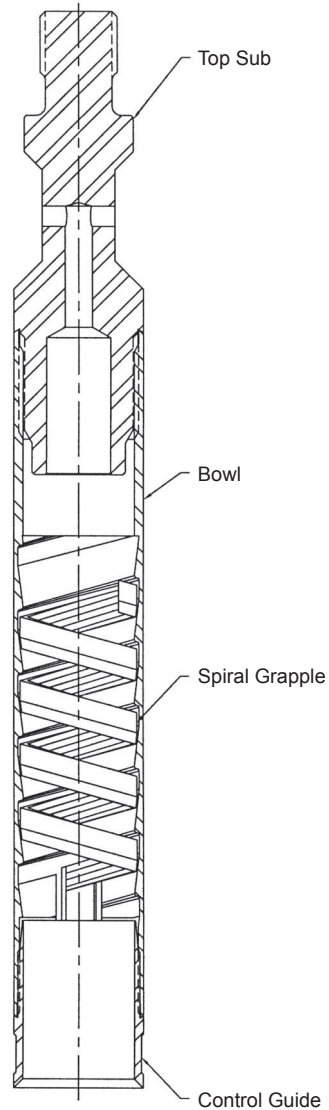
Bump down or drop the weight of the fishing string against the Overshot to break the hold of the grapple within the Bowl. Elevate the fishing string while slowly rotating it to the right until the Overshot has cleared the fish.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard



Basket Grapple Assembly



Spiral Grapple Assembly

## SERIES 10 SUCKER ROD OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		1-1/16	1-1/4	1-3/8	1-1/2	1-1/2	1-5/8	1-5/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		7/8	1-1/16	1-3/16	1-5/16	1-5/16	1-7/16	1-7/16
<b>OVERSHOT O.D.</b>		1-9/16	1.43	1-21/32	1-25/32	1-29/32	1-29/32	2-5/16
<b>TYPE</b>		FS	SH	SH	SH	SH	SH	FS
<b>STANDARD TOP CONNECTION</b>		3/4 Rod	3/4 Rod	3/4 Rod	3/4 Rod	3/4 Rod	3/4 Rod	7/8 Rod
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>110-156-A</b>	<b>110-143-D</b>	<b>110-166-D</b>	<b>110-178-D</b>	<b>110-190-D</b>	<b>110-191-D</b>	<b>110-231-A</b>
	<b>Bowen No.</b>	9790	17985	16490	13940	9990	9340	9880

## SPIRAL COMPONENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>B1000</b>	<b>B1001</b>	<b>B10015</b>	<b>B1002</b>	<b>B1004</b>	<b>B1004</b>	<b>B1004</b>
	<b>Bowen No.</b>	9791	17986	16491	13941	9341	9341	9341
<b>BOWL</b>	<b>Logan Part No.</b>	<b>B2000</b>	<b>B2001</b>	<b>B20015</b>	<b>B2002</b>	<b>B2003</b>	<b>B2004</b>	<b>B2005</b>
	<b>Bowen No.</b>	9792	17987	16492	13942	9991	9342	9881
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>B3000</b>	<b>B3001</b>	<b>B30015</b>	<b>B3002</b>	<b>B3003</b>	<b>B3004</b>	<b>B3004</b>
	<b>Bowen No.</b>	9793	17988	16493	13943	9992	9343	9343
<b>CONTROL GUIDE</b>	<b>Logan Part No.</b>	<b>B4000</b>	<b>B4001</b>	<b>B40015</b>	<b>B4002</b>	<b>B4003</b>	<b>B4004</b>	<b>B4005</b>
	<b>Bowen No.</b>	9796	17989	16496	13945	9993	9349	9883
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	...	...	<b>B80015</b>	...	<b>B4003</b>	...	...
	<b>Bowen No.</b>	...	...	16496	...	9993	...	...

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B5000</b>	<b>B5001</b>	<b>B50015</b>	<b>B5002</b>	<b>B5003</b>	<b>B5004</b>	<b>B5004</b>
	<b>Bowen No.</b>	9793	17988	16493	13943	9992	9343	9343
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B6000</b>	<b>B6001</b>	<b>B60015</b>	<b>B6002</b>	<b>B6003</b>	<b>B6004</b>	<b>B6005</b>
	<b>Bowen No.</b>	9794	18003	16494	13947	9993	9344	153338
<b>PLAIN GUIDE</b>	<b>Logan Part No.</b>	<b>B7000</b>	<b>B7001</b>	<b>B70015</b>	<b>B7002</b>	<b>B7003</b>	<b>B7004</b>	<b>B7005</b>
	<b>Bowen No.</b>	9795	18004	16498	13944	9994	9345	9882

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note: Grapples are available in 1/16" intervals.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Logan Coding

- |         |   |
|---------|---|
| A = FS  | Full Strength – For all pulling torsional and jarring strain      |
| B = XFS | Extra Full Strength – For extreme abuse                           |
| C = SFS | Semi Full Strength – Maximum strength for special hole conditions |
| D = SH  | Slim Hole – For heavy pulling strains only                        |
| E = XSH | Extra Slim Hole – For pick up jobs only                           |

### Recommended Spare Parts:

- (1) Spiral: 2 Grapples, 1 Control
- (2) Basket: 2 Grapples, 1 Control

# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 10 SUCKER ROD OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		1-9/16	1-3/4	1-3/4	1-13/16	1-13/16	1-15/16	2
<b>MAXIMUM CATCH SIZE (Basket)</b>		1-3/8	1-9/16	1-7/16	1-5/8	1-5/8	1-3/4	1-13/16
<b>OVERSHOT O.D.</b>		1-27/32	2-1/16	2-1/16	2-1/8	2-5/16	2-1/4	2-5/16
<b>TYPE</b>		SH	SH	SH	SH	SFS	SH	SH
<b>STANDARD TOP CONNECTION</b>		5/8 Rod	5/8 Rod	7/8 Rod	7/8 Rod	7/8 Rod	7/8 Rod	7/8 Rod
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>110-184-D</b>	<b>110-206-D</b>	<b>110-207-D</b>	<b>110-213-D</b>	<b>110-231-C</b>	<b>110-225-D</b>	<b>110-231-D</b>
	<b>Bowen No.</b>	36423	54178 *	156309	27765	11480	16070	9400

## SPIRAL COMPONENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>B10051</b>	<b>B10053</b>	<b>B10054</b>	<b>B10052</b>	<b>B1006</b>	<b>B1007</b>	<b>B1008</b>
	<b>Bowen No.</b>	36424	54179 *	156310	27766	11481	16071	9401
<b>BOWL</b>	<b>Logan Part No.</b>	<b>B20051</b>	<b>B20053</b>	<b>B20054</b>	<b>B20052</b>	<b>B2006</b>	<b>B2007</b>	<b>B2008</b>
	<b>Bowen No.</b>	36425	54180 *	156311	27767	11482	16072	9402
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>B30051</b>	<b>B30053</b>	<b>B30054</b>	<b>B30052</b>	<b>B3006</b>	<b>B3007</b>	<b>B3008</b>
	<b>Bowen No.</b>	36436	54181	156312	27768	11483	16073	9403
<b>CONTROL GUIDE</b>	<b>Logan Part No.</b>	<b>B40051</b>	<b>B40053</b>	<b>B40054</b>	<b>B40052</b>	<b>B4006</b>	<b>B4007</b>	<b>B4008</b>
	<b>Bowen No.</b>	36427	54184	156313	27764	11484	16076	9406
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B50051</b>	<b>B50053</b>	<b>B50054</b>	<b>B50052</b>	<b>B5006</b>	<b>B5007</b>	<b>B5008</b>
	<b>Bowen No.</b>	36436	54181	156312	27768	11483	16073	9403
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B60051</b>	<b>B60053</b>	<b>B60053</b>	<b>B60052</b>	<b>B6006</b>	<b>B6007</b>	<b>B6008</b>
	<b>Bowen No.</b>	36437	54182	54182	27763	11485	16074	9405
<b>PLAIN GUIDE</b>	<b>Logan Part No.</b>	<b>B70051</b>	<b>B70053</b>	<b>B70054</b>	<b>B70052</b>	<b>B7006</b>	<b>B7007</b>	<b>B7008</b>
	<b>Bowen No.</b>	36426	54183	156333	27769	11486	16075	9404

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Note: Grapples are available in 1/16" intervals.

\* Left-hand threads.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 2 Grapples, 1 Control
- (2) Basket: 2 Grapples, 1 Control

### Logan Coding

- A = FS Full Strength – For all pulling torsional and jarring strain  
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 C = SFS Semi Full Strength – Maximum strength for special hole conditions  
 D = SH Slim Hole – For heavy pulling strains only  
 E = XSH Extra Slim Hole – For pick up jobs only

## SERIES 10 SUCKER ROD OVERSHOTS

MAXIMUM CATCH SIZE (Spiral)	2	2-3/8			
MAXIMUM CATCH SIZE (Basket)	1-13/16	2-3/16			
OVERSHOT O.D.	2-7/8	2-27/32			
TYPE	FS	SH			
STANDARD TOP CONNECTION	7/8 Rod	7/8 Rod			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>110-287-A</b>	<b>110-284-D</b>		
	Bowen No.	9530	15860		

## SPIRAL COMPONENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>B1009</b>	<b>B1010</b>		
	Bowen No.	9531	15863		
<b>BOWL</b>	<b>Logan Part No.</b>	<b>B2009</b>	<b>B2010</b>		
	Bowen No.	9532	15861		
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>B3008</b>	<b>B3010</b>		
	Bowen No.	9403	9872		
<b>CONTROL GUIDE</b>	<b>Logan Part No.</b>	<b>B4009</b>	...		
	Bowen No.	9535	...		
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	...	<b>B8000</b>		
	Bowen No.	...	9873		
<b>GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	...	<b>B8001</b>		
	Bowen No.	...	15862		

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B5008</b>	<b>B5010</b>		
	Bowen No.	9403	9872		
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B6008</b>	<b>B6010</b>		
	Bowen No.	9405	9873		
<b>PLAIN GUIDE</b>	<b>Logan Part No.</b>	<b>B7009</b>	<b>B7010</b>		
	Bowen No.	9533	15862		

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note: Grapples are available in 1/16" intervals.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Logan Coding

- |         |   |
|---------|---|
| A = FS  | Full Strength – For all pulling torsional and jarring strain      |
| B = XFS | Extra Full Strength – For extreme abuse                           |
| C = SFS | Semi Full Strength – Maximum strength for special hole conditions |
| D = SH  | Slim Hole – For heavy pulling strains only                        |
| E = XSH | Extra Slim Hole – For pick up jobs only                           |

### Recommended Spare Parts:

- (1) Spiral: 2 Grapples, 1 Control
- (2) Basket: 2 Grapples, 1 Control



**SERIES 20 SUCKER ROD OVERSHOTS**

**Overview**

Logan Series 20 Short Catch Sucker Rod Overshots are designed for conditions when sucker rods, couplings, and other portions of a fish are too short for retrieval with a standard overshot.

The Logan Series 20 Short Catch Sucker Rod Overshot consists of a Top Sub, Bowl, Basket Grapple Control, and a Basket Grapple. The Grapple Control is located at the top end of the tool between the Top Sub and the Basket Grapple. The position of the Grapple Control above the Basket Grapple rather than below it allows the Basket Grapple to occupy the lowest position in the Bowl. This permits the exposed part of the fish to enter the Basket Grapple where it can be firmly and securely grasped.

Operation of the Logan Series 20 Short Catch Sucker Rod Overshot is the same as the Logan Series 10 Sucker Rod Overshot.

**Catching a Fish**

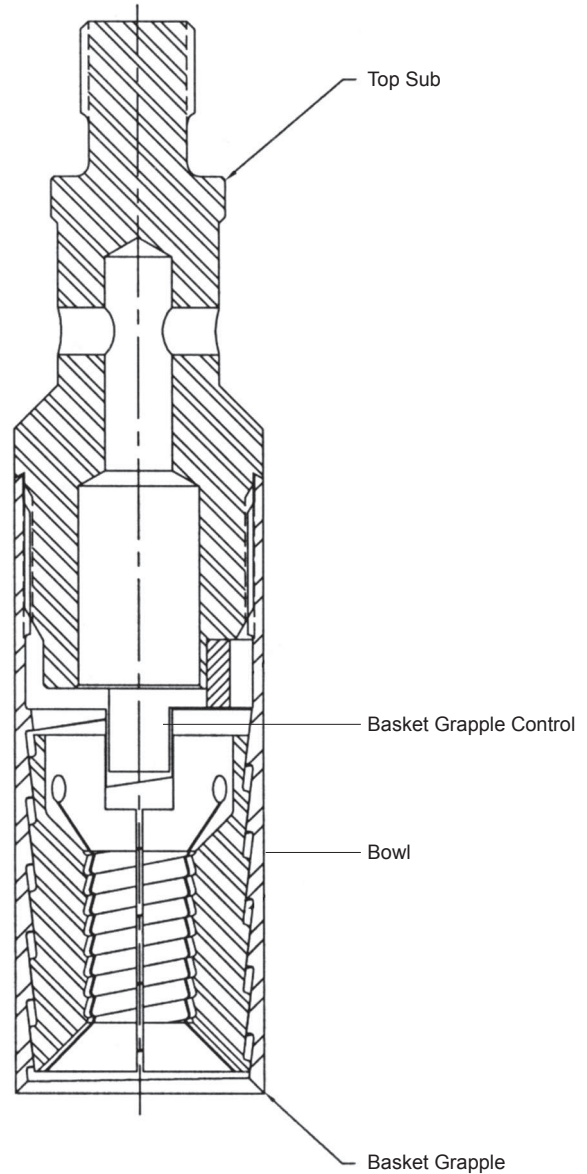
Dress the Overshot with the proper type and size of Grapple. Attach the Overshot to the bottom end of the fishing string and run it into the hole. Gradually lower the overshot over the fish. As the Overshot nears the top of the fish, slowly rotate it to the right to engage the fish. After the fish is engaged, allow right-hand torque to release from the fishing string. Then raise the fish by pulling upward on the fishing string.

**Releasing a Fish**

Bump down or drop the weight of the fishing string against the Overshot to break the hold of the grapple within the Bowl. Elevate the fishing string while slowly rotating it to the right until the Overshot has cleared the fish.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard



# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 20 SUCKER ROD OVERSHOTS

<b>MAXIMUM CATCH SIZE (Basket)</b>		7/8	1	1-1/4	1-3/8	1-1/2	1-3/4	1-13/16
<b>OVERSHOT O.D.</b>		1-1/4	1-3/8	1-5/8	1-3/4	1-29/32	2-1/4	2-5/16
<b>TYPE *</b>		SH	SH	SH	SH	SH	SH	SH
<b>STANDARD TOP CONNECTION</b>		5/8 Rod	5/8 Rod	5/8 Rod	3/4 Rod	3/4 Rod	7/8 Rod	7/8 Rod
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>120-125-D</b>	<b>120-138-D</b>	<b>120-163-D</b>	<b>120-175-D</b>	<b>120-191-D</b>	<b>120-225-D</b>	<b>120-231-D</b>
	<b>Bowen No.</b>	17315	25780	28760	18355	11555	47464	17438

## BASKET COMPONENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>B1011</b>	<b>B1012</b>	<b>B1013</b>	<b>B1014</b>	<b>B1004</b>	<b>B1007</b>	<b>B1008</b>
	<b>Bowen No.</b>	17316	25781	28761	18356	9341	16071	9401
<b>BOWL</b>	<b>Logan Part No.</b>	<b>B2011</b>	<b>B2012</b>	<b>B2013</b>	<b>B2014</b>	<b>B2015</b>	<b>B20155</b>	<b>B2016</b>
	<b>Bowen No.</b>	17317	25782	28762	18357	11556	47465	17439
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B3011</b>	<b>B3012</b>	<b>B3013</b>	<b>B3014</b>	<b>B3015</b>	<b>B30155</b>	<b>B3016</b>
	<b>Bowen No.</b>	17318	25783	28763	18358	11557	47466	17440
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B4011</b>	<b>B4012</b>	<b>B4013</b>	<b>B4014</b>	<b>B4015</b>	<b>B40155</b>	<b>B4016</b>
	<b>Bowen No.</b>	17319	25784	28764	18359	11558	47467	17441
<b>OVERSIZED GUIDES</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>B5016</b>
	<b>Bowen No.</b>	...	...	...	...	...	...	22276
<b>GUIDE PINS</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>B6016</b>
	<b>Bowen No.</b>	...	...	...	...	...	...	14876

Note: Grapples are available in 1/16" intervals.

<b>MAXIMUM CATCH SIZE (Basket)</b>		2-1/8	2-1/8	2-3/8	2-1/2		
<b>OVERSHOT O.D.</b>		2-25/32	2-7/8	3-1/8	3-1/4		
<b>TYPE</b>		SH	FS	SH	FS		
<b>STANDARD TOP CONNECTION</b>		7/8 Rod	2-3/8 Tbg	2-3/8 Tbg	2-3/8 Tbg		
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>120-278-D</b>	<b>120-287-A</b>	<b>120-313-D</b>	<b>120-325-A</b>		
	<b>Bowen No.</b>	18305	20170	20645	22270		

## BASKET COMPONENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>B1017</b>	<b>B1018</b>	<b>B1019</b>	<b>B1020</b>		
	<b>Bowen No.</b>	18306	20172	20646	22271		
<b>BOWL</b>	<b>Logan Part No.</b>	<b>B2017</b>	<b>B2018</b>	<b>B2019</b>	<b>B2020</b>		
	<b>Bowen No.</b>	18307	20171	20647	22272		
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B3017</b>	<b>B3017</b>	<b>B3019</b>	<b>B3020</b>		
	<b>Bowen No.</b>	18308	18308	20648	22273		
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B4017</b>	<b>B4017</b>	<b>B4019</b>	<b>B4020</b>		
	<b>Bowen No.</b>	18309	18309	20649	22274		
<b>OVERSIZED GUIDES</b>	<b>Logan Part No.</b>	...	<b>B5018</b>	...	<b>B5020</b>		
	<b>Bowen No.</b>	...	20173	...	22275		
<b>GUIDE PINS</b>	<b>Logan Part No.</b>	...	<b>B6018</b>	...	<b>B6020</b>		
	<b>Bowen No.</b>	...	20174	...	20651		

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note: Grapples are available in 1/16" intervals.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Logan Coding

- |         |   |
|---------|---|
| A = FS  | Full Strength – For all pulling torsional and jarring strain      |
| B = XFS | Extra Full Strength – For extreme abuse                           |
| C = SFS | Semi Full Strength – Maximum strength for special hole conditions |
| D = SH  | Slim Hole – For heavy pulling strains only                        |
| E = XSH | Extra Slim Hole – For pick up jobs only                           |

### Recommended Spare Parts:

- (1) Spiral: 2 Grapples, 1 Control
- (2) Basket: 2 Grapples, 1 Control

## HYDRAULIC RELEASE OVERSHOTS

### Overview

The Logan Hydraulic Release Overshot was designed to aid in the recovery of a stuck fish in a horizontal drilling application where normal rotation for release is not obtainable.

### Construction

The Logan Hydraulic Release Overshot is manufactured of the finest available alloy steels and to the precise tolerances that have become a Logan standard.

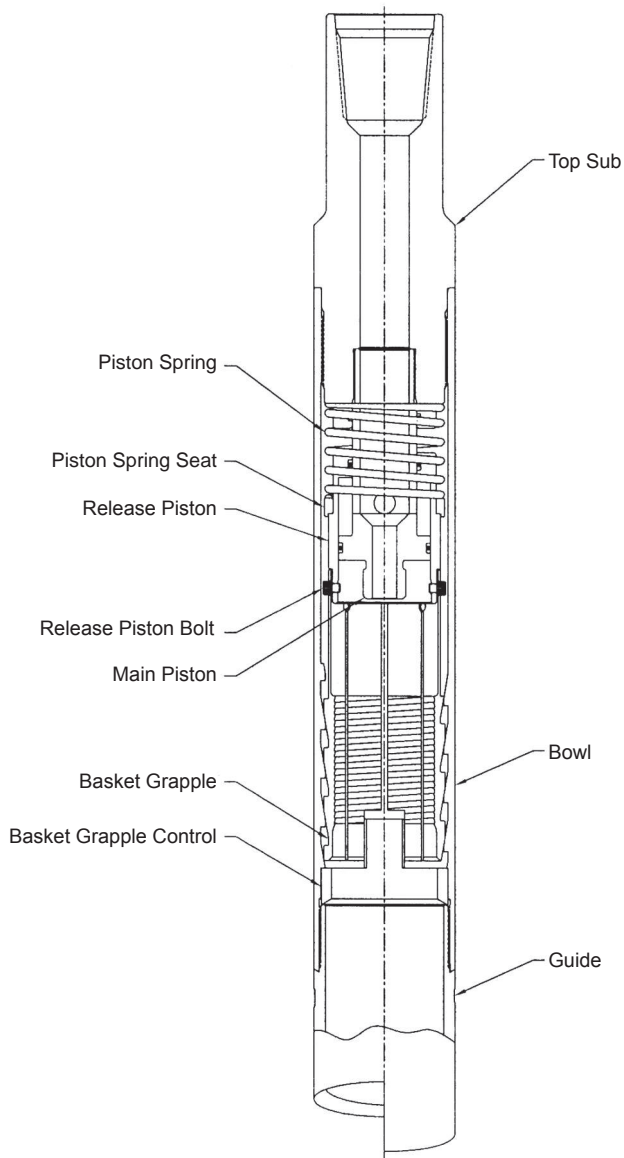
### Operation

The Logan Hydraulic Release Overshot requires only set down load or movement to engage the fish.

If the fish can not be retrieved and release is necessary, simply relax any tension that might have been applied to the string during the retrieval operation. Increased flow rate through the tool will cause the fish to be released. No drop ball is necessary for the tool to work. This eliminates pulling a wet string that is associated with drop ball application, or the possibility of leaving anything in the hole.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard



**HYDRAULIC RELEASE OVERSHOTS**

MAXIMUM CATCH (IN)		N/A	4-1/4	6-3/8
OVERSHOT O.D. (IN)		4-11/16	5-3/4	8-1/8
STANDARD CONNECTIONS		CUSTOMER SPECIFIED CONNECTIONS		
TYPE		HR150	HR150	HR150
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>HR180-469-000</b>	<b>HR180-575-002</b>	<b>HR180-813-002</b>

**COMPONENTS**

TOP SUB	Logan Part No.	N/A	HR1035-001	HR1059-001
MAIN PISTON	Logan Part No.	N/A	HR5035-001	HR5059-001
RELEASE PISTON	Logan Part No.	N/A	HR6035-001	HR6059-001
SPRING SEAT	Logan Part No.	N/A	HR10035-001	HR10059-001
SPRING	Logan Part No.	N/A	HR4035-001	HR4059-001
BOWL	Logan Part No.	N/A	HR2035-001	HR2059-001
BASKET GRAPPLE	Logan Part No.	N/A	HR7035-112	HR7059-160
STANDARD GUIDE	Logan Part No.	N/A	A3035	A3054
PISTON SPRING	Logan Part No.	N/A	HR4035	HR4054
BASKET GRAPPLE RETAINER SCREWS	Logan Part No.	N/A	HR9035-001	HR9035-001
BASKET GRAPPLE CONTROL	Logan Part No.	N/A	A9035-112	HR9059-160
GUIDE	Logan Part No.	N/A	A3035	A3059
MAIN PISTON SEAL (I.D.)	Logan Part No.	N/A	568334	568344
MAIN PISTON SEAL (O.D.)	Logan Part No.	N/A	568340	568430
RELEASE PISTON SEAL (I.D.)	Logan Part No.	N/A	568334	568344

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**STRENGTH DATA**

TENSILE STRENGTH @ YIELD (LBS)	N/A	673,632	1,000,063
BASKET GRAPPLE STRENGTH (LBS)	N/A	379,064	549,907
TORSIONAL YIELD (FT/LBS)	N/A	22,673	40,470
RECOMMENDED MAKE UP TORQUE (FT/LBS)	N/A	5,668	10,100
MAXIMUM MAKE UP TORQUE (FT/LBS)	N/A	11,000	20,200

**SERIES 70  
SHORT CATCH OVERSHOTS**

**Overview**

The Logan Series 70 Short Catch Overshot is designed for conditions when the fish is too short to be engaged with a standard overshot. The Grapple Control is positioned above the Basket Grapple rather than below it to allow the Basket Grapple to occupy the lowest position in the Bowl. This enables the overshot to firmly engage and retrieve a very short fish.

The Logan Series 70 Short Catch Overshot assembly consists of a Top Sub, Bowl, Basket Grapple Control, and a Basket Grapple. Although the Series 70 Overshot has no Guide, the components function in the same manner as the standard Logan Series 150 Releasing and Circulating Overshot.

Operation of the Logan Series 70 Short Catch Releasing Overshot is identical to the Series 150.

**Catching the Fish:**

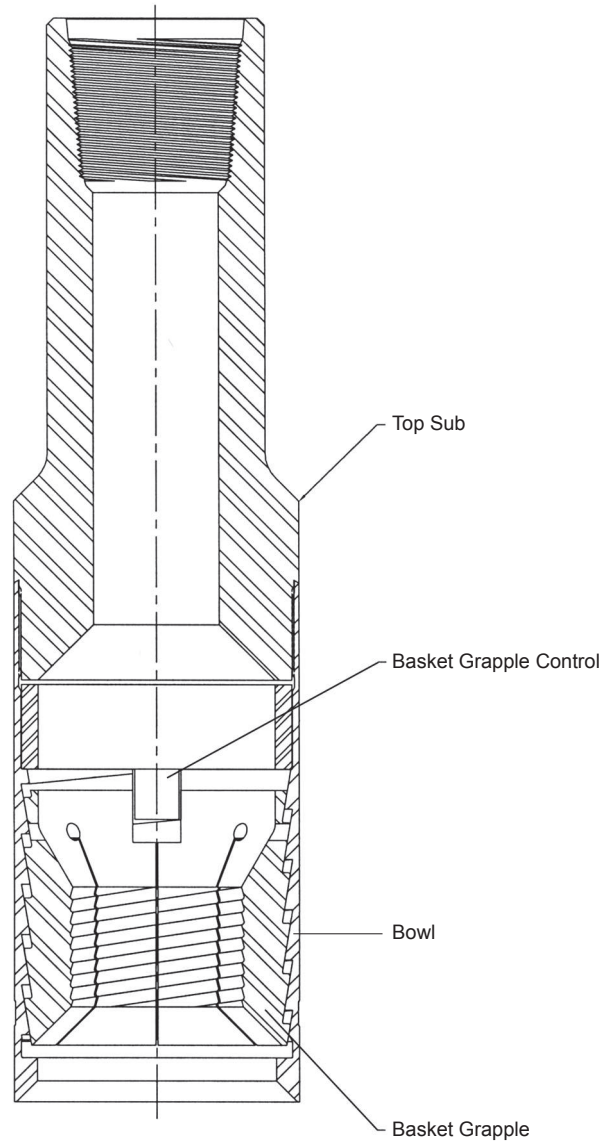
Attach the Overshot to the bottom end of the fishing string and run it into the hole. The Logan Series 70 Overshot assembly is rotated to the right and lowered as the fish enters the expandable grapple. With the fish in the Grapple, stop right-hand rotation and exert an upward pull to fully capture the fish.

**Releasing the Fish:**

A sharp downward force (bump) is applied to the Overshot to break the hold of the grapple within the bowl. The Overshot is then rotated to the right while it is slowly elevated to release the Grapple from the fish.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard



## SERIES 70 SHORT CATCH OVERSHOTS

MAXIMUM CATCH SIZE (Basket)		1-5/8	2-1/2	2-5/8	3-1/16	3-1/16	3-1/16	3-3/8
OVERSHOT O.D.		2-5/16	3-5/8	3-3/4	3-15/16	4-5/8	4-1/8	4-3/8
TYPE		SH	SH	SH	SH	FS	SH	SH
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	170-231-D	170-363-D	170-375-D	170-394-D	170-463-A	170-413-D	170-438-D
	Bowen No.	38506	17615	13535	63892	11290	10434	C-11023
<b>TOP SUB</b>	Logan Part No.	C1000	C1001	C1002	C10025	C1003	C1004	C10045
	Bowen No.	38507	17616	13536	63893	11295	10435	A-11024
<b>BOWL</b>	Logan Part No.	C2000	C2001	C2002	C20025	C2003	C2004	C20045
	Bowen No.	38508	17617	13537	63894	11291	10436	B-11025
<b>BASKET GRAPPLE</b>	Logan Part No.	C3000	C3001	C3002	C30025	C3003	C3004	C30045
	Bowen No.	38509	17618	13538	63895	11292	10437	B-11026
<b>BASKET GRAPPLE CONTROL</b>	Logan Part No.	C4000	C4001	C4002	C40025	C4003	C4004	C40045
	Bowen No.	38510	17619	13539	63896	11294	10438	A-11027

MAXIMUM CATCH SIZE (Basket)		3-21/32	3-21/32	3-3/4	3-3/4	4-1/4	4-3/4	5-1/4
OVERSHOT O.D.		4-11/16	5-5/8	4-3/4	5-1/2	5-3/4	5-7/8	6-1/4
TYPE		SH	FS	SH	FS	FS	SH	SH
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	170-468-D	170-563-A	170-475-D	170-550-A	170-575-A	170-587-D	170-625-D
	Bowen No.	10543	11297	12645	12785	13065	10560	14805
<b>TOP SUB</b>	Logan Part No.	C1005	C1006	C1005	C1008	C1009	C1010	C10105
	Bowen No.	10544	11298	10544	12786	13066	10561	14806
<b>BOWL</b>	Logan Part No.	C2005	C2006	C2007	C2008	C2009	C2010	C20105
	Bowen No.	10545	11299	12646	12787	13067	10562	14807
<b>BASKET GRAPPLE</b>	Logan Part No.	C3005	C3006	C3007	C3008	C3009	C3010	C30105
	Bowen No.	10546	11300	12647	12788	13068	10563	14808
<b>BASKET GRAPPLE CONTROL</b>	Logan Part No.	C4005	C4006	C4007	C4008	C4009	C4010	C40105
	Bowen No.	10547	11301	12648	12789	13069	10564	14809

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Notes: Grapples are available in 1/16" intervals.

### Logan Coding

- A = FS Full Strength – For all pulling torsional and jarring strain
- B = XFS Extra Full Strength – For extreme abuse
- C = SFS Semi Full Strength – Maximum strength for special hole conditions
- D = SH Slim Hole – For heavy pulling strains only
- E = XSH Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 2 Grapples, 1 Control

## SERIES 70 SHORT CATCH OVERSHOTS

<b>MAXIMUM CATCH SIZE (Basket)</b>		4-3/4	6	6-1/4	6-1/2	7	7-3/4	8
<b>OVERSHOT O.D.</b>		6-5/8	7-5/8	7-7/8	8-1/4	8-1/2	9-1/4	9-3/4
<b>TYPE</b>		FS	FS	FS	FS	FS	FS	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>170-663-A</b>	<b>170-763-A</b>	<b>170-787-A</b>	<b>170-825-A</b>	<b>170-850-A</b>	<b>170-925-A</b>	<b>170-975-A</b>
	<b>Bowen No.</b>	11303	11630	16975	38939	20050	25030	20060
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>C1011</b>	<b>C1012</b>	<b>C1013</b>	<b>C1014</b>	<b>C1015</b>	<b>C1016</b>	<b>C1017</b>
	<b>Bowen No.</b>	11304	11631	16976	38940	20051	25031	20061
<b>BOWL</b>	<b>Logan Part No.</b>	<b>C2011</b>	<b>C2012</b>	<b>C2013</b>	<b>C2014</b>	<b>C2015</b>	<b>C2016</b>	<b>C2017</b>
	<b>Bowen No.</b>	11305	11632	16977	38941	20052	25032	20062
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>C3011</b>	<b>C3012</b>	<b>C3013</b>	<b>C3014</b>	<b>C3015</b>	<b>C3016</b>	<b>C3017</b>
	<b>Bowen No.</b>	11306	11633	16978	38942	20053	25033	20063
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>C4011</b>	<b>C4012</b>	<b>C4013</b>	<b>C4014</b>	<b>C4015</b>	<b>C4016</b>	<b>C4017</b>
	<b>Bowen No.</b>	11307	11634	16979	38943	20054	25034	20064

<b>MAXIMUM CATCH SIZE (Basket)</b>		8-1/4	9	13-1/2			
<b>OVERSHOT O.D.</b>		10	11-1/4	16			
<b>TYPE</b>		FS	FS	FS			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>170-1000-A</b>	<b>170-1125-A</b>	<b>170-1600-A</b>			
	<b>Bowen No.</b>	...	33878	...			
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>C10175</b>	<b>C1018</b>	<b>C1019</b>			
	<b>Bowen No.</b>	...	33879	...			
<b>BOWL</b>	<b>Logan Part No.</b>	<b>C20175</b>	<b>C2018</b>	<b>C2019</b>			
	<b>Bowen No.</b>	...	33880	...			
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>C30175</b>	<b>C3018</b>	<b>C3019</b>			
	<b>Bowen No.</b>	...	33881	...			
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>C40175</b>	<b>C4018</b>	<b>C4019</b>			
	<b>Bowen No.</b>	...	33882	...			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Notes: Grapples are available in 1/16" intervals.

### Logan Coding

- A = FS Full Strength – For all pulling torsional and jarring strain
- B = XFS Extra Full Strength – For extreme abuse
- C = SFS Semi Full Strength – Maximum strength for special hole conditions
- D = SH Slim Hole – For heavy pulling strains only
- E = XSH Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 2 Grapples, 1 Control

**SERIES 150 RELEASING & CIRCULATING OVERSHOTS**

**Overview**

The Logan Series 150 Releasing and Circulating Overshot consists of three main external parts: a Top Sub, a Bowl, and a Guide. Internal parts: a Top Sub, a Bowl, and a Guide. Internal catch and pack-off parts are determined by the diameter of the fish. Each assembly is designed for a maximum catch diameter. A Spiral Grapple, Spiral Grapple Control, and a Type A Packer are used in the overshot bowl when the diameter of the fish is near the published maximum catch diameter of the overshot. When the diameter of the fish is considerably below the maximum catch diameter of the overshot (usually 1/2"), a Basket Grapple, a Mill Control Packer, or Basket Grapple Control are used in the overshot bowl.

**Operation**

In fishing operations, the Logan Series 150 Releasing and Circulating Overshot will function in the same manner, whether using a Spiral or Basket Grapple.

The Logan Series 150 Releasing and Circulating Overshot requires right-hand rotation only, during both engaging and releasing operations. The right-hand-only rotation feature eliminates the possibility of accidental left-hand unscrewing.

**Catching the Fish**

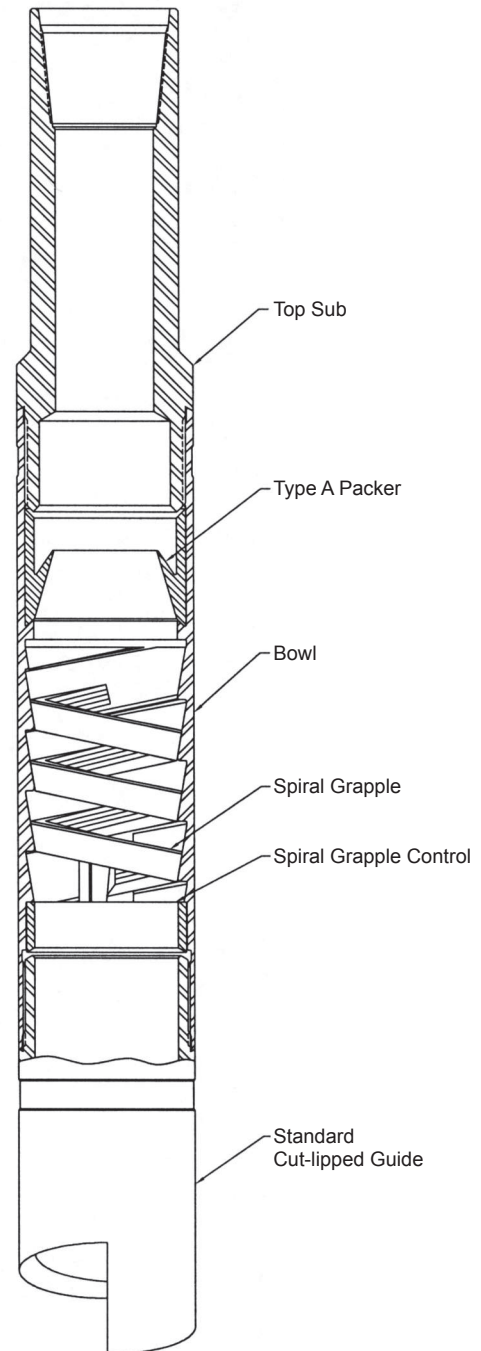
The Logan Series 150 Releasing and Circulating Overshot assembly is rotated to the right and lowered as the fish enters the expandable grapple. With the fish in the grapple, rotation ceases and an upward pull is exerted to fully capture the fish.

**Releasing the Fish**

A sharp downward force (bump) is applied to break the hold of the grapple within the bowl. The Logan Series 150 Releasing and Circulating Overshot is then rotated to the right and slowly elevated to release the grapple from the fish.

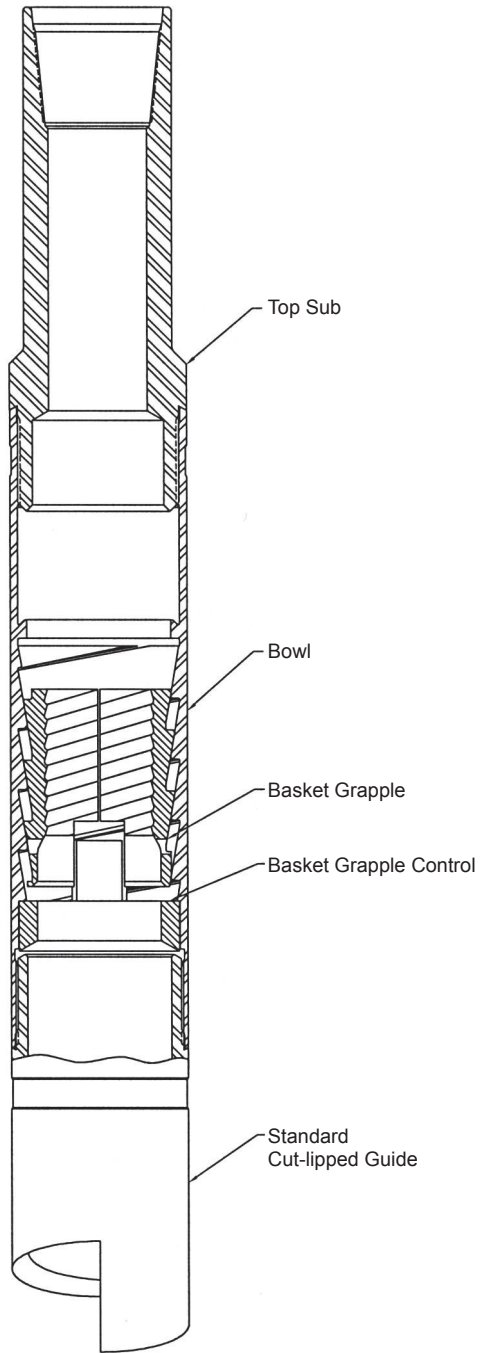
**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

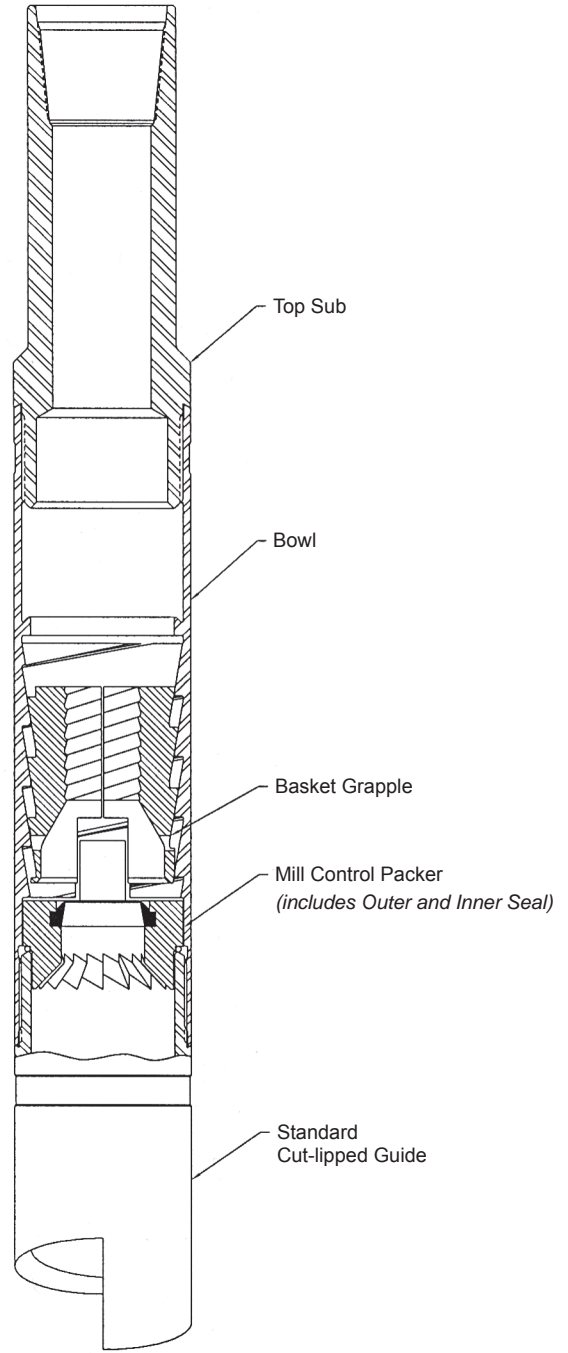


**Spiral Grapple with Spiral Grapple Control and Type A Packer**





**Basket Grapple  
with Basket Grapple Control**



**Basket Grapple  
with Mill Control Packer**

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>	2	2-1/8	2-3/8	2-3/8	2-3/8	2-1/2	2-1/2	
<b>MAXIMUM CATCH SIZE (Basket)</b>	1-3/4	1-3/4	2	1-7/8	1-7/8	2	2	
<b>OVERSHOT O.D.</b>	2-5/16	2-5/8	3-1/8	3-1/2	4-1/8	3-3/8	3-5/8	
<b>TYPE</b>	SH	SH	XSH	FS	FS	SH	FS	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-231-D</b>	<b>150-263-D</b>	<b>150-313-E</b>	<b>150-350-A</b>	<b>150-414-A</b>	<b>150-338-D</b>	<b>150-363-A</b>
	Bowen No.	B-8919	C-10199	9305	C-4741	1443	C-4623	C-5080
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A0950</b>	<b>A1000</b>	<b>A1001</b>	<b>A1002</b>	<b>A10025</b>	<b>A1003</b>	<b>A1004</b>
	Bowen No.	A-8920	A-10200	9311	B-4742	1445	A-5083	A-5081
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A1950</b>	<b>A2000</b>	<b>A2001</b>	<b>A2002</b>	<b>A20025</b>	<b>A2003</b>	<b>A2004</b>
	Bowen No.	B-8921	B-10201	9306	B-4743	1446	B-5088	B-5082
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>B7008</b>	<b>A3000</b>	<b>A3001</b>	<b>A3002</b>	<b>A30025</b>	<b>A3003</b>	<b>A3004</b>
	Bowen No.	9404	A-10206	9312	A-4745	1450	A-5093	A-5087

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4950</b>	<b>A4000</b>	<b>A4001</b>	<b>A4002</b>	<b>A40025</b>	<b>A4003</b>	<b>A4004</b>
	Bowen No.	9407	B-10202	9309	L-1453	1453	B-5089	B-3395
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>B3008</b>	<b>A5000</b>	<b>A5001</b>	<b>A5002</b>	<b>A50025</b>	<b>A5003</b>	<b>A5004</b>
	Bowen No.	9403	B-10204	9307	B-782	1448	B-5091	B-5085
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6950</b>	<b>A6000</b>	<b>A6001</b>	<b>A6002</b>	<b>A60025</b>	<b>A6003</b>	<b>A6004</b>
	Bowen No.	9405	A-10205	9308	B-783	1449	A-5092	A-5086

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>B5008</b>	<b>A7000</b>	<b>A7001</b>	<b>A7002</b>	<b>A70025</b>	<b>A7003</b>	<b>A7004</b>
	Bowen No.	9403	B-10204	9307	B-782	1448	B-5091	B-5085
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>B6008</b>	<b>A8000</b>	<b>A8001</b>	<b>A8002</b>	<b>A80025</b>	<b>A8003</b>	<b>A8004</b>
	Bowen No.	9405	A-10205	9308	B-783	1449	A-5092	A-5086
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9950</b>	<b>A9000</b>	<b>A9001</b>	<b>A9002</b>	<b>A90025</b>	<b>A9003</b>	<b>A9004</b>
	Bowen No.	9407M	B-10202-R	9309-R	L-1453-R	1453-R	B-5089-R	B-3395-R

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### Logan Coding

A = FS Full Strength – For all pulling torsional and jarring strain  
 B = XFS Extra Full Strength – For extreme abuse  
 C = SFS Semi Full Strength – Maximum strength for special hole conditions  
 D = SH Slim Hole – For heavy pulling strains only  
 E = XSH Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

MAXIMUM CATCH SIZE (Spiral)		2-7/8	3-1/16	3-1/8	2-7/8	2-7/8	3-1/16	3-1/16
MAXIMUM CATCH SIZE (Basket)		2-1/2	2-11/16	2-5/8	2-3/8	2-3/8	2-9/16	2-9/16
OVERSHOT O.D.		3-5/8	3-3/4	3-7/8	3-3/4	4	3-15/16	4-3/16
TYPE		XSH	SH	SH	SH	FS	SH	FS
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	150-363-E	150-375-D	150-388-D	150-376-D	150-400-A	150-393-D	150-419-A
	Bowen No.	9270	37585	C-1835	C-1827	C-4736	C-5101	C-5098
<b>TOP SUB</b>	Logan Part No.	A1005	A10055	A10056	A10057	A1006	A1007	A1008
	Bowen No.	9276	37586	A-1842	A-1834	A-4737	A-5102	A-5099
<b>BOWL</b>	Logan Part No.	A2005	A20055	A20056	A20057	A2006	A2007	A2008
	Bowen No.	9271	37587	B-1836	B-1828	B-4738	B-5103	B-5100
<b>STANDARD GUIDE (CUT-LIPPED)</b>	Logan Part No.	A3005	A30055	A30056	A30057	A3006	A3007	A3008
	Bowen No.	9275	37592	A-1841	A-1833	A-4740	A-3598	A-4405

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	Logan Part No.	A4005	A40055	A40056	A40057	A4006	A4007	A4008
	Bowen No.	8550	37588	B-1839	A-1831	L-809	B-3594	L-7090
<b>SPIRAL GRAPPLE</b>	Logan Part No.	A5005	A50055	A50056	A50057	A5006	A5007	A5008
	Bowen No.	9272	37590	B-1837	A-1829	M-805	B-3596	B-4403
<b>SPIRAL GRAPPLE CONTROL</b>	Logan Part No.	A6005	A60055	A60056	A60057	A6006	A6007	A6008
	Bowen No.	9273	37591	A-1838	A-1830	M-806	B-3597	B-4403

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	Logan Part No.	A7005	A70055	A70056	A70057	A7006	A7007	A7008
	Bowen No.	9272	37590	B-1837	A-1829	M-805	B-3596	B-4403
<b>BASKET GRAPPLE CONTROL</b>	Logan Part No.	A8005	A80055	A80056	A80057	A8006	A8007	A8008
	Bowen No.	9273	37591	A-1838	A-1830	M-806	B-3597	B-4404
<b>MILL CONTROL PACKER</b>	Logan Part No.	A9005	A90055	A90056	A90057	A9006	A9007	A9008
	Bowen No.	8550-R	37588-R	B-1839-R	A-1831-R	L-809-RS	B-3594-R	L-7090-R

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- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		3-1/8	3-1/8	3-1/8	3-1/8	3-1/4	3-1/4	3-1/4
<b>MAXIMUM CATCH SIZE (Basket)</b>		2-5/8	2-5/8	2-5/8	2-5/8	2-3/4	2-3/4	2-3/4
<b>OVERSHOT O.D.</b>		4	4-1/8	4-1/8	4-1/4	4-1/8	4-3/8	4-3/8
<b>TYPE</b>		SH	FS	FS	FS	SH	FS	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-400-D</b>	<b>150-413-A</b>	<b>150-412-A</b>	<b>150-425-A</b>	<b>150-413-D</b>	<b>150-437-A</b>	<b>150-438-A</b>
	<b>Bowen No.</b>	C-5104	9105	8220	C-4822	C-5115	9630	C-5112
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1009</b>	<b>A1010</b>	<b>A10105</b>	<b>A1011</b>	<b>A1012</b>	<b>A10125</b>	<b>A1013</b>
	<b>Bowen No.</b>	A-5105	9106	8221	A-4823	A-5116	9631	A-5113
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2009</b>	<b>A2010</b>	<b>A20105</b>	<b>A2011</b>	<b>A2012</b>	<b>A20125</b>	<b>A2013</b>
	<b>Bowen No.</b>	B-5106	9107	8223	B-4824	B-5117	9632	B-5114
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3009</b>	<b>A3010</b>	<b>A3010</b>	<b>A3011</b>	<b>A3012</b>	<b>A30125</b>	<b>A3013</b>
	<b>Bowen No.</b>	A-5111	1746	1746	A-793	A-5122	1519	A-3207

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4009</b>	<b>A4010</b>	<b>A4010</b>	<b>A4011</b>	<b>A4012</b>	<b>A40125</b>	<b>A4013</b>
	<b>Bowen No.</b>	B-5107	809	809	L-7090	B-5118	1517	L-1517
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5009</b>	<b>A5010</b>	<b>A5010</b>	<b>A5011</b>	<b>A5012</b>	<b>A50125</b>	<b>A5013</b>
	<b>Bowen No.</b>	B-5109	1741	1741	B-791	B-5120	1518	B-3205
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6009</b>	<b>A6010</b>	<b>A6010</b>	<b>A6011</b>	<b>A6012</b>	<b>A60125</b>	<b>A6013</b>
	<b>Bowen No.</b>	A-5110	1747	1747	B-792	A-5121	1520	B-3206

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7009</b>	<b>A7010</b>	<b>A7010</b>	<b>A7011</b>	<b>A7012</b>	<b>A70125</b>	<b>A7013</b>
	<b>Bowen No.</b>	B-5109	1741	1741	B-791	B-5120	1518	B-3205
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8009</b>	<b>A8010</b>	<b>A8010</b>	<b>A8011</b>	<b>A8012</b>	<b>A80125</b>	<b>A8013</b>
	<b>Bowen No.</b>	B-5110	1747	1747	B-792	A-5121	1520	B-3206
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9009</b>	<b>A9010</b>	<b>A9010</b>	<b>A9011</b>	<b>A9012</b>	<b>A90125</b>	<b>A9013</b>
	<b>Bowen No.</b>	B-5107-R	809-R	809-R	L-7090-R	B-5118-R	1517-R	L-1517-R

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### SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		3-3/8	3-3/8	3-3/8	3-3/8	3-1/2	3-1/2	3-1/2
<b>MAXIMUM CATCH SIZE (Basket)</b>		2-7/8	2-7/8	2-7/8	2-7/8	2-7/8	2-7/8	2-7/8
<b>OVERSHOT O.D.</b>		3-7/8	4-1/4	4-3/8	4-1/2	4-3/8	4-13/16	4-1/2
<b>TYPE</b>		XSH	SH	FS	FS	SH	FS	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-388-E</b>	<b>150-425-D</b>	<b>150-4375-A</b>	<b>150-450-A</b>	<b>150-438-D</b>	<b>150-482-A</b>	<b>150-450-D</b>
	<b>Bowen No.</b>	21300	C-5126	9635	C-5123	C-4619	C-4732	C-3793
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A10135</b>	<b>A1014</b>	<b>A10145</b>	<b>A1015</b>	<b>A1016</b>	<b>A1017</b>	<b>A10161</b>
	<b>Bowen No.</b>	21301	A-5127	9636	A-5124	A-4620	A-4733	A-3794
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A20135</b>	<b>A2014</b>	<b>A20145</b>	<b>A2015</b>	<b>A2016</b>	<b>A2017</b>	<b>A20161</b>
	<b>Bowen No.</b>	21302	B-5128	9637	B-5125	B-4621	B-4734	A-3795
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A30135</b>	<b>A3014</b>	<b>A30145</b>	<b>A3015</b>	<b>A3016</b>	<b>A3017</b>	<b>A30161</b>
	<b>Bowen No.</b>	21307	A-4629	4197	A-3361	A-4622	A-4735	A-3609

### SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A40135</b>	<b>A4014</b>	<b>A40145</b>	<b>A4015</b>	<b>A4016</b>	<b>A4017</b>	<b>A4015</b>
	<b>Bowen No.</b>	21303	B-4625	4185	L-6515	L-7065	L-168	L-6515
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A50135</b>	<b>A5014</b>	<b>A50145</b>	<b>A5015</b>	<b>A5016</b>	<b>A5017</b>	<b>A5016</b>
	<b>Bowen No.</b>	21305	B-4627	4195	B-3359	B-3607	M-164	B-3607
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A60135</b>	<b>A6014</b>	<b>A60145</b>	<b>A6015</b>	<b>A6016</b>	<b>A6017</b>	<b>A6016</b>
	<b>Bowen No.</b>	21306	B-4628	4196	B-3360	B-3608	M-185	B-3608

### BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A70135</b>	<b>A7014</b>	<b>A70145</b>	<b>A7015</b>	<b>A7016</b>	<b>A7017</b>	<b>A7016</b>
	<b>Bowen No.</b>	21305	B-4627	4195	B-3359	B-3607	M-164	B-3607
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A80135</b>	<b>A8014</b>	<b>A80145</b>	<b>A8015</b>	<b>A8016</b>	<b>A8017</b>	<b>A8016</b>
	<b>Bowen No.</b>	21306	B-4628	4196	B-3360	B-3608	M-185	B-3608
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A90135</b>	<b>A9014</b>	<b>A90145</b>	<b>A9015</b>	<b>A9016</b>	<b>A9017</b>	<b>A9015</b>
	<b>Bowen No.</b>	21303-R	B-4625-R	4185-R	L-6515-R	L-7065-R	L-168-R	L-6515-R

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OIL TOOLS

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		3-21/32	3-21/32	3-21/32	3-21/32	3-3/4	3-3/4	3-13/16
<b>MAXIMUM CATCH SIZE (Basket)</b>		3-1/8	3-1/8	3.220	3-1/8	3-7/32	3-1/4	3-5/16
<b>OVERSHOT O.D.</b>		4-1/2	4-9/16	4-11/16	5	4-5/8	4-11/16	4-7/16
<b>TYPE</b>		SH	SH	SFS	FS	SH	SFS	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-450-D</b>	<b>150-456-D</b>	<b>150-469-C</b>	<b>150-500-A</b>	<b>150-463-D</b>	<b>150-468-C</b>	<b>150-444-D</b>
	Bowen No.	17201	C-5151	9109	C-5148	C-5129	9120	C-9773
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A10175</b>	<b>A1018</b>	<b>A1019</b>	<b>A1020</b>	<b>A1021</b>	<b>A1019</b>	<b>A10217</b>
	Bowen No.	17202	A-5152	9110	A-5149	A-5130	9110	A-9774
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A20175</b>	<b>A2018</b>	<b>A2019</b>	<b>A2020</b>	<b>A2021</b>	<b>A20215</b>	<b>A20217</b>
	Bowen No.	17203	B-5153	9111	B-5150	B-5131	9121	B-9775
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A30175</b>	<b>A3018</b>	<b>A3019</b>	<b>A3020</b>	<b>A3021</b>	<b>A30215</b>	<b>A30217</b>
	Bowen No.	17204	A-4341	6667	A-4412	A-5135	9125	A-9779

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4018</b>	<b>A4018</b>	<b>A4019</b>	<b>A4020</b>	<b>A4021</b>	<b>A40215</b>	<b>A40217</b>
	Bowen No.	L-6665	L-6665	6665	B-3219	B-5538	9122	L-6163
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5018</b>	<b>A5018</b>	<b>A5019</b>	<b>A5020</b>	<b>A5021</b>	<b>A50215</b>	<b>A50217</b>
	Bowen No.	B-4339	B-4339	6662	B-4410	B-5133	9123	B-9777
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6018</b>	<b>A6018</b>	<b>A6019</b>	<b>A6020</b>	<b>A6021</b>	<b>A60215</b>	<b>A60217</b>
	Bowen No.	B-4340	B-4340	6674	B-4411	A-5134	9124	A-9778

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7018</b>	<b>A7018</b>	<b>A7019</b>	<b>A7020</b>	<b>A7021</b>	<b>A70215</b>	<b>A70217</b>
	Bowen No.	B-4339	B-4339	6662	B-4410	B-5133	9123	B-9777
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8018</b>	<b>A8018</b>	<b>A8019</b>	<b>A8020</b>	<b>A8021</b>	<b>A80215</b>	<b>A80217</b>
	Bowen No.	B-4340	B-4340	6674	B-4411	A-5134	9124	A-9778
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9018</b>	<b>A9018</b>	<b>A9019</b>	<b>A9020</b>	<b>A9021</b>	<b>A90215</b>	<b>A90217</b>
	Bowen No.	L-6665-R	L-6665-R	6665-R	B-3219-R	B-5538-R	9122-R	L-6163-R

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### Logan Coding

A = FS	Full Strength – For all pulling torsional and jarring strain
B = XFS	Extra Full Strength – For extreme abuse
C = SFS	Semi Full Strength – Maximum strength for special hole conditions
D = SH	Slim Hole – For heavy pulling strains only
E = XSH	Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		3-3/4	3-7/8	3-7/8	4	4	4-1/8	4-1/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		3-1/8	3-1/4	3-3/8	3-1/2	3-3/8	3-5/8	3-1/2
<b>OVERSHOT O.D.</b>		5-1/8	5-1/4	4-5/8	4-7/8	5-5/16	5	5-7/16
<b>TYPE</b>		FS	FS	SH	SH	FS	SH	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-513-A</b>	<b>150-525-A</b>	<b>150-462-D</b>	<b>150-488-D</b>	<b>150-531-A</b>	<b>150-500-D</b>	<b>150-544-A</b>
	Bowen No.	C-4686	9515	C-6230	C-5154	C-5142	C-5428	C-5425
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1022</b>	<b>A1023</b>	<b>A10235</b>	<b>A1024</b>	<b>A1025</b>	<b>A1026</b>	<b>A1027</b>
	Bowen No.	A-4687	9516	A-6231	A-5155	A-5143	A-5429	A-5426
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2022</b>	<b>A2023</b>	<b>A20235</b>	<b>A2024</b>	<b>A2025</b>	<b>A2026</b>	<b>A2027</b>
	Bowen No.	B-4688	9517	B-6232	B-5156	B-5144	B-5430	B-5427
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3022</b>	<b>A3023</b>	<b>A30235</b>	<b>A3024</b>	<b>A3025</b>	<b>A3026</b>	<b>A3027</b>
	Bowen No.	A-816	876	A-6236	A-5161	A-1507	B-4899	B-1999

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4022</b>	<b>A4023</b>	<b>A40235</b>	<b>A4024</b>	<b>A4025</b>	<b>A4026</b>	<b>A4027</b>
	Bowen No.	A-811	856	A-1707	B-5157	B-1508	B-4895	L-1867
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5022</b>	<b>A5023</b>	<b>A50235</b>	<b>A5024</b>	<b>A5025</b>	<b>A5026</b>	<b>A5027</b>
	Bowen No.	B-814	859	B-6234	B-5159	B-1505	B-4897	B-1997
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6022</b>	<b>A6023</b>	<b>A60235</b>	<b>A6024</b>	<b>A6025</b>	<b>A6026</b>	<b>A6027</b>
	Bowen No.	B-815	875	A-6235	B-5160	A-1506	B-4898	A-1998

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7022</b>	<b>A7023</b>	<b>A70235</b>	<b>A7024</b>	<b>A7025</b>	<b>A7026</b>	<b>A7027</b>
	Bowen No.	B-814	859	B-6234	B-5159	B-1505	B-4897	B-1997
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8022</b>	<b>A8023</b>	<b>A80235</b>	<b>A8024</b>	<b>A8025</b>	<b>A8026</b>	<b>A8027</b>
	Bowen No.	B-815	875	A-6235	B-5160	A-1506	B-4898	A-1998
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9022</b>	<b>A9023</b>	<b>A90235</b>	<b>A9024</b>	<b>A9025</b>	<b>A9026</b>	<b>A9027</b>
	Bowen No.	811-R	856-R	60947R	B-5157-R	A-1508-R	B-4895-R	L-1867-R

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D = SH	Slim Hole – For heavy pulling strains only
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### When ordering, please specify:

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- (4) O.D., if other than standard

### Recommended Spare Parts:

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- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

MAXIMUM CATCH SIZE (Spiral)		4-1/4	4-1/4	4-1/4	4-1/4	4-1/2	4-1/2	4-5/8
MAXIMUM CATCH SIZE (Basket)		3-3/4	3-3/4	3-11/16	3-11/16	3-7/8	3-7/8	4-1/8
OVERSHOT O.D.		5-1/8	5-1/8	5-9/16	5-9/16	5-3/8	5-13/16	5-1/2
TYPE		SH	SH	FS	FS	SH	FS	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-513-D</b>	<b>150-512-D</b>	<b>150-556-A</b>	<b>150-555-A</b>	<b>150-538-D</b>	<b>150-581-A</b>	<b>150-550-D</b>
	Bowen No.	C-5162	4716	5896	C-4819	C-5165	C-4814	C-4969
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1028</b>	<b>A10285</b>	<b>A1029</b>	<b>A10295</b>	<b>A1030</b>	<b>A1031</b>	<b>A10315</b>
	Bowen No.	A-5163	4718	5897	A-4820	A-5166	A-4815	A-4970
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2028</b>	<b>A20285</b>	<b>A2029</b>	<b>A20295</b>	<b>A2030</b>	<b>A2031</b>	<b>A20315</b>
	Bowen No.	B-5164	4717	5898	B-4821	B-5167	B-4816	B-4971
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3028</b>	<b>A30285</b>	<b>A3029</b>	<b>A30295</b>	<b>A3030</b>	<b>A3031</b>	<b>A30315</b>
	Bowen No.	A-4676	4719	187	L-187	B-2491	B-1989	M-1138

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A40285</b>	<b>A40285</b>	<b>A4029</b>	<b>A4029</b>	<b>A4030</b>	<b>A4031</b>	<b>A4032</b>
	Bowen No.	B-4672	4672	169	169	B-2487	B-2199-1	1140
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A50285</b>	<b>A50285</b>	<b>A5029</b>	<b>A5029</b>	<b>A5030</b>	<b>A5031</b>	<b>A5032</b>
	Bowen No.	B-4674	4674	165	165	B-2489	B-1987	1135
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A60285</b>	<b>A60285</b>	<b>A6029</b>	<b>A6029</b>	<b>A6030</b>	<b>A6031</b>	<b>A6032</b>
	Bowen No.	A-4675	4675	186	186	B-2490	B-1988	1137

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A70285</b>	<b>A70285</b>	<b>A7029</b>	<b>A7029</b>	<b>A7030</b>	<b>A7031</b>	<b>A7032</b>
	Bowen No.	B-4674	4674	165	165	B-2489	B-1987	1135
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A80285</b>	<b>A80285</b>	<b>A8029</b>	<b>A8029</b>	<b>A8030</b>	<b>A8031</b>	<b>A8032</b>
	Bowen No.	A-4675	4675	186	186	B-2490	B-1988	1137
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A90285</b>	<b>A90285</b>	<b>A9029</b>	<b>A9029</b>	<b>A9030</b>	<b>A9031</b>	<b>A9032</b>
	Bowen No.	B-4672-R	4672-R	169-R	169-R	B-2487-R	B-2199-1R	1140-R

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## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		4-5/8	4-5/8	4-3/4	4-3/4	4-3/4	4-7/8	4-7/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		4-1/8	4	4-1/4	4-1/4	4-1/8	4-1/4	4-1/4
<b>OVERSHOT O.D.</b>		5-5/8	5-15/16	5-5/8	5-3/4	6-1/16	5-3/4	6-1/8
<b>TYPE</b>		FS	FS	SH	FS	FS	SH	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-563-A</b>	<b>150-594-A</b>	<b>150-563-D</b>	<b>150-575-A</b>	<b>150-606-A</b>	<b>150-575-D</b>	<b>150-613-A</b>
	<b>Bowen No.</b>	5698	5737	C-5168	8975	C-4829	C-7096	912
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1032</b>	<b>A1033</b>	<b>A1034</b>	<b>A1035</b>	<b>A1036</b>	<b>A1037</b>	<b>A10375</b>
	<b>Bowen No.</b>	5699	5738	A-5169	8976	A-4830	A-7097	908
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2032</b>	<b>A2033</b>	<b>A2034</b>	<b>A2035</b>	<b>A2036</b>	<b>A2037</b>	<b>A20375</b>
	<b>Bowen No.</b>	5700	5735	B-5170	8977	B-4831	B-7098	905
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3032</b>	<b>A3033</b>	<b>A3034</b>	<b>A3035</b>	<b>A3036</b>	<b>A3037</b>	<b>A30375</b>
	<b>Bowen No.</b>	1143	192	B-2203	6121	B-2366	A-6391	1186

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4032</b>	<b>A4033</b>	<b>A4034</b>	<b>A4035</b>	<b>A4036</b>	<b>A4037</b>	<b>A40375</b>
	<b>Bowen No.</b>	1140	195	B-2199	6114	B-2362	B-6387	1189
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5032</b>	<b>A5033</b>	<b>A5034</b>	<b>A5035</b>	<b>A5036</b>	<b>A5037</b>	<b>A50375</b>
	<b>Bowen No.</b>	1135	196	B-2201	6112	B-2364	B-6389	1182
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6032</b>	<b>A6033</b>	<b>A6034</b>	<b>A6035</b>	<b>A6036</b>	<b>A6037</b>	<b>A60375</b>
	<b>Bowen No.</b>	1137	193	B-2202	6113	B-2365	A-6390	1187

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7032</b>	<b>A7033</b>	<b>A7034</b>	<b>A7035</b>	<b>A7036</b>	<b>A7037</b>	<b>A70375</b>
	<b>Bowen No.</b>	1135	196	B-2201	6112	B-2364	B-6389	1182
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8032</b>	<b>A8033</b>	<b>A8034</b>	<b>A8035</b>	<b>A8036</b>	<b>A8037</b>	<b>A80375</b>
	<b>Bowen No.</b>	1137	193	B-2202	6113	B-2365	A-6390	1187
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9032</b>	<b>A9033</b>	<b>A9034</b>	<b>A9035</b>	<b>A9036</b>	<b>A9037</b>	<b>A90375</b>
	<b>Bowen No.</b>	1140-R	195-R	B-2199-R	6114-R	B-2362-R	B-6387-R	1189-R

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- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		4-7/8	5	5	5	5-1/8	5-1/4	5-3/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		4-1/4	4-1/2	4-3/8	4-1/4	4-5/8	4-5/8	4-3/4
<b>OVERSHOT O.D.</b>		6-3/16	5-7/8	6-1/8	6-5/8	5-3/4	6-3/8	6-1/2
<b>TYPE</b>		FS	SH	SFS	FS	SH	SH	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-619-A</b>	<b>150-588-D</b>	<b>150-612-C</b>	<b>150-663-A</b>	<b>150-576-D</b>	<b>150-638-D</b>	<b>150-650-D</b>
	Bowen No.	C-7093	C-5171	7787	C-4825	C-11823	6655	4773
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1038</b>	<b>A1039</b>	<b>A10395</b>	<b>A1040</b>	<b>A10402</b>	<b>A10405</b>	<b>A10407</b>
	Bowen No.	A-7094	A-5172	7789	B-4826	A-11824	6656	4774
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2038</b>	<b>A2039</b>	<b>A20395</b>	<b>A2040</b>	<b>A20402</b>	<b>A20405</b>	<b>A20407</b>
	Bowen No.	B-7095	B-5173	7788	B-4827	B-11825	4503	9205
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3038</b>	<b>A3039</b>	<b>A30395</b>	<b>A3040</b>	<b>A30402</b>	<b>A30405</b>	<b>A30407</b>
	Bowen No.	A-2459	B-4371	5946	L-1074	A-11830	4504	4775

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4038</b>	<b>A4039</b>	<b>A40395</b>	<b>A4040</b>	<b>A40402</b>	<b>A40405</b>	<b>A40407</b>
	Bowen No.	B-2455	L-5950	5950	L-4505	B-11826	4505	9209
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5038</b>	<b>A5039</b>	<b>A50395</b>	<b>A5040</b>	<b>A50402</b>	<b>A50405</b>	<b>A50407</b>
	Bowen No.	B-2457	B-4369	5942	M-1071	B-11828	4498	9207
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6038</b>	<b>A6039</b>	<b>A60395</b>	<b>A6040</b>	<b>A60402</b>	<b>A60405</b>	<b>A60407</b>
	Bowen No.	B-2458	B-4370	5944	M-1072	A-11829	4499	9208

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7038</b>	<b>A7039</b>	<b>A70395</b>	<b>A7040</b>	<b>A70402</b>	<b>A70405</b>	<b>A70407</b>
	Bowen No.	B-2457	B-4369	5942	M-1071	B-11828	4498	9207
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8038</b>	<b>A8039</b>	<b>A80395</b>	<b>A8040</b>	<b>A80402</b>	<b>A80405</b>	<b>A80407</b>
	Bowen No.	B-2458	B-4370	5944	M-1072	A-11829	4499	9208
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9038</b>	<b>A9039</b>	<b>A90395</b>	<b>A9040</b>	<b>A90402</b>	<b>A90405</b>	<b>A90407</b>
	Bowen No.	B-2455-R	L-5950-R	5950-R	M-4505-RS	11826-R	4505-R	9209-R

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- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		5-1/2	5-1/2	5-3/4	5-3/4	6	6-1/8	6-1/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		4-7/8	4-3/4	5-1/8	5	5-1/4	5-1/2	5-3/8
<b>OVERSHOT O.D.</b>		6-5/8	7-1/8	6-7/8	7-3/8	7-5/8	7-1/4	7-3/4
<b>TYPE</b>		SH	FS	SH	FS	FS	SH	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-663-D</b>	<b>150-713-A</b>	<b>150-688-D</b>	<b>150-738-A</b>	<b>150-763-A</b>	<b>150-725-D</b>	<b>150-775-A</b>
	<b>Bowen No.</b>	8625	C-5176	8978	C-4689	7572	C-5206	C-5204
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1041</b>	<b>A1042</b>	<b>A1043</b>	<b>A1044</b>	<b>A1045</b>	<b>A1046</b>	<b>A1047</b>
	<b>Bowen No.</b>	8626	A-5177	8979	A-4690	7573	A-5207	A-5205
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2041</b>	<b>A2042</b>	<b>A2043</b>	<b>A2044</b>	<b>A2045</b>	<b>A2046</b>	<b>A2047</b>
	<b>Bowen No.</b>	8617	B-2791	8980	B-3522	7574	B-5208	B-4218
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3041</b>	<b>A3042</b>	<b>A3043</b>	<b>A3044</b>	<b>A3045</b>	<b>A3046</b>	<b>A3047</b>
	<b>Bowen No.</b>	8621	A-761	6701	L-120	218	A-5213	A-2065

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4041</b>	<b>A4042</b>	<b>A4043</b>	<b>A4044</b>	<b>A4045</b>	<b>A4046</b>	<b>A4047</b>
	<b>Bowen No.</b>	8618	A-756	6697	L-110	223	B-5209	L-1642
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5041</b>	<b>A5042</b>	<b>A5043</b>	<b>A5044</b>	<b>A5045</b>	<b>A5046</b>	<b>A5047</b>
	<b>Bowen No.</b>	8619	B-759	6699	M-104	220	B-5211	B-2063
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6041</b>	<b>A6042</b>	<b>A6043</b>	<b>A6044</b>	<b>A6045</b>	<b>A6046</b>	<b>A6047</b>
	<b>Bowen No.</b>	8620	B-760	6700	L-130	219	A-5212	B-2064

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7041</b>	<b>A7042</b>	<b>A7043</b>	<b>A7044</b>	<b>A7045</b>	<b>A7046</b>	<b>A7047</b>
	<b>Bowen No.</b>	8619	B-759	6699	M-104	220	B-5211	B-2063
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8041</b>	<b>A8042</b>	<b>A8043</b>	<b>A8044</b>	<b>A8045</b>	<b>A8046</b>	<b>A8047</b>
	<b>Bowen No.</b>	8620	B-760	6700	L-130	219	A-5212	B-2064
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9041</b>	<b>A9042</b>	<b>A9043</b>	<b>A9044</b>	<b>A9045</b>	<b>A9046</b>	<b>A9047</b>
	<b>Bowen No.</b>	L-8618-R	A-756-R	6697-R	L-110-R	223-R	B-5209-R	L-1642-R

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A = FS	Full Strength – For all pulling torsional and jarring strain
B = XFS	Extra Full Strength – For extreme abuse
C = SFS	Semi Full Strength – Maximum strength for special hole conditions
D = SH	Slim Hole – For heavy pulling strains only
E = XSH	Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		6-1/4	6-1/4	6-1/4	6-1/4	6-1/4	6-3/8	6-3/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		5-5/8	5-9/16	5-9/16	5-9/16	5-1/2	5-3/4	5-5/8
<b>OVERSHOT O.D.</b>		7-3/8	7-5/8	7-5/8	7-7/8	7-7/8	7-1/2	7-3/4
<b>TYPE</b>		SH	SFS	SFS	FS	FS	SH	SFS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-738-D</b>	<b>150-762-C</b>	<b>150-763-C</b>	<b>150-777-A</b>	<b>150-788-A</b>	<b>150-750-D</b>	<b>150-775-C</b>
	<b>Bowen No.</b>	9692	1873	8741	7791	C-2108	9009	9163
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1048</b>	<b>A10485</b>	<b>A1049</b>	<b>A10495</b>	<b>A1050</b>	<b>A1051</b>	<b>A1052</b>
	<b>Bowen No.</b>	9693	118	8742	7793	B-2106	9010	9165
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2048</b>	<b>A20485</b>	<b>A2049</b>	<b>A20495</b>	<b>A2050</b>	<b>A2051</b>	<b>A2052</b>
	<b>Bowen No.</b>	9694	1875	1641	1657	B-2109	9011	9164
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3048</b>	<b>A3049</b>	<b>A3049</b>	<b>A30495</b>	<b>A3050</b>	<b>A3051</b>	<b>A3052</b>
	<b>Bowen No.</b>	9691	5525	5525	1493	A-2075	9007	5506

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4048</b>	<b>A4049</b>	<b>A4049</b>	<b>A40495</b>	<b>A4050</b>	<b>A4051</b>	<b>A4052</b>
	<b>Bowen No.</b>	9689	1642	1642	1680	L-1680	9005	5508
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5048</b>	<b>A5049</b>	<b>A5049</b>	<b>A50495</b>	<b>A5050</b>	<b>A5051</b>	<b>A5052</b>
	<b>Bowen No.</b>	9687	1644	1644	1659	B-2073	9003	5503
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6048</b>	<b>A6049</b>	<b>A6049</b>	<b>A60495</b>	<b>A6050</b>	<b>A6051</b>	<b>A6052</b>
	<b>Bowen No.</b>	9688	1645	1645	1660	A-2074	9004	5504

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7048</b>	<b>A7049</b>	<b>A7049</b>	<b>A70495</b>	<b>A7050</b>	<b>A7051</b>	<b>A7052</b>
	<b>Bowen No.</b>	9687	1644	1644	1659	B-2073	9003	5503
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8048</b>	<b>A8049</b>	<b>A8049</b>	<b>A80495</b>	<b>A8050</b>	<b>A8051</b>	<b>A8052</b>
	<b>Bowen No.</b>	9688	1645	1645	1660	A-2074	9004	5504
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9048</b>	<b>A9049</b>	<b>A9049</b>	<b>A90495</b>	<b>A9050</b>	<b>A9051</b>	<b>A9052</b>
	<b>Bowen No.</b>	9689-R	1642-R	1642-R	1680-R	L-1680-R	9005-R	5508-R

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		6-1/2	6-1/2	6-5/8	6-5/8	6-3/4	6-3/4	6-7/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		5-7/8	5-3/4	6	5-7/8	6-1/8	6	6-1/4
<b>OVERSHOT O.D.</b>		7-5/8	8-1/8	7-3/4	8-1/4	7-7/8	8-3/8	8
<b>TYPE</b>		SH	FS	SH	FS	SH	FS	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-763-D</b>	<b>150-813-A</b>	<b>150-775-D</b>	<b>150-825-A</b>	<b>150-788-D</b>	<b>150-838-A</b>	<b>150-800-D</b>
	Bowen No.	9860	C-5342	4785	C-3032	C-5222	275	N-8995
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1053</b>	<b>A1054</b>	<b>A1055</b>	<b>A1056</b>	<b>A1057</b>	<b>A1058</b>	<b>A10587</b>
	Bowen No.	9861	A-5343	9133	A-3033	A-5223	276	L-8996
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2053</b>	<b>A2054</b>	<b>A2055</b>	<b>A2056</b>	<b>A2057</b>	<b>A2058</b>	<b>A20587</b>
	Bowen No.	9862	B-3711	9134	B-3034	B-5224	277	M-8997
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3053</b>	<b>A3054</b>	<b>A3055</b>	<b>A3056</b>	<b>A3057</b>	<b>A3058</b>	<b>A30587</b>
	Bowen No.	9867	A-2376	9139	A-1818	A-5229	205	L-8989

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4053</b>	<b>A4054</b>	<b>A4055</b>	<b>A4056</b>	<b>A4057</b>	<b>A4058</b>	<b>A40587</b>
	Bowen No.	9865	2372	9136	A-1814	B-5225	207	L-8985
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5053</b>	<b>A5054</b>	<b>A5055</b>	<b>A5056</b>	<b>A5057</b>	<b>A5058</b>	<b>A50587</b>
	Bowen No.	9863	B-2374	9137	N-84	B-5227	209	M-8987
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6053</b>	<b>A6054</b>	<b>A6055</b>	<b>A6056</b>	<b>A6057</b>	<b>A6058</b>	<b>A60587</b>
	Bowen No.	9864	B-2375	9138	M-89	A-5228	208	M-8988

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7053</b>	<b>A7054</b>	<b>A7055</b>	<b>A7056</b>	<b>A7057</b>	<b>A7058</b>	<b>A70587</b>
	Bowen No.	9863	B-2374	9137	N-84	B-5227	209	M-8987
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8053</b>	<b>A8054</b>	<b>A8055</b>	<b>A8056</b>	<b>A8057</b>	<b>A8058</b>	<b>A80587</b>
	Bowen No.	9864	B-2375	9138	M-89	A-5228	208	M-8988
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9053</b>	<b>A9054</b>	<b>A9055</b>	<b>A9056</b>	<b>A9057</b>	<b>A9058</b>	<b>A90587</b>
	Bowen No.	9865-R	L-6635-R	9136-R	A-1814-R	B-5225-R	207-R	L-8985-R

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D = SH	Slim Hole – For heavy pulling strains only
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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		7	7	7	7	7	7-1/8	7-1/4
<b>MAXIMUM CATCH SIZE (Basket)</b>		6-3/8	6-3/8	6-1/4	6-3/8	6-1/4	6-1/2	6-5/8
<b>OVERSHOT O.D.</b>		8-1/8	8-1/8	8-1/8	8-3/8	8-5/8	8-1/4	8-3/8
<b>TYPE</b>		SH	SH	SH	SH	FS	SH	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-814-D</b>	<b>150-813-D</b>	<b>150-812-D</b>	<b>150-837-D</b>	<b>150-863-A</b>	<b>150-825-D</b>	<b>150-838-D</b>
	Bowen No.	9815	9217	C-3263	17208	C-4817	9570	C-5354
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A10590</b>	<b>A1059</b>	<b>A10595</b>	<b>A1058</b>	<b>A1060</b>	<b>A10605</b>	<b>A1061</b>
	Bowen No.	9816	9218	A-3033	276	B-4818	9544	A-5355
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A20590</b>	<b>A2059</b>	<b>A20595</b>	<b>A20598</b>	<b>A2060</b>	<b>A20605</b>	<b>A2061</b>
	Bowen No.	9817	9219	B-3264	17209	B-3819	9571	B-5356
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3059</b>	<b>A3059</b>	<b>A30595</b>	<b>A3059</b>	<b>A3060</b>	<b>A30605</b>	<b>A3061</b>
	Bowen No.	9226	9226	A-3269	9226	M-121	4792	A-5361

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4059</b>	<b>A4059</b>	<b>A40595</b>	<b>A4059</b>	<b>A4060</b>	<b>A40605</b>	<b>A4061</b>
	Bowen No.	9224	L-9224	L-6310	9224	L-111	9231	B-5357
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5059</b>	<b>A5059</b>	<b>A50595</b>	<b>A5059</b>	<b>A5060</b>	<b>A50605</b>	<b>A5061</b>
	Bowen No.	9222	9222	B-3267	9222	N-105	9229	B-5359
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6059</b>	<b>A6059</b>	<b>A60595</b>	<b>A6059</b>	<b>A6060</b>	<b>A60605</b>	<b>A6061</b>
	Bowen No.	9223	9223	B-3268	9223	M-131	9230	B-5360

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7059</b>	<b>A7059</b>	<b>A70595</b>	<b>A7059</b>	<b>A7060</b>	<b>A70605</b>	<b>A7061</b>
	Bowen No.	9222	9222	B-3267	9222	N-105	9229	B-5359
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8059</b>	<b>A8059</b>	<b>A80595</b>	<b>A8059</b>	<b>A8060</b>	<b>A80605</b>	<b>A8061</b>
	Bowen No.	9223	9223	B-3268	9223	M-131	9230	B-5360
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9059</b>	<b>A9059</b>	<b>A90595</b>	<b>A9059</b>	<b>A9060</b>	<b>A90605</b>	<b>A9061</b>
	Bowen No.	92240-R	9224-R	L-6310R	9224-R	L-111-R	9231-R	B-5357-R

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		7-1/4	7-3/8	7-3/8	7-1/2	7-1/2	7-5/8	7-5/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		6-1/2	6-3/4	6-5/8	6-7/8	6-3/4	7	6-7/8
<b>OVERSHOT O.D.</b>		8-7/8	8-1/2	9	8-5/8	9-1/8	8-3/4	9-1/4
<b>TYPE</b>		FS	SH	FS	SH	FS	SH	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-888-A</b>	<b>150-850-D</b>	<b>150-900-A</b>	<b>150-863-D</b>	<b>150-913-A</b>	<b>150-875-D</b>	<b>150-762-A</b>
	Bowen No.	C-5352	4793	C-5230	C-7101	C-7099	4796	C-5241
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1062</b>	<b>A1063</b>	<b>A1064</b>	<b>A1065</b>	<b>A1066</b>	<b>A1067</b>	<b>A10675</b>
	Bowen No.	A-5353	4794	A-5231	A-7102	A-7100	4797	A-5242
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2062</b>	<b>A2063</b>	<b>A2064</b>	<b>A2065</b>	<b>A2066</b>	<b>A2067</b>	<b>A20675</b>
	Bowen No.	M-1026-1	9233	B-5232	B-7103	B-4516	9239	B-5243
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3062</b>	<b>A3063</b>	<b>A3064</b>	<b>A3065</b>	<b>A3066</b>	<b>A3067</b>	<b>A30675</b>
	Bowen No.	M-1029	4795	A-4158	A-7108	A-3456	4798	A-5248

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4062</b>	<b>A4063</b>	<b>A4064</b>	<b>A4065</b>	<b>A4066</b>	<b>A4067</b>	<b>A40675</b>
	Bowen No.	L-1025	9237	B-4154	B-7104	L-98	9243	B-5244
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5062</b>	<b>A5063</b>	<b>A5064</b>	<b>A5065</b>	<b>A5066</b>	<b>A5067</b>	<b>A50675</b>
	Bowen No.	M-1027	9235	C-4156	B-7106	B-3454	9241	B-5246
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6062</b>	<b>A6063</b>	<b>A6064</b>	<b>A6065</b>	<b>A6066</b>	<b>A6067</b>	<b>A60675</b>
	Bowen No.	M-1031	9236	B-4157	A-7107	B-3455	9242	B-5247

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7062</b>	<b>A7063</b>	<b>A7064</b>	<b>A7065</b>	<b>A7066</b>	<b>A7067</b>	<b>A70675</b>
	Bowen No.	M-1027	9235	C-4156	B-7106	B-3454	9241	B-5246
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8062</b>	<b>A8063</b>	<b>A8064</b>	<b>A8065</b>	<b>A8066</b>	<b>A8067</b>	<b>A80675</b>
	Bowen No.	M-1031	9236	B-4157	A-7107	B-3455	9242	B-5247
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9062</b>	<b>A9063</b>	<b>A9064</b>	<b>A9065</b>	<b>A9066</b>	<b>A9067</b>	<b>A90675</b>
	Bowen No.	L-1025-R	9237-R	B-4154-R	B-7104-R	M-98-RS	9243-R	B-5244-R

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### Logan Coding

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B = XFS	Extra Full Strength – For extreme abuse
C = SFS	Semi Full Strength – Maximum strength for special hole conditions
D = SH	Slim Hole – For heavy pulling strains only
E = XSH	Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		7-3/4	7-3/4	7-3/4	7-3/4	8	8	8-3/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		7-1/8	7	7	7	7-3/8	7-1/4	7-3/4
<b>OVERSHOT O.D.</b>		8-7/8	8-7/8	9-3/8	9-3/8	9-1/8	9-5/8	9-1/2
<b>TYPE</b>		SH	SH	FS	FS	SH	FS	SH
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-888-D</b>	<b>150-889-D</b>	<b>150-937-A</b>	<b>150-938-A</b>	<b>150-913-D</b>	<b>150-963-A</b>	<b>150-950-D</b>
	Bowen No.	9850	C-5257	1665	C-1500	C-5265	264	4834
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1068</b>	<b>A1069</b>	<b>A10695</b>	<b>A1070</b>	<b>A1071</b>	<b>A1072</b>	<b>A1073</b>
	Bowen No.	9851	A-5258	1666	B-1502	A-5266	265	9063
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2068</b>	<b>A2069</b>	<b>A20695</b>	<b>A2070</b>	<b>A2071</b>	<b>A2072</b>	<b>A2073</b>
	Bowen No.	9852	B-5259	1283	B-1501	B-5267	266	9062
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3068</b>	<b>A3069</b>	<b>A30695</b>	<b>A3070</b>	<b>A3071</b>	<b>A3072</b>	<b>A3073</b>
	Bowen No.	9857	A-5264	88	M-88	A-5272	240	9059

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4068</b>	<b>A4069</b>	<b>A40695</b>	<b>A40695</b>	<b>A4071</b>	<b>A4072</b>	<b>A4073</b>
	Bowen No.	9855	B-5260	98 & L-98	98 & L-98	B-5268	235	9055
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5068</b>	<b>A5069</b>	<b>A50695</b>	<b>A5070</b>	<b>A5071</b>	<b>A5072</b>	<b>A5073</b>
	Bowen No.	9853	B-5262	85 & N-85	N-85	B-5270	238	9057
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6068</b>	<b>A6069</b>	<b>A60695</b>	<b>A60695</b>	<b>A6071</b>	<b>A6072</b>	<b>A6073</b>
	Bowen No.	9854	A-5263	100 & M-100	100 & M-100	B-5271	239	9058

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7068</b>	<b>A7069</b>	<b>A70695</b>	<b>A7070</b>	<b>A7071</b>	<b>A7072</b>	<b>A7073</b>
	Bowen No.	9853	B-5262	85 & N-85	N-85	B-5270	238	9057
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8068</b>	<b>A8069</b>	<b>A80695</b>	<b>A80695</b>	<b>A8071</b>	<b>A8072</b>	<b>A8073</b>
	Bowen No.	9854	A-5263	100 & M-100	100 & M-100	B-5271	239	9058
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9068</b>	<b>A9069</b>	<b>A90695</b>	<b>A90695</b>	<b>A9071</b>	<b>A9072</b>	<b>A9073</b>
	Bowen No.	9855-R	B-5260-R	98-R & L-98-R	98-R & L-98-R	B-5268-R	235-R	9055-R

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### Logan Coding

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C = SFS	Semi Full Strength – Maximum strength for special hole conditions
D = SH	Slim Hole – For heavy pulling strains only
E = XSH	Extra Slim Hole – For pick up jobs only

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals



## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		8-3/8	8-1/2	8-1/2	8-5/8	8-7/8	9	9-5/8
<b>MAXIMUM CATCH SIZE (Basket)</b>		7-5/8	7-7/8	7-3/4	7-7/8	8-1/8	8-1/4	8-7/8
<b>OVERSHOT O.D.</b>		10-1/16	9-5/8	10-1/8	10-1/4	10-1/2	10-5/8	11-1/4
<b>TYPE</b>		FS	SH	FS	SH	FS	FS	FS
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-1006-A</b>	<b>150-963-D</b>	<b>150-1013-A</b>	<b>150-1025-D</b>	<b>150-1050-A</b>	<b>150-1063-A</b>	<b>150-1125-A</b>
	<b>Bowen No.</b>	C-1230	C-5284	8960	C-5297	C-5305	C-5321	C-12822
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1074</b>	<b>A1075</b>	<b>A1076</b>	<b>A1077</b>	<b>A1078</b>	<b>A1079</b>	<b>A1080</b>
	<b>Bowen No.</b>	B-1235	A-5285	8961	A-5298	A-5306	A-5322	A-12823
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2074</b>	<b>A2075</b>	<b>A2076</b>	<b>A2077</b>	<b>A2078</b>	<b>A2079</b>	<b>A2080</b>
	<b>Bowen No.</b>	B-1231	B-5286	8962	B-5299	B-5307	B-5323	B-12824
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3074</b>	<b>A3075</b>	<b>A3076</b>	<b>A3077</b>	<b>A3078</b>	<b>A3079</b>	<b>A3080</b>
	<b>Bowen No.</b>	B-1236	A-5291	8959	A-5304	A-5312	A-5328	A-12829

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4074</b>	<b>A4075</b>	<b>A4076</b>	<b>A4077</b>	<b>A4078</b>	<b>A4079</b>	<b>A4080</b>
	<b>Bowen No.</b>	L-1060	B-5287	8956	B-5300	B-5308	B-5324	B-12825
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5074</b>	<b>A5075</b>	<b>A5076</b>	<b>A5077</b>	<b>A5078</b>	<b>A5079</b>	<b>A5080</b>
	<b>Bowen No.</b>	C-1232	B-5289	8957	B-5302	B-5310	B-5326	B-12827
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6074</b>	<b>A6075</b>	<b>A6076</b>	<b>A6077</b>	<b>A6078</b>	<b>A6079</b>	<b>A6080</b>
	<b>Bowen No.</b>	B-1233	A-5290	8958	B-5303	B-5311	B-5327	B-12828

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7074</b>	<b>A7075</b>	<b>A7076</b>	<b>A7077</b>	<b>A7078</b>	<b>A7079</b>	<b>A7080</b>
	<b>Bowen No.</b>	C-1232	B-5289	8957	B-5302	B-5310	B-5326	B-12827
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8074</b>	<b>A8075</b>	<b>A8076</b>	<b>A8077</b>	<b>A8078</b>	<b>A8079</b>	<b>A8080</b>
	<b>Bowen No.</b>	B-1233	B-5290	8958	B-5303	B-5311	B-5327	B-12828
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9074</b>	<b>A9075</b>	<b>A9076</b>	<b>A9077</b>	<b>A9078</b>	<b>A9079</b>	<b>A9080</b>
	<b>Bowen No.</b>	L-1060-R	B-5287-R	8956-R	B-5300-R	B-5308-R	B-5324-R	B-12825-R

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### When ordering, please specify:

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- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## SERIES 150 RELEASING & CIRCULATING OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		9-3/4	10-1/8	11-1/4	12	14	14-3/4	16-3/4
<b>MAXIMUM CATCH SIZE (Basket)</b>		9	9-3/8	10-1/2	11-1/4	13-1/4	14	16
<b>OVERSHOT O.D.</b>		11-3/8	11-3/4	12-3/4	13-3/4	16	16-3/4	20-1/4
<b>TYPE</b>		FS	FS	FS	...	...	...	...
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>150-1138-A</b>	<b>150-1175-A</b>	<b>150-1275-A</b>	<b>150-1375</b>	<b>150-1600</b>	<b>150-1675</b>	<b>150-2075</b>
	<b>Bowen No.</b>	26255	C-5329	15800	33006	68028	64553	31653
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>A1081</b>	<b>A1082</b>	<b>A1083</b>	<b>A1084</b>	<b>A1085</b>	<b>A1086</b>	<b>A1087</b>
	<b>Bowen No.</b>	26256	5330	15801	33007	68029	64554	31654
<b>BOWL</b>	<b>Logan Part No.</b>	<b>A2081</b>	<b>A2082</b>	<b>A2083</b>	<b>A2084</b>	<b>A2085</b>	<b>A2086</b>	<b>A2087</b>
	<b>Bowen No.</b>	26257	5331	15802	33008	68030	64555	31655
<b>STANDARD GUIDE (CUT-LIPPED)</b>	<b>Logan Part No.</b>	<b>A3081</b>	<b>A3082</b>	<b>A3083</b>	<b>A3084</b>	<b>A3085</b>	<b>A3086</b>	<b>A3087</b>
	<b>Bowen No.</b>	26261	5336	15806	33012	68035	64560	31660

## SPIRAL COMPONENT PARTS

<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4081</b>	<b>A4082</b>	<b>A4083</b>	<b>A4084</b>	<b>A4085</b>	<b>A4086</b>	<b>A4087</b>
	<b>Bowen No.</b>	26260	B-5332	15805	33011	68031	64556	31656
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5081</b>	<b>A5082</b>	<b>A5083</b>	<b>A5084</b>	<b>A5085</b>	<b>A5086</b>	<b>A5087</b>
	<b>Bowen No.</b>	26258	5334	15803	33009	68033	64558	31658
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6081</b>	<b>A6082</b>	<b>A6083</b>	<b>A6084</b>	<b>A6085</b>	<b>A6086</b>	<b>A6087</b>
	<b>Bowen No.</b>	26259	5335	15804	33010	68034	64559	31659

## BASKET COMPONENT PARTS

<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>A7081</b>	<b>A7082</b>	<b>A7083</b>	<b>A7084</b>	<b>A7085</b>	<b>A7086</b>	<b>A7087</b>
	<b>Bowen No.</b>	26258	5334	15803	33009	68033	64558	31658
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A8081</b>	<b>A8082</b>	<b>A8083</b>	<b>A8084</b>	<b>A8085</b>	<b>A8086</b>	<b>A8087</b>
	<b>Bowen No.</b>	26259	5335	15804	33010	68034	64559	31659
<b>MILL CONTROL PACKER</b>	<b>Logan Part No.</b>	<b>A9081</b>	<b>A9082</b>	<b>A9083</b>	<b>A9084</b>	<b>A9085</b>	<b>A9086</b>	<b>A9087</b>
	<b>Bowen No.</b>	26260-R	5332-R	15805-R	33011-R	68031-R	64556-R	31656-R

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) Size and type of fish to be caught
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) Spiral: 3 Packers, 2 Grapples, for each size, and 1 Control
- (2) Basket: 2 Grapples, 2 Control Packers or Mill Control Packers for each size
- (3) Mill Control Packers: 3 Inner Seals and Outer Seals

## EXTENSION SUBS

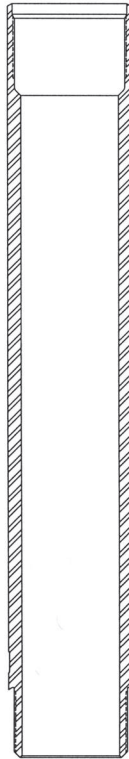
### Overview

Logan Series 150 Extension Sub is used when the upper portion of the fish is damaged or cannot be engaged. This accessory will permit the overshot to be lowered far enough over the fish to ensure secure engagement and pack off. An extension sub is assembled between the top sub and the bowl. They are available in lengths from 24 to 60 inches. Special lengths are available upon request.

Logan Series 150 Extension Subs with stops can also be furnished upon request.

### When ordering, please specify:

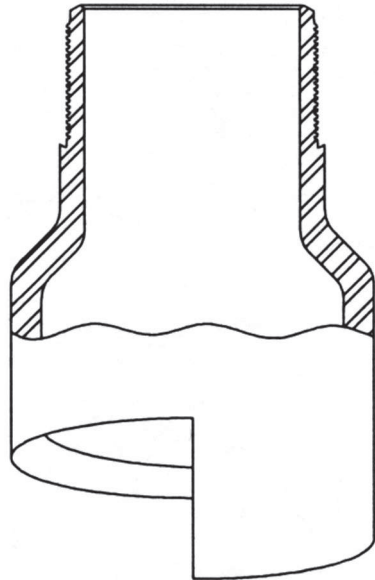
- (1) O.D. and length
- (2) Top or bottom extension
- (3) For Upper Extension, advise part number for Top Sub or Assembly
- (4) For Lower Extension, advise part number for Guide or Assembly



EXTENSION SUB OD (INCHES)	LENGTHS						
	24" Long	30" Long	36" Long	42" Long	48" Long	54" Long	60" Long
2 to 2-1/2	Weight	...	...	...	...	...	...
Over 2-1/2 to 3	Weight	...	...	...	...	...	...
Over 3 to 3-1/2	Weight	...	...	...	...	...	...
Over 3-1/2 to 4	Weight	...	...	...	...	...	...
Over 4 to 4-1/2	Weight	53	64	75	86	97	108
Over 4-1/2 to 5	Weight	59	72	84	97	109	122
Over 5 to 5-1/2	Weight	66	80	94	108	122	136
Over 5-1/2 to 6	Weight	73	88	103	119	134	150
Over 6 to 6 1/2	Weight	90	109	128	147	166	185
Over 6-1/2 to 7	Weight	102	124	146	168	190	212
Over 7 to 7-1/2	Weight	122	148	174	200	226	252
Over 7-1/2 to 8	Weight	127	154	181	209	236	263
Over 8 to 8-1/2	Weight	140	170	200	230	260	290
Over 8-1/2 to 9	Weight	150	182	214	246	278	310
Over 9 to 9-1/2	Weight	178	212	246	280	314	348
Over 9-1/2 to 10	Weight	166	202	238	274	310	346
Over 10 to 10-1/2	Weight	176	214	252	290	328	366
Over 10-1/2 to 11	Weight	184	224	264	304	344	384
Over 11 to 11-1/2	Weight	207	253	298	343	388	433
Over 11-1/2 to 12	Weight	218	266	314	362	410	458
Over 12 to 12-1/2	Weight	230	280	330	380	430	480
Over 12-1/2 to 13	Weight	245	300	355	410	465	520

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**SERIES 150 OVERSHOT  
OVERSIZED GUIDES**



**Overview**

An Logan Series 150 Oversized Guide properly guides the fish into the overshot when the hole size is considerably larger than the diameter of the fish and the overshot may pass alongside the fish without engaging it. Installation of an oversized guide instead of a standard guide will ensure alignment of the fish with the overshot.

**When ordering, please specify:**

- (1) Part number of Overshot Assembly, Standard Guide, or Bowl
- (2) O.D. of Guide

**SERIES 150 OVERSHOT OVERSIZED GUIDES**

GUIDE OD (INCHES)	WEIGHT	GUIDE OD (INCHES)	WEIGHT
to 4-1/2 .....	...	Over 13 to 13-1/2 .....	190
Over 4-1/2 to 5.....	23	Over 13-1/2 to 14.....	197
Over 5 to 5-1/2 .....	27	Over 14 to 14-1/2 .....	205
Over 5-1/2 to 6.....	30	Over 14-1/2 to 15.....	223
Over 6 to 6-1/2 .....	34	Over 15 to 15-1/2 .....	242
Over 6-1/2 to 7.....	49	Over 15-1/2 to 16.....	250
Over 7 to 7-1/2 .....	65	Over 16 to 16-1/2 .....	257
Over 7-1/2 to 8.....	75	Over 16-1/2 to 17.....	267
Over 8 to 8-1/2 .....	85	Over 17 to 17-1/2 .....	278
Over 8-1/2 to 9.....	87	Over 17-1/2 to 18.....	300
Over 9 to 9-1/2 .....	90	Over 18 to 18-1/2 .....	321
Over 9-1/2 to 10.....	110	Over 18-1/2 to 19.....	327
Over 10 to 10-1/2 .....	131	Over 19 to 19-1/2 .....	334
Over 10-1/2 to 11.....	137	Over 19-1/2 to 20.....	344
Over 11 to 11-1/2.....	143	Over 20 to 20-1/2 .....	353
Over 11-1/2 to 12.....	159	Over 20-1/2 to 21.....	362
Over 12 to 12-1/2 .....	175	Over 21 to 22.....	...
Over 12-1/2 to 13.....	183	Over 22 to 24.....	...

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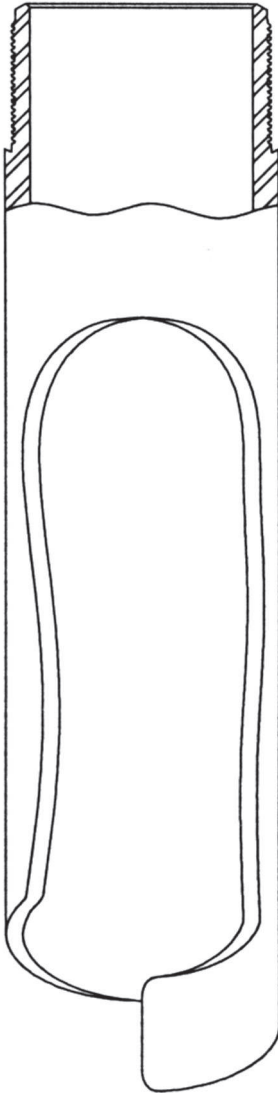
## SERIES 150 OVERSHOT WALLHOOK GUIDES

### Overview

When it is impossible to engage the top of a fish that is positioned in a washed out section of the well bore using a conventional overshot guide, a Logan Series 150 Wallhook Guide can be used to capture the neck of a fish, center it, and properly guide it into the bowl.

### When ordering, please specify:

- (1) Part number of Overshot Assembly, Standard Guide, or Bowl
- (2) Length of Wallhook Guide
- (3) O.D. if other than standard



OD (INCHES)	WEIGHTS:	30" Long	36" Long	42" Long	48" Long
Over 5 to 5-1/2		66	94	110	116
Over 5-1/2 to 6		73	102	117	127
Over 6 to 6-1/2		80	110	126	138
Over 6-1/2 to 7		86	117	134	148
Over 7 to 7-1/2		93	126	144	159
Over 7-1/2 to 8		100	135	155	170
Over 8 to 8-1/2		106	145	166	188
Over 8-1/2 to 9		113	155	177	198
Over 9 to 9-1/2		...	166	191	213
Over 9-1/2 to 10		...	177	204	228
Over 10 to 10-1/2		...	189	244	273
Over 10-1/2 to 11		...	201	285	318
Over 11 to 11-1/2		...	214	299	333
Over 11-1/2 to 12		...	227	312	348
Over 12 to 12-1/2		...	...	327	366
Over 12-1/2 to 13		...	...	343	383
Over 13 to 13-1/2		...	...	360	402
Over 13-1/2 to 14		...	...	377	421
Over 14 to 14-1/2		...	...	391	436
Over 14-1/2 to 15		...	...	404	451
Over 15 to 15-1/2		...	...	419	467
Over 15-1/2 to 16		...	...	433	483
Over 16 to 16-1/2		...	...	448	500
Over 16-1/2 to 17		...	...	462	516
Over 17 to 17-1/2		...	...	479	535
Over 17-1/2 to 18		...	...	496	554

Logan Oil Tools reserves the right to change or discontinue designs without notice.

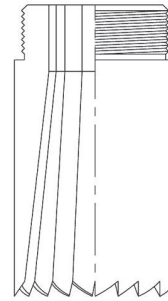
## SERIES 150 OVERSHOT MILL GUIDES

### Overview

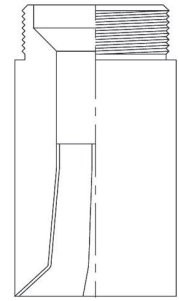
Logan Series 150 Overshot Mill Guides are designed to remove badly burred, flared, or jagged metal from the top of the fish. Mill Guides are used in place of the Standard or Oversized Guide to trim the fish so it can enter the overshot. Series 150 Overshot Mill Guides are available as a Type A, Type B, or Type C. Order by using the Standard Guide part number and the fish size.



**Type A**



**Type B**



**Type C**

### Type A

Machine cut carburized teeth mill burrs off tool joints and drill collars.

### Type B

Fluted design with tapered end teeth and straight inside teeth mills over pipe, upset sections, tool joints caught by the overshot, or when the top of the fish is unusually jagged.

### Type C

Tungsten carburized tapered teeth and straight I.D. mills over pipe, upset sections, and tool joints caught by the overshot.

### When ordering, please specify:

- (1) Mill Guide O.D. and type
- (2) Size of fish to mill over
- (3) O.D. if other than standard
- (4) Overshot Guide part number

### TYPE A — Machine cut carburized teeth to mill burrs off tool joints and drill collars

<b>GUIDE O.D. NOT OVER (inches)</b>	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2
Approximate Length of Guide (inches)	8	8	8	8	8	12	1

<b>GUIDE O.D. NOT OVER (inches)</b>	7	7-1/2	8	8-1/2	9	9-1/2	10
Approximate Length of Guide (inches)	12	12	12	16	16	16	16

<b>GUIDE O.D. NOT OVER (inches)</b>	10-1/2	11					
Approximate Length of Guide (inches)	16	16					

### TYPE B — Fluted with end teeth tapered and straight inside teeth to mill over pipe, upset section, or tool joint that the overshot catches

<b>GUIDE O.D. NOT OVER (inches)</b>	4-1/4	5-1/2	6	7	7-1/2	8	8-1/2
Approximate Length of Guide (inches)	8	8	12	12	12	12	16

<b>GUIDE O.D. NOT OVER (inches)</b>	9	9-1/2	9-3/4				
Approximate Length of Guide (inches)	16	16	16				

### TYPE C — Tungsten carbide tapered and straight ID to mill over pipe, upset section, or tool joint that the overshot catches

<b>GUIDE O.D. NOT OVER (inches)</b>	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2
Approximate Length of Guide (inches)	8	8	8	8	8	12	12

<b>GUIDE O.D. NOT OVER (inches)</b>	7	7-1/2	8	8-1/2	9	9-1/2	10
Approximate Length of Guide (inches)	12	12	12	16	16	16	16

<b>GUIDE O.D. NOT OVER (inches)</b>	10-1/2	11	11-3/4				
Approximate Length of Guide (inches)	16	16	16				

Logan Oil Tools reserves the right to change or discontinue designs without notice.

## SERIES 150 OVERSHOT MILL CONTROL PACKER INNER SEALS

### STANDARD – TYPE R

FISH SIZE (inches)	3/4	7/8	1	1-1/8	1-1/4	1-5/16	1.315
Inner Seal	L13591	L66814	L12470	L12471	L12472	L14187	L12280

FISH SIZE (inches)	1-1/2	1-5/8–1.660	1-3/4	1-3/4	1-7/8	1.900	2
Inner Seal	L12281	L11568	L12177	L12177SH	L10803	L218114-1.900	L10804

FISH SIZE (inches)	2-1/16	2-1/8	2-1/4	2-5/16	2-3/8	2-1/2	2-5/8
Inner Seal	L218114-66	L10805	L10806	L218114-74	L10807	L10808	L10809

FISH SIZE (inches)	2.702	2-3/4	2-13/16	2-7/8	2-7/8	2-7/8	2.900
Inner Seal	L10994	L10810	L218114-90	L10811	L10811-100	L10811SH	L218114-2.900

FISH SIZE (inches)	3	3-1/16	3-1/8	3-3/16	3.220	3-1/4	3-1/4
Inner Seal	L10812	L10098	L10813	L218114-102	L218114-3.220	L10814	L10814S

FISH SIZE (inches)	3-5/16	3-3/8	3-7/16	3-1/2	3-5/8	3-21/32	3-3/4
Inner Seal	L218114-106	L10815	L218114-110	L10816	L10817	L10819	L10819

FISH SIZE (inches)	3-3/4	3-13/16	3-7/8	3-15/16	4	4-1/16	4-1/8
Inner Seal	L10819SH	L218114-122	L10820	L218114-126	L10821	L218114-130	L10822

FISH SIZE (inches)	4-1/8	4-1/4	4-1/4	4-3/8	4-1/2	4-5/8	4-5/8
Inner Seal	L10822SH	L10823	L10823SH	L10824	L10825	L10826	L10826SH

FISH SIZE (inches)	4-3/4	4-7/8	5	5-1/8	5-1/4	5-3/8	5-1/2
Inner Seal	L10827	L10828	L10829	L10830	L10831	L10832	L10833

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note: L10811-100 (2-7/8 catch) inner seal is HNBR material.

**When ordering, please specify:**

- (1) Size of fish
- (2) Inner Seal number

**Recommended Spare Parts:**

- (1) 3 Inner Seals

**SERIES 150 OVERSHOT MILL CONTROL PACKER INNER SEALS**

**STANDARD - TYPE R**

FISH SIZE (inches)	5-5/8	5-3/4	5-7/8	6	6-1/8	6-1/4	6-3/8
Inner Seal	L10834	L10835	L10836	L10837	L10838	L10839	L10840

FISH SIZE (inches)	6-1/2	6-5/8	6-3/4	6-7/8	7	7-1/8	7-1/4
Inner Seal	L10841	L10842	L10843	L10844	L10845	L10846	L10847

FISH SIZE (inches)	7-3/8	7-1/2	7-5/8	7-3/4	7-7/8	8	8-1/8
Inner Seal	L10848	L10849	L10850	L10851	L10852	L10853	L10854

FISH SIZE (inches)	8-1/4	8-3/8	8-1/2	8-5/8	8-3/4	8-7/8	9
Inner Seal	L10855	L10856	L10857	L10858	L10859	L10860	L10861

FISH SIZE (inches)	9-1/8	9-1/4	9-3/8	9-1/2	9-5/8	9-3/4	10
Inner Seal	L10862	L10863	L10864	L12099	L12100	L12101	L12103

FISH SIZE (inches)	10-1/2	11-1/4	12	12-3/4			
Inner Seal	L218114-336	L63841	L10885	L81497			

PACK-OFF PIPE SIZE	1-1/4	1-1/2	2-1/16	2-3/8	2-3/8	2-7/8	2-7/8
PASS UPSET SIZE	1-13/16	1.900	2.330	2-19/32	2-21/32	3-3/32	3-7/32
Inner Seal	L13366	L13317	L13285	L11690	L11690	L11691	L11692

PACK-OFF PIPE SIZE	3-1/2	3-1/2	3-1/2	4-1/2	4-1/2		
PASS UPSET SIZE	3-3/4	3-13/16	3-15/16	5	5-1/8		
Inner Seal	L11693	L11693	L11694	L11695	L11696		

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

*Note: L10811-100 (2-7/8 catch) inner seal is HNBR material.*

**When ordering, please specify:**

- (1) Size of fish
- (2) Inner Seal number

**Recommended Spare Parts:**

- (1) 3 Inner Seals



## SERIES 150 OVERSHOT MILL CONTROL PACKER OUTER SEALS

PACKER	Logan Part No.	A9950	A9000	A9001	A9002	A90025	A9003	A9004
	Bowen No.	9407M	B-10202-R	9309-R	L-1453-R	1453-R	B-5089-R	B-3395-R
	Outer Seal	568-032	568-226	568-228	568-228	568-228	568-229	568-230

PACKER	Logan Part No.	A9005	A90055	A90056	A90057	A9006	A9007	A9009
	Bowen No.	8550-R	37588-R	B-1839-R	A-1831-R	L-809-RS	B-3594-R	B-5107-R
	Outer Seal	568-233	568-234	568-235	568-233	568-233	568-234	568-234

PACKER	Logan Part No.	A9010	A9011	A9012	A90125	A9013	A90135	A9014
	Bowen No.	809-R	L-7090-R	B-5118-R	1517-R	L-1517-R	21303-R	B-4625-R
	Outer Seal	568-234	568-235	568-235	568-236	568-236	568-236	568-237

PACKER	Logan Part No.	A90145	A9015	A9016	A90165	A9017	A9018	A9019
	Bowen No.	4185-R	L-6515-R	L-7065-R	1253-R	L-168-R	L-6665-R	6665-R
	Outer Seal	568-237	568-237	568-238	568-239	568-239	568-239	568-239

PACKER	Logan Part No.	A9020	A9021	A90215	A90217	A9022	A9023	A90235
	Bowen No.	B-3219-R	B-5538-R	9122-R	L-6163-R	811-R	856-R	60947R
	Outer Seal	568-239	568-240	568-239	568-238	568-240	568-241	568-241

PACKER	Logan Part No.	A9024	A9025	A9026	A9027	A90285	A9029	A9030
	Bowen No.	B-5157-R	A-1508-R	B-4895-R	L-1867-R	B-4672-R	169-R	B-2487-R
	Outer Seal	568-242	568-243	568-242	568-243	568-244	568-244	568-246

PACKER	Logan Part No.	A9031	A9032	A9033	A9034	A9035	A9036	A9037
	Bowen No.	B-2199-1R	1140-R	195-R	B-2199-R	6114-R	B-2362-R	B-6387-R
	Outer Seal	568-248	568-247	568-349	568-248	568-247	568-248	568-249

PACKER	Logan Part No.	A90375	A9038	A9039	A90395	A9040	A90402	A90405
	Bowen No.	1189-R	B-2455-R	L-5950-R	5950-R	M-4505-RS	11826-R	4505-R
	Outer Seal	568-250	568-249	568-250	568-250	568-252	568-251	568-252

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**SERIES 150 OVERSHOT MILL CONTROL PACKER OUTER SEALS**

PACKER	Logan Part No.	A90407	A9041	A9042	A9043	A9044	A9045	A9046
	Bowen No.	9209-R	L-8618-R	A-756-R	6697-R	L-110-R	223-R	B-5209-R
	Outer Seal	568-252	568-253	568-254	568-255	568-359	568-437	568-259

PACKER	Logan Part No.	A9047	A9048	A9049	A90495	A9050	A9051	A9052
	Bowen No.	L-1642-R	9689-R	1642-R	1680-R	L-1680-R	9005-R	5508-R
	Outer Seal	568-259	568-258	568-259	568-438	568-438	568-259	568-260

PACKER	Logan Part No.	A9053	A9054	A9055	A90555	A9056	A9057	A9058
	Bowen No.	9865-R	L-6635-R	9136-R	1634-R	A-1814-R	B-5225-R	207-R
	Outer Seal	568-259	568-439	568-260	568-260	568-260	568-261	568-261

PACKER	Logan Part No.	A90587	A9059	A90595	A9060	A90605	A9061	A9062
	Bowen No.	L-8985-R	9224-R	L-6310-R	L-111-R	9231-R	B-5357-R	L-1025-R
	Outer Seal	568-261	568-261	568-262	568-441	568-262	568-263	568-263

PACKER	Logan Part No.	A9063	A9064	A9065	A9066	A9067	A90675	A9068
	Bowen No.	9237-R	B-4154-R	B-7104-R	M-98-RS	9243-R	B-5244-R	9855-R
	Outer Seal	568-263	568-263	568-264	568-264	568-263	568-264	568-264

PACKER	Logan Part No.	A9069	A90695	A9070	A9071	A9072	A9073	A9074
	Bowen No.	B-5260-R	98-R	L-98-R	B-5268-R	235-R	9055-R	L-1060-R
	Outer Seal	568-265	568-265	568-265	568-266	568-445	568-267	568-268

PACKER	Logan Part No.	A9075	A9076	A9077	A9078	A9079	A9080	A9081
	Bowen No.	B-5287-R	8956-R	B-5300-R	B-5308-R	B-5324-R	B-12825-R	26260-R
	Outer Seal	568-266	568-268	568-269	568-270	568-269	568-271	568-273

PACKER	Logan Part No.	A9082	A9083	A9084	A9085	A9086	A9087	
	Bowen No.	5332-R	15805-R	33011-R	68031-R	64556-R	31656-R	
	Outer Seal	568-274	568-451	568-453	568-279	568-458	568-463	

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## TYPE E MILL CONTROL PACKERS

PACKER	Logan Part No.	A9950E	A9000E	A9001E	A9002E	A90025E	A9003E	A9004E
	Bowen No.	9407E	B-10202-E	9309-E	L-1453-E	1453-E	B-5089-E	B-3395-E
	Outer Seal	568-032	568-226	568-228	568-228	568-228	568-229	568-230

PACKER	Logan Part No.	A9005E	A90055E	A90056E	A90057E	A9006E	A9007E	A9009E
	Bowen No.	8550-E	37588-E	B-1839-E	A-1831-E	L-809-ES	B-3594-E	B-5107-E
	Outer Seal	568-233	568-234	568-235	568-233	568-233	568-234	568-234

PACKER	Logan Part No.	A9010E	A9011E	A9012E	A90125E	A9013E	A90135E	A9014E
	Bowen No.	809-E	L-7090-E	B-5118-E	1517-E	L-1517-E	21303-E	B-4625-E
	Outer Seal	568-234	568-235	568-235	568-236	568-236	568-236	568-237

PACKER	Logan Part No.	A90145E	A9015E	A9016E	A90165E	A9017E	A9018E	A9019E
	Bowen No.	4185-E	L-6515-E	L-7065-E	1253-E	L-168-E	L-6665-E	6665-E
	Outer Seal	568-237	568-237	568-238	568-239	568-239	568-239	568-239

PACKER	Logan Part No.	A9020E	A9021E	A90215E	A90217E	A9022E	A9023E	A90235E
	Bowen No.	B-3219-R	B-5538-R	9122-R	L-6163-R	811-R	856-R	60947R
	Outer Seal	568-239	568-240	568-239	568-238	568-240	568-241	568-241

PACKER	Logan Part No.	A9024E	A9025E	A9026E	A9027E	A90285E	A9029E	A9030E
	Bowen No.	B-5157-E	A-1508-E	B-4895-E	L-1867-E	B-4672-E	169-E	B-2487-E
	Outer Seal	568-242	568-243	568-242	568-243	568-244	568-244	568-246

PACKER	Logan Part No.	A9031E	A9032E	A9033E	A9034E	A9035E	A9036E	A9037E
	Bowen No.	B-2199-1E	1140-E	195-E	B-2199-E	6114-E	B-2362-E	B-6387-E
	Outer Seal	568-248	568-247	568-349	568-248	568-247	568-248	568-249

PACKER	Logan Part No.	A90375E	A9038E	A9039E	A90395E	A9040E	A90402E	A90405E
	Bowen No.	1189-E	B-2455-E	L-5950-E	5950-E	M-4505-ES	11826-E	4505-E
	Outer Seal	568-250	568-249	568-250	568-250	568-252	568-251	568-252

Logan Oil Tools reserves the right to change or discontinue designs without notice.

When ordering, please specify:

(1) Specify catch size

# LOGAN GENERAL CATALOG

OIL TOOLS

## TYPE E MILL CONTROL PACKERS

PACKER	Logan Part No.	A90407E	A9041E	A9042E	A9043E	A9044E	A9045E	A9046E
	Bowen No.	9209-E	L-8618-E	A-756-E	6697-E	L-110-E	223-E	B-5209-E
	Outer Seal	568-252	568-253	568-254	568-255	568-359	568-437	568-259

PACKER	Logan Part No.	A9047E	A9048E	A9049E	A90495E	A9050E	A9051E	A9052E
	Bowen No.	L-1642-E	9689-E	1642-E	1680-E	L-1680-E	9005-E	5508-E
	Outer Seal	568-259	568-258	568-259	568-438	568-438	568-259	568-260

PACKER	Logan Part No.	A9053E	A9054E	A9055E	A90555E	A9056E	A9057E	A9058E
	Bowen No.	9865-E	L-6635-E	9136-E	1634-E	A-1814-E	B-5225-E	207-E
	Outer Seal	568-259	568-439	568-260	568-260	568-260	568-261	568-261

PACKER	Logan Part No.	A90587E	A9059E	A90595E	A9060E	A90605E	A9061E	A9062E
	Bowen No.	L-8985-E	9224-E	L-6310-E	L-111-E	9231-E	B-5357-E	L-1025-E
	Outer Seal	568-261	568-261	568-262	568-441	568-262	568-263	568-263

PACKER	Logan Part No.	A9063E	A9064E	A9065E	A9066E	A9067E	A90675E	A9068E
	Bowen No.	9237-E	B-4154-E	B-7104-E	M-98-ES	9243-E	B-5244-E	9855-E
	Outer Seal	568-263	568-263	568-264	568-264	568-263	568-264	568-264

PACKER	Logan Part No.	A9069E	A90695E	A9070E	A9071E	A9072E	A9073E	A9074E
	Bowen No.	B-5260-E	98-E	L-98-E	B-5268-E	235-E	9055-E	L-1060-E
	Outer Seal	568-265	568-265	568-265	568-266	568-445	568-267	568-268

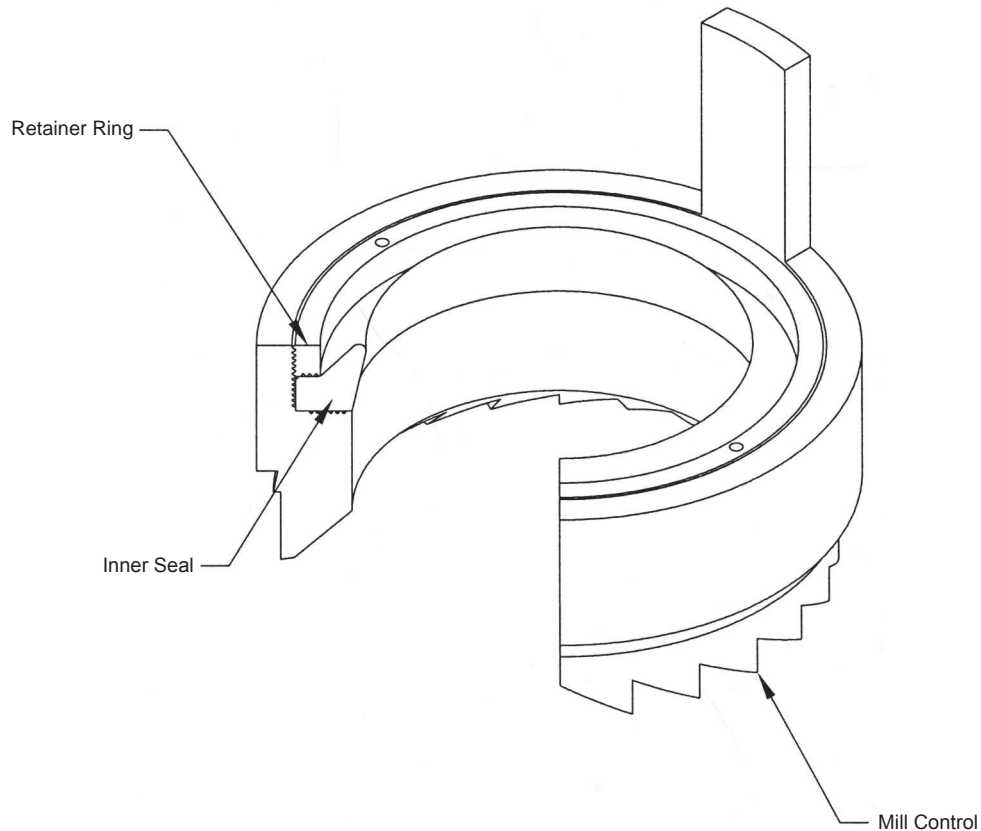
PACKER	Logan Part No.	A9075E	A9076E	A9077E	A9078E	A9079E	A9080E	A9081E
	Bowen No.	B-5287-E	8956-E	B-5300-E	B-5308-E	B-5324-E	B-12825-E	26260-E
	Outer Seal	568-266	568-268	568-269	568-270	568-269	568-271	568-273

PACKER	Logan Part No.	A9082E	A9083E	A9084E	A9085E	A9086E	A9087E
	Bowen No.	5332-E	15805-E	33011-E	68031-E	64556-E	31656-E
	Outer Seal	568-274	568-451	568-453	568-457	568-458	568-463

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When ordering, please specify:

(1) Specify catch size



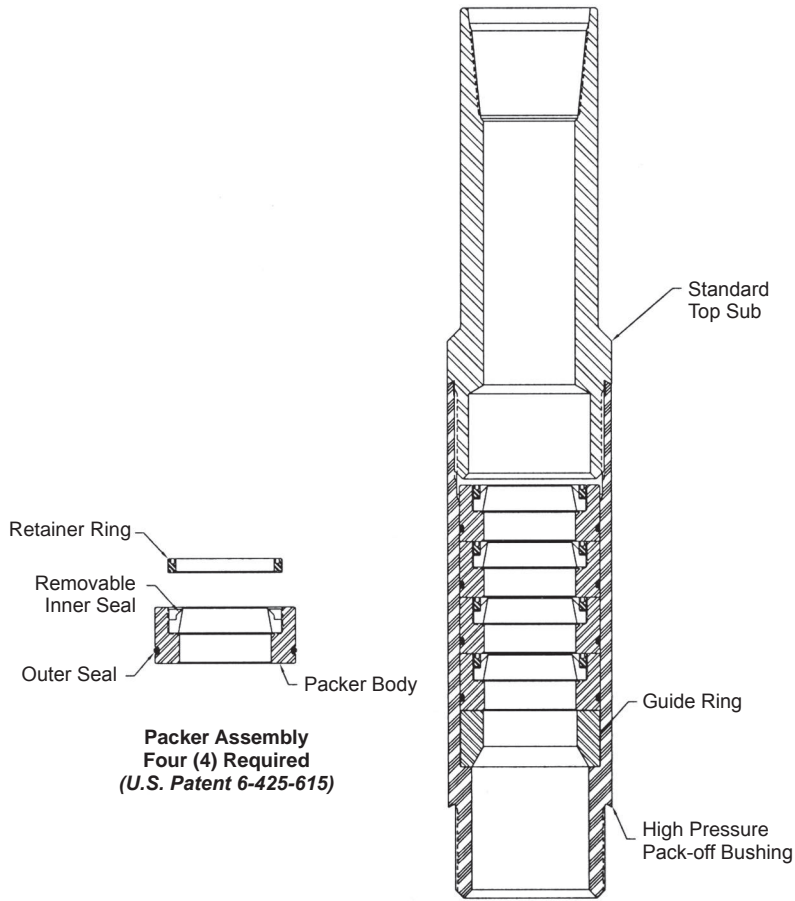
## HIGH PRESSURE MILL CONTROL PACKERS

### Overview

The Logan High Pressure Mill Control Packer (U.S. Patent 6-425-615) is designed for use with Series 150 Overshots and has been successfully field tested and proven to 5,000 psi. The unique design utilizes a steel retainer ring, which can be easily installed and removed with an adjustable spanner wrench, to compress the inner seal. The steel retainer ring is also machined with left-hand threads to prevent back-off. The body of the Mill Control Packer and the steel retainer ring are machined with a series of grooves to ensure maximum positive retention of the inner seal during high pressure operations. Correct steel retainer ring installation and proper inner seal squeeze are accurately defined when the retainer ring is flush with the top of the Mill Control Packer body.

### When ordering, please specify:

- (1) Overshot Assembly to be used with
- (2) O.D. of tubing or pipe size to pack-off



**Packer Assembly  
Four (4) Required  
(U.S. Patent 6-425-615)**

## HIGH PRESSURE PACK-OFF ASSEMBLIES

### Overview

The Logan Series 150 High Pressure Pack-off Assembly is for use in areas with extreme pressure. The assemblies listed below are installed between the top sub and bowl of the overshot. High Pressure Pack-off Assemblies for use between the Bowl and Guide are available upon request. Assemblies for overshots not listed are available upon request.

### When ordering, please specify:

- (1) Overshot Assembly to be used with
- (2) O.D. of tubing or pipe size to pack-off

### Special Notes:

- (1) High Pressure Pack-off Assemblies are used between the Top Sub and Bowl.
- (2) High Pressure Pack-off Assemblies for use between the Bowl and Guide are available upon request.
- (3) High Pressure Pack-off Assemblies for Overshots not listed are available upon request.
- (4) Bi-Directional High Pressure Pack-off Assemblies are available upon request. (seals both internal and external pressure)

### FOR USE WITH:

OVERSHOT ASSEMBLY	Logan Part No.	150-413-A	150-413-D	150-438-A	150-425-D	150-4375-A	150-450-A	150-438-D
	Bowen No.	9105	C5115	C5112	C5126	9635	C5123	C4619
COMPLETE ASSEMBLY	Logan Part No.	800-249	800-252	800-254	800-256	800-257	800-258	800-259
BUSHING	Logan Part No.	HPP1010	HPP1012	HPP1013	HPP1014	HPP10145	HPP1015	HPP1016
PACKER *	Logan Part No.	HPP4010	HPP4012	HPP4013	HPP4014	HPP40145	HPP4015	HPP4016
GUIDE RING	Logan Part No.	GR1010	GR1012	GR1013	GR1014	GR10145	GR1015	GR1016
SPACER RING **	Logan Part No.	SR1010	SR1012	SR1013	SR1014	SR10145	SR1015	SR1016

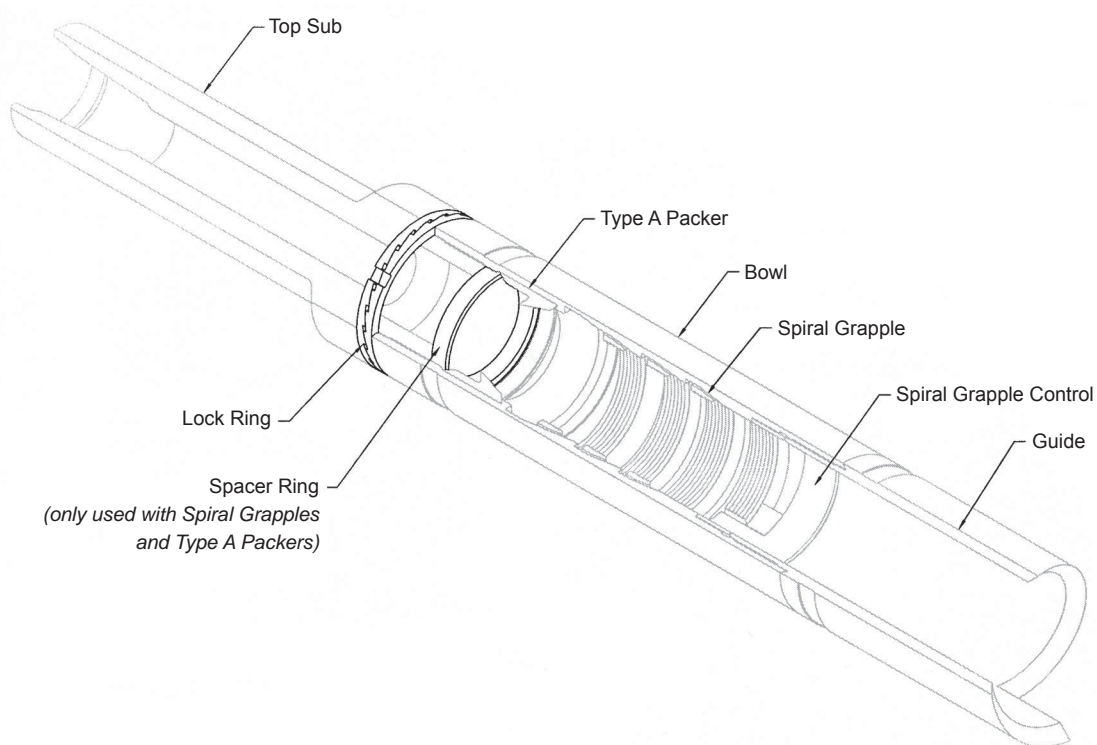
### FOR USE WITH:

OVERSHOT ASSEMBLY	Logan Part No.	150-482-A	150-456-D	150-469-C	150-575-A	150-813-D		
	Bowen No.	C4732	C5151	9109	8975	9217		
COMPLETE ASSEMBLY	Logan Part No.	800-260	800-262	800-263	800-284	800-316		
BUSHING	Logan Part No.	HPP1017	HPP1018	HPP1019	HPP1035	HPP1059		
PACKER *	Logan Part No.	HPP4017	HPP4018	HPP4019	HPP4035	HPP4059		
GUIDE RING	Logan Part No.	GR1017	GR1018	GR1019	GR1035	GR1059		
SPACER RING **	Logan Part No.	SR1017	SR1018	SR1019	SR1035	SR1059		

Logan Oil Tools reserves the right to change or discontinue designs without notice.

\* Includes O-ring, Inner Seal, and Retainer Ring

\*\* Optional Spacer Ring for Bi-Directional Pack-off



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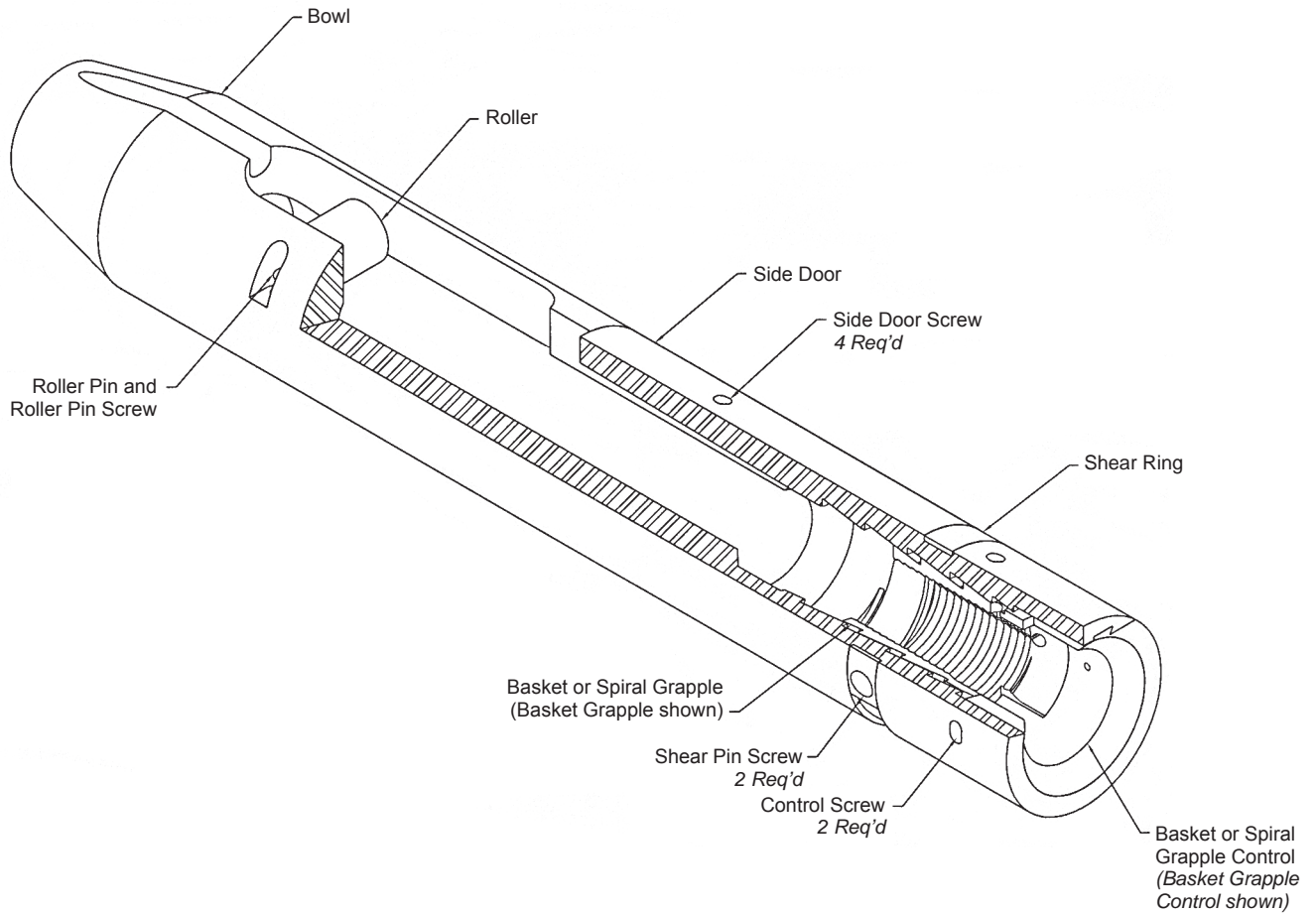
## LOCK RINGS AND SPACERS

### Overview

Lock Rings are installed between the Top Sub and the Bowl, and are designed to keep the Top Sub from inadvertently unscrewing from the Bowl. Lock Rings are typically used when a significant amount of torque is being applied through the overshot to the fish (such as encountered during back-off operations). The Lock Rings can be used with either a Basket Grapple or a Spiral Grapple. If a Spiral Grapple and a Type A Packer are being used, then a Spacer Ring must be used in conjunction with the Lock Rings. The Spacer Ring is installed into the Bowl and on top of the Type A Packer. When the Top Sub/Lock Ring assembly is installed into the Overshot Bowl, the Spacer Ring will secure the Type A Packer in the Bowl.

### When ordering, please specify:

- (1) Part number of the complete assembly for selected Overshot



## SERIES 160 SIDE DOOR OVERSHOTS

### Overview

A Logan Series 160 Side Door Overshot is recommended when fishing for cable tools or conductor lines in cased holes. The side door overshoot is run in on tubing or drill pipe. Line can be fed into the tool by removing the door on the side of the bowl. The door is put back into position after the line is in place. The feature eliminates the necessity of cutting the line or cable and the possibility of the lines fouling when there are two lines in the hole.

### Construction

Principal parts of the Series 160 Side Door Overshot are a bowl, grapple, and grapple control.

### Operation

Remove the side door and interior parts. Place the bowl on the cable and fasten the side door. Slip the grapple onto the cable and screw into place in the bowl. Slip the grapple control into place and fasten the control screws.

Run in the overshoot. As the overshoot nears the fish, slowly rotate the string to the right as it is gradually lowered over the fish. The wickered grapple will engage the fish. Continued lowering and right-hand rotation of the string will move the grapple upward within the bowl. The grapple will expand to allow easy entry of the fish.

### To Pull the Fish

Release torque out of the string and exert an upward strain on the pipe. The friction of the fish on the grapple wickers will pull the grapple down into the bowl. This causes the grapple to contract and tightly grip the fish. Maintain an upward strain on the string to pull the fish out of the hole.

### To Release from a Fish

Bump down to break the grip. Gradually raise the string while slowly rotating it to the left.

Follow the same procedure to release from a recovered fish being sure to hold the fish below the overshoot.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Line diameter



# LOGAN GENERAL CATALOG

OIL TOOLS

## SERIES 160 SIDE DOOR OVERSHOTS

<b>MAXIMUM CATCH SIZE (Spiral)</b>		2	2	2-3/8	2-3/8	2-3/8	3-1/8	3-21/32
<b>MAXIMUM CATCH SIZE (Basket)</b>		1-1/2	1-1/2	1-7/8	1-7/8	1-7/8	2-5/8	3-1/8
<b>OVERSHOT O.D.</b>		3-1/8	3-3/4	4	4-1/2	4-1/2	4-11/16	5-1/2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>160-313</b>	<b>160-375</b>	<b>160-400</b>	<b>160-450</b>	<b>160-451</b>	<b>160-469</b>	<b>160-550</b>
	Bowen No.	15955	C11145	9560	6400	9985	9965	9920

## COMPONENT PARTS

<b>BOWL</b>	<b>Logan Part No.</b>	<b>AK1000</b>	<b>AK1001</b>	<b>AK1002</b>	<b>AK1003</b>	<b>AK1004</b>	<b>AK1005</b>	<b>AK1006</b>
	Bowen No.	15957	C11146	9562	6401	9986	9966	9921
<b>ROLLER</b>	<b>Logan Part No.</b>	<b>AK2000</b>	<b>AK2001</b>	<b>AK2002</b>	<b>AK2003</b>	<b>AK2003</b>	<b>AK2004</b>	<b>AK2005</b>
	Bowen No.	15961	A5440	9566	6456	6456	9967	9922
<b>ROLLER PIN</b>	<b>Logan Part No.</b>	<b>AK3000</b>	<b>AK3001</b>	<b>AK3002</b>	<b>AK3003</b>	<b>AK3003</b>	<b>AK3004</b>	<b>AK3005</b>
	Bowen No.	15962	A11296	9567	6457	6457	9968	9923
<b>ROLLER PIN SCREW</b>	<b>Logan Part No.</b>	<b>AK4000</b>	<b>AK4000</b>	<b>AK4000</b>	<b>AK4000</b>	<b>AK4000</b>	<b>AK4000</b>	<b>AK4001</b>
	Bowen No.	9568	9568	9568	9568	9568	9568	9924
<b>SHEAR RING</b>	<b>Logan Part No.</b>	<b>AK5000</b>	<b>AK5001</b>	<b>AK5002</b>	<b>AK5003</b>	<b>AK5003</b>	<b>AK5004</b>	<b>AK5005</b>
	Bowen No.	15958	A14221	9564	6422	6422	9970	9925
<b>SHEAR RING SCREW</b>	<b>Logan Part No.</b>	<b>AK6000</b>	<b>AK6001</b>	<b>AK6002</b>	<b>AK6003</b>	<b>AK6003</b>	<b>AK6002</b>	<b>AK6004</b>
	Bowen No.	6460	23124	8593	25220	25220	8593	9906
	No. Req'd	2	2	2	2	2	2	2
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>AK7000</b>	<b>AK7001</b>	<b>A50025</b>	<b>A50025</b>	<b>A50025</b>	<b>A5010</b>	<b>A5019</b>
	Bowen No.	1811	11147	1448	1448	1448	1741	6662
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AK8000</b>	<b>AK8001</b>	<b>AK8002</b>	<b>AK8002</b>	<b>AK8002</b>	<b>AK8003</b>	<b>AK8004</b>
	Bowen No.	15965	A11148	6403	6403	6403	9973	9927
<b>CONTROL SCREW</b>	<b>Logan Part No.</b>	<b>AK9000</b>	<b>AK9001</b>	<b>Q3012</b>	<b>AK9003</b>	<b>AK9003</b>	<b>AK9001</b>	<b>AK9004</b>
	Bowen No.	15966	9933	9558	6459	6459	9933	9928
	No. Req'd	2	2	2	2	2	2	2
<b>TOP SUB (see Note 1)</b>	<b>Logan Part No.</b>	...	...	...	<b>AK10000</b>	...	...	...
	Bowen No.	...	...	...	7243, 7244	...	...	...
<b>SIDE DOOR SCREW</b>	<b>Logan Part No.</b>	<b>Q3002</b>	<b>AK11001</b>	<b>AK11002</b>	<b>AK4000</b>	<b>AK9001</b>	<b>Q3012</b>	<b>Q3012</b>
	Bowen No.	8181	23507	9559	9568	9933	9558	9558
	No. Req'd	4	6	6	4	4	44	44
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>AK12000</b>	<b>AK12001</b>	<b>AK12002</b>	<b>AK12002</b>	<b>AK12002</b>	<b>AK12003</b>	<b>AK12004</b>
	Bowen No.	15956	B11147	6402	6402	6402	9972	9934
<b>BASKET GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AK13000</b>	<b>AK13001</b>	<b>AK13002</b>	<b>AK13002</b>	<b>AK13002</b>	<b>AK13003</b>	<b>AK13004</b>
	Bowen No.	15965	B11148	6403	6403	6403	9973	9927

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

(1) Assembly number 160-450 (6400) has a straight thread top connection in bowl and requires special top subs.

### Recommended Spare Parts:

- (1) 2 Grapples for each size, Basket and Spiral
- (2) 2 Grapple Controls for each size

## LEAD IMPRESSION BLOCKS

### Overview

A Logan Lead Impression Block is an effective tool used to determine dimensions, configuration, condition, and location of the top end of a fish in the hole.

### Construction

Logan Lead Impression Blocks are manufactured with a high strength alloy steel body and a soft lead insert at the lower end. All impression blocks (except those with sucker rod connections) are provided with a watercourse for flushing the top of the fish before lowering the tool against it. Impression blocks without a watercourse can be furnished upon request.

Lead O.D. is available in 1 to 12-1/4 inches. Additional sizes are available upon request.

### Operation

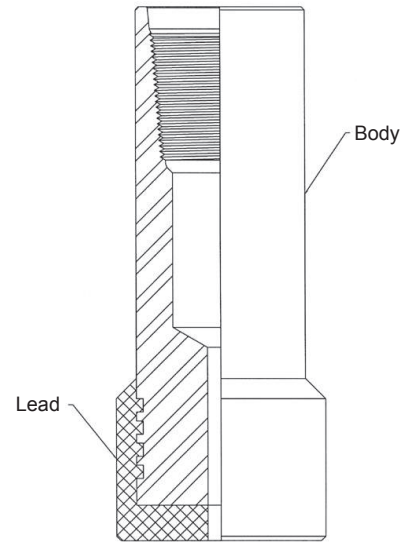
Make up the impression block to the bottom of the fishing string and run into the hole. Do not rotate. Slowly lower the impression block to the point of contact with the fish. Apply weight to the impression block and lift it from the hole.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top connection
- (3) Lead O.D.

### Special Note:

- (1) Additional sizes available upon request



SIZE (O.D. OF LEAD)	1	1-5/8	1-3/4	2-1/8	2-1/4	2-3/4	3
COMPLETE ASSEMBLY Logan Part No.	100-100	100-163	100-175	100-213	100-225	100-275	100-300
WATERCOURSE SIZE	None	None	None	None	None	None	1/2

SIZE (O.D. OF LEAD)	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4 3/4
COMPLETE ASSEMBLY Logan Part No.	100-325	100-350	100-375	100-400	100-425	100-450	100-475
WATERCOURSE SIZE	1/2	1/2	1/2	1/2	1/2	3/4	3/4

SIZE (O.D. OF LEAD)	5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2
COMPLETE ASSEMBLY Logan Part No.	100-500	100-525	100-550	100-575	100-600	100-625	100-650
WATERCOURSE SIZE	3/4	3/4	3/4	3/4	3/4	3/4	3/4

SIZE (O.D. OF LEAD)	6-3/4	7	7-1/4	7-1/2	7-3/4	8	8-1/4
COMPLETE ASSEMBLY Logan Part No.	100-675	100-700	100-725	100-750	100-775	100-800	100-825
WATERCOURSE SIZE	3/4	3/4	3/4	3/4	3/4	3/4	3/4

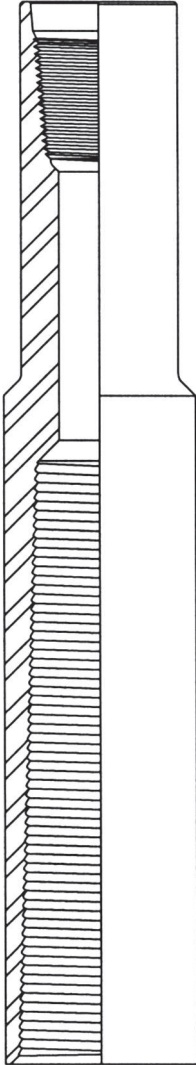
SIZE (O.D. OF LEAD)	8-1/2	8-3/4	9	9-1/4	9-1/2	9-3/4	10
COMPLETE ASSEMBLY Logan Part No.	100-850	100-875	100-900	100-925	100-950	100-975	100-1000
WATERCOURSE SIZE	3/4	3/4	3/4	3/4	3/4	3/4	3/4

SIZE (O.D. OF LEAD)	10-1/4	10-1/2	10-3/4	11	11-1/4	11-1/2	11-3/4
COMPLETE ASSEMBLY Logan Part No.	100-1025	100-1050	100-1075	100-1100	100-1125	100-1150	100-1175
WATERCOURSE SIZE	3/4	3/4	3/4	3/4	3/4	3/4	3/4

SIZE (O.D. OF LEAD)	12	12-1/4	14-1/2	15	15-1/2	17	17-1/4
COMPLETE ASSEMBLY Logan Part No.	100-1200	100-1225	100-1450	100-1500	100-1550	100-1700	100-1725
WATERCOURSE SIZE	3/4	3/4	3/4	3/4	3/4	3/4	3/4

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## ROTARY DIE COLLARS



### Overview

Logan Rotary Die Collars are the simplest external catch fishing tools designed for retrieving a fish from the hole. Logan Die Collars are available in two types: Type A and Type B. They are available in an assortment of sizes, lengths, and connections, and can be custom made to specification.

### Type A

Type A Rotary Die Collars are manufactured with an integral guide. The guide end of the die collar may be specified as flat smooth or cut-lipped.

### Type B

Type B Die Collars are manufactured with a threaded bottom end for attaching a standard cut-lipped guide or wallhook guide of your choice.

### Construction

#### Wickers

All Logan Rotary Die Collars are manufactured with hardened wickers (cutting teeth) to ensure positive, reliable engagement of the fish.

Standard wickers are a non-fluted, plain water-tight design to provide circulation below the stuck point. Fluted type wickers are available upon request. They are designed to provide circulation to flush out cuttings during fish engagement. All Logan Rotary Die Collars are designed with a circulation hole drilled through the center.

Right-hand wickers for right-hand rotation engagement are standard on Logan Rotary Die Collars. Left-hand wickers are available upon request. There is no extra charge for left-hand wickers.

### Operation

The Logan Rotary Die Collar is attached to the fishing string and lowered to the fish. Applying weight of less than one point while rotating will allow the wickers to engage the fish. The fish may be lifted from the hole after being securely engaged.

### How to Order

The internal diameter of the largest wicker should be at least 1/2 inch larger than the outside diameter of the fish. The internal diameter of the smallest wicker should be at least 1/2 inch smaller than the outside diameter of the fish.

### When ordering, please specify:

- (1) Name and number of part
- (2) Connection
- (3) Type and size of guide if required
- (4) O.D. if other than standard

### Special Notes:

- (1) *An extra charge will be made for any change in I.D., O.D., length, or catch range.*
- (2) *No extra charge for left-hand Die Collars.*

## ROTARY DIE COLLARS

COMPLETE ASSEMBLY	Logan Part No.	102-166	102-181	102-191	102-231	102-344	102-368	102-419
NOMINAL SIZE		3/4	1	1	1-1/4	2-3/8	2-3/8	2-3/8
		Pipe	Pipe	Upset	Pipe	Pipe	Upset	API Reg
TO CATCH		1.050	1.315	1.469	1.660	2-3/8	2-21/32	3-1/8
TOTAL LENGTH		8	17	15	12	24	24	24
O.D.		1.660	1-13/16	1-29/32	2-5/16	3-7/16	3-11/16	4-3/16
DIAMETER OF LARGEST WICKER		1-3/16	1-1/2	1-5/8	1-7/8	2-9/16	2-13/16	3-5/16
DIAMETER OF SMALLEST WICKER		7/8	1	1-1/8	1-3/8	1-3/4	2	2-1/2

COMPLETE ASSEMBLY	Logan Part No.	102-444	102-400	102-438	102-488	102-525	102-475	102-506
NOMINAL SIZE		2-3/8	2-7/8	2-7/8	2-7/8	2-7/8	3-1/2	3-1/2
		API IF	Pipe	Upset	API Reg	API IF	Pipe	Upset
TO CATCH		3-3/8	2-7/8	3-7/32	3-3/4	4-1/8	3-1/2	3-13/16
TOTAL LENGTH		24	24	24	24	24	32	32
O.D.		4-7/16	4	4-3/8	4-7/8	5-1/4	4-3/4	5-1/16
DIAMETER OF LARGEST WICKER		3-9/16	3-1/16	3-7/16	3-15/16	4-5/16	3-3/4	4-1/16
DIAMETER OF SMALLEST WICKER		2-3/4	2-1/4	2-5/8	3-1/8	3-1/2	2-5/8	2-15/16

COMPLETE ASSEMBLY	Logan Part No.	102-550	102-588	102-600	102-588	102-638	102-688	102-713
NOMINAL SIZE		3-1/2	3-1/2	3-1/2	4-1/2	4-1/2	4-1/2	4-1/2
		API Reg	API FH	API IF	Pipe	Upset	API Reg	API FH
TO CATCH		4-1/4	4-5/8	4-3/4	4-1/2	5	5-1/2	5-3/4
TOTAL LENGTH		32	32	32	36	36	36	36
O.D.		5-1/2	5-7/8	6	5-7/8	6-3/8	6-7/8	7-1/8
DIAMETER OF LARGEST WICKER		4-1/2	4-7/8	5	4-3/4	5-1/4	5-3/4	6
DIAMETER OF SMALLEST WICKER		3-3/8	3-3/4	3-7/8	3-3/8	3-7/8	4-3/8	4-5/8

COMPLETE ASSEMBLY	Logan Part No.	102-750	102-706	102-756	102-825	102-850	102-888	102-813
NOMINAL SIZE		4-1/2	5-9/16	5-9/16	5-9/16	5-9/16	5-9/16	6-5/8
		API IF	Pipe	Upset	API Reg	API FH	API IF	Pipe
TO CATCH		6-1/8	5-9/16	6-1/16	6-3/4	7	7-3/8	6-5/8
TOTAL LENGTH		36	42	42	42	42	42	42
O.D.		7-1/2	7-1/16	7-9/16	8-1/4	8-1/2	8-7/8	8-1/8
DIAMETER OF LARGEST WICKER		6-3/8	5-13/16	6-5/16	7	7-1/4	7-5/8	6-7/8
DIAMETER OF SMALLEST WICKER		5	3-15/16	4-7/16	5-1/8	5-3/8	5-3/4	5

COMPLETE ASSEMBLY	Logan Part No.	102-863	102-925	102-950	102-1000	102-1075	102-1363
NOMINAL SIZE		6-5/8	6-5/8	6-5/8	6-5/8	6-5/8	6-5/8
		Upset	API Reg	API FH	API IF	API Reg	API Reg
TO CATCH		7-1/8	7-3/4	8	8-1/2	8-5/8	10-3/4
TOTAL LENGTH		42	42	42	42	42	46
O.D.		8-5/8	9-1/4	9-1/2	10	10-3/4	13-5/8
DIAMETER OF LARGEST WICKER		7-3/8	8	8-1/4	8-3/4	9-3/4	12
DIAMETER OF SMALLEST WICKER		5-1/2	6-1/8	6-3/8	6-7/8	7-7/8	10

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**NOTES**

## FULL CIRCLE RELEASING SPEARS

### Overview

Logan Full Circle Releasing Spears are used to internally engage and retrieve all sizes of tubing, drill pipe, and casing. It may be used with internal cutters for cut and pull operations. Full Circle Releasing Spears are designed to evenly distribute expansion strain over a long vertical section of a fish and ensure positive internal engagement. The design of the slips and the effect of the body tapers upon the slips permits tremendous pulling and jarring strains with no danger of distortion to the fish.

### Construction

The Logan Full Circle Releasing Spear consists of a body, sleeve (integral with body), slip, unitizer, stop, safety ring, friction block, retainer screw and retainer set, and a mill type nut. Sub, bullnose, and sidehill type nuts are also available. The size and type of the upper box connection is furnished according to customer specification. Construction of the Full Circle Releasing Spear varies slightly according to size. Tubing and drill pipe Spears with four-inch nominal tubing and above, and all casing Spears, utilize Friction Block Assemblies as the friction grip mechanism.

### Body

The body has a series of large tapers on the outside diameter that match similar tapers on the inside of the slips. During operation, the tapers cause the slips to expand and contact the fish. Lugs near the upper end of the body hold the upper ends of the slips in position.

### Slips

The design of the full circle slips allows easy entry into or withdrawal from the fish. The slips form an almost complete diameter when retracted resulting in more slip engagement than most other spears. This design feature reduces any distortion to the fish.

### Unitizer

The lower ends of the slips are held in position by the unitizer that fits around the lower end of the body. The unitizer is kept in place by the stop, safety ring, and nut at the lower end of the body.

### Safety Ring

The safety ring prevents the Spear from entering a fish with an inside diameter that is too small for the retracted slips to enter.

### Friction Blocks

The friction grip mechanism is a friction block assembly that includes inner and outer block springs. Friction blocks and springs contact the inner wall of the fish and hold the unitizer, retainer set, and slips in place until the shoulders of the tapers on the downwardly traveling body contact the ends of the slips and the assembly is pushed into the fish to the desired depth.

### Nut

The nut guides the Spear into the fish. A mill type nut is used to cut away the distorted end of a fish to ensure that the Spear enters the fish. If the fish is embedded in the side wall of a hole or is badly out of line, a sidehill type nut can be used to align the Spear to the fish. When the use of other tools is required below the Spear, such as an internal cutter, a sub type nut can provide the necessary connection.

### Assembly

Connect the Spear to the bottom of the fishing string. The Spear should be in the retracted position with the upper and lower end of the slips engaged with the lugs on the body and the unitizer. The retracted slips will not engage the pipe as the Spear is run in.

### Operation

#### Engaging and Pulling the Fish

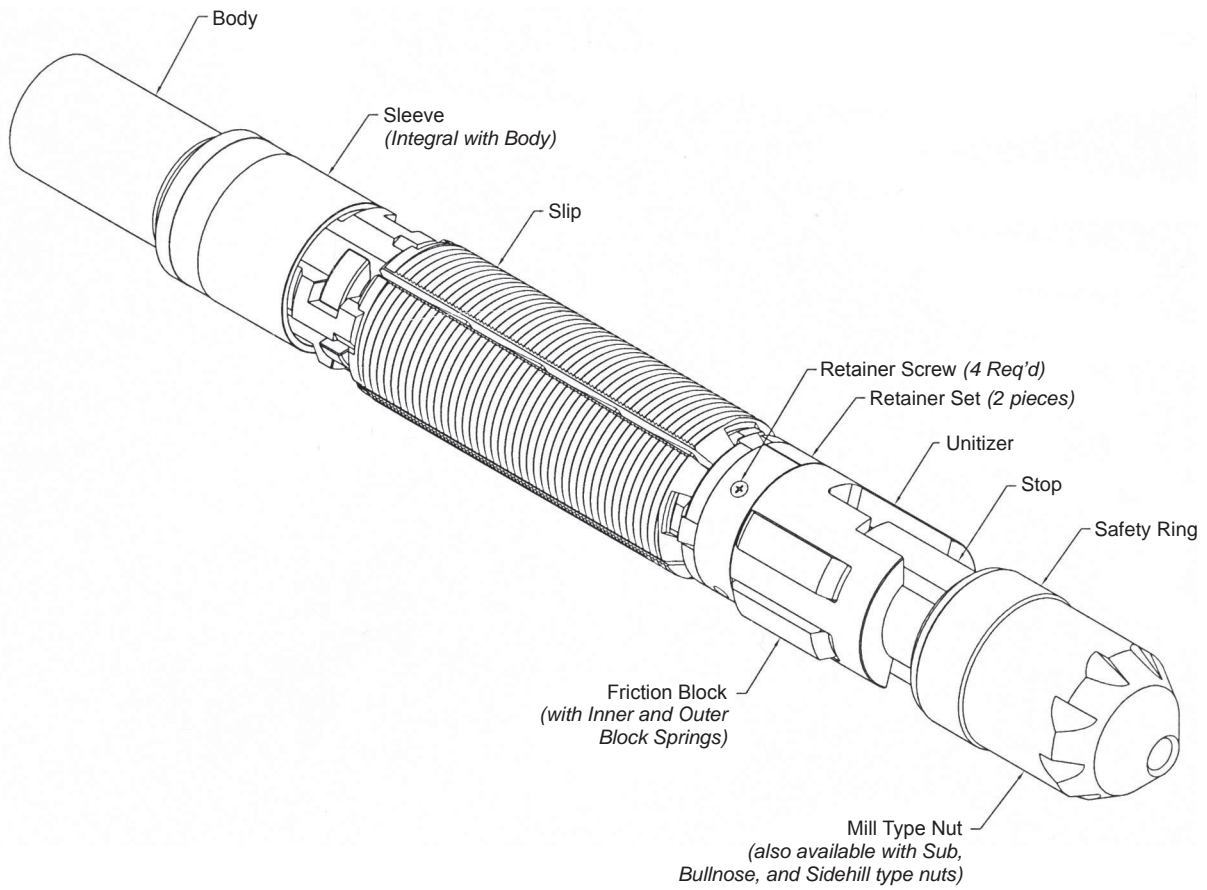
Slowly lower the fishing string until the Spear enters the fish at the desired depth. Rotate the fishing string at least one-sixth of a turn to the left for a left-hand spears (to the right for a right-hand spears). In deep or crooked holes, it may be necessary to rotate the string more than one-sixth of a turn. Additional rotation will not harm the operation of the Spear. Pull on the fish by raising the fishing string.

#### Releasing the Fish

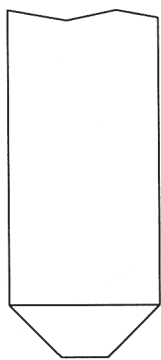
Bump down the full weight of the fishing string. Rotate the string at least one-sixth of a turn to the right for left-hand spears (to the left for right-hand spears). In deep or crooked holes, it may be necessary to rotate the string more than one-sixth of a turn. Additional rotation will not harm the operation of the Spear. Elevate the fishing string until it clears the fish. If the Spear will not release from the fish, bump down, and then simultaneously rotate the string to the right and slowly raise the string until the Spear clears the fish. It is important to combine rotation with elevation.

#### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught



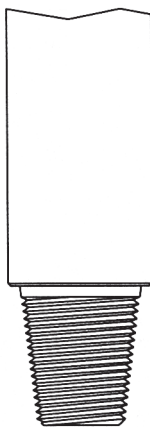
**Optional Nuts**



Bullnose Type Nut



Sidehill Type Nut



Sub Type Nut

# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>		2-3/8 DP	2-3/8 Tbg	2-7/8 DP	2-7/8 Tbg	3-1/2 DP	3-1/2 Tbg	4 DP
<b>RECOMMENDED CATCHING RANGE *</b>		2-3/8 DP	2-3/8 Tbg	2-7/8 DP	2-7/8 Tbg	3-1/2 DP	3-1/2 Tbg	4 DP
<b>OD SMALLEST SLIPS RETRACTED</b>		1-11/16	1-29/32	2	2-5/16	2-7/16	2-13/16	3-3/32
<b>EXPANSION SLIPS OVER SAFETY RING</b>		11/32	11/32	3/8	3/8	13/32	13/32	15/32
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>		55	59	74	87	95	115	126
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-000</b>	<b>204-001</b>	<b>204-002 †</b>	<b>204-003 ††</b>	<b>204-004</b>	<b>204-005</b>	<b>204-006</b>
	Bowen No.	6175	6693	6246	6684	7640	6701	7648
<b>TOP SUB</b> <i>(Includes Protector)</i>	<b>Logan Part No.</b>	<b>AV1000</b>	<b>AV1001</b>	<b>AV1002</b>	<b>AV1003</b>	<b>AV1004</b>	<b>AV1005</b>	<b>AV1006</b>
	Bowen No.	6176	5858	6247	5774	6363	6702	6676
<b>PROTECTOR</b>	<b>Logan Part No.</b>	<b>AV2000</b>	<b>AV2001</b>	<b>AV2002</b>	<b>AV2003</b>	<b>AV2004</b>	<b>AV2005</b>	<b>AV2006</b>
	Bowen No.	6176-1	5858-1	6247-1	5774-1	6363-1	6702-1	6676-1
<b>BODY</b>	<b>Logan Part No.</b>	<b>AV3000</b>	<b>AV3001</b>	<b>AV3002</b>	<b>AV3003</b>	<b>AV3004</b>	<b>AV3005</b>	<b>AV3006</b>
	Bowen No.	6177	6694	6248	6685	7641	6703	7649
<b>SLIP</b> <i>(Includes Fingers)</i>	<b>Logan Part No.</b>	<b>AV4000</b>	<b>AV4001</b>	<b>AV4002</b>	<b>AV4003</b>	<b>AV4004</b>	<b>AV4005</b>	<b>AV4006</b>
	Bowen No.	6178	6695	6249	6686	C7642	6704	7650
	No. Req'd	3	3	3	3	3	3	3
<b>UNITIZER</b>	<b>Logan Part No.</b>	<b>AV5000</b>	<b>AV5001</b>	<b>AV5002</b>	<b>AV5003</b>	<b>AV5004</b>	<b>AV5005</b>	...
	Bowen No.	6179	6696	6250	6687	A7643	A6705	...
<b>FRICTION RETAINER</b> <i>(Includes Springs)</i>	<b>Logan Part No.</b>	<b>AV6000</b>	<b>AV6001</b>	<b>AV6002</b>	<b>AV6003</b>	<b>AV6004</b>	<b>AV6005</b>	...
	Bowen No.	6546F	6697F	A6542F	6688F	7644F	A6706F	...
<b>FRICTION RETAINER SCREWS</b>	<b>Logan Part No.</b>	<b>AV7000</b>	<b>AV7000</b>	<b>AV7000</b>	<b>AV7000</b>	<b>AV7000</b>	<b>AK9004-001</b>	...
	Bowen No.	6423	6423	6423	6423	6423	23508	...
	No. Req'd	4	4	4	4	4	4	...
<b>FRICTION RETAINER SPRINGS</b>	<b>Logan Part No.</b>	<b>AV8000</b>	<b>AV8000</b>	<b>AV8001</b>	<b>AV8001</b>	<b>AV8002</b>	<b>AV8002</b>	...
	Bowen No.	8951	8951	8945	8945	A8952	A8952	...
	No. Req'd	8	8	10	10	12	12	...
<b>FRICTION BLOCK ASSY.</b> <i>Consists of:</i>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV90000</b>
	Bowen No.	...	...	...	...	...	...	14931
<b>UNITIZER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV10000</b>
	Bowen No.	...	...	...	...	...	...	14932
<b>RETAINER SET</b> <i>(2 pieces)</i>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV11000</b>
	Bowen No.	...	...	...	...	...	...	14933
<b>FRICTION BLOCK</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV12000</b>
	Bowen No.	...	...	...	...	...	...	14934
	No. Req'd	...	...	...	...	...	...	2
<b>RETAINER SCREW</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV13000</b>
	Bowen No.	...	...	...	...	...	...	15964
	No. Req'd	...	...	...	...	...	...	4
<b>OUTER BLOCK SPRING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV14000</b>
	Bowen No.	...	...	...	...	...	...	14935
	No. Req'd	...	...	...	...	...	...	4
<b>INNER BLOCK SPRING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV15000</b>
	Bowen No.	...	...	...	...	...	...	14936
	No. Req'd	...	...	...	...	...	...	4
<b>STOP</b>	<b>Logan Part No.</b>	<b>AV16000</b>	<b>AV16001</b>	<b>AV16002</b>	<b>AV16003</b>	<b>AV16004</b>	<b>AV16005</b>	<b>AV16006</b>
	Bowen No.	7638	6961	7639	A7452	A7645	7647	7653
<b>SAFETY RING</b>	<b>Logan Part No.</b>	<b>AV17000</b>	<b>AV17001</b>	<b>AV17002</b>	<b>AV17003</b>	<b>AV17004</b>	<b>AV17005</b>	<b>AV17006</b>
	Bowen No.	6547	6545	6543	6424	6541	6707	6681
<b>NUT</b>	<b>Logan Part No.</b>	<b>AV18000</b>	<b>AV18001</b>	<b>AV18002</b>	<b>AV18003</b>	<b>AV18004</b>	<b>AV18005</b>	<b>AV18006</b>
	Bowen No.	6180	5864	6251	6345	6267	6708	6682
<b>NUT SET SCREW</b>	<b>Logan Part No.</b>	<b>AV19000</b>	<b>AV19000</b>	<b>AV19001</b>	<b>AV19001</b>	<b>AV19001</b>	<b>AV19002</b>	<b>AV19003</b>
	Bowen No.	23330	23330	17762	17762	17762	23358	23345
	No. Req'd	2	2	2	2	2	2	2

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**CAUTION:**

† 204-002 dressed for 2-7/8" 8.7 lb tubing will not go in completely. The top sub O.D. is 3-5/8" and will not fit into tubing.

†† 204-003 dressed for 2-7/8" 8.7 lb tubing will not go in completely. The top sub O.D. is 2-5/16" and will not fit into tubing.



## FULL CIRCLE RELEASING SPEARS

NOMINAL SIZE	2-3/8 DP	2-3/8 Tbg	2-7/8 DP	2-7/8 Tbg	3-1/2 DP	3-1/2 Tbg	4 DP	
RECOMMENDED CATCHING RANGE *	2-3/8 DP	2-3/8 Tbg	2-7/8 DP	2-7/8 Tbg	3-1/2 DP	3-1/2 Tbg	4 DP	
OD SMALLEST SLIPS RETRACTED	1-11/16	1-29/32	2	2-5/16	2-7/16	2-13/16	3-3/32	
EXPANSION SLIPS OVER SAFETY RING	11/32	11/32	3/8	3/8	13/32	13/32	15/32	
SLIP ENGAGEMENT AREA (SQ IN)	55	59	74	87	95	115	126	
COMPLETE ASSEMBLY	Logan Part No.	204-000	204-001	204-002 †	204-003 ††	204-004	204-005	204-006
	Bowen No.	6175	6693	6246	6684	7640	6701	7648

## OPTIONAL COMPONENTS

UNITIZER	Logan Part No.	...	...	...	...	...	...	AV20000
	Bowen No.	...	...	...	...	...	...	7651
FRICTION RETAINER (Includes Springs)	Logan Part No.	...	...	...	...	...	...	AV21000
	Bowen No.	...	...	...	...	...	...	7652F
FRICTION RETAINER SCREWS	Logan Part No.	...	...	...	...	...	...	AV22000
	Bowen No.	...	...	...	...	...	...	23508
	No. Req'd	...	...	...	...	...	...	4
FRICTION RETAINER SPRINGS	Logan Part No.	...	...	...	...	...	...	AV23000
	Bowen No.	...	...	...	...	...	...	A8953
	No. Req'd	...	...	...	...	...	...	12
FRICTION BLOCK	Logan Part No.	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

## OPTIONAL ACCESSORIES

SAFETY RING PACK-OFF	Logan Part No.	AV25000	AV25001	AV25002	AV25003	AV25004	AV25005	AV25006
	Bowen No.	6181	6174	6252	5779	6268	6709	6683
EXTENSION (3 feet long)	Logan Part No.	AV26000	AV26001	AV26002	AV26003	AV26004	AV26005	AV26006
	Bowen No.	6176-6177	5858-6694	6247-6248	5771-6685	6263-7641	6702-6703	6676-7649
MILL TYPE NUT	Logan Part No.	AV18000-A	AV18001-A	AV18002-A	AV18003-A	AV18004-A	AV18005-A	AV18006-A
	Bowen No.	6180A	5864A	6251A	6345A	6267A	6708A	6682A
SUB TYPE NUT	Logan Part No.	AV18000-B	AV18001-B	AV18002-B	AV18003-B	AV18004-B	AV18005-B	AV18006-B
	Bowen No.	6180B	5864B	6251B	6345B	6267B	6708B	6682B
SIDEHILL TYPE NUT	Logan Part No.	AV18000-C	AV18001-C	AV18002-C	AV18003-C	AV18004-C	AV18005-C	AV18006-C
	Bowen No.	6180C	5864C	6251C	6345C	6267C	6708C	6682C

\* Size and weight of pipe to be caught

### CAUTION:

† 204-002 dressed for 2-7/8" 8.7 lb tubing will not go in completely. The top sub O.D. is 3-5/8" and will not fit into tubing.  
 †† 204-003 dressed for 2-7/8" 8.7 lb tubing will not go in completely. The top sub O.D. is 2-5/16" and will not fit into tubing.

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>		4 Tbg	4-1/2 DP	5-1/2 DP	4-1/2 Csg	5 Csg	5-1/2 Csg	6 Csg
<b>RECOMMENDED CATCHING RANGE *</b>		4 Tbg	4-1/2 DP & 5-9/16 DP	5-1/2 & 5 Csg	4-1/2, 4-3/4	5 Csg	5-1/2 Csg	6 Csg
<b>OD SMALLEST SLIPS RETRACTED</b>		3-5/16	3-15/32	4-1/2	3-25/32	4	4-1/2	5-1/2
<b>EXPANSION SLIPS OVER SAFETY RING</b>		15/32	1/2	9/16	1/2	1/2	9/16	9/16
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>		136	178	265	210	217	265	315
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-007</b>	<b>204-008</b>	<b>204-009</b>	<b>204-010</b>	<b>204-011</b>	<b>204-012</b>	<b>204-013</b>
	<b>Bowen No.</b>	6710	6715	6723	10536	9337	9342	9347
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AV1007</b>	<b>AV1008</b>	<b>AV1009</b>	...	...	...	...
<i>(Includes Protector)</i>	<b>Bowen No.</b>	5839	6270	6277	...	...	...	...
<b>PROTECTOR</b>	<b>Logan Part No.</b>	<b>AV2007</b>	<b>AV2008</b>	<b>AV2009</b>	...	...	...	...
	<b>Bowen No.</b>	5839-1	6270-1	6277-1	...	...	...	...
<b>BODY</b>	<b>Logan Part No.</b>	<b>AV3007</b>	<b>AV3008</b>	<b>AV3009</b>	<b>AV3010</b>	<b>AV3011</b>	<b>AV3012</b>	<b>AV3013</b>
	<b>Bowen No.</b>	6711	6716	6724	10537	C9338	9343	9348
<b>SLIP</b>	<b>Logan Part No.</b>	<b>AV4007</b>	<b>AV4008</b>	<b>AV4009</b>	<b>AV4010</b>	<b>AV4011</b>	<b>AV4012</b>	<b>AV4013</b>
<i>(Includes Fingers)</i>	<b>Bowen No.</b>	6712	6717	6725	10538	9339	9344	9349
	<b>No. Req'd</b>	3	3	4	3	3	4	4
<b>UNITIZER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<i>(Includes Springs)</i>	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>SCREWS</b>	<b>Bowen No.</b>	...	...	...	...	...	...	...
	<b>No. Req'd</b>	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>SPRINGS</b>	<b>Bowen No.</b>	...	...	...	...	...	...	...

\* Size and weight of pipe to be caught

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>		4 Tbg	4-1/2 DP	5-1/2 DP	4-1/2 Csg	5 Csg	5-1/2 Csg	6 Csg
<b>RECOMMENDED CATCHING RANGE *</b>		4 Tbg	4-1/2 DP & 5-9/16 DP	5-1/2 & 5 Csg	4-1/2, 4-3/4	5 Csg	5-1/2 Csg	6 Csg
<b>OD SMALLEST SLIPS RETRACTED</b>		3-5/16	3-15/32	4-1/2	3-25/32	4	4-1/2	5-1/2
<b>EXPANSION SLIPS OVER SAFETY RING</b>		15/32	1/2	9/16	1/2	1/2	9/16	9/16
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>		136	178	265	210	217	265	315
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-007</b>	<b>204-008</b>	<b>204-009</b>	<b>204-010</b>	<b>204-011</b>	<b>204-012</b>	<b>204-013</b>
	<b>Bowen No.</b>	6710	6715	6723	10536	9337	9342	9347
<b>FRICION BLOCK ASSEMBLY</b>	<b>Logan Part No.</b>	<b>AV90001</b>	<b>AV90002</b>	<b>AV90003</b>	<b>AV90004</b>	<b>AV90005</b>	<b>AV90006</b>	<b>AV90007</b>
	<b>Bowen No.</b>	14901	14937	14838	14923	14943	14949	14950
<i>Consists of:</i>								
<b>UNITIZER</b>	<b>Logan Part No.</b>	<b>AV10001</b>	<b>AV10002</b>	<b>AV10003</b>	<b>AV10004</b>	<b>AV10005</b>	<b>AV10006</b>	<b>AV10007</b>
	<b>Bowen No.</b>	14902	14938	14839	14924	14944	14962	14951
<b>RETAINER SET (2 pieces)</b>	<b>Logan Part No.</b>	<b>AV11001</b>	<b>AV11002</b>	<b>AV11003</b>	<b>AV11004</b>	<b>AV11005</b>	<b>AV11006</b>	<b>AV11007</b>
	<b>Bowen No.</b>	14903	14939	14841	14925	14945	14841	14952
<b>FRICION BLOCK</b>	<b>Logan Part No.</b>	<b>AV12001</b>	<b>AV12002</b>	<b>AV12003</b>	<b>AV12004</b>	<b>AV12005</b>	<b>AV12006</b>	<b>AV12007</b>
	<b>Bowen No.</b>	14904	14940	14840	14927	14946	14840	14953
	<b>No. Req'd</b>	2	2	4	2	2	4	4
<b>RETAINER SCREW</b>	<b>Logan Part No.</b>	<b>AV13001</b>	<b>AV13000</b>	<b>AV13002</b>	<b>AV13000</b>	<b>AV13002</b>	<b>AV13002</b>	<b>AV13003</b>
	<b>Bowen No.</b>	23108	15964	25214	15964	25214	25214	23126
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>OUTER BLOCK SPRING</b>	<b>Logan Part No.</b>	<b>AV14001</b>	<b>AV14002</b>	<b>AV14003</b>	<b>AV14004</b>	<b>AV14005</b>	<b>AV14006</b>	<b>AV14007</b>
	<b>Bowen No.</b>	14919	14941	14842	14926	14947	14842	14954
	<b>No. Req'd</b>	4	4	8	2		4	4
<b>INNER BLOCK SPRING</b>	<b>Logan Part No.</b>	<b>AV15001</b>	<b>AV15002</b>	<b>AV15003</b>	<b>AV15004</b>	<b>AV15005</b>	<b>AV15006</b>	<b>AV15007</b>
	<b>Bowen No.</b>	14920	14942	14837	16589	14948	14837	14955
	<b>No. Req'd</b>	4	4	8	2	2	4	4
<b>STOP</b>	<b>Logan Part No.</b>	<b>AV16007</b>	<b>AV16008</b>	<b>AV16009</b>	<b>AV16010</b>	<b>AV16011</b>	<b>AV16009</b>	<b>AV16012</b>
	<b>Bowen No.</b>	7654	7655	7454	A7603	A7580	7454	7597
<b>SAFETY RING</b>	<b>Logan Part No.</b>	<b>AV17007</b>	<b>AV17008</b>	<b>AV17012</b>	<b>AV17010</b>	<b>AV17011</b>	<b>AV17012</b>	<b>AV17013</b>
	<b>Bowen No.</b>	6539	6720	6485	6733	7581	6485	6520
<b>NUT</b>	<b>Logan Part No.</b>	<b>AV18007</b>	<b>AV18008</b>	<b>AV18012</b>	<b>AV18010</b>	<b>AV18011</b>	<b>AV18012</b>	<b>AV18013</b>
	<b>Bowen No.</b>	5729	6721	6483	6376	7582	6483	6040
<b>NUT SET SCREW</b>	<b>Logan Part No.</b>	<b>AV19004</b>	<b>AV19005</b>	<b>AV19006</b>	<b>AV19005</b>	<b>AV19005</b>	<b>AV19006</b>	<b>AV19006</b>
	<b>Bowen No.</b>	23366	23368	23379	23368	23368	23379	23379
	<b>No. Req'd</b>	2	2	2	2	2	2	2

\* Size and weight of pipe to be caught

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>	4 Tbg	4-1/2 DP	5-1/2 DP	4-1/2 Csg	5 Csg	5-1/2 Csg	6 Csg	
<b>RECOMMENDED CATCHING RANGE</b>	4 Tbg	4-1/2 DP & 5-9/16 DP	5-1/2 & 5 Csg	4-1/2, 4-3/4	5 Csg	5-1/2 Csg	6 Csg	
<b>OD SMALLEST SLIPS RETRACTED</b>	3-5/16	3-15/32	4-1/2	3-25/32	4	4-1/2	5-1/2	
<b>EXPANSION SLIPS OVER SAFETY RING</b>	15/32	1/2	9/16	1/2	1/2	9/16	9/16	
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>	136	178	265	210	217	265	315	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-007</b>	<b>204-008</b>	<b>204-009</b>	<b>204-010</b>	<b>204-011</b>	<b>204-012</b>	<b>204-013</b>
	<b>Bowen No.</b>	6710	6715	6723	10536	9337	9342	9347

## OPTIONAL COMPONENTS

<b>UNITIZER</b>	<b>Logan Part No.</b>	<b>AV20001</b>	<b>AV20002</b>	<b>AV20003</b>	<b>AV20004</b>	<b>AV20005</b>	<b>AV20006</b>	<b>AV20007</b>
	<b>Bowen No.</b>	B6713	6718	6726	10539	B9340	9345	9350
<b>FRICITION RETAINER</b> <i>(Includes Springs)</i>	<b>Logan Part No.</b>	<b>AV21001</b>	<b>AV21002</b>	<b>AV21003</b>	<b>AV21004</b>	<b>AV21005</b>	<b>AV21006</b>	<b>AV21007</b>
	<b>Bowen No.</b>	6714F	6719F	6727F	10540	9341	9346	9351
<b>FRICITION RETAINER</b> <b>SCREWS</b>	<b>Logan Part No.</b>	<b>AV22000</b>	<b>AV22000</b>	<b>AV22001</b>	<b>AV22001</b>	<b>AV22001</b>	<b>AV22001</b>	<b>AV22002</b>
	<b>Bowen No.</b>	23508	23508	25214	25214	25214	25214	23518
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>FRICITION RETAINER</b> <b>SPRINGS</b>	<b>Logan Part No.</b>	<b>AV23000</b>	<b>AV23000</b>	<b>AV23001</b>	<b>AV23002</b>	<b>AV23002</b>	<b>AV23002</b>	<b>AV23003</b>
	<b>Bowen No.</b>	A8953	A8953	8918	10541	10541	10541	9606
	<b>No. Req'd</b>	12	14	16	14	14	16	18
<b>FRICITION BLOCK</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...

## OPTIONAL ACCESSORIES

<b>SAFETY RING PACK-OFF</b>	<b>Logan Part No.</b>	<b>AV25007</b>	<b>AV25008</b>	<b>AV25009</b>	<b>AV25010</b>	<b>AV25011</b>	<b>AV25009</b>	<b>AV25012</b>
	<b>Bowen No.</b>	5730	6722	6484	6734	A7583	6484	6041
<b>EXTENSION</b> <i>(3 feet long)</i>	<b>Logan Part No.</b>	<b>AV26007</b>	<b>AV26008</b>	<b>AV26009</b>	...	...	...	...
	<b>Bowen No.</b>	5839-6711	6270-6716	6277-6724	...	...	...	...
<b>MILL TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18007-A</b>	<b>AV18008-A</b>	<b>AV18009-A</b>	<b>AV18010-A</b>	<b>AV18011-A</b>	<b>AV18012-A</b>	<b>AV18013-A</b>
	<b>Bowen No.</b>	5729A	6721A	6483A	6376A	7582A	6483A	6040A
<b>SUB TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18007-B</b>	<b>AV18008-B</b>	<b>AV18009-B</b>	<b>AV18010-B</b>	<b>AV18011-B</b>	<b>AV18012-B</b>	<b>AV18013-B</b>
	<b>Bowen No.</b>	5729B	6721B	6483B	6376B	7582B	6483B	6040B
<b>SIDEHILL TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18007-C</b>	<b>AV18008-C</b>	<b>AV18009-C</b>	<b>AV18010-C</b>	<b>AV18011-C</b>	<b>AV18012-C</b>	<b>AV18013-C</b>
	<b>Bowen No.</b>	5729C	6721C	6483C	6376C	7582C	6483C	6040C

Logan Oil Tools reserves the right to change or discontinue designs without notice.

# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>		6-5/8 Csg	7 Csg	7 5/8 Csg	8-5/8 Csg	9-5/8 Csg	10-3/4 Csg	11-3/4 Csg
<b>RECOMMENDED CATCHING RANGE</b>		6-5/8 Csg	7 Csg	7 5/8 Csg & 9 Csg	8-5/8 & 10 Csg	9-5/8	10-3/4 Csg 12 Csg	11-3/4 to
<b>OD SMALLEST SLIPS RETRACTED</b>		5-1/2	5-3/4	6-7/16	7-1/4	8-3/16	9-1/2	10-9/16
<b>EXPANSION SLIPS OVER SAFETY RING</b>		5/8	5/8	5/8	11/16	3/4	13/16	13/16
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>		350	365	430	485	580	690	785
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-014</b>	<b>204-015</b>	<b>204-016</b>	<b>204-017</b>	<b>204-018</b>	<b>204-019</b>	<b>204-020</b>
	Bowen No.	9796	9352	10608	6318	10473	6067	6073
<b>TOP SUB</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<i>(Includes Protector)</i>	Bowen No.	...	...	...	...	...	...	...
<b>PROTECTOR</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>BODY</b>	<b>Logan Part No.</b>	<b>AV3014</b>	<b>AV3015</b>	<b>AV3016</b>	<b>AV3017</b>	<b>AV3018</b>	<b>AV3019</b>	<b>AV3020</b>
	Bowen No.	9797	9353	10609	6319	10474	6068	6074
<b>SLIP</b>	<b>Logan Part No.</b>	<b>AV4014</b>	<b>AV4015</b>	<b>AV4016</b>	<b>AV4017</b>	<b>AV4018</b>	<b>AV4019</b>	<b>AV4020</b>
<i>(Includes Fingers)</i>	Bowen No.	9798	9354	10610	6320	10475	6069	6075
	No. Req'd	4	4	4	4	4	6	6
<b>UNITIZER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<i>(Includes Springs)</i>	Bowen No.	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>SCREWS</b>	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>FRICTION RETAINER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>SPRINGS</b>	Bowen No.	...	...	...	...	...	...	...
<b>FRICTION BLOCK</b>	<b>Logan Part No.</b>	<b>AV90008</b>	<b>AV90009</b>	<b>AV90010</b>	<b>AV90011</b>	<b>AV90012</b>	<b>AV90013</b>	<b>AV90014</b>
<b>ASSEMBLY</b>	Bowen No.	14956	14958	14964	14970	14976	14981	14986
<i>Consists of:</i>								
<b>UNITIZER</b>	<b>Logan Part No.</b>	<b>AV10008</b>	<b>AV10009</b>	<b>AV10010</b>	<b>AV10011</b>	<b>AV10012</b>	<b>AV10013</b>	<b>AV10014</b>
	Bowen No.	14957	14959	14965	14971	14977	14982	14987
<b>RETAINER SET</b>	<b>Logan Part No.</b>	<b>AV11008</b>	<b>AV11009</b>	<b>AV11010</b>	<b>AV11011</b>	<b>AV11012</b>	<b>AV11013</b>	<b>AV11014</b>
<i>(2 pieces)</i>	Bowen No.	14834	14960	14966	14972	14978	14983	14988
<b>FRICTION BLOCK</b>	<b>Logan Part No.</b>	<b>AV12008</b>	<b>AV12009</b>	<b>AV12010</b>	<b>AV12011</b>	<b>AV12012</b>	<b>AV12013</b>	<b>AV12014</b>
	Bowen No.	14835	14961	14967	14973	14979	14984	14989
	No. Req'd	4	4	4	4	4	4	6
<b>RETAINER SCREW</b>	<b>Logan Part No.</b>	<b>AV13001</b>	<b>AV13001</b>	<b>AV13004</b>	<b>AV13004</b>	<b>AV13004</b>	<b>AV13004</b>	<b>AV13004</b>
	Bowen No.	23108	23108	25221	25221	25221	25221	25221
	No. Req'd	4	4	4	4	4	4	4
<b>OUTER BLOCK SPRING</b>	<b>Logan Part No.</b>	<b>AV14008</b>	<b>AV14008</b>	<b>AV14009</b>	<b>AV14010</b>	<b>AV14011</b>	<b>AV14011</b>	<b>AV14014</b>
	Bowen No.	14836	14836	14968	14974	17694	17694	14990
	No. Req'd	8	8	8	8	12	12	18
<b>INNER BLOCK SPRING</b>	<b>Logan Part No.</b>	<b>AV15006</b>	<b>AV15006</b>	<b>AV15008</b>	<b>AV15009</b>	<b>AV15010</b>	<b>AV15010</b>	...
	Bowen No.	14837	14837	14969	14975	11816	11816	...
	No. Req'd	8	8	8	8	12	12	...
<b>STOP</b>	<b>Logan Part No.</b>	<b>AV16013</b>	<b>AV16014</b>	<b>AV16015</b>	<b>AV16016</b>	<b>AV16018</b>	<b>AV16017</b>	<b>AV16019</b>
	Bowen No.	B6965	7609	7626	7494	7531	7627	7628
<b>SAFETY RING</b>	<b>Logan Part No.</b>	<b>AV17014</b>	<b>AV17015</b>	<b>AV17016</b>	<b>AV17017</b>	<b>AV17018</b>	<b>AV17019</b>	<b>AV17020</b>
	Bowen No.	6488	6522	6524	6528	6531	6533	6535
<b>NUT</b>	<b>Logan Part No.</b>	<b>AV18014</b>	<b>AV18015</b>	<b>AV18016</b>	<b>AV18017</b>	<b>AV18018</b>	<b>AV18019</b>	<b>AV18020</b>
	Bowen No.	6108	6046	6054	6321	6062	6071	6079
<b>NUT SET SCREW</b>	<b>Logan Part No.</b>	<b>AV19006</b>	<b>AV19006</b>	<b>AV19007</b>	<b>AV19007</b>	<b>AV19007</b>	<b>AV19008</b>	<b>AV19008</b>
	Bowen No.	23379	23379	23386	23386	23386	41056	41056
	No. Req'd	2	2	2	2	2	2	2

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>	6-5/8 Csg	7 Csg	7-5/8 Csg	8-5/8 Csg	9-5/8 Csg	10-3/4 Csg	11-3/4 Csg	
<b>RECOMMENDED CATCHING RANGE *</b>	6-5/8 Csg	7 Csg	7-5/8 Csg & 9 Csg	8-5/8 & 10 Csg	9-5/8	10-3/4 Csg	11-3/4 to	
<b>OD SMALLEST SLIPS RETRACTED</b>	5-1/2	5-3/4	6-7/16	7-1/4	8-3/16	9-1/2	10-9/16	
<b>EXPANSION SLIPS OVER SAFETY RING</b>	5/8	5/8	5/8	11/16	3/4	13/16	13/16	
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>	350	365	430	485	580	690	785	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-014</b>	<b>204-015</b>	<b>204-016</b>	<b>204-017</b>	<b>204-018</b>	<b>204-019</b>	<b>204-020</b>
	<b>Bowen No.</b>	9796	9352	10608	6318	10473	6067	6073

## OPTIONAL COMPONENTS

<b>UNITIZER</b>	<b>Logan Part No.</b>	<b>AV20008</b>	<b>AV20009</b>	<b>AV20010</b>	<b>AV20011</b>	<b>AV20012</b>	<b>AV20013</b>	<b>AV20014</b>
	<b>Bowen No.</b>	9799	9355	10611	7493	10476	6070	6078
<b>FRICTION RETAINER</b> <i>(Includes Springs)</i>	<b>Logan Part No.</b>	<b>AV21008</b>	<b>AV21009</b>	<b>AV21010</b>	<b>AV21011</b>	<b>AV21012</b>	<b>AV21013</b>	<b>AV21014</b>
	<b>Bowen No.</b>	9800	9356	10612	7495F	B10477	6532F	6534
<b>FRICTION RETAINER</b> <b>SCREWS (4 req'd)</b>	<b>Logan Part No.</b>	<b>AV22003</b>	<b>AV22003</b>	<b>AV22004</b>	<b>AV22004</b>	<b>AV22004</b>	<b>AV22004</b>	<b>AV22004</b>
	<b>Bowen No.</b>	6964	6964	25175	25175	25175	25175	25175
<b>FRICTION RETAINER</b> <b>SPRINGS</b>	<b>Logan Part No.</b>	<b>AV23003</b>	<b>AV23003</b>	<b>AV23004</b>	<b>AV23005</b>	<b>AV23005</b>	<b>AV23011</b>	<b>AV23012</b>
	<b>Bowen No.</b>	9606	9606	10613	8948	8948	A9631	9631
	<b>No. Req'd</b>	18	20	16	14	16	16	18
<b>FRICTION BLOCK</b>	<b>Logan Part No.</b>	...	...	...	<b>AV24000</b>	...	...	<b>AV24001</b>
	<b>Bowen No.</b>	...	...	...	15001	...	...	15000

## OPTIONAL ACCESSORIES

<b>SAFETY RING PACK-OFF</b>	<b>Logan Part No.</b>	<b>AV25013</b>	<b>AV25015</b>	<b>AV25014</b>	<b>AV25016</b>	<b>AV25017</b>	<b>AV25018</b>	<b>AV25019</b>
	<b>Bowen No.</b>	6487	6047	6055	6529	6063	6072	6080
<b>EXTENSION</b> <i>(3 feet long)</i>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>MILL TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18014-A</b>	<b>AV18015-A</b>	<b>AV18016-A</b>	<b>AV18017-A</b>	<b>AV18018-A</b>	<b>AV18019-A</b>	<b>AV18020-A</b>
	<b>Bowen No.</b>	6108A	6046A	6054A	6321A	6062A	6071A	6079A
<b>SUB TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18014-B</b>	<b>AV18015-B</b>	<b>AV18016-B</b>	<b>AV18017-B</b>	<b>AV18018-B</b>	<b>AV18019-B</b>	<b>AV18020-B</b>
	<b>Bowen No.</b>	6108B	6046B	6054B	6321B	6062B	6071B	6079B
<b>SIDEHILL TYPE NUT</b>	<b>Logan Part No.</b>	<b>AV18014-C</b>	<b>AV18015-C</b>	<b>AV18016-C</b>	<b>AV18017-C</b>	<b>AV18018-C</b>	<b>AV18019-C</b>	<b>AV18020-C</b>
	<b>Bowen No.</b>	6108C	6046C	6054C	6321C	6062C	6071C	6079C

\* Size and weight of pipe to be caught

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

## FULL CIRCLE RELEASING SPEARS

<b>NOMINAL SIZE</b>	13-3/8 Csg				
<b>RECOMMENDED CATCHING RANGE *</b>	13 to 13-3/8 Csg				
<b>OD SMALLEST SLIPS RETRACTED</b>	12				
<b>EXPANSION SLIPS OVER SAFETY RING</b>	13/16				
<b>SLIP ENGAGEMENT AREA (SQ IN)</b>	890				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 204-021				
	Bowen No. 6081				
<b>TOP SUB</b>	<b>Logan Part No.</b> ...				
<i>(Includes Protector)</i>	Bowen No. ...				
<b>PROTECTOR</b>	<b>Logan Part No.</b> ...				
	Bowen No. ...				
<b>BODY</b>	<b>Logan Part No.</b> AV3021				
	Bowen No. 6082				
<b>SLIP</b>	<b>Logan Part No.</b> AV4021				
<i>(Includes Fingers)</i>	Bowen No. 6083				
	No. Req'd 6				
<b>UNITIZER</b>	<b>Logan Part No.</b> ...				
	Bowen No. ...				
<b>FRICITION RETAINER</b>	<b>Logan Part No.</b> ...				
<i>(Includes Springs)</i>	Bowen No. ...				
<b>FRICITION RETAINER</b>	<b>Logan Part No.</b> ...				
<b>SCREWS</b>	Bowen No. ...				
	No. Req'd ...				
<b>FRICITION RETAINER</b>	<b>Logan Part No.</b> ...				
<b>SPRINGS</b>	Bowen No. ...				

\* Size and weight of pipe to be caught

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

## FULL CIRCLE RELEASING SPEARS

NOMINAL SIZE	13-3/8 Csg				
RECOMMENDED CATCHING RANGE *	13 to 13-3/8 Csg				
OD SMALLEST SLIPS RETRACTED	12				
EXPANSION SLIPS OVER SAFETY RING	13/16				
SLIP ENGAGEMENT AREA (SQ IN)	890				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 204-021</b>				
	Bowen No. 6081				
<b>FRICTION BLOCK ASSEMBLY</b>	<b>Logan Part No. AV90015</b>				
	Bowen No. 14991				
<i>Consists of:</i>					
<b>UNITIZER</b>	<b>Logan Part No. AV10015</b>				
	Bowen No. 14992				
<b>RETAINER SET</b> (2 pieces)	<b>Logan Part No. AV11015</b>				
	Bowen No. 14993				
<b>FRICTION BLOCK</b>	<b>Logan Part No. AV12015</b>				
	Bowen No. 14994				
	No. Req'd 6				
<b>RETAINER SCREW</b>	<b>Logan Part No. AV13004</b>				
	Bowen No. 25221				
	No. Req'd 4				
<b>OUTER BLOCK SPRING</b>	<b>Logan Part No. AV14015</b>				
	Bowen No. 14996				
	No. Req'd 18				
<b>INNER BLOCK SPRING</b>	<b>Logan Part No. ...</b>				
	Bowen No. ...				
	No. Req'd ...				
<b>STOP</b>	<b>Logan Part No. AV16020</b>				
	Bowen No. 7629				
<b>SAFETY RING</b>	<b>Logan Part No. AV17021</b>				
	Bowen No. 6537				
<b>NUT</b>	<b>Logan Part No. AV18021</b>				
	Bowen No. 6087				
<b>NUT SET SCREW</b>	<b>Logan Part No. AV19008</b>				
	Bowen No. 41056				
	No. Req'd 2				

\* Size and weight of pipe to be caught

**Logan Oil Tools reserves the right to change or discontinue designs without notice.**

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

**Recommended Spare Parts:**

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop



## FULL CIRCLE RELEASING SPEARS

NOMINAL SIZE	13-3/8 Csg				
RECOMMENDED CATCHING RANGE *	13 to 13-3/8 Csg				
OD SMALLEST SLIPS RETRACTED	12				
EXPANSION SLIPS OVER SAFETY RING	13/16				
SLIP ENGAGEMENT AREA (SQ IN)	890				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 204-021				
	Bowen No. 6081				

## OPTIONAL COMPONENTS

<b>UNITIZER</b>	<b>Logan Part No.</b> AV20015				
	Bowen No. 6086				
<b>FRICTION RETAINER</b> <i>(Includes Springs)</i>	<b>Part No.</b> AV21015				
	Bowen No. 6536F				
<b>FRICTION RETAINER</b> <b>SCREWS</b>	<b>Logan Part No.</b> AV22004				
	No. Req'd 4				
	Bowen No. 25175				
<b>FRICTION RETAINER</b> <b>SPRINGS</b>	<b>Logan Part No.</b> AV23013				
	Bowen No. 8950				
	No. Req'd 16				
<b>FRICTION BLOCK</b>	<b>Logan Part No.</b> AV24002				
	Bowen No. 14995				

## OPTIONAL ACCESSORIES

<b>SAFETY RING PACKOFF</b>	<b>Logan Part No.</b> AV25020				
	Bowen No. 6088				
<b>EXTENSION</b> <i>(3 feet long)</i>	<b>Logan Part No.</b> ...				
	Bowen No. ...				
<b>MILL TYPE NUT</b>	<b>Logan Part No.</b> AV18021-A				
	Bowen No. 6087A				
<b>SUB TYPE NUT</b>	<b>Logan Part No.</b> AV18021-B				
	Bowen No. 6087B				
<b>SIDEHILL TYPE NUT</b>	<b>Logan Part No.</b> AV18021-C				
	Bowen No. 6087C				

\* Size and weight of pipe to be caught

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### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of top connection
- (3) Size and type of fish to be caught

### Recommended Spare Parts:

- (1) 2 sets of Slips for each size
- (2) 1 Safety Ring for each size
- (3) 1 unitizer and 2 friction retainers on 2-3/8" to 3-1/2" Tubing Spears  
or 2 friction block assemblies on 4" Tubing Spears and larger
- (4) 1 Stop

# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE RELEASING SPEAR SKIRTS

NOMINAL SIZE OF SPEAR		2-3/8	2-7/8	3-1/2	4	4-1/2	5-1/2	6-5/8
SKIRT SIZE (INCHES)		...	...	...	...	...	...	...
4 OD	Logan Part No.	AV27000-128	AV27001-128	...	...	...	...	...
	Bowen No.	4644	4646	...	...	...	...	...
4-1/2 OD	Logan Part No.	AV27000-144	AV27001-144	AV27002-144	AV27003-144	...	...	...
	Bowen No.	4645	4647	4649	19446	...	...	...
5 OD	Logan Part No.	...	AV27001-160	AV27002-160	AV27003-160	...	...	...
	Bowen No.	...	4648	4650	19447	...	...	...
5-1/2 OD	Logan Part No.	...	AV27001-176	AV27002-176	AV27003-176	AV27004-176	...	...
	Bowen No.	...	4778	4651	19448	4652	...	...
6 OD	Logan Part No.	...	...	AV27002-192	AV27003-192	AV27004-192	...	...
	Bowen No.	...	...	19441	19449	19454	...	...
6-5/8 OD	Logan Part No.	...	...	AV27002-212	AV27003-212	AV27004-212	AV27005-212	...
	Bowen No.	...	...	5495	19450	4653	4655	...
7 OD	Logan Part No.	...	...	AV27002-224	AV27003-224	AV27004-224	AV27005-224	...
	Bowen No.	...	...	5494	19451	4654	5497	...
7-5/8 OD	Logan Part No.	...	...	AV27002-244	AV27003-244	AV27004-244	AV27005-244	AV27006-244
	Bowen No.	...	...	4772	19452	4864	4656	4658
8-5/8 OD	Logan Part No.	...	...	AV27002-276	AV27003-276	AV27004-276	AV27005-276	AV27006-276
	Bowen No.	...	...	4773	19453	5496	4657	4659
9-5/8 OD	Logan Part No.	...	...	AV27002-308	...	AV27004-308	...	AV27006-308
	Bowen No.	...	...	56829	...	39190	...	4661
10-3/4 OD	Logan Part No.	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

NOMINAL SIZE OF SPEAR		7-5/8					
SKIRT SIZE (INCHES)		...					
4 OD	Logan Part No.	...					
	Bowen No.	...					
4-1/2 OD	Logan Part No.	...					
	Bowen No.	...					
5 OD	Logan Part No.	...					
	Bowen No.	...					
5-1/2 OD	Logan Part No.	...					
	Bowen No.	...					
6 OD	Logan Part No.	...					
	Bowen No.	...					
6-5/8 OD	Logan Part No.	...					
	Bowen No.	...					
7 OD	Logan Part No.	...					
	Bowen No.	...					
7-5/8 OD	Logan Part No.	...					
	Bowen No.	...					
8-5/8 OD	Logan Part No.	...					
	Bowen No.	...					
9-5/8 OD	Logan Part No.	...					
	Bowen No.	...					
10-3/4 OD	Logan Part No.	AV27007-344					
	Bowen No.	79749					

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# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE RELEASING SPEAR GUIDES

NOMINAL SIZE		4	4-1/2	5	5-1/2	6	6-5/8	7
GUIDE SIZE (INCHES)		...	...	...	...	...	...	...
<b>OVER 5 to 6</b>	Logan Part No.	AV28000	AV28001	AV28002	...	...	...	...
	Bowen No.	4662	4663	4664	...	...	...	...
<b>OVER 6 to 7</b>	Logan Part No.	AV28000	AV28001	AV28002	AV28003	...	...	...
	Bowen No.	4662	4663	4664	4665	...	...	...
<b>OVER 7 to 8</b>	Logan Part No.	...	AV28001	AV28002	AV28003	AV28004	...	...
	Bowen No.	...	4663	4664	4665	4685	...	...
<b>OVER 8 to 9</b>	Logan Part No.	...	AV28001	AV28002	AV28003	AV28004	AV28005	AV28006
	Bowen No.	...	4663	4664	4665	4685	4299	3824
<b>OVER 9 to 10</b>	Logan Part No.	...	...	...	AV28003	AV28004	AV28005	AV28006
	Bowen No.	...	...	...	4665	4685	4299	3824
<b>OVER 10 to 11</b>	Logan Part No.	...	...	...	AV28003	AV28004	AV28005	AV28006
	Bowen No.	...	...	...	4665	4685	4299	3824
<b>OVER 11 to 12</b>	Logan Part No.	...	...	...	...	...	AV28005	AV28006
	Bowen No.	...	...	...	...	...	4299	3824
<b>OVER 12 to 13</b>	Logan Part No.	...	...	...	...	...	...	AV28006
	Bowen No.	...	...	...	...	...	...	3824
<b>OVER 13 to 14</b>	Logan Part No.	...	...	...	...	...	...	AV28006
	Bowen No.	...	...	...	...	...	...	3824

NOMINAL SIZE		7-5/8	8-5/8	9	9-5/8	10-3/4	11-3/4	
GUIDE SIZE (INCHES)		...	...	...	...	...	...	
<b>OVER 5 to 6</b>	Logan Part No.	...	...	...	...	...	...	
	Bowen No.	...	...	...	...	...	...	
<b>OVER 6 to 7</b>	Logan Part No.	...	...	...	...	...	...	
	Bowen No.	...	...	...	...	...	...	
<b>OVER 7 to 8</b>	Logan Part No.	...	...	...	...	...	...	
	Bowen No.	...	...	...	...	...	...	
<b>OVER 8 to 9</b>	Logan Part No.	...	...	...	...	...	...	
	Bowen No.	...	...	...	...	...	...	
<b>OVER 9 to 10</b>	Logan Part No.	AV28007	...	...	...	...	...	
	Bowen No.	4666	...	...	...	...	...	
<b>OVER 10 to 11</b>	Logan Part No.	AV28007	AV28008	...	...	...	...	
	Bowen No.	4666	4295	...	...	...	...	
<b>OVER 11 to 12</b>	Logan Part No.	AV28007	AV28008	AV28009	AV28010	AV28011	AV28012	
	Bowen No.	4666	4295	4667	4668	79750	65526	
<b>OVER 12 to 13</b>	Logan Part No.	AV28007	AV28008	AV28009	AV28010	...	...	
	Bowen No.	4666	4295	4667	4668	...	...	
<b>OVER 13 to 14</b>	Logan Part No.	AV28007	AV28008	AV28009	AV28010	...	...	
	Bowen No.	4666	4295	4667	4668	...	...	

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# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE SPEAR SLIP RANGE FOR DRILL PIPE AND TUBING

<b>FISH SIZE</b>		2-3/8 DP	2-3/8 DP	2-3/8 Tbg	2-7/8 DP	2-7/8 DP	2-7/8 DP	2-7/8 Tbg
<b>WEIGHT (LBS/FT)</b>		6.65	4.8, 4.6	4.7, 4.6, 4.0	10.4	8.35	6.45	6.5, 6.4
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-000</b>	<b>204-000</b>	<b>204-001</b>	<b>204-002</b>	<b>204-002</b>	<b>204-002</b>	<b>204-003</b>
	<b>Bowen No.</b>	6175	6175	6693	6246	6246	6246	6684
<b>SLIP SIZE STAMPED</b>		1-13/16	2	2-1/32	2-5/32	2-11/32	2-1/2	2-7/16
	<b>Logan Part No.</b>	<b>AV4000</b>	<b>AV4000</b>	<b>AV4001</b>	<b>AV4002</b>	<b>AV4002</b>	<b>AV4002</b>	<b>AV4003</b>
	<b>Bowen No.</b>	6178	6178	6695	6249	6249	6249	6686
<b>SAFETY RING SIZE STAMPED</b>		1-11/32	1-7/8	1-29/32	2	2-3/16	2-11/32	2-5/16
	<b>Logan Part No.</b>	<b>AV17000</b>	<b>AV17000</b>	<b>AV17001</b>	<b>AV17002</b>	<b>AV17002</b>	<b>AV17002</b>	<b>AV17003</b>
	<b>Bowen No.</b>	6547	6547	6545	6543	6543	6543	6424
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		1-11/32	1-7/8	1-29/32	2	2-3/16	2-11/32	2-5/16
	<b>Logan Part No.</b>	<b>AV25000</b>	<b>AV25000</b>	<b>AV25001</b>	<b>AV25002</b>	<b>AV25002</b>	<b>AV25002</b>	<b>AV25003</b>
	<b>Bowen No.</b>	6181	6181	6174	6252	6252	6252	5779

<b>FISH SIZE</b>		3-1/2 DP	3-1/2 DP	3-1/2 DP	3-1/2 DP	3-1/2 Tbg	3-1/2 Tbg	4 DP
<b>WEIGHT (LBS/FT)</b>		15.5	13.3	11.2	8.5	10.2, 9.3, 9.2	7.7	15.7
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-004</b>	<b>204-004</b>	<b>204-004</b>	<b>204-004</b>	<b>204-005</b>	<b>204-005</b>	<b>204-006</b>
	<b>Bowen No.</b>	7640	7640	7640	7640	6701	6701	7648
<b>SLIP SIZE STAMPED</b>		2-5/8	2-25/32	2-15/16	3-3/32	2-31/32	3-1/8	3-9/32
	<b>Logan Part No.</b>	<b>AV4004</b>	<b>AV4004</b>	<b>AV4004</b>	<b>AV4004</b>	<b>AV4005</b>	<b>AV4005</b>	<b>AV4006</b>
	<b>Bowen No.</b>	C7642	C7642	C7642	C7642	6704	6704	7650
<b>FRICTION BLOCK SIZE STAMPED</b>		...	...	...	...	...	...	...
	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>AV12000</b>
	<b>Bowen No.</b>	...	...	...	...	...	...	14934
<b>SAFETY RING SIZE STAMPED</b>		2-7/16	2-19/32	2-3/4	2-29/32	2-13/16	2-15/16	3-3/32
	<b>Logan Part No.</b>	<b>AV17004</b>	<b>AV17004</b>	<b>AV17004</b>	<b>AV17004</b>	<b>AV17005</b>	<b>AV17005</b>	<b>AV17006</b>
	<b>Bowen No.</b>	6541	6541	6541	6541	6707	6707	6681
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		2-7/16	2-19/32	2-3/4	2-29/32	2-13/16	2-15/16	3-3/32
	<b>Logan Part No.</b>	<b>AV25004</b>	<b>AV25004</b>	<b>AV25004</b>	<b>AV25004</b>	<b>AV25005</b>	<b>AV25005</b>	<b>AV25006</b>
	<b>Bowen No.</b>	6268	6268	6268	6268	6709	6709	6683

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# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE SPEAR SLIP RANGE FOR DRILL PIPE AND TUBING

<b>FISH SIZE</b>		4 DP	4 Tbg	4 Tbg	4-1/2 DP	4-1/2 DP	4-1/2 DP	5-1/2 DP
<b>WEIGHT (LBS/FT)</b>		14	11	9.5	20	18.1, 16.6	13.75, 12.75	24.7, 21.9
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-006</b>	<b>204-007</b>	<b>204-007</b>	<b>204-008</b>	<b>204-008</b>	<b>204-008</b>	<b>204-009</b>
	<b>Bowen No.</b>	7648	6710	6710	6715	6715	6715	6723
<b>SLIP SIZE STAMPED</b>		3-11/32	3-1/2	3-19/32	3-11/16	3-7/8	4-1/32	4-3/4
	<b>Logan Part No.</b>	<b>AV4006</b>	<b>AV4007</b>	<b>AV4007</b>	<b>AV4008</b>	<b>AV4008</b>	<b>AV4008</b>	<b>AV4009</b>
	<b>Bowen No.</b>	7650	6712	6712	6717	6717	6717	6725
<b>FRICTION BLOCK SIZE STAMPED</b>		...	3-1/4	3-1/4	3-5/8	3-5/8	3-5/8	4-3/4
	<b>Logan Part No.</b>	<b>AV12000</b>	<b>AV12001</b>	<b>AV12001</b>	<b>AV12002</b>	<b>AV12002</b>	<b>AV12002</b>	<b>AV12003</b>
	<b>Bowen No.</b>	14934	14904	14904	14940	14940	14940	14840
<b>SAFETY RING SIZE STAMPED</b>		3-5/32	3-5/16	3-13/32	3-15/32	3-21/32	3-13/16	4-1/2
	<b>Logan Part No.</b>	<b>AV17006</b>	<b>AV17007</b>	<b>AV17007</b>	<b>AV17008</b>	<b>AV17008</b>	<b>AV17008</b>	<b>AV17009</b>
	<b>Bowen No.</b>	6681	6539	6539	6720	6720	6720	6485
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		3-5/32	3-5/16	3-13/32	3-15/32	3-21/32	3-13/16	4-1/2
	<b>Logan Part No.</b>	<b>AV25006</b>	<b>AV25007</b>	<b>AV25007</b>	<b>AV25008</b>	<b>AV25008</b>	<b>AV25008</b>	<b>AV25009</b>
	<b>Bowen No.</b>	6683	5730	5730	6722	6722	6722	6484

<b>FISH SIZE</b>		5-1/2 DP	5-1/2 DP	5-1/2 DP				
<b>WEIGHT (LBS/FT)</b>		25.25	22.2	19				
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-009</b>	<b>204-009</b>	<b>204-009</b>				
	<b>Bowen No.</b>	6723	6723	6723				
<b>SLIP SIZE STAMPED</b>		4-3/4	4-7/8	5-1/16				
	<b>Logan Part No.</b>	<b>AV4009</b>	<b>AV4009</b>	<b>AV4009</b>				
	<b>Bowen No.</b>	6725	6725	6725				
<b>FRICTION BLOCK SIZE STAMPED</b>		4-3/4	4-3/4	4-3/4				
	<b>Logan Part No.</b>	<b>AV12003</b>	<b>AV12003</b>	<b>AV12003</b>				
	<b>Bowen No.</b>	14840	14840	14840				
<b>SAFETY RING SIZE STAMPED</b>		4-1/2	4-5/8	4-13/16				
	<b>Logan Part No.</b>	<b>AV17009</b>	<b>AV17009</b>	<b>AV17009</b>				
	<b>Bowen No.</b>	6485	6485	6485				
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		4-1/2	4-5/8	4-13/16				
	<b>Logan Part No.</b>	<b>AV25009</b>	<b>AV25009</b>	<b>AV25009</b>				
	<b>Bowen No.</b>	6484	6484	6484				

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# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE SPEAR SLIP RANGE FOR CASING

<b>FISH SIZE</b>		4-1/2 Csg	4-1/2 Csg	4-3/4 Csg	5 Csg	5 Csg	5 Csg	5 Csg
<b>WEIGHT (LBS/FT)</b>		13.5, 11.6	9.5	16	21	18.0, 17.7	15	13.0, 11.5
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-010</b>	<b>204-010</b>	<b>204-010</b>	<b>204-011</b>	<b>204-011</b>	<b>204-011</b>	<b>204-011</b>
	<b>Bowen No.</b>	10536	10536	10536	9337	9337	9337	9337
<b>SLIP SIZE STAMPED</b>		4	4-5/32	4-5/32	4-7/32	4-11/32	4-15/32	4-19/32
	<b>Logan Part No.</b>	<b>AV4010</b>	<b>AV4010</b>	<b>AV4010</b>	<b>AV4011</b>	<b>AV4011</b>	<b>AV4011</b>	<b>AV4011</b>
	<b>Bowen No.</b>	10538	10538	10538	9339	9339	9339	9339
<b>FRICTION BLOCK SIZE STAMPED</b>		4-1/2	...	4-1/2	4-5/8	...	...	...
	<b>Logan Part No.</b>	<b>AV12004</b>	...	<b>AV12004</b>	<b>AV12005</b>	...	...	...
	<b>Bowen No.</b>	14927	...	14927	14946	...	...	...
<b>SAFETY RING SIZE STAMPED</b>		3-25/32	3-15/16	3-15/16	4	4-1/8	4-1/4	4-3/8
	<b>Logan Part No.</b>	<b>AV17010</b>	<b>AV17010</b>	<b>AV17010</b>	<b>AV17011</b>	<b>AV17011</b>	<b>AV17011</b>	<b>AV17011</b>
	<b>Bowen No.</b>	6733	6733	6733	7581	7581	7581	7581
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		3-25/32	3-15/16	3-15/16	4	4-1/8	4-1/4	4-3/8
	<b>Logan Part No.</b>	<b>AV25010</b>	<b>AV25010</b>	<b>AV25010</b>	<b>AV25011</b>	<b>AV25011</b>	<b>AV25011</b>	<b>AV25011</b>
	<b>Bowen No.</b>	6734	6734	6734	A7583	A7583	A7583	A7583

<b>FISH SIZE</b>		5-1/2 Csg	5-1/2 Csg	5-1/2 Csg	5-3/4	5-3/4	6 Csg	6 Csg
<b>WEIGHT (LBS/FT)</b>		23	20, 17	15.5, 14, 13	22.5, 19.5	17, 14	23	20, 18
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-012</b>	<b>204-012</b>	<b>204-012</b>	<b>204-012</b>	<b>204-012</b>	<b>204-012</b>	<b>204-012</b>
	<b>Bowen No.</b>	9342	9342	9342	9342	9342	9347	9347
<b>SLIP SIZE STAMPED</b>		4-3/4	4-7/8	5-1/16	5-1/16	5-5/16	5-5/16	5-7/16
	<b>Logan Part No.</b>	<b>AV4012</b>	<b>AV4012</b>	<b>AV4012</b>	<b>AV4012</b>	<b>AV4012</b>	<b>AV4013</b>	<b>AV4013</b>
	<b>Bowen No.</b>	9344	9344	9344	9344	9344	9349	9349
<b>FRICTION BLOCK SIZE STAMPED</b>		4-3/4	...	...	5-1/16	...	4-3/4	...
	<b>Logan Part No.</b>	<b>AV12006</b>	...	...	<b>AV12006</b>	...	<b>AV12007</b>	...
	<b>Bowen No.</b>	14840	...	...	14840	...	14953	...
<b>SAFETY RING SIZE STAMPED</b>		4-1/2	4-5/8	4-13/16	4-13/16	5-1/16	5-1/16	5-3/16
	<b>Logan Part No.</b>	<b>AV17012</b>	<b>AV17012</b>	<b>AV17012</b>	<b>AV17012</b>	<b>AV17012</b>	<b>AV17013</b>	<b>AV17013</b>
	<b>Bowen No.</b>	6485	6485	6485	6485	6485	6520	6520
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		4-1/2	4-5/8	4-13/16	4-13/16	5-1/16	5-1/16	5-3/16
	<b>Logan Part No.</b>	<b>AV25009</b>	<b>AV25009</b>	<b>AV25009</b>	<b>AV25009</b>	<b>AV25009</b>	<b>AV25012</b>	<b>AV25012</b>
	<b>Bowen No.</b>	6484	6484	6484	6484	6484	6041	6041

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# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE SPEAR SLIP RANGE FOR CASING

<b>FISH SIZE</b>		6 Csg	6-5/8 Csg	6-5/8 Csg	6-5/8 Csg	7 Csg	7 Csg	7 Csg
<b>WEIGHT (LBS/FT)</b>		16, 15	32, 29, 28 24, 22	26.8, 26,	20, 17	40	38, 35 28	32, 30, 29,
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-013</b>	<b>204-014</b>	<b>204-014</b>	<b>204-014</b>	<b>204-014</b>	<b>204-015</b>	<b>204-015</b>
	<b>Bowen No.</b>	9347	9796	9796	9796	9796	9352	9352
<b>SLIP SIZE STAMPED</b>		5-19/32	5-3/4	5-15/16	6-1/8	5-15/16	6	6-3/16
	<b>Logan Part No.</b>	<b>AV4013</b>	<b>AV4014</b>	<b>AV4014</b>	<b>AV4014</b>	<b>AV4014</b>	<b>AV4015</b>	<b>AV4015</b>
	<b>Bowen No.</b>	9349	9798	9798	9798	9798	9354	9354
<b>FRICITION BLOCK SIZE STAMPED</b>		...	5-3/4	...	6-1/8	6-1/8	5-3/4	...
	<b>Logan Part No.</b>	...	<b>AV12008</b>	...	<b>AV12008</b>	<b>AV12008</b>	<b>AV12009</b>	...
	<b>Bowen No.</b>	...	14835	...	14835	14835	14961	...
<b>SAFETY RING SIZE STAMPED</b>		5-11/32	5-1/2	5-11/16	5-7/8	5-11/16	5-3/4	5-15/16
	<b>Logan Part No.</b>	<b>AV17013</b>	<b>AV17014</b>	<b>AV17014</b>	<b>AV17014</b>	<b>AV17014</b>	<b>AV17015</b>	<b>AV17015</b>
	<b>Bowen No.</b>	6520	6488	6488	6488	6488	6522	6522
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		5-11/32	5-1/2	5-11/16	5-7/8	5-11/16	5-3/4	5-15/16
	<b>Logan Part No.</b>	<b>AV25012</b>	<b>AV25013</b>	<b>AV25013</b>	<b>AV25013</b>	<b>AV25013</b>	<b>AV25015</b>	<b>AV25015</b>
	<b>Bowen No.</b>	6041	6487	6487	6487	6487	6047	6047

<b>FISH SIZE</b>		7 Csg	7 Csg	7-5/8 Csg	7-5/8 Csg	7-5/8 Csg	8 Csg	8-1/8 Csg
<b>WEIGHT (LBS/FT)</b>		26, 24, 23, 22	20, 17	39, 33.7	29.7, 26.4	24, 20	26	39.5, 35.5
<b>SPEAR ASSEMBLY</b>	<b>Logan Part No.</b>	<b>204-015</b>	<b>204-015</b>	<b>204-016</b>	<b>204-016</b>	<b>204-016</b>	<b>204-016</b>	<b>204-016</b>
	<b>Bowen No.</b>	9352	9352	10608	10608	10608	10608	10608
<b>SLIP SIZE STAMPED</b>		6-3/8	6-17/32	6-11/16	6-15/16	7-3/32	7-7/16	7-1/4
	<b>Logan Part No.</b>	<b>AV4015</b>	<b>AV4015</b>	<b>AV4016</b>	<b>AV4016</b>	<b>AV4016</b>	<b>AV4016</b>	<b>AV4016</b>
	<b>Bowen No.</b>	9354	9354	10610	10610	10610	10610	10610
<b>FRICITION BLOCK SIZE STAMPED</b>		...	...	6-5/8	...	...	6-7/8	6-7/8
	<b>Logan Part No.</b>	...	...	<b>AV12010</b>	...	...	<b>AV12010</b>	<b>AV12010</b>
	<b>Bowen No.</b>	...	...	14967	...	...	14967	14967
<b>SAFETY RING SIZE STAMPED</b>		6-1/8	6-9/32	6-7/16	6-11/16	6-27/32	7-3/16	7
	<b>Logan Part No.</b>	<b>AV17015</b>	<b>AV17015</b>	<b>AV17016</b>	<b>AV17016</b>	<b>AV17016</b>	<b>AV17016</b>	<b>AV17016</b>
	<b>Bowen No.</b>	6522	6522	6524	6524	6524	6524	6524
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		6-1/8	6-9/32	6-7/16	6-11/16	6-27/32	7-3/16	7
	<b>Logan Part No.</b>	<b>AV25015</b>	<b>AV25015</b>	<b>AV25014</b>	<b>AV25014</b>	<b>AV25014</b>	<b>AV25014</b>	<b>AV25014</b>
	<b>Bowen No.</b>	6047	6047	6055	6055	6055	6055	6055

Logan Oil Tools reserves the right to change or discontinue designs without notice.

# LOGAN GENERAL CATALOG

OIL TOOLS

## FULL CIRCLE SPEAR SLIP RANGE FOR CASING

<b>FISH SIZE</b>		8-1/8 Csg	8-5/8 Csg	8-5/8 Csg	8-5/8 Csg	9 Csg	9 Csg	9 Csg
<b>WEIGHT (LBS/FT)</b>		32, 28	49, 44 38, 36	43, 40,	32, 28, 24	55	45	40, 38, 34
<b>SPEAR ASSEMBLY</b>	Logan Part No.	204-016	204-017	204-017	204-017	204-017	204-017	204-017
	Bowen No.	10608	6318	6318	6318	6318	6318	6318
<b>SLIP SIZE STAMPED</b>		7-7/16	7-9/16	7-13/16	8-1/16	7-13/16	8-1/16	8-5/16
	Logan Part No.	AV4016	AV4017	AV4017	AV4017	AV4017	AV4017	AV4017
	Bowen No.	10610	6320	6320	6320	6320	6320	6320
<b>FRICTION BLOCK SIZE STAMPED</b>		...	...	7-3/4	...	...	7-3/4	... ..
	Logan Part No.	...	AV12011	...	...	AV12011	...	...
	Bowen No.	...	14973	...	...	14973	...	...
<b>SAFETY RING SIZE STAMPED</b>		7-3/16	7-1/4	7-1/2	7-3/4	7-1/2	7-3/4	8
	Logan Part No.	AV17016	AV17017	AV17017	AV17017	AV17017	AV17017	AV17017
	Bowen No.	6524	6528	6528	6528	6528	6528	6528
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		7-3/16	7-1/4	7-1/2	7-3/4	7-1/2	7-3/4	8
	Logan Part No.	AV25014	AV25016	AV25016	AV25016	AV25016	AV25016	AV25016
	Bowen No.	6055	6529	6529	6529	6529	6529	6529

<b>FISH SIZE</b>		9-5/8 Csg	9-5/8 Csg	9-5/8 Csg	10 Csg	10-3/4 Csg	10-3/4 Csg	11-3/4 Csg
<b>WEIGHT (LBS/FT)</b>		58, 47, 53.5	40, 36, 43.5	32.3, 29.3	33 48	55.5, 54, 51, 40.5, 32.75	45.5, 45, 40,	60, 54
<b>SPEAR ASSEMBLY</b>	Logan Part No.	204-018	204-018	204-018	204-018	204-019	204-019	204-020
	Bowen No.	10473	10473	10473	10473	6067	6067	6073
<b>SLIP SIZE STAMPED</b>		8-1/2	8-13/16	9	9-3/8	9-13/16	10-1/16	10-7/8
	Logan Part No.	AV4018	AV4018	AV4018	AV4018	AV4019	AV4019	AV4020
	Bowen No.	10475	10475	10475	10475	6069	6069	6075
<b>FRICTION BLOCK SIZE STAMPED</b>		8-7/8	...	...	8 7/8	10	...	...
	Logan Part No.	AV12012	...	...	AV12012	AV12013	...	...
	Bowen No.	14979	...	...	14979	14984	...	...
<b>SAFETY RING SIZE STAMPED</b>		8-3/16	8-1/2	8-11/16	9-1/16	9-1/2	9-3/4	10-9/16
	Logan Part No.	AV17018	AV17018	AV17018	AV17018	AV17019	AV17019	AV17020
	Bowen No.	6531	6531	6531	6531	6533	6533	6535
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		8-3/16	8-1/2	8-11/16	9-1/16	9-1/2	9-3/4	10-9/16
	Logan Part No.	AV25017	AV25017	AV25017	AV25017	AV25018	AV25018	AV25019
	Bowen No.	6063	6063	6063	6063	6072	6072	6080

<b>FISH SIZE</b>		11-3/4 Csg	12 Csg	13 Csg	13-3/8 Csg	13-3/8 Csg	16 Csg	
<b>WEIGHT (LBS/FT)</b>		47, 42, 38	40	54, 50, 45, 40	83, 72, 68, 61	54, 48	84, 75, 65, 55	
<b>SPEAR ASSEMBLY</b>	Logan Part No.	204-020	204-020	204-021	204-021	204-021	204-021	
	Bowen No.	6073	6073	6081	6081	6081	6081	
<b>SLIP SIZE STAMPED</b>		11-1/8	11-3/8	12-3/8	12-3/8	12-5/8	15-3/16	
	Logan Part No.	AV4020	AV4020	AV4021	AV4021	AV4021	AV4021	
	Bowen No.	6075	6075	6083	6083	6083	6083	
<b>FRICTION BLOCK SIZE STAMPED</b>		...	...	12-1/4	12-1/4	...	15	
	Logan Part No.	...	...	AV12015	AV12015	...	AV12015	
	Bowen No.	...	...	14994	14994	...	14994	
<b>SAFETY RING SIZE STAMPED</b>		10-13/16	11-1/16	12	12	12-1/4	14-13/16	
	Logan Part No.	AV17020	AV17020	AV17021	AV17021	AV17021	AV17021	
	Bowen No.	6535	6535	6537	6537	6537	6537	
<b>SAFETY RING PACK-OFF SIZE STAMPED</b>		10-13/16	11-1/16	12	12	12-1/4	14-13/16	
	Logan Part No.	AV25019	AV25019	AV25020	AV25020	AV25020	AV25020	
	Bowen No.	6080	6080	6088	6088	6088	6088	



## STANDARD RELEASING SPEARS

### Overview

Logan Releasing Spears provide a positive means to engage and retrieve an internal fish from the well. The design of this rugged, dependable, and inexpensive internal catch fishing tool ensures positive engagement, easy release and re-engagement. It may be used with other equipment such as pack-off assemblies and internal cutters.

### Construction

The Logan Releasing Spear consists of a mandrel, grapple, releasing ring, and a bullnose nut. The size and type of the upper box connection is furnished according to customer specification.

### Mandrel

The mandrel type may be specified as either flush or shoulder. Flush-type mandrels are designed to completely enter the fish. Shoulder-type mandrels provide a positive landing position on top of the fish. The mandrel is made of high strength, specially heat-treated alloy steel. The lower end is threaded to accept a bull nose nut, or the mill, sub, or sidehill type nuts.

### Standard Spear Grapple

One-piece spear grapples are designed and manufactured to engage a specific size and weight of pipe, tubing, or casing to ensure maximum surface engagement and minimum fish distortion.

### Segment-Type Spear Grapple

The segment-type spear grapple enhances the spear's usefulness by providing an extended catching range beyond the maximum range of the standard one-piece grapple. The Logan Segment-Type Spear Grapple consists of a grapple body, eight grapple segments, two retainer rings, four retainer ring screws, six retainer ring spacers, and sixteen grapple segment screws.

### Release Ring

The cammed release ring matches the cammed nut ensuring a positive locking device that will not freeze or jam. It is a standard component of the releasing spear.

### Nut

The standard bottom nut is a bullnose nut. Optional nut types, sub, mill, and sidehill, are available.

### Spear Pack-off Assembly

Pack-off assemblies are available for all Logan Spear Assemblies and are designed to efficiently pack off all sizes of drill pipe, tubing and casing. Circulation through the fish is enabled by attaching the Spear Pack-off Assembly to the bottom of the spear with a sub type nut.

### Assembly

With left-hand rotation, screw the grapple onto the mandrel from the lower pin end. Slip the release ring onto the mandrel and make up the nut to the mandrel aligning the cams. Screw the grapple down the mandrel against the release ring until hand tight. The Spear Assembly is now in its run-in position.

### Operation

#### Engaging the Fish

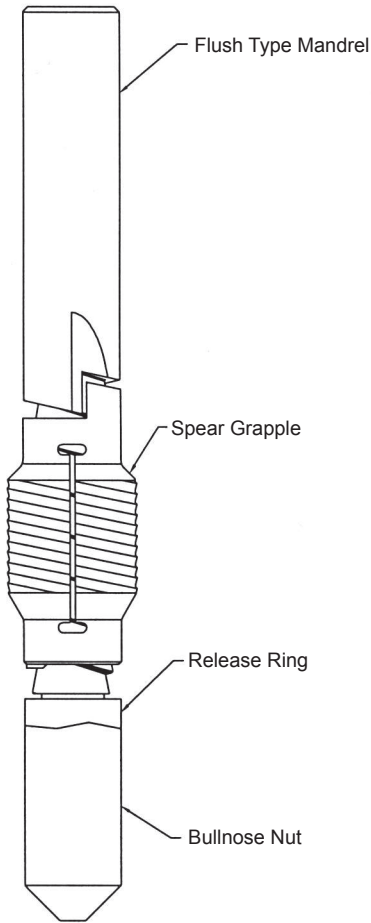
The Logan Releasing Spear is made up to the bottom of the fishing string and lowered to the desired depth into the fish. Rotate the mandrel one full turn to the left to turn the mandrel through the grapple and move the grapple into engaging position. Pulling straight up will cause the tapers on the mandrel to expand the grapple and allow it to positively engage the fish.

#### Releasing the Fish

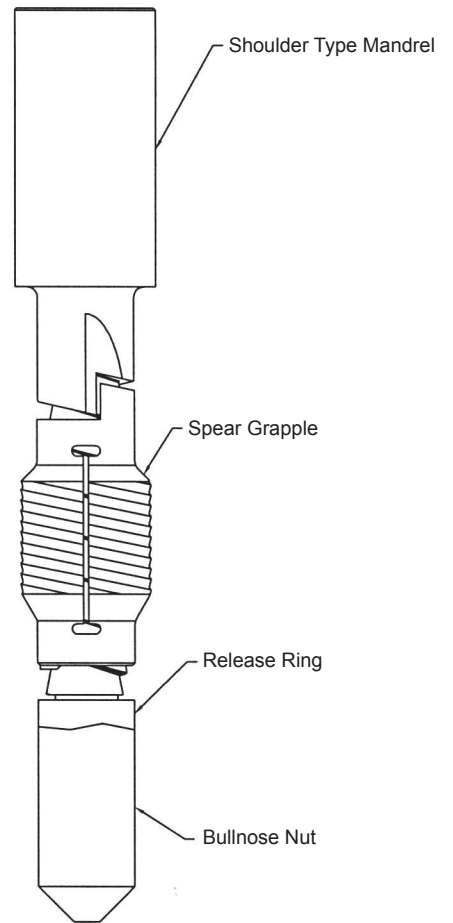
To release the fish, bump down and then make two to three rotations to the right. This right-hand rotation allows the mandrel to move up through the grapple thereby placing the grapple against the release ring and putting the spear in release position. A straight upward pull will release the spear from the fish. Continue with slow, right-hand rotation when coming out of the fish.

#### When ordering, please specify:

- (1) Name and part number of assembly or part
- (2) Size and type of top connection
- (3) Size and weight(s) of pipe to catch
- (4) Flush or Shoulder type (specify O.D. of shoulder, "A")
- (5) Mandrel length desired, "C"
- (6) Thread size and type of nut, if wanted

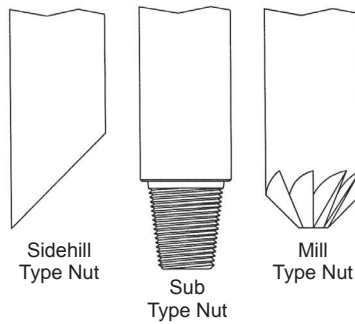


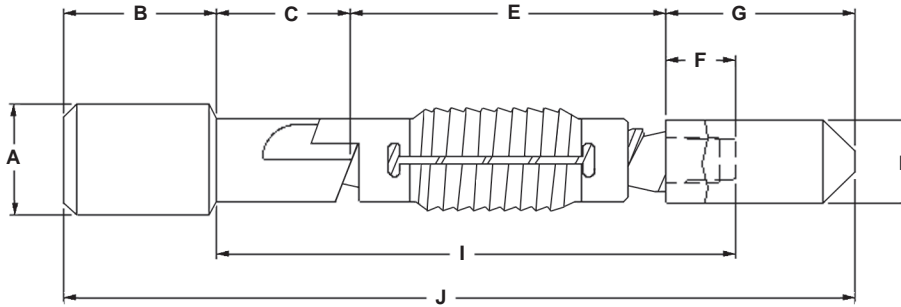
Spear Assembly  
with Flush Type Mandrel



Spear Assembly  
with Shoulder Type Mandrel

**Optional Nuts**





SHOULDER TYPE

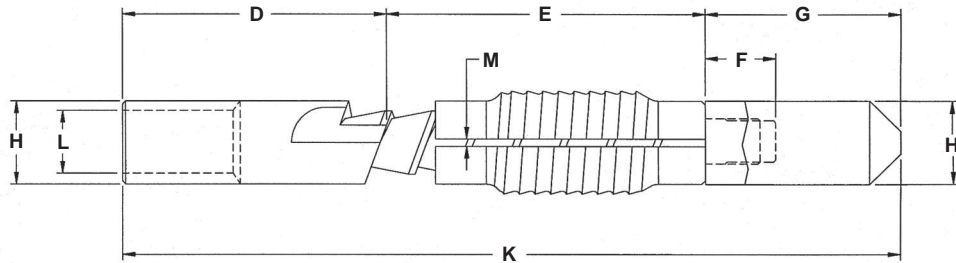
**STANDARD RELEASING SPEARS PRINCIPAL DIMENSIONS**

SPEAR MANDREL PART NO.	SPEAR SIZE	CLASS	ID	A	B	SHOULDER TYPE ONLY		FLUSH TYPE ONLY	
						C	D	E	
F1000	1.050 OD Pipe	Standard	...	1-1/2	4-1/8	6	...	...	2-3/8
F1001	1.313 OD Pipe	Standard	...	1-5/8	3	3	...	...	3-5/16
F1002	1.660 OD Tubing	Standard	...	1-13/16	3	3	3-25/32	...	3-5/16
F1004	1.900 OD Tubing	Standard	...	2-1/2	5	3	7	...	5-1/16
F1005	2-3/8 OD Drill Pipe	Standard	...	3-1/8	7	3	7	...	5-29/32
F1007	2-3/8 OD Tubing	Standard	3/8	3-1/8	7	3	7	...	6-3/4
F1008	2-3/8 OD Tubing	Standard	3/8	3-1/8	7	3	7	...	9
F1009	2-7/8 OD Tubing	Standard	3/8	3-3/4	7	3	7-1/4	...	6-3/4
F1010	2-7/8 OD Tubing	Heavy Duty	3/8	3-3/4	7	3	7-1/4	...	9
F1012	3-1/2 OD Tubing	Standard	1/2	3-3/4	7	3-1/2	10-1/2	...	12
F1013	3-1/2 OD Drill Pipe	Heavy Duty	1/2	3-3/8	7	3-1/2	10-1/2	...	9-3/4
F1014	4 OD Tubing	Light Duty	3/4	3-3/4	7-1/2	3	10-3/8	...	8-1/8
F1015	4 OD Tubing	Standard	3/4	4-1/8	7-1/2	3	10-1/2	...	12
F1016	4-1/2 OD Tubing	Light Duty	3/4	4-1/2	8	3-1/2	3-3/4	...	9-3/4
F1017	4-1/2 OD Tubing	Standard	3/4	4-1/2	8	3-1/2	9-1/2	...	14-1/4
F1018	5 OD Casing	Light Duty	7/8	4-3/8	8	3-1/2	9-1/2	...	9-3/4
F1019	5 OD Casing	Standard	1	5	8	3-1/2	12	...	14-1/4
F1022	6 OD Casing	Light Duty	1	6	8	5-1/2	12	...	13
F1023	6 OD Casing	Standard	1	6	8	5-1/2	12	...	13
F1024	7 OD Casing	Standard	2	7	10	6-1/2	16-1/2	...	14-5/8
F1026	7 OD Casing	Heavy Duty	2	7	10	6-1/2	13-1/2	...	21-3/8
F1029	8-5/8 OD Casing	Standard	2-3/4	8-5/8	14	7	20-7/8	...	14-5/8
F1030	8-5/8 OD Casing	Heavy Duty	2-3/4	8-5/8	...	...	20-7/8	...	21-3/8
F1032	9-5/8 OD Casing	Standard	2-13/16	9-5/8	15-3/8	7	20-7/8	...	14-5/8
F1034	9-5/8 OD Casing	Standard	2-13/16	9-5/8	...	...	20-7/8	...	21-3/8
F1035	13-3/8 OD Casing	Standard	3-1/2	13-3/8	17-7/8	7	22-3/8	...	16-7/8

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Notes:

- 1) For Flush or Shoulder type, specify O.D. of shoulder, "A"
- 2) Mandrel length desired, "C"



FLUSH TYPE

**STANDARD RELEASING SPEAR PRINCIPAL DIMENSIONS**

SPEAR MANDREL PART NO.	F	G	H	I	J	SHOULDER TYPE ONLY K	FLUSH TYPE ONLY L	M
F1000	7/8	2-3/8	11/16	9-5/8	15-1/4	...	...	3/16
F1001	1-3/8	2-1/2	15/16	7-11/16	11-13/16	...	...	1/4
F1002	1-3/8	2-1/2	1-1/8	7-11/16	11-13/16	...	...	3/8
F1004	2-1/4	5-5/8	1-3/8	10-5/16	18-11/16	...	...	7/16
F1005	2-1/4	6-17/32	1-11/16	...	...	19-7/16	...	5/8
F1007	2-1/4	6-5/8	1-7/8	12	23-3/8	23-3/8	...	5/8
F1008	2-1/4	6-5/8	1-7/8	14-1/4	25-5/8	22-5/8	...	5/8
F1009	2-1/2	7	2-5/16	12-1/4	23-3/4	21	...	5/8
F1010	2-1/2	7	2-5/16	14-1/2	26	23-1/4	...	5/8
F1012	3-1/2	9	2-13/16	19	31-1/2	32-1/2	...	5/8
F1013	3-5/8	8-1/8	2-1/2	16-5/8	31-1/8	...	...	5/8
F1014	2-1/2	8	3-1/4	13-5/8	26-5/8	26-1/2	...	5/8
F1015	3-1/2	9	3-1/4	18-1/2	31-1/2	31-1/2	...	5/8
F1016	3-1/2	10-3/4	3-5/8	16-3/4	32	32	...	1
F1017	3-1/2	10	3-5/8	21-1/4	35-3/4	33-3/4	...	3/4
F1018	3-1/2	10-5/8	4-1/32	16-3/4	31-7/8	29-7/8	...	13/16
F1019	3-1/2	10-5/8	4-1/32	21-1/4	36-3/8	36-7/8	...	13/16
F1022	3-1/2	12	5	16-3/8	39-3/16	37-11/16	3-5/16	1-1/4
F1023	3-1/2	12	5	16-3/8	...	43	3-5/16	1-1/4
F1024	3-1/2	12-3/4	5-3/4	...	...	40-1/4	3-1/2	1-5/8
F1026	3-1/2	12-3/4	5-3/4	31-3/8	53-3/8	47	3-1/2	1-5/8
F1029	4-1/2	13-3/4	7-1/4	26-1/8	53-7/8	49-1/4	5	1-5/8
F1030	4-1/2	13-3/4	7-1/4	...	...	56	5-3/4	1-5/8
F1032	3-1/2	14	8-1/4	25-1/8	51	49-1/4	6-1/4	1-5/8
F1034	3-1/2	13-3/4	8-1/4	...	...	56	6-1/4	1-5/8
F1035	3-1/2	12	11-3/4	27-3/8	53-3/4	51-1/4	7-3/4	1-5/8

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Notes:

- 1) For Flush or Shoulder type, specify O.D. of shoulder, "A"
- 2) Mandrel length desired, "C"

## STANDARD RELEASING SPEARS

NOMINAL CATCH SIZE O.D.		1.050	1.313	1.660	1.900	2-3/8	2-3/8	2-3/8
SPEAR O.D.		1 1/16	7/8 NOM	1-1/8	1-3/8	1-11/16	1-7/8	1-7/8
SPEAR I.D.		...	...	...	...	...	3/8	3/8
DUTY CLASS		STD	STD	STD	STD	STD	STD	STD
COMPLETE ASSEMBLY	Logan Part No.	202-001	202-002	202-003	202-004	202-036	202-005	202-006
	Bowen No.	16455	19350	11195	9915	9645	1344	17228

## REPLACEMENT PARTS

TOP SUB	Logan Part No.	F1000-A	F1001-A	F1002-A	...	...	...	...
	Bowen No.	16456A	19351A	11196A	...	...	...	...
MANDREL (FLUSH TYPE)	Logan Part No.	F1000	F1001	F1002	F1004	F1005	F1007	F1008
	Bowen No.	16456B	19351B	11196B	9916	9646	1345	17229
GRAPPLE	Logan Part No.	F3000	F3001	F3002	F3004	F3005	F3007	F3008
	Bowen No.	16457	19352	11197	9917	9647	1348	17230
RELEASE RING	Logan Part No.	F4000	F4001	F4002	F4004	F4005	F4007	F4007
	Bowen No.	16458	19353	11198	9918	9649	1347	1347
BULL NOSE NUT	Logan Part No.	F5000	F5001	F5002	F5004	F5005	F5007	F5007
	Bowen No.	16459	19354	11199	9919	9648	1346	1346

## OPTIONAL PARTS

MANDREL (SHOULDER TYPE)	Logan Part No.	F1000	F1001	F1002	F1004	F1005	F1007	F1008
	Bowen No.	16456	19351	11196	9916	9646	1345	17229
MANDREL EXTRA LENGTH PER INCH (C & D)								

## ACCESSORIES

MILL TYPE NUT	Logan Part No.	F5000-A	F5001-A	F5002-A	F5004-A	F5005-A	F5007-A	F5007-A
	Bowen No.	16459-A	19354-A	11199-A	9919-A	9648-A	1346-A	1346-A
SUB TYPE NUT	Logan Part No.	F5000-B	F5001-B	F5002-B	F5004-B	F5005-B	F5007-B	F5007-B
	Bowen No.	16459-B	19354-B	11199-B	9919-B	9648-B	1346-B	1346-B
SIDE HILL NUT	Logan Part No.	F5000-C	F5001-C	F5002-C	F5004-C	F5005-C	F5007-C	F5007-C
	Bowen No.	16459-C	19354-C	11199-C	9919-C	9648-C	1346-C	1346-C

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### When ordering, please specify:

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- (2) Size and type of top connection
- (3) Size and weight(s) of pipe to catch
- (4) Flush or Shoulder type (specify O.D. of shoulder, "A")
- (5) Mandrel length desired "C"
- (6) Thread size and type of nut, if wanted

### Recommended Spare Parts:

- (1) 2 Grapples for each catch size

## STANDARD RELEASING SPEARS

NOMINAL CATCH SIZE O.D.		2-7/8	2-7/8	2-7/8	3-1/2	3-1/2	4	4
SPEAR O.D.		2-5/16	2-5/16	2-5/16	2-13/16	2-1/2	3-1/4	3-1/4
SPEAR I.D.		3/8	3/8	3/8	1/2	1/2	3/4	3/4
DUTY CLASS		STD	STD LH	HD	STD	HD	LD	STD
COMPLETE ASSEMBLY	Logan Part No.	202-007	202-022	202-008	202-009	202-010	202-024	202-011
	Bowen No.	1227	62198	17231	9410	9945	530	9485

## REPLACEMENT PARTS

TOP SUB	Logan Part No.	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
MANDREL (FLUSH TYPE)	Logan Part No.	F1009	F10095	F1010	F1012	F1013	F1014	F1015
	Bowen No.	1231	62199	17232	9411	9946	531	9486
GRAPPLE	Logan Part No.	F3009	F30095	F3010	F3012	F3013	F3014	F3015
	Bowen No.	1230	49888	17233	9412	9947	532	9487
RELEASE RING	Logan Part No.	F4009	F4009	F4009	F4012	F4013	F4015	F4015
	Bowen No.	1229	1229	1229	1584	9948	534	534
BULL NOSE NUT	Logan Part No.	F5009	F50095	F5009	F5012	F5013	F5014	F5015
	Bowen No.	1228	62200	1228	9413	9949	533	9488

## OPTIONAL

MANDREL (SHOULDER TYPE)	Logan Part No.	F1009	F10095	F1010	F1012	F1013	F1014	F1015
	Bowen No.	1231	62199	17232	9411	9946	531	9486
MANDREL EXTRA LENGTH PER INCH (C & D)								

## ACCESSORIES

MILL TYPE NUT	Logan Part No.	F5009-A	F50095-A	F5010-A	F5012-A	F5013-A	F5014-A	F5015-A
	Bowen No.	1228-A	...	1228-A	9413-A	...	533-A	9488-A
SUB TYPE NUT	Logan Part No.	F5009-B	F50095-B	F5009-B	F5012-B	F5013-B	F5014-B	F5015-B
	Bowen No.	1228-B	...	1228-B	9413-B	...	533-B	9488-B
SIDE HILL NUT	Logan Part No.	F5009-C	F50095-C	F5009-C	F5012-C	F5013-C	F5014-C	F5015-A
	Bowen No.	1228-C	...	1228-C	9413-C	...	533-C	9488-C

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### When ordering, please specify:

- (1) Name and part number of assembly or part
- (2) Size and type of top connection
- (3) Size and weight(s) of pipe to catch
- (4) Flush or Shoulder type (specify O.D. of shoulder, "A")
- (5) Mandrel length desired "C"
- (6) Thread size and type of nut, if wanted

### Recommended Spare Parts:

- (1) 2 Grapples for each catch size

## STANDARD RELEASING SPEARS

NOMINAL CATCH SIZE O.D.	4-1/2	4-1/2	5	5	6	6	7	
SPEAR O.D.	3-5/8	3-5/8	4-1/32	4-1/32	5	5	5-3/4	
SPEAR I.D.	3/4	3/4	7/8	1	1	1	2	
DUTY CLASS	LD	STD	LD	STD	LD	STD	STD	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>202-017</b>	<b>202-012</b>	<b>202-035</b>	<b>202-013</b>	<b>202-023</b>	<b>202-014</b>	<b>202-015</b>
	Bowen No.	13200	17475	1332	9680	9715	17234	9266

## REPLACEMENT PARTS

<b>TOP SUB</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>MANDREL (FLUSH TYPE)</b>	<b>Logan Part No.</b>	<b>F1016</b>	<b>F1017</b>	<b>F1018</b>	<b>F1019</b>	<b>F1022</b>	<b>F1023</b>	<b>F1024</b>
	Bowen No.	13201	17476	1333	9681	9716	17235	9267
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3016</b>	<b>F3017</b>	<b>F3018</b>	<b>F3019</b>	<b>F3022</b>	<b>F3023</b>	<b>F3024</b>
	Bowen No.	13202	17477	1334	9682	9717	17236	9268
<b>RELEASE RING</b>	<b>Logan Part No.</b>	<b>F4017</b>	<b>F4017</b>	<b>F4019</b>	<b>F4019</b>	<b>F4023</b>	<b>F4023</b>	<b>F4024</b>
	Bowen No.	13183	13183	1336	1336	9718	9718	9279
<b>BULL NOSE NUT</b>	<b>Logan Part No.</b>	<b>F5017</b>	<b>F5017</b>	<b>F5019</b>	<b>F5019</b>	<b>F5023</b>	<b>F5023</b>	<b>F5024</b>
	Bowen No.	13184	13184	1335	1335	9719	9719	9269

## OPTIONAL PARTS

<b>MANDREL (SHOULDER TYPE)</b>	<b>Logan Part No.</b>	<b>F1016</b>	<b>F1017</b>	<b>F1018</b>	<b>F1019</b>	<b>F1022</b>	<b>F1023</b>	<b>F1024</b>
	Bowen No.	13201	17476	1333	9681	9716	17235	9267
<b>MANDREL EXTRA LENGTH PER INCH (C &amp; D)</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

## ACCESSORIES

<b>MILL TYPE NUT</b>	<b>Logan Part No.</b>	<b>F5017-A</b>	<b>F5017-A</b>	<b>F5019-A</b>	<b>F5019-A</b>	<b>F5023-A</b>	<b>F5023-A</b>	<b>F5024-A</b>
	Bowen No.	13184-A	13184-A	1335-A	1335-A	9719-A	9719-A	9269-A
<b>SUB TYPE NUT</b>	<b>Logan Part No.</b>	<b>F5017-B</b>	<b>F5017-B</b>	<b>F5019-B</b>	<b>F5019-B</b>	<b>F5023-B</b>	<b>F5023-B</b>	<b>F5024-B</b>
	Bowen No.	13184-B	13184-B	1335-B	1335-B	9719-B	9719-B	9269-B
<b>SIDE HILL NUT</b>	<b>Logan Part No.</b>	<b>F5017-C</b>	<b>F5017-C</b>	<b>F5019-C</b>	<b>F5019-C</b>	<b>F5023-C</b>	<b>F5023-C</b>	<b>F5024-C</b>
	Bowen No.	13184-C	13184-C	1335-C	1335-C	9719-C	9719-C	9269-C

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- (2) Size and type of top connection
- (3) Size and weight(s) of pipe to catch
- (4) Flush or Shoulder type (specify O.D. of shoulder, "A")
- (5) Mandrel length desired "C"
- (6) Thread size and type of nut, if wanted

### Recommended Spare Parts:

- (1) 2 Grapples for each catch size

## STANDARD RELEASING SPEARS

NOMINAL CATCH SIZE O.D.		7	8-5/8	8-5/8	9-5/8	9-5/8	13-3/8	
SPEAR O.D.		5-3/4	7-1/4	7-1/4	8-1/4	8-1/4	11-3/4	
SPEAR I.D.		2	2-3/4	2-3/4	2-13/16	2-13/16	3-1/2	
DUTY CLASS		HD	STD	HD	STD	HD	STD	
COMPLETE ASSEMBLY	Logan Part No.	202-016	202-025	202-018	202-019	202-020	202-021	
	Bowen No.	17237	9380	17243	9281	17246	27780	

## REPLACEMENT PARTS

TOP SUB	Logan Part No.	...	...	...	...	...	...	
	Bowen No.	...	...	...	...	...	...	
MANDREL (FLUSH TYPE)	Logan Part No.	F1026	F1029	F1030	F1032	F1034	F1035	
	Bowen No.	17238	9381	17244	9282	17247	27781	
GRAPPLE	Logan Part No.	F3026	F3029	F3030	F3032	F3034	F3035	
	Bowen No.	17239	9382	17245	9283	17248	27782	
RELEASE RING	Logan Part No.	F4024	F4029	F4029	F4032	F4032	F4033	
	Bowen No.	9279	9383	9383	9286	9286	27783	
BULL NOSE NUT	Logan Part No.	F5024	F5029	F5029	F5032	F5032	F5033	
	Bowen No.	9269	9384	9384	9284	9284	27784	

## OPTIONAL PARTS

MANDREL (SHOULDER TYPE)	Logan Part No.	F1026	F1029	F1030	F1032	F1034	F1035	
	Bowen No.	17238	9381	17244	9282	17247	27781	
MANDREL EXTRA LENGTH PER INCH (C & D)								

## ACCESSORIES

MILL TYPE NUT	Logan Part No.	F5024-A	F5029-A	F5029-A	F5032-A	F5032-A	F5035-A	
	Bowen No.	9269-A	9384-A	9384-A	9284-A	9284-A	27784-A	
SUB TYPE NUT	Logan Part No.	F5024-B	F5029-B	F5029-B	F5032-B	F5032-B	F5035-B	
	Bowen No.	9269-B	9384-B	9384-B	9284-B	9284-B	27784-B	
SIDE HILL NUT	Logan Part No.	F5024-C	F5029-C	F5029-C	F5032-C	F5032-C	F5035-C	
	Bowen No.	9269-C	9384-C	9384-C	9284-C	9284-C	27784-C	

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- (2) Size and type of top connection
- (3) Size and weight(s) of pipe to catch
- (4) Flush or Shoulder type (specify O.D. of shoulder, "A")
- (5) Mandrel length desired "C"
- (6) Thread size and type of nut, if wanted

### Recommended Spare Parts:

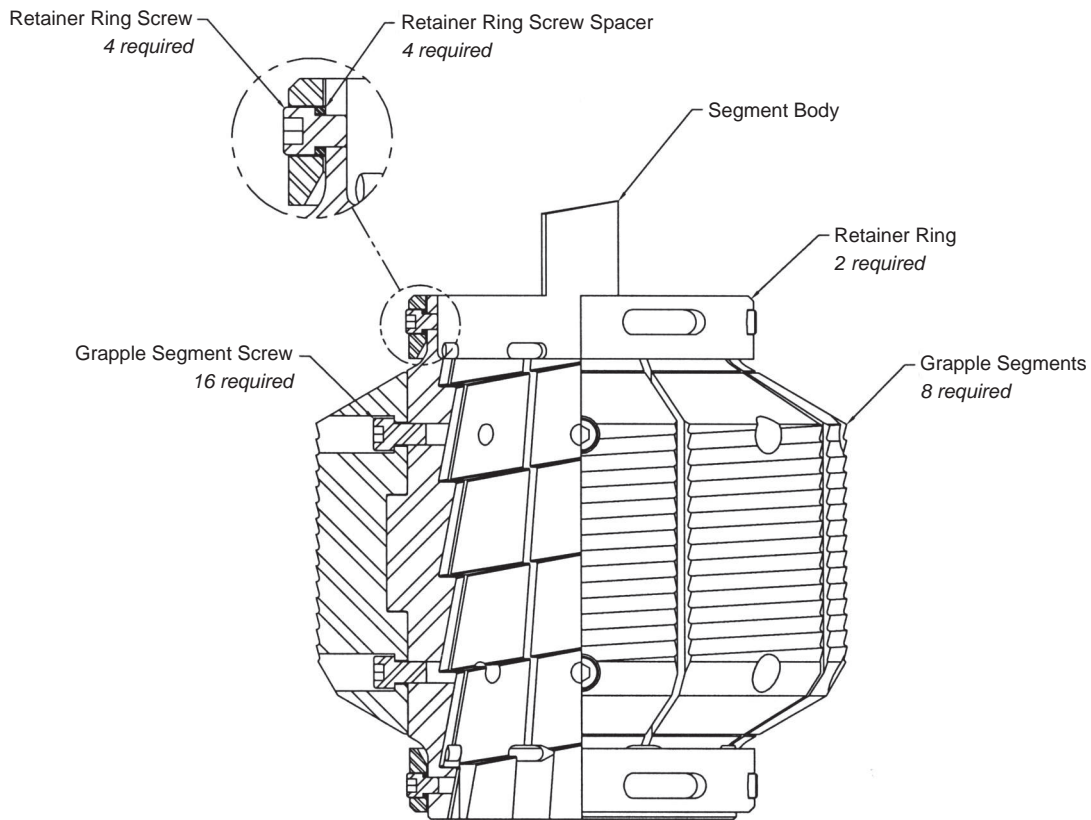
- (1) 2 Grapples for each catch size



## SEGMENTED SPEAR GRAPPLE ASSEMBLIES

### Overview

The segment-type spear grapple enhances the spear's usefulness by providing an extended catching range beyond the maximum range of the standard one-piece grapple. The Logan Segment-Type Spear Grapple consists of a grapple body, eight grapple segments, two retainer rings, six retainer ring screws, six retainer ring spacers, and sixteen grapple segment screws.



# LOGAN GENERAL CATALOG

OIL TOOLS

## SEGMENTED SPEAR GRAPPLE ASSEMBLIES

ASSEMBLES TO SPEAR		Logan Part No. 202-025				202-018			
	Bowen No.	9380				17243			
<b>CATCH SIZE (PIPE SIZE)</b>		10-3/4	11-3/4	12-3/4	13-3/8	10-3/4	11-3/4	12-3/4	13-3/8
<b>PIPE WEIGHT</b>		32.75	38.00	45.45	48.00	32.75	38.00	45.45	48.60
		48.00	54.00	66.72	68.00	48.00	54.00	66.72	68.00
		40.00	47.00	...	61.00	40.00	47.00	...	61.00
		55.50	60.00	...	85.00	55.50	60.00	...	85.00
<b>COMPLETE ASSEMBLY</b>		Logan Part No. 205-000				205-001			
	Bowen No.	9382				17245			
<b>GRAPPLE BODY</b>	Logan Part No.	F3029-A				F3030-A			
	Bowen No.	9382-A				17245-A			
<b>GRAPPLE SEGMENT</b> <i>(8 per set)</i>	Logan Part No.	F3029-B				F3030-B			
	Bowen No.	9382-B				17245-B			
<b>SEGMENT SCREW</b>	Logan Part No.	T3000				T3000			
	Bowen No.	12198				12198			
	No. Req'd	16				16			
<b>RETAINER RING</b>	Logan Part No.	T4000				T4000			
	Bowen No.	56855				56855			
	No. Req'd	2				2			
<b>RETAINER RING SCREW</b>	Logan Part No.	T5000				T5000			
	Bowen No.	23535				23535			
	No. Req'd	4				4			
<b>RETAINER RING SCREW SPACER</b>	Logan Part No.	T6000				T6000			
	Bowen No.	56979				56979			
	No. Req'd	4				4			

ASSEMBLES TO SPEAR		Logan Part No. 202-019					202-020				
	Bowen No.	9281					17246				
<b>CATCH SIZE (PIPE SIZE)</b>		13-3/8	14	16	18-5/8	20	13-3/8	14	16	18-5/8	20
<b>PIPE WEIGHT</b>		48.00	42.00	55.00	90.00	90.00	48.00	42.00	55.00	...	90.00
		68.00	57.00	65.00	106.50	94.00	68.00	57.00	65.00	...	94.00
		61.00	...	84.00	...	106.00	61.00	...	84.00	...	133.00
		85.00	...	109.00	...	133.00	85.00	...	...	...	...
<b>COMPLETE ASSEMBLY</b>		Logan Part No. 205-002					205-003				
	Bowen No.	9283					17248				
<b>GRAPPLE BODY</b>	Logan Part No.	F3032-A					F3034-A				
	Bowen No.	9283-A					17248-A				
<b>GRAPPLE SEGMENT</b> <i>(8 per set)</i>	Logan Part No.	F3032-B					F3034-B				
	Bowen No.	9283-B					17248-B				
<b>SEGMENT SCREW</b>	Logan Part No.	T3001					T3001				
	Bowen No.	23020					23020				
	No. Req'd	16					16				
<b>RETAINER RING</b>	Logan Part No.	T4001					T4001				
	Bowen No.	56409					56409				
	No. Req'd	2					2				
<b>RETAINER RING SCREW</b>	Logan Part No.	T5001					T5001				
	Bowen No.	56813					56813				
	No. Req'd	4					4				
<b>RETAINER RING SCREW SPACER</b>	Logan Part No.	T6000					T6000				
	Bowen No.	56979					56979				
	No. Req'd	4					4				

## SEGMENTED SPEAR GRAPPLE ASSEMBLIES

<b>ASSEMBLES TO SPEAR</b>	<b>Logan Part No.</b>	<b>202-021</b>	
	Bowen No.	27780	
<b>CATCH SIZE (PIPE SIZE)</b>		16	20
<b>PIPE WEIGHT</b>		55.00	90.00
		65.00	94.00
		84.00	133.00
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>205-004</b>	
	Bowen No.	27782	
<b>GRAPPLE BODY</b>	<b>Logan Part No.</b>	<b>F3035-A</b>	
	Bowen No.	27782A	
<b>GRAPPLE SEGMENT</b> <i>(8 per set)</i>	<b>Logan Part No.</b>	<b>F3035-B</b>	
	Bowen No.	27782B	
<b>SEGMENT SCREW</b>	<b>Logan Part No.</b>	<b>T3002</b>	
	Bowen No.	12019	
	No. Req'd	16	
<b>RETAINER RING</b>	<b>Logan Part No.</b>	<b>T4002</b>	
	Bowen No.	56858	
	No. Req'd	2	
<b>RETAINER RING SCREW</b>	<b>Logan Part No.</b>	<b>T5002</b>	
	Bowen No.	56859	
	No. Req'd	4	
<b>RETAINER RING SCREW SPACER</b>	<b>Logan Part No.</b>	<b>T6000</b>	
	Bowen No.	56979	
	No. Req'd	4	

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## RELEASING SPEAR GRAPPLE RANGE CHART

LOGAN SPEAR GRAPPLE	Logan Part No.	F3000	F3000	F3000	F3000	F3000	F3000	F3000
	Bowen No.	16457	16457	16457	16457	16457	16457	16457
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		.725		.799		.850	.912	.932
NOMINAL CATCH SIZE		.742		.813		.864	.924	.944
MAXIMUM ID		.750		.824		.875	.937	.957
OLD NOMINAL SIZE (INCHES)		3/4 ID & 3/4 X-STG Pipe		3/4 Std Pipe .824 ID		.875-.864 ID 1 to 2.25# CS Hydril	.937 ID	.957 ID 1" X-STG Pipe

LOGAN SPEAR GRAPPLE	Logan Part No.	F3000	F3000	F3000	F3000	F3001	F3001	F3001
	Bowen No.	16457	16457	16457	16457	19352	19352	19352
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		.955	.975	1.033	1.100	.913	.956	1.005
NOMINAL CATCH SIZE		.967	.987	1.049	1.112	.937	.978	1.027
MAXIMUM ID		.982	1.000	1.058	1.125	.957	1.000	1.049
OLD NOMINAL SIZE (INCHES)		.982 ID	1" ID	1" Std Pipe 1.049 ID	1-1/8 ID	.957 ID 1" X-STG Pipe	1" ID	1.045 ID 1" Std Pipe

LOGAN SPEAR GRAPPLE	Logan Part No.	F3001	F3001	F3002	F3002	F3002	F3002	F3002
	Bowen No.	19352	19352	11197	11197	11197	11197	11197
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.050	1.081	1.137	1.180	1.211	1.242	1.273
NOMINAL CATCH SIZE		1.072	1.103	1.170	1.215	1.246	1.277	1.308
MAXIMUM ID		1.093	1.125	1.207	1.250	1.281	1.312	1.342
OLD NOMINAL SIZE (INCHES)		1.093 ID	1.250 ID	1.187 ID	1.250 to 1.219 ID	1.281 to 1.250 ID	1.312 to 1.281 ID	1.343 to 1.312 ID

LOGAN SPEAR GRAPPLE	Logan Part No.	F3002	F3002	F3002	F3002	F3002	F3002	F3002
	Bowen No.	11197	11197	11197	11197	11197	11197	11197
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.332	1.394	1.430	1.580	1.481	1.519	1.650
NOMINAL CATCH SIZE		1.367	1.429	1.465	1.615	1.516	1.554	1.687
MAXIMUM ID		1.402	1.464	1.500	1.652	1.551	1.589	1.720
OLD NOMINAL SIZE (INCHES)		1-3/8 ID 1-1/4 Tbg	1.438 ID	1.500 to 1.469 ID	1-1/2 Std Pipe & 1-5/8 ID	1.531 ID	1 9/16 ID	1.687 to 1.700 ID

LOGAN SPEAR GRAPPLE	Logan Part No.	F3002	F3002	F3002	F3002	F3002	F3002	F3004
	Bowen No.	11197	11197	11197	11197	11197	11197	9917
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.722	1.771	1.836	1.895	1.957	2.024	1.441
NOMINAL CATCH SIZE		1.757	1.806	1.875	1.930	1.992	2.061	1.470
MAXIMUM ID		1.792	1.841	1.906	1.965	2.027	2.094	1.500
OLD NOMINAL SIZE (INCHES)		1-3/4 to 1-25/32 ID	1.815 ID	1-7/8 to 1-29/32	1-15/16 ID	2 ID	2.067 ID	1.500 ID to 1-1/2 X-STG Pipe

Note: Grapples are stenciled with nominal catch size.

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## RELEASING SPEAR GRAPPLE RANGE CHART

LOGAN SPEAR GRAPPLE	Logan Part No.	F3004	F3004	F3004	F3004	F3004	F3004	F3004
Bowen No.		9917	9917	9917	9917	9917	9917	9917
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.470	1.472	1.553	1.566	1.598	1.612	1.673
NOMINAL CATCH SIZE		1.500	1.502	1.583	1.596	1.628	1.642	1.700
MAXIMUM ID		1.527	1.529	1.610	1.625	1.657	1.670	1.750
OLD NOMINAL SIZE (INCHES)				1-1/2 Std Pipe to 1.610 ID	1-5/8 ID	1.657 ID	1.670 ID	1-3/4 1.700 ID

LOGAN SPEAR GRAPPLE	Logan Part No.	...	...	...	...	...	...	...
Bowen No.		...	...	...	...	...	...	...
LOGAN SPEAR GRAPPLE	Logan Part No.	F3004	F3004	F3004	F3004	F3004	F3005	F3005
Bowen No.		9917	9917	9917	9917	9917	9647	9647
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.707	1.742	1.817	1.881	1.942	1.677	1.742
NOMINAL CATCH SIZE		1.737	1.772	1.847	1.911	1.972	1.719	1.778
MAXIMUM ID		1.781	1.800	1.875	1.939	2.000	1.750	1.815
OLD NOMINAL SIZE (INCHES)		1.781 ID	1.800 ID	1-7/8 ID	1.939 ID	2 ID	1.719 to 1.750 ID	2-3/8 Drill Pipe, 65.5#

LOGAN SPEAR GRAPPLE	Logan Part No.	...	...	...	F3007	F3007	F3007	F3007
Bowen No.		...	...	...	1348	1348	1348	1348
LOGAN SPEAR GRAPPLE	Logan Part No.	F3005	F3005	F3005	F3008	F3008	F3008	F3008
Bowen No.		9647	9647	9647	17230	17230	17230	17230
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.802	1.864	1.968	1.788	1.796	1.889	1.952
NOMINAL CATCH SIZE		1.838	1.900	2.004	1.828	1.836	1.929	1.992
MAXIMUM ID		1.875	1.937	2.041	1.867	1.876	1.968	2.041
OLD NOMINAL SIZE (INCHES)		1-7/8 & 1-27/32 ID	1.875 to 1.937 ID	2-3/8 Tbg, 4 to 4.7# Down	1.867 ID Turn Body Down	1.875 ID Turn Body	1.937 to 1.968 ID	2-3/8 Tbg, 4 to 4.7#

LOGAN SPEAR GRAPPLE	Logan Part No.	F3007	F3007	F3007	F3007	F3007	F3007	F3007
Bowen No.		1348	1348	1348	1348	1348	1348	1348
LOGAN SPEAR GRAPPLE	Logan Part No.	F3008	F3008	F3008	F3008	F3008	F3008	F3008
Bowen No.		17230	17230	17230	17230	17230	17230	17230
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		1.983	2.045	2.091	2.170	2.186	2.233	2.249
NOMINAL CATCH SIZE		2.023	2.085	2.131	2.211	2.226	2.273	2.289
MAXIMUM ID		2.062	2.125	2.172	2.250	2.266	2.312	2.329
OLD NOMINAL SIZE (INCHES)		2.000 to 2.062 ID	2-1/8 ID	2-7/8 DP, 9.75 to 10.4#	2-1/4 to 2-3/16 ID	2-17/64 ID	2-5/16 ID	2-7/8 OD 7.8 to 8.35# DP

Note: Grapples are stenciled with nominal catch size.

Logan Oil Tools reserves the right to change or discontinue designs without notice.

## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>
	Bowen No.	1348	1348	1348	1348	1348	1348	1348
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>
	Bowen No.	17230	17230	17230	17230	17230	17230	17230
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		2.295	2.358	2.390	2.420	2.556	2.608	2.670
<b>NOMINAL CATCH SIZE</b>		2.335	2.398	2.430	2.460	2.596	2.648	2.710
<b>MAXIMUM ID</b>		2.375	2.438	2.469	2.500	2.625	2.688	2.750
<b>OLD NOMINAL SIZE (INCHES)</b>		2-3/8 ID NX 1/2 Rod	2-3/8 ID 2-7/16 ID	2-7/8 Tbg 6.25-6.5#, 2-7/8 OD	2-7/16 ID 2-1/2 ID	2-5/8 ID & 2-9/16 ID	2-5/8 ID & 2-11/16 ID	2-3/4 ID

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3007</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>
	Bowen No.	1348	1348	1348	1348	1230	1230	1230
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3008</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>
	Bowen No.	17230	17230	17230	17230	17233	17233	17233
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		2.921	3.046	3.170	3.264	2.280	2.351	2.390
<b>NOMINAL CATCH SIZE</b>		2.961	3.086	3.210	3.304	2.328	2.399	2.438
<b>MAXIMUM ID</b>		3.000	3.126	3.250	3.344	2.375	2.446	2.487
<b>OLD NOMINAL SIZE (INCHES)</b>		3 ID & 2-15/16 ID - NX DRIVE	3-1/16 ID & 3-1/8 ID	3-1/4 ID & 3-3/16 ID	3-11/32 ID & 3-9/32 ID	2-3/8 ID	2-3/8 to 2-7/16 ID	2-7/8 Tbg 6.25-6.5#, 2-7/8 OD

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>	<b>F3009</b>
	Bowen No.	1230	1230	1230	1230	1230	1230	1230
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>	<b>F3010</b>
	Bowen No.	17233	17233	17233	17233	17233	17233	17233
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		2.468	2.515	2.593	2.671	2.718	2.827	2.843
<b>NOMINAL CATCH SIZE</b>		2.516	2.562	2.641	2.718	2.766	2.875	2.891
<b>MAXIMUM ID</b>		2.563	2.610	2.688	2.766	2.814	2.922	2.938
<b>OLD NOMINAL SIZE (INCHES)</b>		2.562 to 2-15/32 ID Pipe	3-1/2 OD 15.5# Drill	2-11/16 2-5/8 ID Drill Pipe	3-1/2 OD 12.4 to 13.3#	2-13/16 ID & 2-3/4 ID Drill Pipe	3-1/2 OD 10.2 to 11.2#	2-7/8 to 2-15/16 ID

Note: Grapples are stenciled with nominal catch size.

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### RELEASING SPEAR GRAPPLE RANGE CHART

LOGAN SPEAR GRAPPLE	Logan Part No.	F3009	F3009	F3009	F3009	F3009	F3009	...
	Bowen No.	1230	1230	1230	1230	1230	1230	...
LOGAN SPEAR GRAPPLE	Logan Part No.	F3010	F3010	F3010	F3010	F3010	F3010	F3012
	Bowen No.	17233	17233	17233	17233	17233	17233	9412
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		2.890	2.984	3.030	3.155	3.297	3.437	2.881
NOMINAL CATCH SIZE		2.938	3.032	3.078	3.203	3.345	3.485	2.933
MAXIMUM ID		2.992	3.079	3.125	3.250	3.392	3.532	2.992
OLD NOMINAL SIZE (INCHES)		3-1/2 OD 9.2-10.2# Tbg	3-1/2 OD 7.7# Tbg	3-1/8 3-1/16 ID	3-1/4 3-3/16 ID	3.340 to 3.382 ID	3-1/2 ID	3-1/2 OD 9.2-10.2# Tbg

LOGAN SPEAR GRAPPLE	Logan Part No.	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
LOGAN SPEAR GRAPPLE	Logan Part No.	F3012	F3012	F3012	F3012	F3012	F3012	F3012
	Bowen No.	9412	9412	9412	9412	9412	9412	9412
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		2.949	3.021	3.146	3.256	3.365	3.444	3.522
NOMINAL CATCH SIZE		3.001	3.073	3.198	3.308	3.417	3.496	3.574
MAXIMUM ID		3.068	3.125	3.250	3.364	3.476	3.548	3.625
OLD NOMINAL SIZE (INCHES)		3-1/2 OD 7.7 to 9.2#	3-1/8 ID	3-1/4 ID 3-3/16 ID	4 OD 12.5 to 14.0# Drill Pipe	4 OD 11.0 to 11.6#	4 OD 9.5 to 11.0#	3.500 to 3.625 ID

LOGAN SPEAR GRAPPLE	Logan Part No.	...	...	F3014	F3014	F3014	F3014	F3014
	Bowen No.	...	...	532	532	532	532	532
LOGAN SPEAR GRAPPLE	Logan Part No.	F3012	F3012	F3015	F3015	F3015	F3015	F3015
	Bowen No.	9412	9412	9487	9487	9487	9487	9487
<b>ACTUAL CATCHING RANGE:</b>								
MINIMUM ID		3.584	3.646	3.218	3.327	3.406	3.484	3.608
NOMINAL CATCH SIZE		3.636	3.698	3.291	3.400	3.479	3.557	3.681
MAXIMUM ID		3.687	3.750	3.364	3.476	3.548	3.625	3.754
OLD NOMINAL SIZE (INCHES)		3-11/16 ID	3-3/4 ID	4 OD 12.5 to 14.0 Tbg	4 OD 11.0 to 11.6# Tbg	4 OD 9.5 to 11.0# Tbg	3-5/8 ID & 3-9/16 ID	4-1/2 OD 18.1 to 22.0# Tbg

Note: Grapples are stenciled with nominal catch size.

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## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3014</b>	<b>F3014</b>	<b>F3014</b>	<b>F3014</b>	<b>F3014</b>	<b>F3014</b>	<b>F3014</b>
	Bowen No.	532	532	532	532	532	532	532
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3015</b>	<b>F3015</b>	<b>F3015</b>	<b>F3015</b>	<b>F3015</b>	<b>F3015</b>	<b>F3015</b>
	Bowen No.	9487	9487	9487	9487	9487	9487	9487
<b>ACTUAL CATCHING RANGE:</b>								
<b>Minimum ID</b>		3.671	3.812	3.874	3.937	4.134	4.155	4.358
<b>NOMINAL CATCH SIZE</b>		3.744	3.885	3.947	4.010	4.207	4.228	4.431
<b>MAXIMUM ID</b>		3.826	3.958	4.026	4.090	4.276	4.300	4.506
<b>OLD NOMINAL SIZE (INCHES)</b>		4-1/2 OD 15.3 to 18.1# Tbg	4-1/2 OD 13.7 to 15.3# Tbg	4-1/2 OD 11.0 to 13.7# Tbg	4-1/2 OD 9.5 to 11.6# Tbg	5 OD 18.0 to 21.0# Tbg	5 OD 17.7 to 18.0# Tbg	5 Tbg 12.6 to15.0# (4.408 ID)

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3014</b>	<b>F3014</b>	<b>F3016</b>	<b>F3016</b>	<b>F3016</b>	<b>F3016</b>	<b>F3016</b>
	Bowen No.	532	532	13202	13202	13202	13202	13202
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3015</b>	<b>F3015</b>	<b>F3017</b>	<b>F3017</b>	<b>F3017</b>	<b>F3017</b>	<b>F3017</b>
	Bowen No.	9487	9487	17477	17477	17477	17477	17477
<b>ACTUAL CATCHING RANGE:</b>								
<b>Minimum ID</b>		4.406	4.874	3.682	3.761	3.823	3.886	4.073
<b>NOMINAL CATCH SIZE</b>		4.479	4.947	3.782	3.861	3.923	3.986	4.173
<b>MAXIMUM ID</b>		4.560	5.012	3.881	3.958	4.026	4.090	4.276
<b>OLD NOMINAL SIZE (INCHES)</b>		5 OD 11.5# Tbg	5-1/2 OD 14.0 to 17.0# Tbg	4-1/2 OD 15.3 to 18.1# Tbg	4-1/2 OD 13.7 to 15.3# Tbg	4-1/2 OD 11.0 to 13.7# Tbg	4-1/2 OD 9.5 to 11.6# Csg	5 OD 18.0 to 21.4# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3016</b>	<b>F3016</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>
	Bowen No.	13202	13202	1334	1334	1334	1334	1334
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3017</b>	<b>F3017</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>
	Bowen No.	17477	17477	9682	9682	9682	9682	9682
<b>ACTUAL CATCHING RANGE:</b>								
<b>Minimum ID</b>		4.214	4.307	4.093	4.234	4.390	4.469	4.515
<b>NOMINAL CATCH SIZE</b>		4.314	4.407	4.179	4.320	4.476	4.555	4.601
<b>MAXIMUM ID</b>		4.408	4.506	4.276	4.408	4.562	4.642	4.696
<b>OLD NOMINAL SIZE (INCHES)</b>		5 OD 15.0 to 18.0# Csg	5 OD 12.6 to 15.0# Csg	5 OD 18.0 to 21.0# Csg	5 OD 15.0 to 18.0# Csg	5 OD 11.5 to 15.0# Csg	5 OD 9.0 to 13.0# Csg	5 OD, 8# 5-1/2 OD 23 to 25# Csg

Note: Grapples are stenciled with nominal catch size.

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## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>
	Bowen No.	1334	1334	1334	1334	1334	1334	1334
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>
	Bowen No.	9682	9682	9682	9682	9682	9682	9682
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		4.609	4.719	4.875	4.922	5.015	5.124	5.218
<b>NOMINAL CATCH SIZE</b>		4.695	4.805	4.961	5.008	5.101	5.210	5.304
<b>MAXIMUM ID</b>		4.782	4.892	5.048	5.095	5.192	5.297	5.390
<b>OLD NOMINAL SIZE (INCHES)</b>		5-1/2 OD 20.0 to 23.0# Csg	5-1/2 OD 17.0 to 20.0# Csg	5-1/2 OD 14.0 to 17.0# Csg	5-3/4 OD 19.5 to 22.5# Csg	5-3/4, 17-19.5# 5-1/2 OD 9.0 to 13.0# Csg	5-3/4 OD 14.0 to 17.0 Csg	6 OD 20.0# Csg to 23.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3018</b>	<b>F3018</b>	<b>F3018</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>
	Bowen No.	1334	1334	1334	9717	9717	9717	9717
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3019</b>	<b>F3019</b>	<b>F3019</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>
	Bowen No.	9682	9682	9682	17236	17236	17236	17236
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		5.281	5.375	5.500	5.000	5.093	5.187	5.280
<b>NOMINAL CATCH SIZE</b>		5.367	5.461	5.586	5.134	5.227	5.321	5.414
<b>MAXIMUM ID</b>		5.454	5.552	5.675	5.266	5.360	5.454	5.547
<b>OLD NOMINAL SIZE (INCHES)</b>		6 OD 17.0 to 20.0# Csg	6 OD 14.0 to 17.0# Csg	6-5/8 OD 32.0 to 34.0# Csg	6 OD 23.0 to 26.0# Csg	6 OD 20.0 to 23.0# Csg	6 OD 17.0 to 20.0# Csg	6 OD 14.0 to 17.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>
	Bowen No.	9717	9717	9717	9717	9717	9717	9717
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>
	Bowen No.	17236	17236	17236	17236	17236	17236	17236
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		5.406	5.530	5.593	5.656	5.671	5.781	5.796
<b>NOMINAL CATCH SIZE</b>		5.540	5.664	5.727	5.790	5.805	5.915	5.930
<b>MAXIMUM ID</b>		5.675	5.797	5.860	5.923	5.938	6.049	6.063
<b>OLD NOMINAL SIZE (INCHES)</b>		6 OD 10.5 to 14.0# Csg	6-5/8 OD 28.0 to 32.0# Csg	6-5/8 OD 26.0 to 29.0# Csg	6-5/8 OD 24.0 to 28.0# Csg	7 OD 38.0 to 40.0# Csg	6-5/8 OD 20.0 to 24.0# Csg	7 OD 33.7 to 38.0# Csg

Note: Grapples are stenciled with nominal catch size.

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## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3022</b>	<b>F3024</b>
	Bowen No.	9717	9717	9717	9717	9717	9717	9268
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3023</b>	<b>F3026</b>
	Bowen No.	17236	17236	17236	17236	17236	17236	17239
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		5.875	5.937	6.015	6.140	6.202	6.281	5.770
<b>NOMINAL CATCH SIZE</b>		6.009	6.071	6.149	6.274	6.335	6.415	5.970
<b>MAXIMUM ID</b>		6.142	6.204	6.282	6.407	6.469	6.548	6.173
<b>OLD NOMINAL SIZE (INCHES)</b>		6-5/8 OD 17.0 to 22.0# Csg	7 OD 29.0 to 33.7# Csg	7 OD 26.0 to 29.0# Csg	7 OD 22.0 to 26.0# Csg	7 OD 20.0 to 23.0# Csg	7 OD 17.0 to 20.0# Csg	7" 30.0-40.0# & 6-5/8 24.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>
	Bowen No.	9268	9268	9268	9268	9268	9268	9268
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>
	Bowen No.	17239	17239	17239	17239	17239	17239	17239
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		5.895	6.020	6.270	6.364	6.567	6.864	6.987
<b>NOMINAL CATCH SIZE</b>		6.095	6.220	6.470	6.564	6.767	7.064	7.187
<b>MAXIMUM ID</b>		6.297	6.423	6.673	6.765	6.969	7.263	7.391
<b>OLD NOMINAL SIZE (INCHES)</b>		7 OD 26.0 to 35.0# Csg	7 OD 22.0 to 33.7# Csg	7 OD 13.0 to 24.0# Csg	7-5/8 OD 33.7 to 45.0# Csg	7-5/8 OD 26.4 to 39.0# Csg	7-5/8 OD 14.7 to 26.4# Csg	8-1/8 OD 32.0 to 42.0#Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>	<b>F3024</b>
	Bowen No.	9268	9268	9268	9268	9268	9268	9268
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>	<b>F3026</b>
	Bowen No.	17239	17239	17239	17239	17239	17239	17239
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		7.225	7.239	7.489	7.755	7.911	7.958	8.692
<b>NOMINAL CATCH SIZE</b>		7.425	7.439	7.689	7.955	8.111	8.158	8.892
<b>MAXIMUM ID</b>		7.628	7.642	7.892	8.157	8.313	8.360	9.094
<b>OLD NOMINAL SIZE (INCHES)</b>		8 OD 16.0 to 26.0# Csg	7-9/16 ID	8-5/8 OD 34.0 to 48.0# Csg	8-5/8 24.0 to 38.0#, 9" 55# Csg	8-5/8 OD 17.6 to 29.3# Csg	9 OD 34.0 to 45.0# Csg	9-5/8 OD 29.3 to 42.0# Csg

Note: Grapples are stenciled with nominal catch size.

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## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3024</b>	<b>F3029</b>	<b>F3029</b>	<b>F3029</b>	<b>F3029</b>	<b>F3029</b>	<b>F3029</b>
	Bowen No.	9268	9382	9382	9382	9382	9382	9382
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3026</b>	<b>F3030</b>	<b>F3030</b>	<b>F3030</b>	<b>F3030</b>	<b>F3030</b>	<b>F3030</b>
	Bowen No.	17239	17245	17245	17245	17245	17245	17245
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		8.442	7.537	7.729	7.981	8.435	8.535	8.760
<b>NOMINAL CATCH SIZE</b>		8.642	7.690	7.882	8.134	8.588	8.688	8.913
<b>MAXIMUM ID</b>		8.884	7.846	8.034	8.315	8.755	8.846	9.065
<b>OLD NOMINAL SIZE (INCHES)</b>		9-5/8 OD 43.5 to 53.5# Csg	8-5/8 OD 36.0 to 48.0# Csg	8-5/8 28.0 to 38.0#, 9 OD 45.0 to 55.0# Csg	8-5/8 17.5 to 29.3#, 9 OD 34.0 to 45.0# Csg	9 OD 19.0# & 9-5/8 OD 43.5 to 58.0# Csg	9-5/8 OD 40.0 to 53.5# Csg	9-5/8 OD 29.3 to 42.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3029</b>	<b>205-000 *</b>	<b>205-000 *</b>	<b>205-000 *</b>	<b>205-000 *</b>	<b>205-000 *</b>	<b>205-000 *</b>
	Bowen No.	9382	9382	9382	9382	9382	9382	9382
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-001 *</b>	<b>205-001 *</b>	<b>205-001 *</b>	<b>205-001 *</b>	<b>205-001 *</b>	<b>205-001 *</b>	<b>205-001 *</b>
	Bowen No.	17245	17245	17245	17245	17245	17245	17245
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		9.479	9.760	9.885	10.729	10.854	12.228	12.415
<b>NOMINAL CATCH SIZE</b>		9.632	9.913	10.038	10.882	11.007	12.381	12.568
<b>MAXIMUM ID</b>		9.784	10.065	10.192	11.034	11.159	12.534	12.721
<b>OLD NOMINAL SIZE (INCHES)</b>		10-3/4 OD 55.5 to 65.7# Csg	10-3/4 OD 40.0 to 55.5# Csg	10-3/4 OD 32.7 to 48.0# Csg	11-3/4 OD 47.0 to 60.0# Csg	11-3/4 OD 38.0 to 54.0# Csg	13-3/8 OD 61.0 to 85.0# Csg	13-3/8 OD 48.0 to 68.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>
	Bowen No.	9283	9283	9283	9283	9283	9283	9283
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>
	Bowen No.	17248	17248	17248	17248	17248	17248	17248
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		8.435	8.519	8.596	8.738	9.738	9.867	9.225
<b>NOMINAL CATCH SIZE</b>		8.597	8.681	8.758	8.900	9.900	10.029	9.387
<b>MAXIMUM ID</b>		8.755	8.844	8.921	9.063	10.063	10.192	9.550
<b>OLD NOMINAL SIZE (INCHES)</b>		9-5/8 OD 43.5 to 58.0# Csg	9-5/8 OD 40.0 to 53.5# Csg	9-5/8 OD 36.0 to 43.5# Csg	9-5/8 OD 29.3 to 40.0# Csg	10-3/4 OD 40.0 to 55.5# Csg	10-3/4 OD 32.7 to 48.0# Csg	10-3/4 OD 71.0 to 76.0# Csg

Note: Grapples are stenciled with nominal catch size

\* Segmented grapples.

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## RELEASING SPEAR GRAPPLE RANGE CHART

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-002 *</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>F3032</b>	<b>205-002 *</b>	<b>205-002 *</b>
	Bowen No.	9283	9283	9283	9283	9283	9283	9283
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-003 *</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>F3034</b>	<b>205-003 *</b>	<b>205-003 *</b>
	Bowen No.	17248	17248	17248	17248	17248	17248	17248
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		11.206	10.581	10.832	10.612	10.675	11.643	11.674
<b>NOMINAL CATCH SIZE</b>		11.369	10.743	10.994	10.774	10.837	11.805	11.837
<b>MAXIMUM ID</b>		11.531	10.906	11.157	10.937	11.000	11.968	12.000
<b>OLD NOMINAL SIZE (INCHES)</b>		11.5 ID	11-3/4 OD 54.0 to 65.0# Csg	11-3/4 OD 38.0 to 54.0# Csg	11-3/4 OD 60.0# Csg	11-3/4 OD 47.0 to 60.0# Csg	13-3/8 OD 11.937 ID Csg	13-3/8 OD 96.0#, 11.975 ID Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>
	Bowen No.	9283	9283	9283	9283	9283	9283	9283
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>
	Bowen No.	17248	17248	17248	17248	17248	17248	17248
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		12.022	12.393	12.455	13.143	13.312	13.330	15.112
<b>NOMINAL CATCH SIZE</b>		12.184	12.555	12.617	13.305	13.474	13.492	15.274
<b>MAXIMUM ID</b>		12.347	12.718	12.780	13.468	13.637	13.655	15.437
<b>OLD NOMINAL SIZE (INCHES)</b>		13-3/8 OD 72.0 to 85.0# Csg	13-3/8 OD 48.0 to 68.0# Csg	12-3/4 OD 12-3/4 ID	14 OD 42.0 to 57.0# Csg	13.599 to 13.609 ID	13-5/8 ID	16 OD 55.0 to 75.0# Csg

<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>	<b>205-002 *</b>			
	Bowen No.	9283	9283	9283	9283			
<b>LOGAN SPEAR GRAPPLE</b>	<b>Logan Part No.</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>	<b>205-003 *</b>			
	Bowen No.	17248	17248	17248	17248			
<b>ACTUAL CATCHING RANGE:</b>								
<b>MINIMUM ID</b>		14.925	17.331	18.862	17.487			
<b>NOMINAL CATCH SIZE</b>		15.087	17.493	19.024	17.650			
<b>MAXIMUM ID</b>		15.250	17.656	19.187	17.812			
<b>OLD NOMINAL SIZE (INCHES)</b>		16 OD 65.0 to 84.0# Csg	17-1/2 ID	20 OD 90.0 to 106.5# Csg	18-5/8 OD 87.5# Csg			

Note: Grapples are stenciled with nominal catch size

\* Segmented grapples.

Logan Oil Tools reserves the right to change or discontinue designs without notice.

## RELEASING SPEAR PACK-OFF ASSEMBLIES

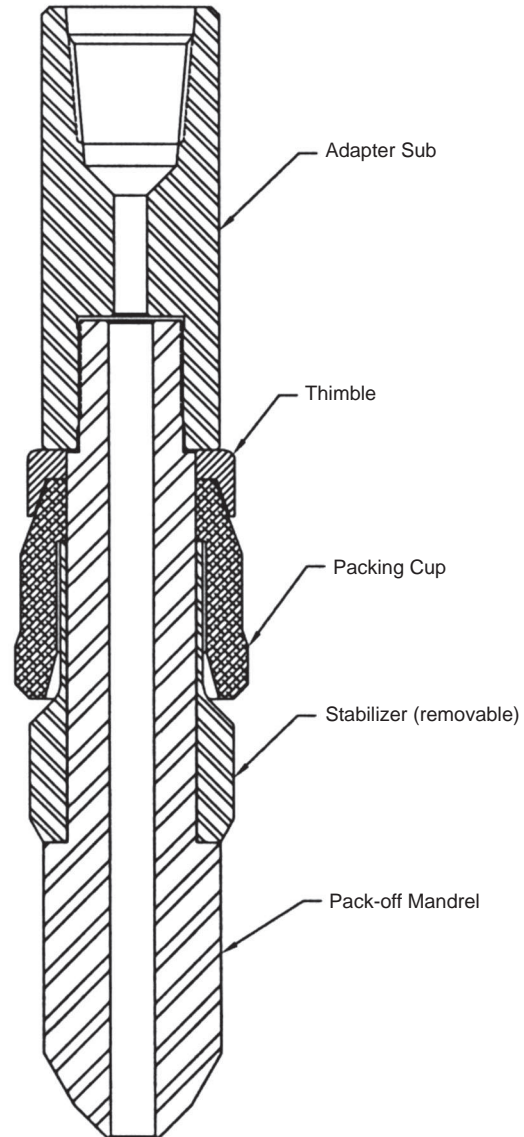
### Overview

Pack-off Assemblies are available for all Logan Spear Assemblies and are designed to efficiently pack-off all sizes of tubing and casing. Circulation through the fish is enabled by attaching the Spear Pack-off Assembly to the bottom of the spear with a sub type nut.

The standard bottom nut is a bullnose nut. Optional nut types — sub, mill, and sidehill — are available.

### When ordering, please specify:

- (1) Name and part number of assembly or part
- (2) Size and type of top connection
- (3) Size and weight of pipe to be run in



## RELEASING SPEAR PACK-OFF ASSEMBLIES

CASING SIZE TO PACK-OFF		1-1/2 Tbg	2-3/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4 Tbg	4-1/2 Tbg	5 Csg
OD ADAPTER SUB (INCHES)		1-1/4	1-13/16	1-13/16	2-1/2	3-1/4	3-1/2	4
OD INTEGRAL NUT (INCHES)		1	1-3/4	2	2	2-1/2	3-1/4	3-1/8
PACK-OFF ASSEMBLY	Logan Part No.	400-036	400-037	400-038	400-039	400-040	400-041	400-042
MANDREL	Logan Part No.	F6000	F6001	F6002	F6003	F6004	F6005	F6006
ADAPTER SUB	Logan Part No.	F7000	F7001	F7002	F7003	F7004	F7005	F7006
	Std. Length	6	8	8	8	8	9	10
PACKING CUP	Logan Part No.	F8000	F8001	F8002	F8003	F8004	F8005	F8006
THIMBLE	Logan Part No.	F9000	F9001	F9002	F9003	F9004	F9005	F9006
STABILIZER	Logan Part No.	F10000	F10001	F10002	F10003	F10004	F10005	F10006
CAN BE DRESSED TO PACK-OFF		...	...	3-1/2 DP	4 Tbg	...	4-1/2 Csg & 4-3/4 Csg	...

CASING SIZE TO PACK-OFF		5-1/2 Csg	6 Csg	6-5/8 Csg	8 Csg	9-5/8 Csg	10-3/4 Csg	11-3/4 Csg
OD ADAPTER SUB (INCHES)		4	4-3/4	4-3/4	6-1/8	6-3/8	8	8
OD INTEGRAL NUT (INCHES)		4	4-1/2	4-3/4	6-3/8	6-3/8	8	8
PACK-OFF ASSEMBLY	Logan Part No.	400-043	400-044	400-045	400-046	400-047	400-048	400-055
MANDREL	Logan Part No.	F6007	F6008	F6009	F6011	F6011	F6013	F6013
ADAPTER SUB	Logan Part No.	F7006	F7007	F7007	F7009	F7009	F7009	F7009
	Std. Length	10	12	12	12	12	12	12
PACKING CUP	Logan Part No.	F8007	F8008	F8009	F8010	F8011	F8012	F80125
THIMBLE	Logan Part No.	F9007	F9008	F9009	F9010	F9011	F9012	F90125
STABILIZER	Logan Part No.	F10007	F10008	F10009	F10011	F10011	F10012	F100125
CAN BE DRESSED TO PACK-OFF		5-3/4 Csg	...	7 & 7-5/8 Csg	8-5/8 Csg 9 Csg	...	...	...

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### When ordering, please specify:

- (1) Name and part number of assembly or part
- (2) Size and type of top connection
- (3) Size and weight of pipe to be run in

### Recommended Spare Parts:

- (1) 2 Packers for each size
- (2) 1 Thimble for each size

## RELEASING SPEAR PACK-OFF ASSEMBLIES

CASING SIZE TO PACK-OFF		13-3/8 Csg	16 Csg			
OD ADAPTER SUB (INCHES)		8	8			
OD INTEGRAL NUT (INCHES)		8	8			
PACK-OFF ASSEMBLY	Logan Part No.	400-049	400-066			
MANDREL	Logan Part No.	F6013	F6013			
ADAPTER SUB	Logan Part No.	F7009	F7009			
	Std. Length	12	12			
PACKING CUP	Logan Part No.	F8013	F8014			
THIMBLE	Logan Part No.	F9013	not req'd			
STABILIZER	Logan Part No.	F10013	F10014			
CAN BE DRESSED TO PACK-OFF		13-5/8 Csg	...			

CASING SIZE TO PACK-OFF		18-5/8 Csg	20 Csg			
OD ADAPTER SUB (INCHES)		8	8			
OD INTEGRAL NUT (INCHES)		8	8			
PACK-OFF ASSEMBLY	Logan Part No.	400-067	400-068			
MANDREL	Logan Part No.	F6013	F6013			
ADAPTER SUB	Logan Part No.	F7009	F7009			
	Std. Length	12	12			
PACKING CUP	Logan Part No.	F8015	F8016			
THIMBLE	Logan Part No.	not req'd	not req'd			
STABILIZER	Logan Part No.	F10015	F10016			
CAN BE DRESSED TO PACK-OFF		...	...			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Name and part number of assembly or part
- (2) Size and type of top connection
- (3) Size and weight of pipe to be run in

### Recommended Spare Parts:

- (1) 2 Packers for each size
- (2) 1 Thimble for each size

## RELEASING SPEAR STOP SUB ASSEMBLIES

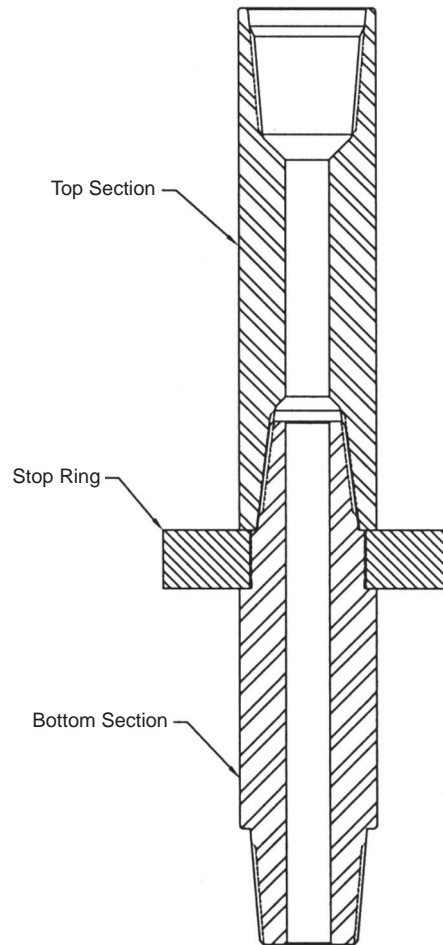
### Overview

The Logan Releasing Spear Stop Sub Assembly is an accessory designed to convert a releasing spear with a flush-type mandrel into a shouldered type spear. It is installed in the box connection at the top of the mandrel when the use of a positive stop is desired or required.

A stop ring can be added to increase shoulder diameter. All stop rings are furnished with left-hand threads.

### When ordering, please specify:

- (1) O.D. of Stop Subs
- (2) Length from stop to threaded connection
- (3) Top and bottom connection desired
- (4) Assembly number of spear on which the stop sub will be run
- (5) O.D. of Stop Ring



STANDARD STOP SUB & FLUSH MANDREL OD		2-5/16	3-1/8	3-1/2	3-5/8	4-1/32	5
STOP SUB ASSEMBLY	Logan Part No.	400-071	400-064	400-063	400-050	400-051	400-052
<b>STOP SUB (2 PCS. REQ'D)</b>							
UPPER SECTION 18" LENGTH	Logan Part No.	F11009-A	F110002-A	F110005-A	F11000-A	F11001-A	F11002-A
LOWER SECTION 12" LENGTH	Logan Part No.	F11009-B	F110002-B	F110005-B	F11000-B	F11001-B	F11002-B
STOP RING	Logan Part No.	F12009	F120002	F120005	F12000	F12001	F12002
	Minimum O.D.	...	4-1/8	4-1/8	4-1/2	5	6

STANDARD STOP SUB & FLUSH MANDREL O.D.		5-3/4	7-1/4	7-3/4	8-1/4	11-3/4
STOP SUB ASSEMBLY	Logan Part No.	400-053	400-054	400-062	400-065	400-056
<b>STOP SUB (2 PCS. REQ'D)</b>						
UPPER SECTION 18" LENGTH	Logan Part No.	F11003-A	F11004-A	F11005-A	F11015-A	F11006-A
LOWER SECTION 12" LENGTH	Logan Part No.	F11003-B	F11004-B	F11005-B	F11015-B	F11006-B
STOP RING	Logan Part No.	F12003	F12004	F12005	F12015	F12006
	Minimum O.D.	7	8-5/8	9-5/8	9-5/8	13-3/8

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## PACKER RETRIEVER SPEARS

### Overview

The Logan Packer Retriever Spear is designed to remove drillable full-bore packers from the well casing. With appropriate dressing, the tool can mill through the packer if necessary. It will remain in the proper catching position at all times once it is through the packer to engage the lower end of the packer, thereby enabling a one-trip milling and recovery operation. The tool can be released and reengaged, and also may be run with a jarring assembly.

### Construction

The Logan Packer Retriever Spear consists of only three parts: a top coupling, mandrel, and a slip. An optional bull plug that can be dressed with tungsten carbide is available.

### Operation

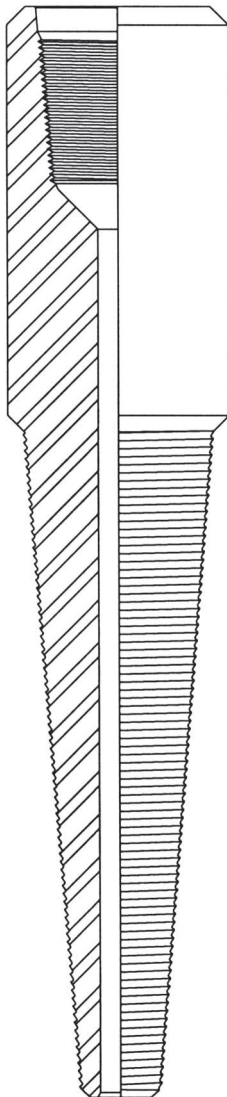
The Logan Packer Retriever Spear is installed at the lower end of the milling assembly. Sufficient extension joints allow the Packer Retriever Spear to clear the lower end of the packer bore before the dressed shoe or mill makes contact with the outside of the packer. As the Packer Retriever Spear enters the packer bore, the retrieving slip is forced up into position to allow passage through the packer bore. The slip automatically drops into the catch position as it clears the lower end of the packer. The milling operation may now be performed and the packer retrieved.

The Packer Retriever Spear remains in catch position at all times. It will not prematurely release due to sudden movement of the packer and can withstand severe upward strain. If necessary, the tool can be released with right-hand rotation and lowering of the fishing string after the slip has been pulled into friction contact with the packer.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) O.D. of assembly
- (3) Size and type of connection

**TAPER TAPS**



**Overview**

Logan Rotary Taper Taps are the simplest, and the most economical, internal catch fishing tools designed for retrieving a fish from the hole. They are available in an assortment of sizes, lengths, and connections, or can be custom-made to customer specifications.

**Construction**

The Taper Tap is manufactured in one piece from high grade alloy and specially heat treated for strength. Taper Taps are available in two types: plain and skirt type.

**Plain Type**

Plain type taper taps are not threaded on the outside diameter shoulder.

**Skirt Type**

Skirt type taper taps are designed to guide the fish for proper engagement and retrieval. The outside diameter shoulder is threaded for a skirt. Skirts can be furnished with a plain, lipped, or threaded end. Threaded end skirts must be used with oversized guides. Thread protectors are provided with skirt type taper taps and threaded end skirts.

**Wickers**

All Logan Rotary Taper Taps are manufactured with hardened wickers (cutting teeth) that provide an excellent grip for light-duty pickup jobs and ensure positive, reliable engagement of the fish.

Standard wickers are a non-fluted, plain water-tight design to provide circulation below the stuck point. Fluted type wickers are available upon request. They are designed to provide circulation to flush out cuttings during fish engagement. All Logan Rotary Taper Taps are designed with a circulation hole drilled through the center.

Right-hand wickers for right-hand rotation engagement are standard on Logan Rotary Taper Taps. Left-hand wickers are available upon request. There is no extra charge for left-hand wickers.

**Operation**

**Engaging the Fish**

The Logan Rotary Taper Tap is attached to the fishing string and lowered into the hole to the top of the fish. Apply weight of less than one point and rotate the tap until the tapered threads have engaged the fish. Excessive weight and rotation could damage the wickers. When securely engaged, stop rotation and lift the fish from the hole.

**How to Order**

**When ordering, please specify:**

- (1) Assembly number
- (2) Size of fish to be caught
- (3) Size and type of top connection
- (4) Fluted or non-fluted wickers
- (5) Threaded for skirt with skirt thread protector

## TAPER TAPS

COMPLETE ASSEMBLY	Logan Part No.	203-150	203-175	203-181	203-190	203-231	203-238	203-306
NOMINAL SIZE		5/8 SR	3/4 SR	1-13/16 FJ	1 EUE	7/8 SR	1-1/4 EUE	2-3/8 EUE
O.D.		1-1/2	1-3/4	1-13/16	1.9	2-5/16	2-3/8	3-1/16
TO CATCH		1/2 to 1 ID	5/8 to 1-1/4 ID	3/4 to 1-3/8 ID	1 Pipe	7/8 to 1-1/2 ID	1-1/4 Pipe	2-3/8 OD CPL
DIAMETER OF SMALLEST WICKER		3/8	1/2	5/8	3/4	3/4	7/8	1-5/8
DIAMETER OF LARGEST WICKER		1-1/4	1-1/2	1-5/8	1-3/4	1-3/4	1-7/8	2-5/8
LENGTH OF TAPER	Inches	14	16	16	16	16	16	16

COMPLETE ASSEMBLY	Logan Part No.	203-313	203-338	203-363	203-375	203-413	203-425	203-463
NOMINAL SIZE		2-3/8 Reg	2-3/8 IF	2-3/8 Reg	2-7/8 Reg	2-7/8 IF	3-1/2 Reg	3-1/2 FH
O.D.		3-1/8	3-3/8	3-5/8	3-3/4	4-1/8	4-1/4	4-3/8
TO CATCH		2-3/8 Reg	2-3/8 IF HYD	2-3/8 Reg	2-7/8 Reg	2-7/8 Pipe API	3-1/2 Reg	3-1/2 Pipe API FH
DIAMETER OF SMALLEST WICKER		5/8	1-3/8	1-1/2	7/8	1-3/4	1	1-5/8
DIAMETER OF LARGEST WICKER		1-5/8	2-3/8	3	1-7/8	2-3/4	2-1/2	3-1/8
LENGTH OF TAPER	Inches	16	16	24	16	16	24	24

COMPLETE ASSEMBLY	Logan Part No.	203-463	203-475	203-500	203-525	203-550	203-575	203-600
NOMINAL SIZE		3-1/2 FH	3-1/2 IF	4-1/2 REED DS	4 FH	4-1/2 Reg	4-1/2 FH	4-1/2 XH
O.D.		4-5/8	4-3/4	5	5 1/4	5 1/2	5 3/4	6
TO CATCH		3-1/2 Pipe API FH	3-1/2 IF 3-1/2 Pipe	4-1/2 REED DS	4 FH	4-1/2 Reg	4 IF 4 Pipe 4-1/2 FH 4-1/2 Pipe	4-1/2 XH
DIAMETER OF SMALLEST WICKER		1-5/8	2-3/16	2-5/16	2-5/16	1-3/4	2-5/8	2-7/8
DIAMETER OF LARGEST WICKER		3-1/8	3-11/16	3-13/16	3-15/16	3-3/8	4-1/4	4-1/2
LENGTH OF TAPER	Inches	24	24	24	26	26	26	26

COMPLETE ASSEMBLY	Logan Part No.	203-613	203-675	203-700	203-738	203-775	203-800	
NOMINAL SIZE		4-1/2 IF	5-1/2 Reg	5-1/2 FH	5-1/2 IF	6-5/8 Reg	6-5/8 Reg	
O.D.		6-1/8	6-3/4	7	7-3/8	7-3/4	8	
TO CATCH		4-1/2 IF 4-1/2 PIPE	5-1/2 or 5-9/16 Reg	5-1/2 or 5-9/16 FH Pipe	5-1/2 or 5-9/16 IF Pipe	6-5/8 Reg	6-5/8 FH IF Pipe	
DIAMETER OF SMALLEST WICKER		3-1/4	2-1/4	3-5/8	4-1/4	3	4-5/8	
DIAMETER OF LARGEST WICKER		4-3/4	4	5-3/8	6	4-3/4	6-3/8	
LENGTH OF TAPER	Inches	24	28	28	28	28	28	

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note: No extra charge for Left-Hand Taper Taps.

**When ordering, please specify:**

- (1) Assembly number
- (2) Size of fish to be caught
- (3) Size and type of top connection
- (4) Fluted or non-fluted wickers
- (5) Threaded for skirt with skirt thread protector

## CORE TYPE JUNK BASKETS

### Overview

The Logan Core Type Junk Basket is an easy to use junk retrieval tool designed to effectively remove small objects such as bit cones, slips, hand tools, and tail chains from the hole.

### Construction

The Logan Core Type Junk Basket consists of a top sub, barrel, type A mill shoe, and an upper and lower catcher. The short fingers of the upper catcher are designed to break the core that has been cut by the mill shoe. The combination of short and long fingers of the lower catcher are designed to trap and retrieve the core and junk. Both catchers are free-revolving within the mill shoe, eliminating any breakage of the catcher fingers.

For component breakdown of the junk catcher assemblies, refer to the Junk Catcher Assemblies tables on pages 112 – 121.

### Optional Accessories

Mill shoes for all Core Type Junk Baskets are available in three types: A, B, and C.

### Type A Mill Shoe

Conventional hard metal with side wings.

### Type B Mill Shoe

Dressed with sintered tungsten carbide.

### Type C Mill Shoe

Flat bottomed and dressed with sintered tungsten carbide.

### Magnet Inserts

Core Type Junk Baskets can easily be converted to an effective fishing magnet by replacing the upper and lower junk catcher assemblies with a magnet insert.

### Finger Shoe

A Finger Shoe may be installed on the bottom of the barrel instead of a mill shoe when junk is lying loose on the bottom of the well or it is too large to pass through the catchers. After the junk basket has engaged the fish, the continued combination of rotating and lowering cause the long fingers of the finger shoe to close beneath the fish and retain it in the barrel.

### Operation

The Logan Core Type Junk Basket is made up to the bottom of the fishing string and lowered to a point within several feet from the bottom of the hole. The coring action created by combination of fluid circulation and slow rotation of the tool while lowering will cut a 24-inch core. Upward strain on the string will allow the fingers of the upper catcher to break the core. The fingers of the lower catcher will trap the core and other junk for removal from the hole.

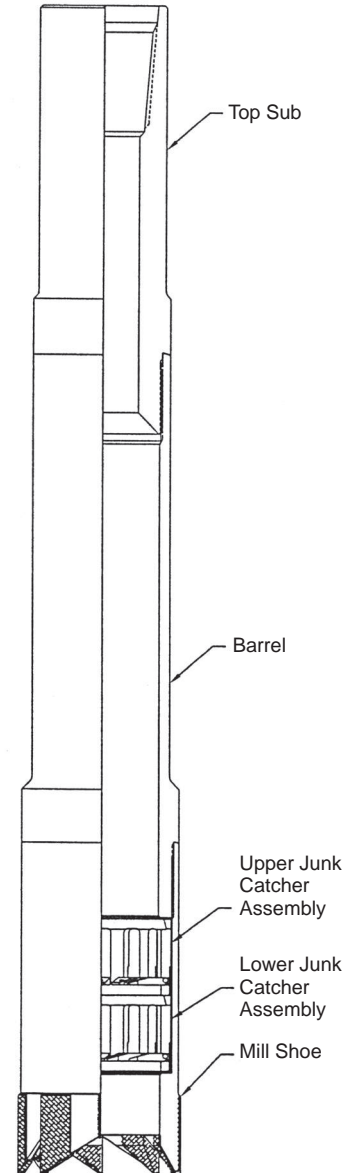
### How to Order

#### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

#### Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements



# LOGAN GENERAL CATALOG

OIL TOOLS

## CORE TYPE JUNK BASKETS

<b>HOLE SIZE</b>		3-3/4 to 4-1/8	4-1/4 to 4-1/2	4-5/8 to 5	4-5/8 to 5	5-1/8 to 5-1/2	5-5/8 to 6	5-5/8 to 6
<b>BARREL O.D.</b>		3-5/8	3-3/4	3-7/8	3-7/8	4-1/4	5-1/8	4-3/4
<b>SHOE O.D.</b>		3-5/8	4-1/16	4-1/2	4-1/2	4-7/8	5-1/8	5-3/8
<b>MAXIMUM DIAMETER OF FISH</b>		2-23/32	2-31/32	3-9/32	3-3/8	3-23/32	3-25/32	4-1/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>301-363</b>	<b>301-375</b>	<b>301-388</b>	<b>301-387</b>	<b>301-425</b>	<b>301-512</b>	<b>301-475</b>
	Bowen No.	14590	14586	14595	19375	14600	59993	14605
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>E1000</b>	<b>E1001</b>	<b>E1002</b>	<b>E1002</b>	<b>E1003</b>	<b>D1004</b>	<b>E1004</b>
	Bowen No.	14725	14726	14727	14727	14728	2619	14729
<b>BARREL</b>	<b>Logan Part No.</b>	<b>E2000</b>	<b>E2001</b>	<b>E20015</b>	<b>E2002</b>	<b>E2003</b>	<b>E20035</b>	<b>E2004</b>
	Bowen No.	14591	14587	14596	19376	14601	14746	14606
<b>UPPER CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	...	...	...	...	...	<b>600-083</b>	<b>500-014</b>
	Bowen No.	...	...	...	...	...	14747-W	14607-W
<b>LOWER CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>500-023</b>	<b>500-024</b>	<b>500-050</b>	<b>500-025</b>	<b>500-026</b>	<b>500-026</b>	<b>500-027</b>
	Bowen No.	14593-W	14589-W	14598-W	19377-W	14603-W	14603-W	14608-W
<b>TYPE A MILL SHOE</b> (Hard Faced Mill Teeth)	<b>Logan Part No.</b>	<b>E5000-A</b>	<b>E5001-A</b>	<b>E50015</b>	<b>E5002-A</b>	<b>E5003-A</b>	<b>E50035-A</b>	<b>E5004-A</b>
	Bowen No.	14594-A	14574-A	14599-A	19378-A	14604-A	2625-A	14609-A

## OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b> (Tungsten Carbide Mill Teeth)	<b>Logan Part No.</b>	<b>E5000-B</b>	<b>E5001-B</b>	<b>E50015-B</b>	<b>E5002-B</b>	<b>E5003-B</b>	<b>E50035-B</b>	<b>E5004-B</b>
	Bowen No.	14594-B	14574-B	14599-B	19378-B	14604-B	2625-B	14609-B
<b>TYPE C MILL SHOE</b> (Tungsten Carbide Faced)	<b>Logan Part No.</b>	<b>E5000-C</b>	<b>E5001-C</b>	<b>E50015-C</b>	<b>E5002-C</b>	<b>E5003-C</b>	<b>E50035-C</b>	<b>E5004-C</b>
	Bowen No.	14594-C	14574-C	14599-C	19378-C	14604-C	2625-C	14609-C
<b>FINGER SHOE</b>	<b>Logan Part No.</b>	<b>E3000</b>	<b>E3001</b>	<b>E3002</b>	<b>E3002</b>	<b>E3003</b>	...	<b>E3004</b>
	Bowen No.	22205	22206	22207	22207	22208	...	22209
	Max. Dia. of Fish	3-1/4	3-13/16	4-1/16	4-1/16	4-1/2	...	4-3/4
<b>MAGNET INSERTS</b>	<b>Logan Part No.</b>	<b>500-036</b>	<b>500-037</b>	<b>500-038</b>	<b>500-038</b>	<b>500-039</b>	...	<b>500-040</b>
	Bowen No.	61842	61838	61858	61858	60852	...	61862
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4000</b>	<b>E4001</b>	<b>E4002</b>	<b>E4002</b>	<b>E4003</b>	...	<b>E4004</b>
	Bowen No.	M-61843	M-61839	M-61859	M-61859	M-61853	...	M-61863
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-069</b>	<b>600-069</b>	<b>600-070</b>	<b>600-070</b>	<b>600-070</b>	...	<b>600-071</b>
	Bowen No.	61812	61812	61814	61814	61814	...	61816

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

### Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

# LOGAN GENERAL CATALOG

OIL TOOLS

## CORE TYPE JUNK BASKETS

<b>HOLE SIZE</b>		6-1/8 to 6-1/2	6-1/8 to 6-1/2	6-1/8 to 6-1/2	6-5/8 to 7	7-1/4 to 8	8-1/4 to 9	9-1/4 to 10-1/8
<b>BARREL O.D.</b>		5-3/4	5-1/8	5-1/4	5-3/4	6-1/2	7-1/2	8-1/2
<b>SHOE O.D.</b>		5-3/4	5-7/8	5-7/8	6-1/4	7-1/8	8-1/8	9-1/8
<b>MAXIMUM DIAMETER OF FISH</b>		4-13/32	4-5/16	4-1/2	4-13/16	5-7/16	6-3/16	7-3/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>301-576</b>	<b>301-513</b>	<b>301-525</b>	<b>301-575</b>	<b>301-650</b>	<b>301-750</b>	<b>301-850</b>
	<b>Bowen No.</b>	59996	14610	19379	14615	14620	14625	14630
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>E10045</b>	<b>E10047</b>	<b>E1005</b>	<b>E1006</b>	<b>E1007</b>	<b>E1008</b>	<b>E1009</b>
	<b>Bowen No.</b>	59997	14730	19380	14731	14732	14733	14734
<b>BARREL</b>	<b>Logan Part No.</b>	<b>E20045</b>	<b>E20047</b>	<b>E2005</b>	<b>E2006</b>	<b>E2007</b>	<b>E2008</b>	<b>E2009</b>
	<b>Bowen No.</b>	15134	14611	19381	14616	14621	14626	14631
<b>UPPER CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>500-051</b>	<b>600-065</b>	<b>500-015</b>	<b>500-016</b>	<b>500-017</b>	<b>500-018</b>	<b>14000-013</b>
	<b>Bowen No.</b>	15130-W	14612-W	19382-W	14617-W	14622-W	14627-W	14632-W
<b>LOWER CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>600-020</b>	<b>600-066</b>	<b>500-028</b>	<b>500-029</b>	<b>500-030</b>	<b>500-031</b>	<b>600-024</b>
	<b>Bowen No.</b>	28349-W	14613-W	19383-W	14618-W	14623-W	14628-W	14633-W
<b>TYPE A MILL SHOE</b> (Hard Faced Mill Teeth)	<b>Logan Part No.</b>	<b>E50045-A</b>	<b>E50047-A</b>	<b>E5005-A</b>	<b>E5006-A</b>	<b>E5007-A</b>	<b>E5008-A</b>	<b>E5009-A</b>
	<b>Bowen No.</b>	2676-A	14614-A	19384-A	14619-A	14624-A	14629-A	14634-A

## OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b> (Tungsten Carbide Mill Teeth)	<b>Logan Part No.</b>	<b>E50045-B</b>	<b>E50047-B</b>	<b>E5005-B</b>	<b>E5006-B</b>	<b>E5007-B</b>	<b>E5008-B</b>	<b>E5009-B</b>
	<b>Bowen No.</b>	2676-B	14614-B	19384-B	14619-B	14624-B	14629-B	14634-B
<b>TYPE C MILL SHOE</b> (Tungsten Carbide Faced)	<b>Logan Part No.</b>	<b>E50045-C</b>	<b>E50047-C</b>	<b>E5005-C</b>	<b>E5006-C</b>	<b>E5007-C</b>	<b>E5008-C</b>	<b>E5009-C</b>
	<b>Bowen No.</b>	2676-C	14614-C	19384-C	14619-C	14624-C	14629-C	14634-C
<b>FINGER SHOE</b>	<b>Logan Part No.</b>	<b>E30045</b>	...	<b>E3005</b>	<b>E3006</b>	<b>E3007</b>	<b>E3008</b>	<b>E3009</b>
	<b>Bowen No.</b>	22218	...	19406	22210	22211	22212	22213
	<b>Max. Dia. of Fish</b>	4-13/32	...	5-3/8	5-29/32	6-1/2	7-1/4	8-1/8
<b>MAGNET INSERTS</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>500-055</b>	<b>500-053</b>	<b>500-041</b>	<b>500-042</b>	<b>500-043</b>	<b>500-044</b>	<b>500-045</b>
	<b>Bowen No.</b>	61866	62637	61868	61874	61949	61955	61959
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4018</b>	<b>E4031</b>	<b>E4005</b>	<b>E4006</b>	<b>E4007</b>	<b>E4008</b>	<b>E4009</b>
	<b>Bowen No.</b>	M-61867	62638	M-61869	M-61875	M-61950	M-61956	M-61960
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-071</b>	<b>600-071</b>	<b>600-071</b>	<b>600-072</b>	<b>600-072</b>	<b>600-079</b>	<b>600-075</b>
	<b>Bowen No.</b>	61816	61816	61816	61818	61822	61824	61826

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Special Notes:

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.

When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

# LOGAN GENERAL CATALOG

OIL TOOLS

## CORE TYPE JUNK BASKETS

<b>HOLE SIZE</b>		10-1/4 to 11-5/8	11-3/4 to 12-1/2	12-5/8 to 15	15 to 20			
<b>BARREL O.D.</b>		9-3/8	10-3/8	11-3/8	13-3/4			
<b>SHOE O.D.</b>		10-1/8	11-1/4	12-1/4	14-1/2			
<b>MAXIMUM DIAMETER OF FISH</b>		8-1/16	9-1/16	10-1/16	12-1/16			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>301-938</b>	<b>301-1038</b>	<b>301-1138</b>	<b>301-1375</b>			
	Bowen No.	14635	14640	14645	14650			
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>E1010</b>	<b>E1011</b>	<b>E1012</b>	<b>E1013</b>			
	Bowen No.	14735	14736	14737	14738			
<b>BARREL</b>	<b>Logan Part No.</b>	<b>E2010</b>	<b>E2011</b>	<b>E2012</b>	<b>E2013</b>			
	Bowen No.	14636	14641	14646	14651			
<b>UPPER CATCHER</b>	<b>Logan Part No.</b>	<b>500-054</b>	<b>500-020</b>	<b>500-021</b>	<b>500-022</b>			
<b>ASSEMBLY (See Note 1)</b>	Bowen No.	14637-W	14642-W	14647-W	14652-W			
<b>LOWER CATCHER</b>	<b>Logan Part No.</b>	<b>500-032</b>	<b>500-033</b>	<b>500-034</b>	<b>500-035</b>			
<b>ASSEMBLY (See Note 1)</b>	Bowen No.	14638-W	14643-W	14648-W	14653-W			
<b>TYPE A MILL SHOE</b>	<b>Logan Part No.</b>	<b>E5010-A</b>	<b>E5011-A</b>	<b>E5012-A</b>	<b>E5013-A</b>			
<i>(Hard Faced Mill Teeth)</i>	Bowen No.	14639-A	14644-A	14649-A	14654-A			

## OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b>	<b>Logan Part No.</b>	<b>E5010-B</b>	<b>E5011-B</b>	<b>E5012-B</b>	<b>E5013-B</b>			
<i>(Tungsten Carbide Mill Teeth)</i>	Bowen No.	14639-B	14644-B	14649-B	14654-B			
<b>TYPE C MILL SHOE</b>	<b>Logan Part No.</b>	<b>E5010-C</b>	<b>E5011-C</b>	<b>E5012-C</b>	<b>E5013-C</b>			
<i>(Tungsten Carbide Faced)</i>	Bowen No.	14639-C	14644-C	14649-C	14654-C			
<b>FINGER SHOE</b>	<b>Logan Part No.</b>	<b>E3010</b>	<b>E3011</b>	<b>E3012</b>	<b>E3013</b>			
	Bowen No.	22214	22215	22216	22217			
	Max. Dia. of Fish	9-15/16	11	11-7/8	15-1/4			
<b>MAGNET INSERTS</b>	<b>Logan Part No.</b>	<b>500-046</b>	<b>500-047</b>	<b>500-048</b>	<b>500-049</b>			
<i>(Complete Assembly)</i>	Bowen No.	61969	61977	61979	61987			
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4010</b>	<b>E4011</b>	<b>E4012</b>	<b>E4013</b>			
	Bowen No.	M-61970	M-61978	M-61980	M-61988			
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-076</b>	<b>600-077</b>	<b>600-077</b>	<b>600-078</b>			
	Bowen No.	61828	61830	61830	61834			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Special Notes:

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.

When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

## REVERSE CIRCULATION JUNK BASKETS

### Overview

Utilizing the principal of reverse fluid circulation, the Logan Reverse Circulation Junk Basket has been designed to remove all types of small junk objects from the hole. The tool's drain feature eliminates pulling a wet string. Even when the tool is fitted with a magnet insert, reverse circulation is maintained.

### Construction

The Logan Reverse Circulation Junk Basket consists of a lifting sub, top sub, barrel, type A mill shoe, and a single junk catcher. A lifting sub is provided for ease of handling and for storage of the steel drop ball. Assemblies with two junk catchers are available upon request.

For component breakdown of the junk catcher assemblies, refer to the Junk Catcher Assemblies tables on pages 114 – 123.

### Optional Accessories

Mill shoes for all reverse circulation junk baskets are available in three types: A, B, and C.

#### Type A Mill Shoe

Conventional hard metal with side wings.

#### Type B Mill Shoe

Similar to the Type A design, but dressed with sintered tungsten carbide.

#### Type C Mill Shoe

Flat bottomed and dressed with sintered tungsten carbide.

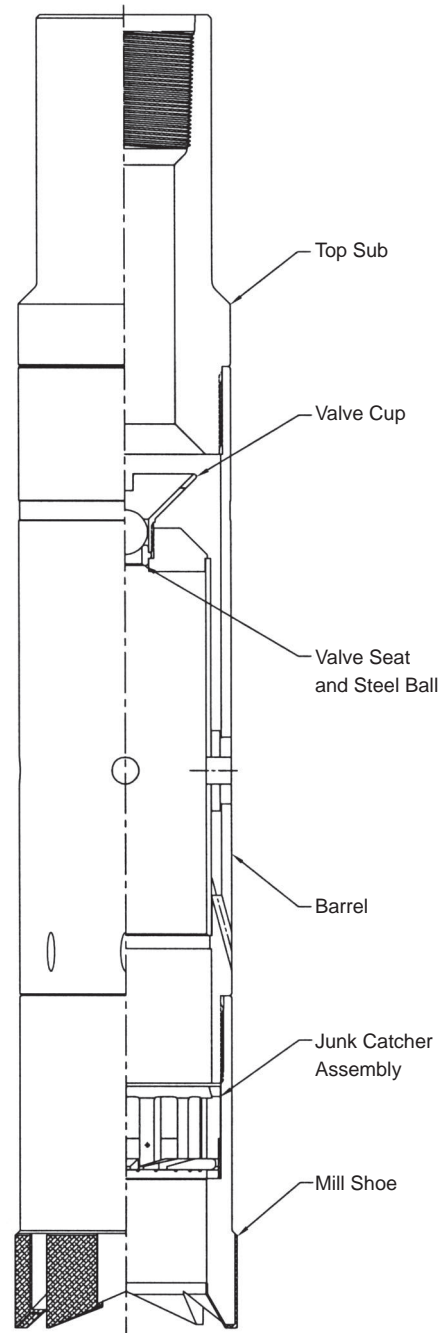
### Magnet Inserts

Reverse Circulation Junk Baskets can easily be converted to an effective fishing magnet by replacing the junk catcher assembly with a magnet insert.

### Operation

The Logan Reverse Circulation Junk Basket is made up to the bottom of the fishing string and lowered to a point within several feet from the bottom of the hole. Begin circulation to wash the hole. Stop circulation and drop the steel ball. (When the steel ball is dropped into the valve seat, circulation fluid travels outward and downward through the inner passage of the barrel and out through the vents in the lower end. The fluid is then deflected to the center of the tool and up through the return holes in the upper end of the barrel. This reverse fluid circulation carries the junk into the barrel above the junk catcher.)

Begin circulation again, slowly rotating while lowering the tool until a 10-inch core has been cut. Stop rotation and circulation and pull the tool from the hole.





## REVERSE CIRCULATION JUNK BASKETS

HOLE SIZE		3-3/4 to 4	4-1/8 to 4-1/2	4-5/8 to 5	5-1/8 to 5-1/2	5-11/16 to 6	6-1/8 to 6-1/2	6-5/8 to 7-3/8
<b>BARREL O.D.</b>		3-5/8	4	4-1/2	4-7/8	5-1/8	5-3/4	6-1/4
<b>MAXIMUM DIAMETER OF FISH</b>		2-11/32	2-17/32	3-1/16	3-9/16	3-3/4	4-13/32	4-3/4
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>302-363</b>	<b>302-400</b>	<b>302-450</b>	<b>302-487</b>	<b>302-513</b>	<b>302-575</b>	<b>302-625</b>
	Bowen No.	6635	7295	4448	4572	2618	2670	2677
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>D1000</b>	<b>D1001</b>	<b>D1002</b>	<b>D1003</b>	<b>D1004</b>	<b>D1005</b>	<b>D1006</b>
	Bowen No.	6636	7296	4449	4573	2619	2671	2678
<b>BARREL</b>	<b>Logan Part No.</b>	<b>D2000</b>	<b>D2001</b>	<b>D2002</b>	<b>D2003</b>	<b>D2004</b>	<b>D2005</b>	<b>D2006</b>
	Bowen No.	6637	7297	4450	4574	2620	2672	2679
<b>VALVE CUP</b>	<b>Logan Part No.</b>	<b>D3000</b>	<b>D3000</b>	<b>D3002</b>	<b>D3002</b>	<b>D3004</b>	<b>D3004</b>	<b>D3004</b>
	Bowen No.	6638	6638	4451	4451	2621	2621	2621
<b>STEEL BALL</b>	<b>Logan Part No.</b>	<b>D4000</b>	<b>D4000</b>	<b>D4002</b>	<b>D4002</b>	<b>D4004</b>	<b>D4004</b>	<b>D4004</b>
	Bowen No.	6640	6640	4453	4453	2623	2623	2623
<b>VALVE SEAT</b>	<b>Logan Part No.</b>	<b>D5000</b>	<b>D5000</b>	<b>D5002</b>	<b>D5002</b>	<b>D5004</b>	<b>D5004</b>	<b>D5004</b>
	Bowen No.	6639	6639	4452	4452	2622	2622	2622
<b>LIFTING SUB</b>	<b>Logan Part No.</b>	<b>D6000</b>	<b>D6000</b>	<b>D6002</b>	<b>D6002</b>	<b>D6004</b>	<b>D6004</b>	<b>D6006</b>
	Bowen No.	4568	4568	424	424	425	425	1849
<b>JUNK CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>600-015</b>	<b>600-016</b>	<b>600-017</b>	<b>600-018</b>	<b>600-019</b>	<b>600-020</b>	<b>600-021</b>
	Bowen No.	21795W	21855W	21780W	21790W	21735W	28349W	21750W
<b>TYPE A MILL SHOE</b> (Hard Faced Mill Teeth)	<b>Logan Part No.</b>	<b>D8000-A</b>	<b>D8001-A</b>	<b>D8002-A</b>	<b>D8003-A</b>	<b>D8004-A</b>	<b>D8005-A</b>	<b>D8006-A</b>
	Bowen No.	6642A	7299A	4455A	4576A	2625A	2676A	2683A

## OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b> (Tungsten Carbide Mill Teeth)	<b>Logan Part No.</b>	<b>D8000-B</b>	<b>D8001-B</b>	<b>D8002-B</b>	<b>D8003-B</b>	<b>D8004-B</b>	<b>D8005-B</b>	<b>D8006-B</b>
	Bowen No.	6642B	7299B	4455B	4576B	2625B	2676B	2683B
<b>TYPE C MILL SHOE</b> (Tungsten Carbide Faced)	<b>Logan Part No.</b>	<b>D8000-C</b>	<b>D8001-C</b>	<b>D8002-C</b>	<b>D8003-C</b>	<b>D8004-C</b>	<b>D8005-C</b>	<b>D8006-C</b>
	Bowen No.	6642C	7299C	4455C	4576C	2625C	2676C	2683C
<b>FINGER SHOES</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-100</b>	<b>600-101</b>	<b>600-102</b>	<b>600-103</b>	<b>600-104</b>	<b>600-105</b>	<b>600-106</b>
	Bowen No.	6643	7300	4456	4577	22208	22218	2739
	Max. Dia. of Fish	3-1/4	3-3/4	4-1/16	4 1/2	4-3/4	5-17/32	5-29/32
<b>BODY</b>	<b>Logan Part No.</b>	<b>D7000</b>	<b>D7001</b>	<b>D7002</b>	<b>D7003</b>	<b>D7004</b>	<b>D7005</b>	<b>D7006</b>
	Bowen No.	6643-2	7300-2	4456-2	4577-2	22208-2	22218-2	2739-2
<b>REPLACEMENT</b>	<b>Logan Part No.</b>	<b>D10000</b>	<b>D10001</b>	<b>D10002</b>	<b>D10003</b>	<b>D10004</b>	<b>D10005</b>	<b>D10006</b>
	Bowen No.	6643-1	7300-1	4456-1	4577-1	22208-1	22218-1	2739-1
<b>MAGNET INSERTS</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-045</b>	<b>600-046</b>	<b>600-047</b>	<b>600-048</b>	<b>600-049</b>	<b>600-050</b>	<b>600-051</b>
	Bowen No.	61836	61848	61840	61850	61852	61866	61872
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-068</b>	<b>600-069</b>	<b>600-069</b>	<b>600-070</b>	<b>600-070</b>	<b>600-071</b>	<b>600-072</b>
	Bowen No.	61810	61812	61812	61814	61814	61816	61818
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4028</b>	<b>E4029</b>	<b>E4016</b>	<b>E4030</b>	<b>E4003</b>	<b>E4018</b>	<b>E4019</b>
	Bowen No.	61837	61849	61841	61851	61853	61867	61873

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacements are furnished with the same O.D. as standard shoe unless otherwise specified.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

### Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

# LOGAN GENERAL CATALOG

## OIL TOOLS

### REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>		7-1/2 to 8-1/4	8-3/8 to 9-1/2	9-5/8 to 10-5/8	10-3/4 to 11-5/8	11-3/4 to 12-1/2	12-5/8 to 13-5/8	13-3/4 to 16
<b>BARREL O.D.</b>		7	7-7/8	9-1/8	10-1/8	11	11-7/8	13
<b>MAXIMUM DIAMETER OF FISH</b>		5-3/16	6-1/16	7-1/16	7-11/16	8-5/16	8-11/16	9-7/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>302-700</b>	<b>302-787</b>	<b>302-913</b>	<b>302-1013</b>	<b>302-1100</b>	<b>302-1187</b>	<b>302-1300</b>
	<b>Bowen No.</b>	2554	2567	2659	2684	2690	2696	2702
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>D1007</b>	<b>D1008</b>	<b>D1009</b>	<b>D1010</b>	<b>D1011</b>	<b>D1012</b>	<b>D1013</b>
	<b>Bowen No.</b>	2493	2568	2660	2685	2691	2697	2703
<b>BARREL</b>	<b>Logan Part No.</b>	<b>D2007</b>	<b>D2008</b>	<b>D2009</b>	<b>D2010</b>	<b>D2011</b>	<b>D2012</b>	<b>D2013</b>
	<b>Bowen No.</b>	2555	2569	2661	2686	2692	2698	2704
<b>VALVE CUP</b>	<b>Logan Part No.</b>	<b>D3007</b>	<b>D3007</b>	<b>D3009</b>	<b>D3009</b>	<b>D3009</b>	<b>D3009</b>	<b>D3009</b>
	<b>Bowen No.</b>	2570	2570	2662	2662	2662	2662	2662
<b>STEEL BALL</b>	<b>Logan Part No.</b>	<b>D4007</b>	<b>D4007</b>	<b>D4009</b>	<b>D4009</b>	<b>D4009</b>	<b>D4009</b>	<b>D4009</b>
	<b>Bowen No.</b>	2572	2572	2665	2665	2665	2665	2665
<b>VALVE SEAT</b>	<b>Logan Part No.</b>	<b>D5007</b>	<b>D5007</b>	<b>D5009</b>	<b>D5009</b>	<b>D5009</b>	<b>D5009</b>	<b>D5009</b>
	<b>Bowen No.</b>	2571	2571	2663	2663	2663	2663	2663
<b>LIFTING SUB</b>	<b>Logan Part No.</b>	<b>D6006</b>	<b>D6008</b>	<b>D6009</b>	<b>D6009</b>	<b>D6009</b>	<b>D6009</b>	<b>D6009</b>
	<b>Bowen No.</b>	1849	426	427	427	427	427	427
<b>JUNK CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>600-022</b>	<b>600-023</b>	<b>600-024</b>	<b>500-019</b>	<b>600-026</b>	<b>600-027</b>	<b>600-028</b>
	<b>Bowen No.</b>	21725W	18725W	14633W	18945W	21760W	21840W	21770W
<b>TYPE A MILL SHOE</b> (Hard faced Mill Teeth)	<b>Logan Part No.</b>	<b>D8007-A</b>	<b>D8008-A</b>	<b>D8009-A</b>	<b>D8010-A</b>	<b>D8011-A</b>	<b>D8012-A</b>	<b>D8013-A</b>
	<b>Bowen No.</b>	2556A	2574A	2668A	2689A	2695A	2701A	2707A

### OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b> (Tungsten Carbide Mill Teeth)	<b>Logan Part No.</b>	<b>D8007-B</b>	<b>D8008-B</b>	<b>D8009-B</b>	<b>D8010-B</b>	<b>D8011-B</b>	<b>D8012-B</b>	<b>D8013-B</b>
	<b>Bowen No.</b>	2556B	2574B	2668B	2689B	2695B	2701B	2707B
<b>TYPE C MILL SHOE</b> (Tungsten Carbide Faced)	<b>Logan Part No.</b>	<b>D8007-C</b>	<b>D8008-C</b>	<b>D8009-C</b>	<b>D8010-C</b>	<b>D8011-C</b>	<b>D8012-C</b>	<b>D8013-C</b>
	<b>Bowen No.</b>	2556C	2574C	2668C	2689C	2695C	2701C	2707C
<b>FINGER SHOES</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-107</b>	<b>600-108</b>	<b>600-109</b>	<b>600-110</b>	<b>600-111</b>	<b>600-112</b>	<b>600-113</b>
	<b>Bowen No.</b>	2740	2741	2742	2743	2744	2745	2746
	<b>Max. Dia. of Fish</b>	6-3/4	7-23/32	9	9-15/16	11	11-7/8	13
<b>BODY</b>	<b>Logan Part No.</b>	<b>D7007</b>	<b>D7008</b>	<b>D7009</b>	<b>D7010</b>	<b>D7011</b>	<b>D7012</b>	<b>D7013</b>
	<b>Bowen No.</b>	2740-2	2741-2	2742-2	2743-2	2744-2	2745-2	2746-2
<b>REPLACEMENT</b>	<b>Logan Part No.</b>	<b>D10007</b>	<b>D10008</b>	<b>D10009</b>	<b>D10010</b>	<b>D10011</b>	<b>D10012</b>	<b>D10013</b>
	<b>Bowen No.</b>	2740-1	2741-1	2742-1	2743-1	2744-1	2745-1	2746-1
<b>MAGNET INSERTS</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-052</b>	<b>600-053</b>	<b>600-054</b>	<b>600-055</b>	<b>600-056</b>	<b>600-057</b>	<b>600-058</b>
	<b>Bowen No.</b>	61947	61953	61965	61963	61973	61975	61983
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-073</b>	<b>600-074</b>	<b>600-075</b>	<b>600-075</b>	<b>600-076</b>	<b>600-076</b>	<b>600-077</b>
	<b>Bowen No.</b>	61820	61822	61826	61826	61828	61828	61830
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4020</b>	<b>E4021</b>	<b>E4022</b>	<b>E4023</b>	<b>E4024</b>	<b>E4025</b>	<b>E4026</b>
	<b>Bowen No.</b>	61948	61954	61966	61968	61974	61976	61982

Logan Oil Tools reserves the right to change or discontinue designs without notice.

#### Special Notes:

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacements are furnished with the same O.D. as standard shoe unless otherwise specified.

#### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

#### Recommended Spare Parts:

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

## REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>		16 to 17-1/2					
<b>BARREL O.D.</b>		15					
<b>MAXIMUM DIAMETER OF FISH</b>		11-1/8					
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>302-1500</b>					
	<b>Bowen No.</b>	2708					
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>D1014</b>					
	<b>Bowen No.</b>	2709					
<b>BARREL</b>	<b>Logan Part No.</b>	<b>D2014</b>					
	<b>Bowen No.</b>	2710					
<b>VALVE CUP</b>	<b>Logan Part No.</b>	<b>D3009</b>					
	<b>Bowen No.</b>	2662					
<b>STEEL BALL</b>	<b>Logan Part No.</b>	<b>D4009</b>					
	<b>Bowen No.</b>	2665					
<b>VALVE SEAT</b>	<b>Logan Part No.</b>	<b>D5009</b>					
	<b>Bowen No.</b>	2663					
<b>LIFTING SUB</b>	<b>Logan Part No.</b>	<b>D6009</b>					
	<b>Bowen No.</b>	427					
<b>JUNK CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b>	<b>600-029</b>					
	<b>Bowen No.</b>	21775W					
<b>TYPE A MILL SHOE</b> (Hard faced Mill Teeth)	<b>Logan Part No.</b>	<b>D8014-A</b>					
	<b>Bowen No.</b>	2713A					

## OPTIONAL COMPONENTS

<b>TYPE B MILL SHOE</b> (Tungsten Carbide Mill Teeth)	<b>Logan Part No.</b>	<b>D8014-B</b>					
	<b>Bowen No.</b>	2713B					
<b>TYPE C MILL SHOE</b> (Tungsten Carbide Faced)	<b>Logan Part No.</b>	<b>D8014-C</b>					
	<b>Bowen No.</b>	2713C					
<b>FINGER SHOES</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-114</b>					
	<b>Bowen No.</b>	2747					
	<b>Max. Dia. of Fish</b>	15-1/4					
<b>BODY</b>	<b>Logan Part No.</b>	<b>D7014</b>					
	<b>Bowen No.</b>	2747-2					
<b>REPLACEMENT</b>	<b>Logan Part No.</b>	<b>D10014</b>					
	<b>Bowen No.</b>	2747-1					
<b>MAGNET INSERTS</b> (Complete Assembly)	<b>Logan Part No.</b>	<b>600-059</b>					
	<b>Bowen No.</b>	61985					
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-078</b>					
	<b>Bowen No.</b>	61832					
<b>ADAPTER</b>	<b>Logan Part No.</b>	<b>E4027</b>					
	<b>Bowen No.</b>	61986					

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**Special Notes:**

- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacements are furnished with the same O.D. as standard shoe unless otherwise specified.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

**Recommended Spare Parts:**

- (1) 2 Upper Catchers
- (2) 2 Lower Catchers
- (3) 2 Mill Shoes
- (4) 2 Finger Shoes
- (5) 4 Finger Shoe Replacements

## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

### Overview

The Full Flow Reverse Circulation Junk Basket is similar to the Reverse Circulation Junk Basket. The unique difference is the Full Flow Valve Assembly that enables continuous circulation through the center thereby keeping out shale and debris while running in the hole. Premature reverse flow action caused by clogged valves is eliminated. The tool's drain feature eliminates pulling a wet string.

### Construction

The Full Flow Reverse Circulation Junk Basket consists of a lifting sub, top sub, barrel, full flow valve assembly, filter, type A mill shoe, and an upper and lower catcher.

A lifting sub is provided for ease of handling and for storage of the steel drop ball. The short fingers of the upper catcher are designed to break the core that has been cut by the mill shoe. The combination of short and long fingers of the lower catcher are designed to trap and retrieve the core and junk. Both catchers are free-revolving within the mill shoe, eliminating any breakage of the catcher fingers.

The full flow valve assembly consists of a steel ball, ball seat, ball seat retainer, four shear pins, and O-ring seals.

For component breakdown of the junk catcher assemblies, refer to the Junk Catcher Assemblies tables on pages 115 – 123.

### Optional Accessories

Mill shoes for all full flow reverse circulation junk baskets are available in three types: A, B, and C.

#### Type A Mill Shoe

Conventional hard metal with side wings.

#### Type B Mill Shoe

Similar to the Type A design, but dressed with sintered tungsten carbide.

#### Type C Mill Shoe

Flat bottomed and dressed with sintered tungsten carbide.

#### Magnet Inserts

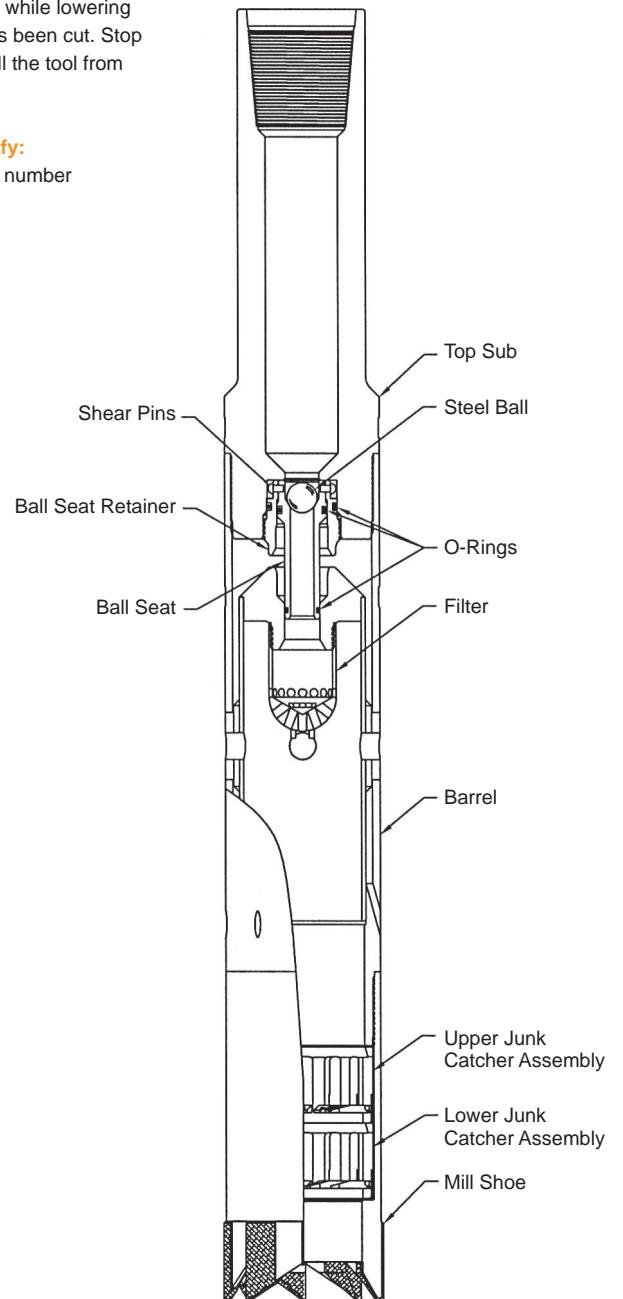
Full Flow Reverse Circulation Junk Baskets can easily be converted to an effective fishing magnet by replacing both junk catcher assemblies with a magnet insert.

### Operation

The Logan Full Flow Reverse Circulation Junk Basket is made up to the bottom of the fishing string and lowered to a point within several feet from the bottom of the hole. Begin circulation to wash the hole. Stop circulation and drop the steel ball. Begin circulation again to shear pins and actuate the valve assembly for reverse circulation. Begin slow rotation while lowering the tool until a 10-inch core has been cut. Stop rotation and circulation and pull the tool from the hole.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe



## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

HOLE SIZE	3-3/4 to 4	4-1/8 to 4-1/2	4-5/8 to 5	6-1/8 to 6-1/2	7-1/2 to 8-1/4	8-3/8 to 9-1/2	9-5/8 to 10-5/8
BARREL O.D.	3-5/8	4	4-1/2	5-3/4	7	7-7/8	9-1/8
MAXIMUM DIAMETER OF FISH	...	2-1/2	3-1/16	4-3/8	5-1/8	6-1/16	7-1/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 304-363	<b>304-400</b>	<b>304-450</b>	<b>304-575</b>	<b>304-700</b>	<b>304-788</b>	<b>304-913</b>
	Bowen No. 154583	71226	70702	71127	70908	70923	71198
<b>BALL SEAT</b>	<b>Logan Part No.</b> S1008	<b>S1000</b>	<b>S1002</b>	<b>S1002</b>	<b>S1003</b>	<b>S1003</b>	<b>S1005</b>
	Bowen No. 154601	70699	70851	70851	67354	67354	67168
<b>SHEAR PIN</b>	<b>Logan Part No.</b> S2008	<b>S2000</b>	<b>S2000</b>	<b>S2000</b>	<b>S2003</b>	<b>S2003</b>	<b>S2003</b>
	Bowen No. 154602	70852	70852	70852	67175	67175	67175
	No. Req'd 4	4	4	4	4	4	4
<b>UPPER JUNK CATCHER ASSEMBLY</b> <i>(See Note 1)</i>	<b>Logan Part No.</b> 14000-016	<b>14000-008</b>	<b>14000-009</b>	<b>500-051</b>	<b>14000-011</b>	<b>14000-012</b>	<b>14000-013</b>
	Bowen No. 154611	22070-W	22075-W	15130-W	22050-W	21640-W	14632-W
<b>LOWER JUNK CATCHER ASSEMBLY</b> <i>(See Note 1)</i>	<b>Logan Part No.</b> 600-015	<b>600-016</b>	<b>600-017</b>	<b>600-020</b>	<b>600-022</b>	<b>600-023</b>	<b>600-024</b>
	Bowen No. 21795W	21855-W	21780-W	28349-W	21725-W	18725-W	14633-W
<b>STEEL BALL</b>	<b>Logan Part No.</b> D4010	<b>D4000</b>	<b>D4002</b>	<b>D4002</b>	<b>D4007</b>	<b>D4007</b>	<b>D4009</b>
	Bowen No. 80295	6640	4453	4453	2572	2572	2665
<b>TOP SUB</b>	<b>Logan Part No.</b> S4008	<b>S4000</b>	<b>S4001</b>	<b>S4002</b>	<b>S4003</b>	<b>S4004</b>	<b>S4005</b>
	Bowen No. 154598	71227	71104	71125	70935	70926	71202
<b>BARREL</b>	<b>Logan Part No.</b> S5008	<b>S5000</b>	<b>S5001</b>	<b>S5002</b>	<b>S5003</b>	<b>S5004</b>	<b>S5005</b>
	Bowen No. 154599	71230	71116	71115	70911	70924	71203
<b>BALL SEAT RETAINER</b>	<b>Logan Part No.</b> S6008	<b>S6002</b>	<b>S6002</b>	<b>S6002</b>	<b>S6003</b>	<b>S6003</b>	<b>S6005</b>
	Bowen No. 154600	70850	70850	70850	67353	67353	67167
<b>FILTER</b>	<b>Logan Part No.</b> S7008	<b>S7002</b>	<b>S7002</b>	<b>S7002</b>	<b>S7003</b>	<b>S7003</b>	<b>S7005</b>
	Bowen No. 154603	80768	80768	80768	70731	70731	70764
<b>RETAINER</b>	<b>Logan Part No.</b> 568-225	<b>568-331</b>	<b>568-331</b>	<b>568-331</b>	<b>568-243</b>	<b>568-243</b>	<b>568-248</b>
<b>O-RING SEAL</b>	Bowen No. 568225	27-34	27-34	27-34	30-21	30-21	30-26
<b>UPPER SEAT</b>	<b>Logan Part No.</b> 568-118	<b>568-325</b>	<b>568-325</b>	<b>568-325</b>	<b>568-231</b>	<b>568-231</b>	<b>568-235</b>
<b>O-RING SEAL</b>	Bowen No. 568118	27-28	27-28	27-28	30-9	30-9	30-13
<b>LOWER SEAT</b>	<b>Logan Part No.</b> 568-118	<b>568-215</b>	<b>568-215</b>	<b>568-215</b>	<b>568-224</b>	<b>568-224</b>	<b>568-229</b>
<b>O-RING SEAL</b>	Bowen No. 568118	27-20	27-20	27-20	30-2	30-2	30-7
<b>MILL SHOE A</b> <i>(Hard Faced Mill Teeth)</i>	<b>Logan Part No.</b> S3008-A	<b>S3000-A</b>	<b>S3001-A</b>	<b>S3002-A</b>	<b>S3003-A</b>	<b>S3004-A</b>	<b>S3005-A</b>
	Bowen No. 154612	71228	70909	71124	72070	72081	71199

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- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>	3-3/4 to 4	4-1/8 to 4-1/2	4-5/8 to 5	6-1/8 to 6-1/2	7-1/2 to 8-1/4	8-3/8 to 9-1/2	9-5/8 to 10-5/8	
<b>BARREL O.D.</b>	3-5/8	4	4-1/2	5-3/4	7	7-7/8	9-1/8	
<b>MAXIMUM DIAMETER OF FISH</b>	...	2-1/2	3-1/16	4-3/8	5-1/8	6-1/16	7-1/16	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 304-363	<b>304-400</b>	<b>304-450</b>	<b>304-575</b>	<b>304-700</b>	<b>304-788</b>	<b>304-913</b>	
	Bowen No.	154583	71226	70702	71127	70908	70923	71198

## OPTIONAL COMPONENTS

<b>MILL SHOE B</b> <i>(Tungsten Carbide Mill Teeth)</i>	<b>Logan Part No.</b>	<b>S3008-B</b>	<b>S3000-B</b>	<b>S3001-B</b>	<b>S3002-B</b>	<b>S3003-B</b>	<b>S3004-B</b>	<b>S3005-B</b>
	Bowen No.	154612	71228	70909	71124	72070	72081	71199
<b>MILL SHOE C</b> <i>(Tungsten Carbide Faced)</i>	<b>Logan Part No.</b>	<b>S3008-C</b>	<b>S3000-C</b>	<b>S3001-C</b>	<b>S3002-C</b>	<b>S3003-C</b>	<b>S3004-C</b>	<b>S3005-C</b>
	Bowen No.	154612	71228	70909	71124	72070	72081	71199
<b>LIFTING SUB</b>	<b>Logan Part No.</b>	...	<b>D6000</b>	<b>D6002</b>	<b>D6004</b>	<b>D6006</b>	<b>D6008</b>	<b>D6009</b>
	Bowen No.	...	4568	424	425	1849	426	427
<b>PIPE PLUG</b>	<b>Logan Part No.</b>	...	<b>S9000</b>	<b>S9000</b>	<b>S9001</b>	<b>S9002</b>	<b>S9003</b>	<b>S9003</b>
	Bowen No.	...	61520	61520	61521	61522	61523	61523
<b>T-WRENCH</b>	<b>Logan Part No.</b>	...	<b>S10000</b>	<b>S10000</b>	<b>S10000</b>	<b>S10001</b>	<b>S10001</b>	<b>S10002</b>
	Bowen No.	...	72067	72067	72067	72069	72069	72068

## FINGER SHOE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	...	<b>600-101</b>	<b>600-102</b>	<b>600-115</b>	<b>600-107</b>	<b>600-108</b>	<b>600-109</b>
	Bowen No.	...	7300	4456	2738	2740	2741	2742
<b>BODY</b>	<b>Logan Part No.</b>	...	<b>D7001</b>	<b>D7002</b>	<b>D7015</b>	<b>D7007</b>	<b>D7008</b>	<b>D7009</b>
	Bowen No.	...	7300-2	4456-2	2738-2	2740-2	2741-2	2742-2
<b>REPLACEMENT</b>	<b>Logan Part No.</b>	...	<b>D10001</b>	<b>D10002</b>	<b>D10015</b>	<b>D10007</b>	<b>D10008</b>	<b>D10009</b>
	Bowen No.	...	7300-1	4456-1	2738-1	2740-1	2741-1	2742-1

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- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

### Recommended Spare Parts:

- (1) 2 Junk Catchers
- (2) 2 Mill Shoes
- (3) 1 Ball Seat
- (4) 1 Ball Seat Retainer
- (5) 1 Steel Ball
- (6) 4 Valve Repair Kits
- (7) 2 Catcher Repair Kits (for each assembly)

## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>	3-3/4 to 4	4-1/8 to 4-1/2	4-5/8 to 5	6-1/8 to 6-1/2	7-1/2 to 8-1/4	8-3/8 to 9-1/2	9-5/8 to 10-5/8	
<b>BARREL O.D.</b>	3-5/8	4	4-1/2	5-3/4	7	7-7/8	9-1/8	
<b>MAXIMUM DIAMETER OF FISH</b>	...	2-1/2	3-1/16	4-3/8	5-1/8	6-1/16	7-1/16	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>304-363</b>	<b>304-400</b>	<b>304-450</b>	<b>304-575</b>	<b>304-700</b>	<b>304-788</b>	<b>304-913</b>
	<b>Bowen No.</b>	154583	71226	70702	71127	70908	70923	71198

## MAGNET INSERTS

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	...	...	<b>600-047</b>	<b>600-050</b>	<b>600-052</b>	<b>600-053</b>	<b>600-054</b>
	<b>Bowen No.</b>	...	...	61840	61866	61876	61953	61961
<b>ADAPTER</b>	<b>Logan Part No.</b>	...	...	<b>E4016</b>	<b>E4018</b>	<b>E4020</b>	<b>E4021</b>	<b>E4022</b>
	<b>Bowen No.</b>	...	...	61841	61867	61948	61954	61966
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No.</b>	...	...	<b>600-069</b>	<b>600-071</b>	<b>600-073</b>	<b>600-074</b>	<b>600-075</b>
	<b>Bowen No.</b>	...	...	61812	61816	61820	61822	61826

## REPAIR KITS

<b>UPPER CATCHER</b>	<b>Logan Part No.</b>	...	<b>14000-008RK</b>	<b>14000-009RK</b>	<b>600-020RK</b>	<b>14000-011RK</b>	<b>14000-012RK</b>	<b>14000-013RK</b>
<b>REPAIR KITS</b>	<b>Bowen No.</b>	...	22070-WK	22075-WK	28349-WK	22050-WK	21640-WK	14632-WK
<b>LOWER CATCHER</b>	<b>Logan Part No.</b>	...	<b>600-016RK</b>	<b>600-017RK</b>	<b>500-051RK</b>	<b>600-022RK</b>	<b>600-023RK</b>	<b>600-024RK</b>
<b>REPAIR KITS</b>	<b>Bowen No.</b>	...	21855-WK	21780-WK	15130-WK	21725-WK	18725-WK	14633-WK
<b>VALVE REPAIR KIT</b>	<b>Logan Part No.</b>	...	<b>14000-032</b>	<b>14000-033</b>	<b>14000-034</b>	<b>14000-035</b>	<b>14000-036</b>	<b>14000-037</b>
	<b>Bowen No.</b>	...	72064	72062	72063	72058	72061	72065

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- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

### Recommended Spare Parts:

- (1) 2 Junk Catchers
- (2) 2 Mill Shoes
- (3) 1 Ball Seat
- (4) 1 Ball Seat Retainer
- (5) 1 Steel Ball
- (6) 4 Valve Repair Kits
- (7) 2 Catcher Repair Kits (for each assembly)

## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>	10-3/4 to 11-5/8	11- 3/4 to 12-1/2					
<b>BARREL O.D.</b>	10-1/8	11					
<b>MAXIMUM DIAMETER OF FISH</b>	7-11/16	8-5/16					
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 304-1013 Bowen No. 71218	<b>304-1100</b> 70910					
<b>BALL SEAT</b>	<b>Logan Part No.</b> S1005 Bowen No. 67168	<b>S1005</b> 67168					
<b>SHEAR PIN</b>	<b>Logan Part No.</b> S2003 Bowen No. 67175 No. Req'd 4	<b>S2003</b> 67175 4					
<b>UPPER JUNK CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b> 14000-014 Bowen No. 25235-W	<b>14000-015</b> 31046-W					
<b>LOWER JUNK CATCHER ASSEMBLY</b> (See Note 1)	<b>Logan Part No.</b> 500-019 Bowen No. 18945-W	<b>600-026</b> 21760-W					
<b>STEEL BALL</b>	<b>Logan Part No.</b> D4009 Bowen No. 2665	<b>D4009</b> 2665					
<b>TOP SUB</b>	<b>Logan Part No.</b> S4006 Bowen No. 71219	<b>S4007</b> 70920					
<b>BARREL</b>	<b>Logan Part No.</b> S5006 Bowen No. 71220	<b>S5007</b> 70921					
<b>BALL SEAT RETAINER</b>	<b>Logan Part No.</b> S6005 Bowen No. 67167	<b>S6005</b> 67167					
<b>FILTER</b>	<b>Logan Part No.</b> S7005 Bowen No. 70764	<b>S7005</b> 70764					
<b>RETAINER</b>	<b>Logan Part No.</b> 568-248 Bowen No. 30-26	<b>568-248</b> 30-26					
<b>O-RING SEAL</b>	<b>Logan Part No.</b> 568-235 Bowen No. 30-13	<b>568-235</b> 30-13					
<b>UPPER SEAT</b>	<b>Logan Part No.</b> 568-229 Bowen No. 30-7	<b>568-229</b> 30-7					
<b>O-RING SEAL</b>							

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- (1) For component breakdown of the junk catcher assemblies, refer to Junk Catcher Assemblies chart.
- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

**Recommended Spare Parts:**

- (1) 2 Junk Catchers
- (2) 2 Mill Shoes
- (3) 1 Ball Seat
- (4) 1 Ball Seat Retainer
- (5) 1 Steel Ball
- (6) 4 Valve Repair Kits
- (7) 2 Catcher Repair Kits (for each assembly)



## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>	10-3/4 to 11-5/8	11- 3/4 to 12-1/2				
<b>BARREL O.D.</b>	10-1/8	11				
<b>MAXIMUM DIAMETER OF FISH</b>	7-11/16	8-5/16				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 304-1013</b>	<b>304-1100</b>				
	Bowen No. 71218	70910				
<b>MILL SHOE A</b> <i>(Hard Faced Mill Teeth)</i>	<b>Logan Part No. S3006-A</b>	<b>S3007-A</b>				
	Bowen No. 72080	72071				
<b>MILL SHOE B</b> <i>(Tungsten Carbide Mill Teeth)</i>	<b>Logan Part No. S3006-B</b>	<b>S3007-B</b>				
	Bowen No. 72080	72071				
<b>MILL SHOE C</b> <i>(Tungsten Carbide Faced)</i>	<b>Logan Part No. S3006-C</b>	<b>S3007-C</b>				
	Bowen No. 72080	72071				
<b>LIFTING SUB</b>	<b>Logan Part No. D6009</b>	<b>D6009</b>				
	Bowen No. 427	427				
<b>PIPE PLUG</b>	<b>Logan Part No. S9003</b>	<b>S9003</b>				
	Bowen No. 61523	61523				
<b>T-WRENCH</b>	<b>Logan Part No. S10002</b>	<b>S10002</b>				
	Bowen No. 72068	72068				

## FINGER SHOE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 600-110</b>	<b>600-111</b>				
	Bowen No. 2743	2744				
<b>BODY</b>	<b>Logan Part No. D7010</b>	<b>D7011</b>				
	Bowen No. 2743-2	2744-2				
<b>REPLACEMENT</b>	<b>Logan Part No. D10010</b>	<b>D10011</b>				
	Bowen No. 2743-1	2744-1				

## MAGNET INSERTS

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 600-055</b>	<b>600-056</b>				
	Bowen No. 61963	61973				
<b>ADAPTER</b>	<b>Logan Part No. E4023</b>	<b>E4024</b>				
	Bowen No. 61968	61974				
<b>MAGNETIC ASSEMBLY</b>	<b>Logan Part No. 600-075</b>	<b>600-076</b>				
	Bowen No. 61826	61828				

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- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

### Recommended Spare Parts:

- (1) 2 Junk Catchers
- (2) 2 Mill Shoes
- (3) 1 Ball Seat
- (4) 1 Ball Seat Retainer
- (5) 1 Steel Ball
- (6) 4 Valve Repair Kits
- (7) 2 Catcher Repair Kits (for each assembly)

## FULL FLOW REVERSE CIRCULATION JUNK BASKETS

<b>HOLE SIZE</b>	10-3/4 to 11-5/8	11- 3/4 to 12-1/2				
<b>BARREL O.D.</b>	10-1/8	11				
<b>MAXIMUM DIAMETER OF FISH</b>	7-11/16	8-5/16				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 304-1013	<b>304-1100</b>				
	Bowen No. 71218	70910				

## REPAIR KITS

<b>UPPER CATCHER REPAIR KITS</b>	<b>Logan Part No.</b> 14000-14RK	<b>14000-015RK</b>				
	Bowen No. 25235-WK	31046-WK				
<b>LOWER CATCHER REPAIR KITS</b>	<b>Logan Part No.</b> 500-019RK	<b>600-026RK</b>				
	Bowen No. 18945-WK	21760-WK				
<b>VALVE REPAIR KIT</b>	<b>Logan Part No.</b> 14000-038	<b>14000-039</b>				
	Bowen No. 72059	72060				

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- (2) For type A, B, or C shoes: unless specified, shoes will be furnished with the same O.D. as minimum hole size shown.
- (3) Finger shoe replacement is furnished with the same O.D. as standard shoe unless otherwise specified.

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Top Sub connection
- (3) O.D. and type of shoe

**Recommended Spare Parts:**

- (1) 2 Junk Catchers
- (2) 2 Mill Shoes
- (3) 1 Ball Seat
- (4) 1 Ball Seat Retainer
- (5) 1 Steel Ball
- (6) 4 Valve Repair Kits
- (7) 2 Catcher Repair Kits (for each assembly)

## JUNK CATCHER ASSEMBLIES

### Overview

The alternately long and short fingers of the junk catcher assembly extend almost to the center of the basket to form a close-fitting receptacle that will retain small pieces of junk that may impede drilling progress or hold a core sample.

### Construction

The steel body design provides greater strength and durability. The retainer ring, retainer screws and springs are made of stainless steel to eliminate rust and corrosion problems. Fingers are inexpensive and can be easily replaced.

### Assembly

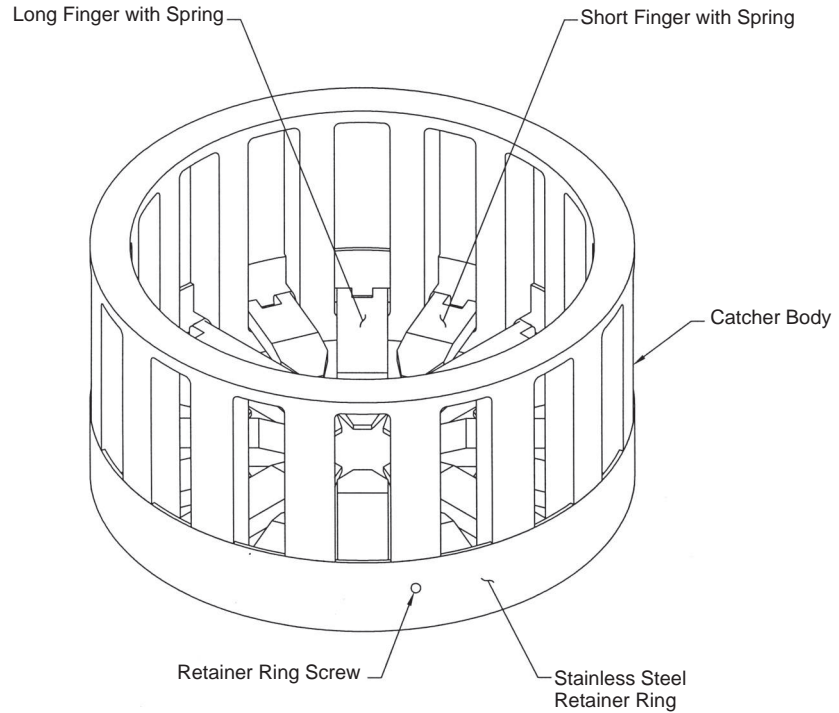
After redressing a junk catcher assembly, care must be taken to ensure that alternate long and short fingers are assembled in proper sequence.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws



### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		2-11/32	2-39/64	2-23/32	2-17/32	2-17/32	2-31/32	3-1/16
<b>OUTSIDE DIAMETER</b>		3-3/32	3-15/64	3-1/4	3-11/32	3-11/32	3-11/16	3-13/16
<b>LENGTH</b>		1-7/8	1-7/8	1-7/8	1-7/8	1-7/8	2-1/4	2-1/2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-015</b>	<b>600-031</b>	<b>500-023</b>	<b>14000-008</b>	<b>600-016</b>	<b>500-024</b>	<b>14000-009</b>
	Bowen No.	21795W	21810W	14593-W	22070-W	21855W	14589-W	22075-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>D11000</b>	<b>D11021</b>	<b>E7000</b>	<b>D11001</b>	<b>D11001</b>	<b>E7001</b>	<b>D11002</b>
	Bowen No.	56357	45542	45541	68366	68366	45590	45591
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>D12000</b>	<b>D12019</b>	<b>E8000</b>	<b>D12001</b>	<b>D12001</b>	<b>E8001</b>	<b>D12002</b>
	Bowen No.	56358	45538	45543	68367	68367	45562	45592
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9011</b>	<b>E9001</b>	<b>E9001</b>	<b>E9011</b>	<b>E9011</b>	<b>E9002</b>	<b>E9002</b>
	Bowen No.	68368	45539	45539	68368	68368	45574	45574
	Code	...	E	E	AD	...	W-3	R
	No. Req'd	4	5	5	8	4	5	10
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	Code	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E11012</b>	<b>E11000</b>	<b>E11000</b>	...	<b>E11012</b>	<b>E11001</b>	...
	Bowen No.	68369	45540	45540	...	68369	45575	...
	Code	...	F	F	...	...	W-4	...
	No. Req'd	4	5	5	...	4	5	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	<b>E12001</b>	<b>E12000</b>	<b>E12000</b>	<b>E12001</b>	<b>E12001</b>	<b>E12001</b>	<b>E12001</b>
	Bowen No.	45583	45535	45535	45583	45583	45583	45583
	Req'd	8	10	10	8	8	10	10
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13009</b>	<b>E13006</b>	<b>E13006</b>	<b>E13009</b>	<b>E13009</b>	<b>E13007</b>	<b>E13009</b>
	Bowen No.	45571	45567	45567	45571	45571	55958	45571
	No. Req'd	8	10	10	8	8	10	10
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>600-015RK</b>	<b>600-031RK</b>	<b>500-023RK</b>	<b>14000-008RK</b>	<b>600-016RK</b>	<b>500-024RK</b>	<b>14000-009RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	21795K	21810K	14593K	22070K	21855K	14589K	22075K

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		3-1/16	3-13/32	3-13/32	3-9/32	3-13/32	3-21/32	3-3/4
<b>OUTSIDE DIAMETER</b>		3-13/16	3-31/32	3-31/32	4	4-1/16	4-9/32	4-15/32
<b>LENGTH</b>		2-1/2	1-63/64	1-63/64	2-3/8	2-3/8	2-1/4	2-9/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-017</b>	<b>600-032</b>	<b>600-033</b>	<b>500-050</b>	<b>500-025</b>	<b>600-018</b>	<b>600-019</b>
	Bowen No.	21780W	21880W	21805W	14598-W	19377-W	21790W	21735W
<b>BODY</b>	<b>Logan Part No.</b>	<b>D11002</b>	<b>D11022</b>	<b>D11022</b>	<b>E70015</b>	<b>E7002</b>	<b>D11003</b>	<b>E7003</b>
	Bowen No.	45591	45565	45565	45568	45563	45579	45559
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>D12002</b>	<b>D12020</b>	<b>D12020</b>	<b>E80015</b>	<b>E8002</b>	<b>D12003</b>	<b>E8003</b>
	Bowen No.	45592	45566	45566	45569	45564	45580	45560
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9002</b>	<b>E9002</b>	<b>E9002</b>	<b>E90015</b>	<b>E90015</b>	<b>E9012</b>	<b>E9004</b>
	Bowen No.	45574	45574	45574	55962	55962	45581	45558
	Code	W-3	R	R	690-W	690-W	W-1	H
	No. Req'd	5	12	6	5	5	6	5
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	Code	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E11001</b>	...	<b>E11001</b>	<b>E11015</b>	<b>E11015</b>	<b>E11013</b>	<b>E11003</b>
	Bowen No.	45575	...	45575	55963	55963	45582	45561
	Code	W-4	...	W-4	691-W	691-W	W-2	I
	No. Req'd	5	...	6	5	5	6	5
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	<b>E12001</b>	<b>E12001</b>	<b>E12001</b>	<b>E12002</b>	<b>E12002</b>	<b>E12001</b>	...
	Bowen No.	45583	45583	45583	55957	55957	45583	...
	No. Req'd	10	12	12	10	10	12	...
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13009</b>	<b>E13009</b>	<b>E13009</b>	<b>E13007</b>	<b>E13007</b>	<b>E13009</b>	<b>E13000</b>
	Bowen No.	45571	45571	45571	55958	55958	45571	45520
	No. Req'd	10	12	12	10	10	12	10
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>600-017RK</b>	<b>600-032RK</b>	<b>600-033RK</b>	<b>500-050RK</b>	<b>500-025RK</b>	<b>600-018RK</b>	<b>600-019RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	21780K	21880K	21805K	14598K	19377K	21790K	21735K

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		3-3/4	3-3/4	4-3/32	4-1/16	4-1/16	4-13/32	4-13/32
<b>OUTSIDE DIAMETER</b>		4-15/32	4-15/32	4-3/4	4-7/8	4-7/8	5-5/32	5-5/32
<b>LENGTH</b>		2-9/16	2-9/16	2-1/2	2-25/32	2-25/32	2-13/16	1-13/32
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-083</b>	<b>500-026</b>	<b>600-062</b>	<b>500-014</b>	<b>500-027</b>	<b>600-020</b>	<b>600-067</b>
	Bowen No.	14747-W	14603-W	21820W	14607-W	14608-W	28349W	25250-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>E7003</b>	<b>E7003</b>	<b>D11015</b>	<b>E7004</b>	<b>E7004</b>	<b>D11004</b>	<b>D11019</b>
	Bowen No.	45559	45559	45595	45555	45555	45511	68375
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E8003</b>	<b>E8003</b>	<b>D12015</b>	<b>E8004</b>	<b>E8004</b>	<b>D12004</b>	<b>D12004</b>
	Bowen No.	45560	45560	45596	45556	45556	45519	45519
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9004</b>	<b>E9004</b>	<b>E9019</b>	<b>E9004</b>	<b>E9004</b>	<b>E9005</b>	<b>E9018</b>
	Bowen No.	45558	45558	45597	45558	45558	45517	68376
	Code	H	H	X-1	H	H	B	
	No. Req'd	10	5	6	12	6	8	12
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	Code	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	...	<b>E11003</b>	<b>E11020</b>	...	<b>E9013</b>	<b>E11006</b>	...
	Bowen No.	...	45561	45598	...	45557	45516	...
	Code	...	I	X-2	...	G	A	...
	No. Req'd	...	5	6	...	6	4	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	<b>E12010</b>	...	...	...	...
	Bowen No.	...	...	45599	...	...	...	...
	No. Req'd	...	...	12	...	...	...	...
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13000</b>	<b>E13000</b>	<b>E13009</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>
	Bowen No.	45520	45520	45571	45520	45520	45520	45520
	No. Req'd	10	10	12	12	12	12	12
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>600-083RK</b>	<b>500-026RK</b>	<b>600-062RK</b>	<b>500-014RK</b>	<b>500-027RK</b>	<b>600-020RK</b>	<b>600-067RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	14747K	14603K	21820K	14607K	14608K	28349K	25250K

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### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		4-13/32	4-5/16	4-5/16	4-17/32	4-17/32	4-3/4	4-13/16
<b>OUTSIDE DIAMETER</b>		5-5/32	5-5/16	5-5/16	5-13/32	5-13/32	5-5/8	5-23/32
<b>LENGTH</b>		2-13/16	2-7/8	2-7/8	2-7/8	2-7/8	2-5/8	3-1/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>500-051</b>	<b>600-065</b>	<b>600-066</b>	<b>500-015</b>	<b>500-028</b>	<b>600-021</b>	<b>500-016</b>
	Bowen No.	15130-W	14612-W	14613-W	19382-W	19383-W	21750W	14617-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>D11004</b>	<b>D11018</b>	<b>D11018</b>	<b>E7005</b>	<b>E7005</b>	<b>D11005</b>	<b>E7006</b>
	Bowen No.	45511	45572	45572	45553	45553	45584	45512
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>D12004</b>	<b>D12017</b>	<b>D12017</b>	<b>E8005</b>	<b>E8005</b>	<b>D12005</b>	<b>E8006</b>
	Bowen No.	45519	45573	45573	45554	45554	45585	45552
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>
	Bowen No.	45517	45517	45517	45517	45517	45517	45517
	Code	B	B	B	B	B	B	B
	No. Req'd	12	12	6	12	6	6	12
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	<b>E9013</b>	...	...	...	...
	Bowen No.	...	...	45557	...	...	...	...
	Code	...	...	G	...	...	...	...
	No. Req'd	...	...	3	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	...	...	<b>E11006</b>	...	<b>E11006</b>	<b>E11006</b>	...
	Bowen No.	...	...	45516	...	45516	45516	...
	Code	...	...	A	...	A	A	...
	No. Req'd	...	...	3	...	6	6	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>
	Bowen No.	45520	45520	45520	45520	45520	45520	45520
	No. Req'd	12	12	12	12	12	12	12
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>500-051RK</b>	<b>600-065RK</b>	<b>600-066RK</b>	<b>500-015RK</b>	<b>500-028RK</b>	<b>600-021RK</b>	<b>500-016RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	15130K	14612K	14613K	19382K	19383K	21750K	14617K

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### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		4-13/16	5-1/4	5-3/16	5-3/16	5-7/16	5-7/16	5-5/8
<b>OUTSIDE DIAMETER</b>		5-23/32	6-1/8	6-1/4	6-1/4	6-3/8	6-3/8	6-19/32
<b>LENGTH</b>		3-1/16	3-5/16	3-5/16	3-5/16	3	3-5/16	2-7/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>500-029</b>	<b>600-063</b>	<b>14000-011</b>	<b>600-022</b>	<b>500-017</b>	<b>500-030</b>	<b>600-060</b>
	Bowen No.	14618-W	18935-W	22050-W	21725W	14622-W	14623-W	21865W
<b>BODY</b>	<b>Logan Part No.</b>	<b>E7006</b>	<b>D11016</b>	<b>D11006</b>	<b>D11006</b>	<b>E7007</b>	<b>E7007</b>	<b>D11013</b>
	Bowen No.	45512	45513	45550	45550	45545	45545	45602
<b>FINGER RETAINER</b>	<b>Logan Part No.</b>	<b>E8006</b>	<b>D12016</b>	<b>D12006</b>	<b>D12006</b>	<b>E8007</b>	<b>E8007</b>	<b>D12014</b>
<i>(stainless steel)</i>	Bowen No.	45552	45527	45551	45551	45546	45546	45528
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9005</b>	<b>E9005</b>	<b>E9013</b>	<b>E9013</b>	<b>E9005</b>	<b>E9005</b>	<b>E9005</b>
	Bowen No.	45517	45517	45557	45557	45517	45517	45517
	Code	B	B	G	G	B	B	B
	No. Req'd	6	6	12	6	14	7	12
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	<b>E11006</b>	...	...	...	...	...
	Bowen No.	...	45516	...	...	...	...	...
	Code	...	A	...	...	...	...	...
	No. Req'd	...	3	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E11006</b>	<b>E11005</b>	...	<b>E11005</b>	...	<b>E11005</b>	...
	Bowen No.	45516	45518	...	45518	...	45518	...
	Code	A	C	...	C	...	C	...
	No. Req'd	6	3	...	6	...	7	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>TORSION SPRING *</b>	<b>Logan Part No.</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>	<b>E13000</b>
<i>(stainless steel)</i>	Bowen No.	45520	45520	45520	45520	45520	45520	45520
	No. Req'd	12	12	12	12	14	14	12
<b>* RETAINER SCREW</b>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
<i>(stainless steel)</i>	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>500-029RK</b>	<b>600-063RK</b>	<b>14000-011RK</b>	<b>600-022RK</b>	<b>500-017RK</b>	<b>500-030RK</b>	<b>600-060RK</b>
* Indicates parts included in kit	Bowen No.	14618K	18935K	22050K	21725K	14622K	14623K	21865K

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011



## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		5-5/8	6	6	6	6-3/16	6-3/16	6-1/2
<b>OUTSIDE DIAMETER</b>		6-19/32	7	7	7	7-1/8	7-1/8	7-7/16
<b>LENGTH</b>		3-5/8	1-23/32	3-7/16	3.44	3-13/16	3-13/16	3-1/2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-061</b>	<b>14000-012</b>	<b>600-023</b>	<b>600-085</b>	<b>500-018</b>	<b>500-031</b>	<b>600-030</b>
	Bowen No.	18936W	21640-W	18725W		14627-W	14628-W	18720-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>D11014</b>	<b>E7014</b>	<b>D11007</b>	<b>D11007</b>	<b>E7008</b>	<b>E7008</b>	<b>D11020</b>
	Bowen No.	45514	68382	45505	45505	45547	45547	45515
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>D12014</b>	<b>D12007</b>	<b>D12007</b>	<b>D12007</b>	<b>E8008</b>	<b>E8008</b>	<b>D12018</b>
	Bowen No.	45528	45506	45506	45506	45548	45548	45529
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9005</b>	<b>E9016</b>	<b>E9014</b>	<b>E9014</b>	<b>E9006</b>	<b>E9006</b>	<b>E9014</b>
	Bowen No.	45517	68383	45508	45508	47670	47670	45508
	Code	B	AH	K	K	362-W	362-W	K
	No. Req'd	6	12	6	12	12	6	6
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	Code	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E11005</b>	...	<b>E11014</b>	...	<b>E11007</b>	<b>E11014</b>	...
	Bowen No.	45518	...	45507	...	47669	45507	...
	Code	C	...	J	...	363-W	J	...
	No. Req'd	6	...	6	...	6	6	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	...	...	<b>E12008</b>	<b>E12008</b>	...
	Bowen No.	...	...	...	...	45536	45536	...
	No. Req'd	...	...	...	...	12	12	...
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13000</b>	<b>E13002</b>	<b>E13004</b>	<b>E13004</b>	<b>E13001</b>	<b>E13001</b>	<b>E13004</b>
	Bowen No.	45520	45549	45509	45509	45537	45537	45509
	No. Req'd	12	12	12	12	12	12	12
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>600-061RK</b>	<b>14000-012RK</b>	<b>600-023RK</b>	...	<b>500-018RK</b>	<b>500-031RK</b>	<b>600-030RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	18936K	21640K	18725K	...	14627K	14628K	18720K

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		7-1/16	7-3/16	7-3/16	7-11/16	7-13/16	7-13/16	8-1/16
<b>OUTSIDE DIAMETER</b>		7-7/8	8-1/8	8-1/8	9	9-1/32	9-1/32	9-5/16
<b>LENGTH</b>		4-5/16	4-5/16	4-5/16	4-5/8	2-5/16	4-5/8	5
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>600-034</b>	<b>14000-013</b>	<b>600-024</b>	<b>600-025</b>	<b>14000-014</b>	<b>500-019</b>	<b>500-054</b>
	Bowen No.	9800W	14632-W	14633W	21755W	25235-W	18945-W	14637-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>D11023</b>	<b>E7009</b>	<b>E7009</b>	<b>D11008</b>	<b>E7016</b>	<b>E7010</b>	<b>E7013</b>
	Bowen No.	68396	45521	45521	68116	68388	45522	45523
<b>FINGER RETAINER</b>	<b>Logan Part No.</b>	<b>D12021</b>	<b>D12008</b>	<b>D12008</b>	<b>D12009</b>	<b>E8010</b>	<b>E8010</b>	<b>E8013</b>
<i>(stainless steel)</i>	Bowen No.	68397	45530	45530	68117	45531	45531	45532
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9010</b>	<b>E9007</b>	<b>E9007</b>	<b>E11014</b>	<b>E9016</b>	<b>E11014</b>	<b>E9010</b>
	Bowen No.	45525	45588	45588	45507	68383	45507	45525
	Code	M	N	P-1	J	S	J	M
	No. Req'd	6	12	6	6	12	6	16
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	Code	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E10003</b>	...	<b>E11008</b>	<b>E11018</b>	...	<b>E11018</b>	...
	Bowen No.	45510	...	45589	70277	...	70277	...
	Code	L	...	P-2	J	...	J	...
	No. Req'd	6	...	6	6	...	6	...
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>TORSION SPRING *</b>	<b>Logan Part No.</b>	<b>E13002</b>	<b>E13002</b>	<b>E13002</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>
<i>(stainless steel)</i>	Bowen No.	45549	45549	45549	45509	45509	45509	45509
	No. Req'd	12	12	12	12	12	12	16
<b>RETAINER SCREW *</b>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
<i>(stainless steel)</i>	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>600-034RK</b>	<b>14000-013RK</b>	<b>600-024RK</b>	<b>600-025RK</b>	<b>14000-014RK</b>	<b>500-019RK</b>	<b>500-054RK</b>
<i>* Indicates parts included in kit</i>	Bowen No.	9800K	14632K	14633K	21755K	25235K	18945K	154611K

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		8-1/16	8-5/16	8-5/16	8-5/16	8-11/16	9-1/8	9-1/8
<b>OUTSIDE DIAMETER</b>		9-5/16	9-3/4	9-3/4	9-3/4	10-3/32	10-7/16	10-7/16
<b>LENGTH</b>		5	5	5	4-1/2	5-3/32	5-3/16	5-3/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>500-032</b>	<b>14000-015</b>	<b>600-026</b>	<b>600-064</b>	<b>600-027</b>	<b>500-020</b>	<b>500-033</b>
	Bowen No.	14638-W	31046-W	21760W	22000-W	21840W	14642-W	14643-W
<b>BODY</b>	<b>Logan Part No.</b>	<b>E7013</b>	<b>D11009</b>	<b>D11009</b>	<b>D11017</b>	<b>D11010</b>	<b>E7011</b>	<b>E7011</b>
	Bowen No.	45523	45576	45576	45577	45593	45524	45524
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E8013</b>	<b>D12010</b>	<b>D12010</b>	<b>D12010</b>	<b>D12011</b>	<b>E8011</b>	<b>E8011</b>
	Bowen No.	45532	45578	45578	45578	45594	45533	45533
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	<b>E9010</b>	<b>E9010</b>	<b>E9010</b>	<b>E9010</b>	<b>E11014</b>	<b>E11014</b>	<b>E11014</b>
	Bowen No.	45525	45525	45525	45525	45507	45507	45507
	Code	M	M	M	M	J	J	J
	No. Req'd	8	16	8	16	8	16	8
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	<b>E11014</b>	...	<b>E10003</b>	...	<b>E10003</b>	...	<b>E10003</b>
	Bowen No.	45507	...	45510	...	45510	...	45510
	Code	J	...	L	...	L	...	L
	No. Req'd	4	...	4	...	4	...	4
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	<b>E11017</b>	...	<b>E11010</b>	...	<b>E11010</b>	...	<b>E11010</b>
	Bowen No.	68295	...	45526	...	45526	...	45526
	Code	N	...	N	...	N	...	N
	No. Req'd	4	...	4	...	4	...	4
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>	<b>E13004</b>
	Bowen No.	45509	45509	45509	45509	45509	45509	45509
	No. Req'd	16	16	16	16	16	16	16
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>	<b>E14000</b>
	Bowen No.	42257	42257	42257	42257	42257	42257	42257
	No. Req'd	2	2	2	2	2	2	2
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	<b>500-032RK</b>	<b>14000-015RK</b>	<b>600-026RK</b>	<b>600-064RK</b>	<b>600-027RK</b>	<b>500-020RK</b>	<b>500-033RK</b>
	Bowen No.	14638K	31046K	21760K	22000K	21840K	14642K	14643K

\* Indicates parts included in kit

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## JUNK CATCHER ASSEMBLIES

<b>INSIDE DIAMETER</b>		10-1/8	10-1/8	9-7/8	11-3/16	12-3/8	12-3/8	
<b>OUTSIDE DIAMETER</b>		11-3/8	11-3/8	11-21/32	13-5/8	13-13/16	13-13/16	
<b>LENGTH</b>		6	6	5-31/32	7-5/16	7-7/8	7-7/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	500-021	500-034	600-028	600-029	500-022	500-035	
	<b>Bowen No.</b>	14647-W	14648-W	21770W	21775W	14652-W	14653-W	
<b>BODY</b>	<b>Logan Part No.</b>	E7012	E7012	D11011	D11012	E7015	E7015	
	<b>Bowen No.</b>	45586	45586	64810	45605	68391	68391	
<b>FINGER RETAINER</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	E8012	E8012	D12012	D12013	E8014	E8014	
	<b>Bowen No.</b>	45587	45587	64811	45606	68392	68392	
<b>SHORT FINGER *</b>	<b>Logan Part No.</b>	E9009	E9009	E9009	E9015	E9017	E9017	
	<b>Bowen No.</b>	666	666	666	45607	68393	68393	
	<b>Code</b>	666-W	666-W	666-W	21778-W			
	<b>No. Req'd</b>	16	8	8	7	14	7	
<b>MEDIUM FINGER *</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	
	<b>Bowen No.</b>	...	...	...	...	...	...	
	<b>Code</b>	...	...	...	...	...	...	
	<b>No. Req'd</b>	...	...	...	...	...	...	
<b>LONG FINGER *</b>	<b>Logan Part No.</b>	...	E11011	E11011	E11016	...	E11019	
	<b>Bowen No.</b>	...	667	667	45608	...	68395	
	<b>Code</b>	...	667-W	667-W	21779-W	...	...	
	<b>No. Req'd</b>	...	8	8	7	...	7	
<b>PIVOT PIN *</b>	<b>Logan Part No.</b>	E12012	E12012	E12012	E12009	E12013	E12013	
	<b>Bowen No.</b>	45603	45603	45603	45609	68394	68394	
	<b>No. Req'd</b>	16	16	16	14	14	14	
<b>TORSION SPRING *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	E13005	E13005	E13005	E13010	E13004	E13004	
	<b>Bowen No.</b>	45604	45604	45604	45610	45509	45509	
	<b>No. Req'd</b>	16	16	16	14	14	14	
<b>RETAINER SCREW *</b> <i>(stainless steel)</i>	<b>Logan Part No.</b>	E14000	E14000	E14000	E14000	E14000	E14000	
	<b>Bowen No.</b>	42257	42257	42257	42257	42257	42257	
	<b>No. Req'd</b>	2	2	2	2	2	2	
<b>REPAIR KITS</b>	<b>Logan Part No.</b>	500-021RK	500-034RK	600-028RK	600-029RK	500-022RK	500-035RK	
<i>* Indicates parts included in kit</i>	<b>Bowen No.</b>	1464K	14648K	21770K	21775K	14652K	14653K	

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Finger number and code, when ordering fingers

### Recommended Spare Parts:

- (1) 2 Sets of Fingers
- (2) 4 Sets of Torsion Springs
- (3) 1 Set of Pivot Pins
- (4) 4 Retainer Screws

### Special Notes:

- (1) Code: Each finger is stenciled with a letter or letter-number code. These codes are used in lieu of the part number because of space limitation. See the Finger Code Chart below to cross-reference the code with the part number.

### Finger Code Chart

Code	Part No.	Code	Part No.	Code	Part No.	Code	Part No.
A	E11006	I	E11003	P-1	E9007	21778-W	E9015
B	E9005	J	E11014	P-2	E11008	21779-W	E11016
C	E11005	K	E9014	W-1	E9012	362-W	E9006
D	—	L	E10003	W-2	E11013	363-W	E11007
E	E9001	M	E9010	W-3	E9002	690-W	E90015
F	E11000	N	E11010	W-4	E11001	691-W	E11015
G	E9013	O	—	X-1	E9019	666-W	E9009
H	E9004	P	—	X-2	E11020	667-W	E11011

## FISHING MAGNETS AND MAGNET CHARGER

### Overview

The Logan Fishing Magnet is designed to retrieve small metal, oddly-shaped objects such as milling shavings, bit cones, cutters, bearings, slips, tong pins, and hand tools from the bottom of the well bore. Typically, these objects are the result of bit failures, an accumulation of mill cuttings, or simply accidental droppings of unmillable objects. In almost all of these cases, the fish can not be engaged in the normal manner. Fishing magnets successfully remove these objects from the hole. The tool's design features generous circulation ports that wash away cuttings and other debris that might interfere with or prevent contact with the magnet. A variety of guides are available to accommodate any retrieval situation.

### Construction

The Logan Fishing Magnet Assembly consists of a body, integral housing, integral pole plate, magnet element, and standard flush guide.

The body is manufactured from high strength alloy steel. It has a tool joint pin top connection and generous circulation ports.

The magnet element is the most efficient and powerful permanent magnet available. The magnet can be recharged if necessary.

The magnet body, housing, and pole plate are threaded and welded together during assembly with the magnet element in place.

The standard flush bottom guide is threaded and easily removed. Lipped guides and mill guides are also available.

### Operation

Logan Fishing Magnets are usually run on tubing or drill pipe, but can be run on wireline. Wireline adapters are available.

The Logan Fishing Magnet is made up to the bottom of the fishing string and lowered into the hole to within six to twelve inches of the fish. Circulate to wash the fish. Reduce circulation and lower the fishing magnet to the fish. Slowly rotate to ensure positive contact. Discontinue circulation and lift the fishing magnet from the hole.

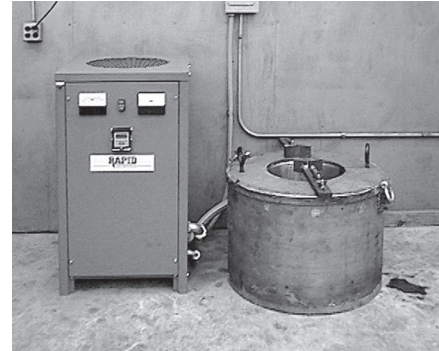
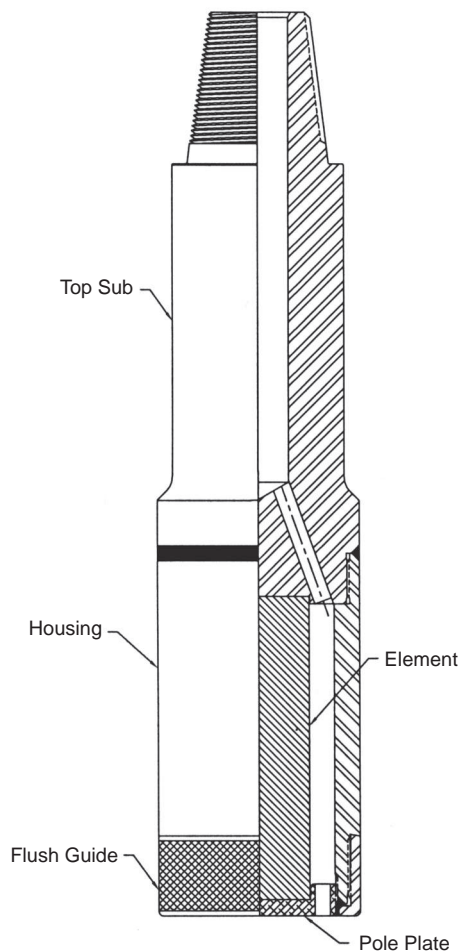
### Optional Accessories

#### Guides

A flush guide is standard. Lipped guides and mill guides are also available. The lipped guide centralizes the fish to assure contact with the magnet. The mill guide enables milling of any soft formation or settling to free debris at the bottom of the hole.

#### Keepers

While magnets should not lose their strength during normal use, storing the magnet in the vicinity of an electric motor or bringing magnets too close to each other can adversely affect their charge. Keepers are recommended when storing magnets to reduce the attraction of miscellaneous metal objects or particles. A keeper is required for shipment via air freight.

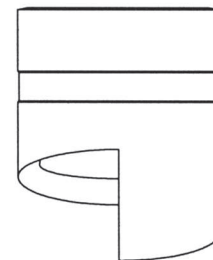


### Magnet Chargers

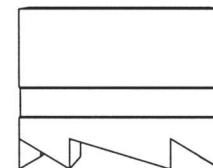
Recharging is quick and easy with our state-of-the-art control console. There is no limit to the number of times a magnet can be recharged. Logan Magnet Chargers ensure maximum charging efficiencies with ease of operation and long-life durability.

#### When ordering, please specify:

- (1) Name and number of assembly
- (2) Size – O.D.
- (3) Top connection, if other than standard



Lipped Guide



Mill Guide

## FISHING MAGNETS

HOLE SIZE	1-1/4 to 2	1-5/8 to 2-1/2	2 to 2-3/4	2-3/8 to 3-1/4	2-3/4 to 3-5/8	3 to 3-3/4	3-1/4 to 4-1/8	
O.D. OF BODY	1	1-1/4	1-1/2	1-3/4	2-1/4	2-1/2	3	
TOP CONNECTION	5/8-11 UNC	5/8 SR	5/8 SR	3/4 SR	3/4 SR	3/4 SR	2-3/8 Tbg	
APPROXIMATE PULL IN LBS.	5 to 7	8 to 10	11 to 14	15 to 20	25 to 80	80 to 85	85 to 190	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>306-100</b>	<b>306-125</b>	<b>306-150</b>	<b>306-175</b>	<b>306-225</b>	<b>306-250</b>	<b>306-300</b>
	Bowen No.	32060	32080	32100	32120	32150	32170	32180
<b>BODY</b>	<b>Logan Part No.</b>	...	<b>V1000</b>	<b>V1001</b>	<b>V1002</b>	<b>V1003</b>	<b>V1004</b>	<b>V1005</b>
	Bowen No.	...	32081	32101	32121	32151	32171	32181
<b>HOUSING</b>	<b>Logan Part No.</b>	<b>V20005</b>	<b>V2000</b>	<b>V2001</b>	<b>V2002</b>	<b>V2003</b>	<b>V2004</b>	<b>V2005</b>
	Bowen No.	32062	32082	32102	32122	32152	32172	32182
<b>POLE PLATE</b>	<b>Logan Part No.</b>	<b>V30005</b>	<b>V3000</b>	<b>V3001</b>	<b>V3002</b>	<b>V3003</b>	<b>V3004</b>	<b>V3005</b>
	Bowen No.	32063	32083	32103	32123	32153	32173	32183
<b>MAGNETIC ELEMENT</b>	<b>Logan Part No.</b>	<b>V4000</b>	<b>V4000</b>	<b>V4001</b>	<b>V4002</b>	<b>V4003</b>	<b>V4004</b>	<b>V4005</b>
	Bowen No.	32064	32084	32104	32124	32154	32174	32184
<b>FLUSH GUIDE</b>	<b>Logan Part No.</b>	...	<b>V6000</b>	<b>V6001</b>	<b>V6002</b>	<b>V6003</b>	<b>V6004</b>	<b>V6005</b>
	Bowen No.	...	32085	32105	32125	32155	32175	32185
<b>LIFTING CAP</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Connection	...	...	...	...	...	...	...

## OPTIONAL COMPONENTS

<b>CUT-LIPPED GUIDE</b>	<b>Logan Part No.</b>	...	<b>V6000</b>	<b>V6001</b>	<b>V6002</b>	<b>V6003</b>	<b>V6004</b>	<b>V6005</b>
	Bowen No.	...	32085	32105	32125	32155	32175	32185
<b>MILL GUIDE</b>	<b>Logan Part No.</b>	...	<b>V6000</b>	<b>V6001</b>	<b>V6002</b>	<b>V6003</b>	<b>V6004</b>	<b>V6005</b>
	Bowen No.	...	32085	32105	32125	32155	32175	32185
<b>ADAPTER – 5/8" SUCKER ROD</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>ADAPTER – 3/4" SUCKER ROD</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	<b>V7005</b>
	Bowen No.	...	...	...	...	...	...	70513
<b>KEEPER</b>	<b>Logan Part No.</b>	<b>V90005</b>	<b>V9000</b>	<b>V9001</b>	<b>V9002</b>	<b>V9003</b>	<b>V9004</b>	<b>V9005</b>
	Bowen No.	...	66005	66008	74731	74732	66014	71716

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

*Special Notes:*

*(1) Guides left oversized are extra charge. Magnets shipped via air freight must include a Keeper.*

**When ordering, please specify:**

- (1) Name and number of assembly
- (2) Size – O.D.
- (3) Top connection, if other than standard

**Recommended Accessories:**

- (1) 1 Lipped Guide
- (2) 1 Mill Guide

## FISHING MAGNETS

<b>HOLE SIZE</b>		4 to 4-1/4	4-1/4 to 4-1/2	4-1/2 to 5	5-1/8 to 5-1/2	5-5/8 to 6	6-1/8 to 6-1/2	6-1/8 to 6-1/2
<b>O.D. OF BODY</b>		3-1/4	3-1/2	4	4-1/2	5	5-1/2	5-3/4
<b>TOP CONNECTION</b>		2-3/8 Tbg	2-3/8 API Reg	2-3/8 API Reg	2-7/8 API Reg	2-7/8 API Reg	3-1/2 API Reg	3-1/2 API Reg
<b>APPROXIMATE PULL IN LBS.</b>		85 to 190	150 to 250	175 to 250	250 to 320	320 to 385	385 to 425	385 to 435
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>306-325</b>	<b>306-350</b>	<b>306-400</b>	<b>306-450</b>	<b>306-500</b>	<b>306-550</b>	<b>306-575</b>
	Bowen No.	32190	32210	32230	32240	32260	32270	32280
<b>BODY</b>	<b>Logan Part No.</b>	<b>V1006</b>	<b>V1007</b>	<b>V1008</b>	<b>V1009</b>	<b>V1010</b>	<b>V1011</b>	<b>V1012</b>
	Bowen No.	32191	32211	32231	32241	32261	32271	32281
<b>HOUSING</b>	<b>Logan Part No.</b>	<b>V2006</b>	<b>V2007</b>	<b>V2008</b>	<b>V2009</b>	<b>V2010</b>	<b>V2011</b>	<b>V2012</b>
	Bowen No.	32192	32212	32232	32242	32262	32272	32282
<b>POLE PLATE</b>	<b>Logan Part No.</b>	<b>V3006</b>	<b>V3007</b>	<b>V3008</b>	<b>V3009</b>	<b>V3010</b>	<b>V3011</b>	<b>V3012</b>
	Bowen No.	32193	32213	32233	32243	32263	32273	32283
<b>MAGNETIC ELEMENT</b>	<b>Logan Part No.</b>	<b>V4006</b>	<b>V4007</b>	<b>V4008</b>	<b>V4009</b>	<b>V4010</b>	<b>V4011</b>	<b>V4012</b>
	Bowen No.	32194	32214	32234	32244	32264	32274	32274
<b>FLUSH GUIDE</b>	<b>Logan Part No.</b>	<b>V6006</b>	<b>V6007</b>	<b>V6008</b>	<b>V6009</b>	<b>V6010</b>	<b>V6011</b>	<b>V6012</b>
	Bowen No.	32195	32215	32235	32245	32265	32275	32285
<b>LIFTING CAP</b>	<b>Logan Part No.</b>	...	<b>V8000</b>	<b>V8000</b>	<b>V8001</b>	<b>V8001</b>	<b>V8002</b>	<b>V8002</b>
	Connection	...	2-3/8 API Reg	2-3/8 API Reg	2-7/8 API Reg	2-7/8 API Reg	3-1/2 API Reg	3-1/2 API Reg

## OPTIONAL COMPONENTS

<b>CUT-LIPPED GUIDE</b>	<b>Logan Part No.</b>	<b>V6006</b>	<b>V6007</b>	<b>V6008</b>	<b>V6009</b>	<b>V6010</b>	<b>V6011</b>	<b>V6012</b>
	Bowen No.	32195	32215	32235	32245	32265	32275	32285
<b>MILL GUIDE</b>	<b>Logan Part No.</b>	<b>V6006</b>	<b>V6007</b>	<b>V6008</b>	<b>V6009</b>	<b>V6010</b>	<b>V6011</b>	<b>V6012</b>
	Bowen No.	32195	32215	32235	32245	32265	32275	32285
<b>ADAPTER — 5/8" SUCKER ROD</b>	<b>Logan Part No.</b>	...	...	<b>V5008</b>	<b>V5009</b>	<b>V5009</b>	<b>V5011</b>	<b>V5011</b>
	Bowen No.	...	...	62250	62252	62252	62254	62254
<b>ADAPTER — 3/4" SUCKER ROD</b>	<b>Logan Part No.</b>	<b>V7005</b>	...	<b>V7008</b>	<b>V7009</b>	<b>V7009</b>	<b>V7011</b>	<b>V7011</b>
	Bowen No.	70513	...	62251	62253	62253	62255	62255
<b>KEEPER</b>	<b>Logan Part No.</b>	<b>V9006</b>	<b>V9007</b>	<b>V9008</b>	<b>V9009</b>	<b>V9010</b>	<b>V9011</b>	<b>V9012</b>
	Bowen No.	66016	66021	66026	66027	66030	66031	74962

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*Special Notes:*

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**When ordering, please specify:**

- (1) Name and number of assembly
- (2) Size – O.D.
- (3) Top connection, if other than standard

**Recommended Accessories:**

- (1) 1 Lipped Guide
- (2) 1 Mill Guide

# LOGAN GENERAL CATALOG

OIL TOOLS

## FISHING MAGNETS

<b>HOLE SIZE</b>		6-5/8 to 7-1/2	7-5/8 to 8-1/2	8-5/8 to 9-3/4	9-7/8 to 11-5/8	10-1/2 to 11-7/8	11-3/4 to 13	12-1/4 to 14
<b>O.D. OF BODY</b>		6	7	8	9	10	10-1/2	11-1/2
<b>TOP CONNECTION</b>		3-1/2 API Reg	4-1/2 API Reg	4-1/2 API Reg	4-1/2 API Reg	6-5/8 API Reg	6-5/8 API Reg	6-5/8 API Reg
<b>APPROXIMATE PULL IN LBS.</b>		425 to 500	550 to 700	700 to 850	850 to 1,000	1,000 to 1,125	1,125 to 1,260	1,260 to 1,550
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>306-600</b>	<b>306-700</b>	<b>306-800</b>	<b>306-900</b>	<b>306-1000</b>	<b>306-1050</b>	<b>306-1150</b>
	<b>Bowen No.</b>	32290	32300	32310	32330	32340	32350	32370
<b>BODY</b>	<b>Logan Part No.</b>	<b>V1013</b>	<b>V1014</b>	<b>V1015</b>	<b>V1016</b>	<b>V1017</b>	<b>V1018</b>	<b>V1019</b>
	<b>Bowen No.</b>	32291	32301	32311	32331	32341	32351	32371
<b>HOUSING</b>	<b>Logan Part No.</b>	<b>V2013</b>	<b>V2014</b>	<b>V2015</b>	<b>V2016</b>	<b>V2017</b>	<b>V2018</b>	<b>V2019</b>
	<b>Bowen No.</b>	32292	32302	32312	32332	32342	32352	32372
<b>POLE PLATE</b>	<b>Logan Part No.</b>	<b>V3013</b>	<b>V3014</b>	<b>V3015</b>	<b>V3016</b>	<b>V3017</b>	<b>V3017</b>	<b>V3019</b>
	<b>Bowen No.</b>	32293	32303	32313	32333	32343	32343	32373
<b>MAGNETIC ELEMENT</b>	<b>Logan Part No.</b>	<b>V4013</b>	<b>V4014</b>	<b>V4015</b>	<b>V4016</b>	<b>V4017</b>	<b>V4017</b>	<b>V4019</b>
	<b>Bowen No.</b>	32294	32304	32314	32334	32344	32344	32374
<b>FLUSH GUIDE</b>	<b>Logan Part No.</b>	<b>V6013</b>	<b>V6014</b>	<b>V6015</b>	<b>V6016</b>	<b>V6017</b>	<b>V6018</b>	<b>V6019</b>
	<b>Bowen No.</b>	32295	32305	32315	32335	32345	32355	32375
<b>LIFTING CAP</b>	<b>Logan Part No.</b>	<b>V8002</b>	<b>V8003</b>	<b>V8003</b>	<b>V8003</b>	<b>V8004</b>	<b>V8004</b>	<b>V8004</b>
	<b>Connection</b>	3-1/2 API Reg	4-1/2 API Reg	4-1/2 API Reg	4-1/2 API Reg	6-5/8 API Reg	6-5/8 API Reg	6-5/8 API Reg

## OPTIONAL COMPONENTS

<b>CUT-LIPPED GUIDE</b>	<b>Logan Part No.</b>	<b>V6013</b>	<b>V6014</b>	<b>V6015</b>	<b>V6016</b>	<b>V6017</b>	<b>V6018</b>	<b>V6019</b>
	<b>Bowen No.</b>	32295	32305	32315	32335	32345	32355	32375
<b>MILL GUIDE</b>	<b>Logan Part No.</b>	<b>V6013</b>	<b>V6014</b>	<b>V6015</b>	<b>V6016</b>	<b>V6017</b>	<b>V6018</b>	<b>V6019</b>
	<b>Bowen No.</b>	32295	32305	32315	32335	32345	32355	32375
<b>ADAPTER — 5/8" SUCKER ROD</b>	<b>Logan Part No.</b>	<b>V5011</b>	<b>V5014</b>	<b>V5014</b>	<b>V5014</b>	<b>V5017</b>	<b>V5017</b>	<b>V5017</b>
	<b>Bowen No.</b>	62254	62256	62256	62256	62258	62258	62258
<b>ADAPTER — 3/4" SUCKER ROD</b>	<b>Logan Part No.</b>	<b>V7011</b>	<b>V7014</b>	<b>V7014</b>	<b>V7014</b>	<b>V7017</b>	<b>V7017</b>	<b>V7017</b>
	<b>Bowen No.</b>	62255	62257	62257	62257	62259	62259	62259
<b>KEEPER</b>	<b>Logan Part No.</b>	<b>V9013</b>	<b>V9014</b>	<b>V9015</b>	<b>V9016</b>	<b>V9017</b>	<b>V9017</b>	<b>V9019</b>
	<b>Bowen No.</b>	66039	56181	66041	66044	66045	66045	66218

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*Special Notes:*

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**When ordering, please specify:**

- (1) Name and number of assembly
- (2) Size – O.D.
- (3) Top connection, if other than standard

**Recommended Accessories:**

- (1) 1 Lipped Guide
- (2) 1 Mill Guide



# LOGAN GENERAL CATALOG

OIL TOOLS

## FISHING MAGNETS

<b>HOLE SIZE</b>		15	17	20				
<b>O.D. OF BODY</b>		14	16	19				
<b>TOP CONNECTION</b>		6-5/8 API Reg	6-5/8 API Reg	7-5/8 API Reg				
<b>APPROXIMATE PULL IN LBS.</b>		1,700 to 2,100	3,200 to 4,000	4,200 to 5,000				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>306-1400</b>	<b>306-1600</b>	<b>306-1900</b>				
	Bowen No.	32380	79183	79189				
<b>BODY</b>	<b>Logan Part No.</b>	<b>V1020</b>	<b>V1021</b>	<b>V1022</b>				
	Bowen No.	32381	145730	79190				
<b>HOUSING</b>	<b>Logan Part No.</b>	<b>V2020</b>	<b>V2021</b>	<b>V2022</b>				
	Bowen No.	32382	145731	79191				
<b>POLE PLATE</b>	<b>Logan Part No.</b>	<b>V3020</b>	<b>V3021</b>	<b>V3022</b>				
	Bowen No.	32383	145732	79192				
<b>MAGNETIC ELEMENT</b>	<b>Logan Part No.</b>	<b>V4020</b>	<b>V4020</b>	<b>V4022</b>				
	Bowen No.	32384	32384	79193				
<b>FLUSH GUIDE</b>	<b>Logan Part No.</b>	<b>V6020</b>	<b>V6021</b>	<b>V6022</b>				
	Bowen No.	32385	79188	79194				
<b>LIFTING CAP</b>	<b>Logan Part No.</b>	<b>V8004</b>	<b>V8004</b>	<b>V8005</b>				
	Connection	6-5/8 API Reg	6-5/8 API Reg	7-5/8 API Reg				

## OPTIONAL COMPONENTS

<b>CUT-LIPPED GUIDE</b>	<b>Logan Part No.</b>	<b>V6020</b>	<b>V6021</b>	<b>V6022</b>				
	Bowen No.	32385	79188	79194				
<b>MILL GUIDE</b>	<b>Logan Part No.</b>	<b>V6020</b>	<b>V6021</b>	<b>V6022</b>				
	Bowen No.	32385	79188	79194				
<b>ADAPTER — 5/8" SUCKER ROD</b>	<b>Logan Part No.</b>	<b>V5017</b>	...	...				
	Bowen No.	62258	...	...				
<b>ADAPTER — 3/4" SUCKER ROD</b>	<b>Logan Part No.</b>	<b>V7017</b>	...	...				
	Bowen No.	62259	...	...				
<b>KEEPER</b>	<b>Logan Part No.</b>	<b>V9020</b>	<b>V9021</b>	<b>V9022</b>				
	Bowen No.	66219	145867	...				

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*Special Notes:*

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**When ordering, please specify:**

- (1) Name and number of assembly
- (2) Size – O.D.
- (3) Top connection, if other than standard

**Recommended Accessories:**

- (1) 1 Lipped Guide
- (2) 1 Mill Guide

## HEAVY-DUTY DITCH MAGNETS

### Overview

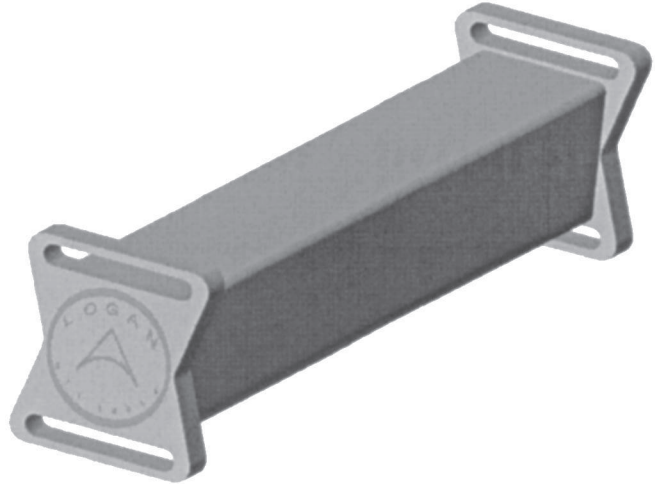
The Logan Ditch Magnet is the most effective means available to trap and remove metal particles from drilling mud missed by the shale shaker. The ditch magnet will capture all magnetized metals. During milling operations, the magnet is particularly valuable for the removal of mill cuttings and debris that cause wear on mud pumps and other equipment. It eliminates the problems caused by harmful debris returned downhole and is equally effective in both wash-over and fishing jobs.

### Construction

The clean, simple design eliminates the use of trays, gates, and other extra equipment. The magnet is encased in stainless steel and has integral handles at each end for lifting.

### Operation

The ditch magnet is most effective when it is suspended by soft line in the mud ditch before the shale shaker, or in the shaker discharge. Depending on milling rate, the unit should be cleaned with fresh or salt water and cuttings wiped away several times per day. The unit may be cleaned less often when cuttings come at a slow rate.



LENGTH (INCHES)		18	24	36			
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	305-018	305-024	305-036			
	Bowen No.	...	152761	79162			
<b>KEEPER</b>	Logan Part No.	DMK-018	DMK-024	DMK-036			

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

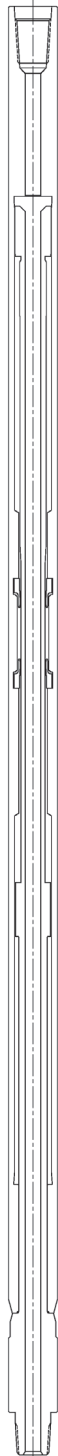
#### Special Notes:

(1) Magnets shipped via air freight must include a Keeper set.

#### When ordering, please specify:

(1) Name and number of magnet

**NOTES**



## BI-DIRECTIONAL COILED TUBING JARS

### Overview

The Logan Bi-Directional Coiled Tubing Jar is designed to hit upward and downward blows. It can be dressed to only hit up or down. These tools' small outside diameters and shorter lengths make them ideal for milling, drilling, workover, remedial, or completion operations, especially in vertical, deviated, and ultra-deep wellbores. Independent hydraulic timers respond to any push or pull load. The Logan Bi-Directional Coiled Tubing Jar operates by straight push or pull with splines that are engaged at all times.

### Construction

Logan Bi-Directional Coiled Tubing Jars are hydrostatically pressure balanced and can operate at any depth. They can be dressed with special packing to withstand temperatures above 350° F.

### Assembly

The Logan Bi-Directional Coiled Tubing Jar is shipped in the closed (cocked) position. The Jar should not be suspended in this position, especially with any weight suspended below it, as the Jar may unintentionally fire and cause equipment damage or bodily harm.

### Operation

The Logan Bi-Directional Coiled Tubing Jar operates by straight push or pull and has splines that are engaged at all times. For maximum effectiveness, it is recommended that the Logan Bi-Directional Coiled Tubing Jar be run in combination with a Logan Bi-Directional Coiled Tubing Energizer.

The Logan Bi-Directional Coiled Tubing Jar should be carefully examined prior to use to ensure it has been properly assembled and filled with coiled tubing jar fluid. The tool should be tested in a jar tester prior to field use. All connections should be checked to ensure that they have been tightened to the proper torque.

At no time during the push/pull cycle should the maximum push/pull load be exceeded. (See Strength Data Chart below for push/pull loads.) It is recommended that the operator use a low initial load — 30% to 50% of the maximum load — so the effects of the jarring action can be reviewed before the jarring load is increased.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Outside diameter
- (3) Connections, if other than standard
- (4) Name and number of any desired spares
- (5) Outside diameter of spare parts

## SPECIFICATIONS

COMPLETE ASSEMBLY	616-169	616-213	616-288
<b>OUTSIDE DIAMETER (INCHES)</b>	1-11/16 (1.708)	2-1/8 (2.156)	2-7/8 (2.906)
<b>MINIMUM INSIDE DIAMETER (INCHES)</b>	17/32 (.530)	21/32 (.656)	29/32 (.906)
<b>CONNECTION</b>	1 AM MT	1-1/4 API REG	2-3/8 PAC
<b>LENGTH - FULLY CLOSED (FEET &amp; INCHES)</b>	4' - 6-13/16"	5' - 4-9/16"	5' - 10-13/16"
<b>TOTAL STROKE (INCHES)</b>	8-3/4	9 *	9-1/4
<b>PUMP OPEN AREA (SQ IN)</b>	1.28	2.23 *	3.98

## STRENGTH AND TEST DATA

COMPLETE ASSEMBLY	616-169	616-213	616-288
<b>OUTSIDE DIAMETER (INCHES)</b>	1-11/16 (1.708)	2-1/8 (2.156)	2-7/8 (2.906)
<b>TEST LOADS:</b>			
Up	12,000	24,000 *	35,000
Down	1,500 †	2,500 †	4,000 †
<b>MAX PUSH/PULL LOAD (LBS)</b>	12,000 †	24,000 * †	35,000 †
Jar with Energizer:			
No weight bars between tools	13,500	24,000 *	40,000
With at least one weight bar between tools	15,500	30,000 *	50,000
All Other Cases	15,500	30,000 *	50,000
<b>MAX LIFT LOAD AFTER JARRING</b>			
<b>JAR FULLY EXTENDED</b>	69,000	125,000	225,000
<b>TENSILE @ YIELD (LBS)</b>			
<b>TORQUE @ YIELD (FT-LBS)</b>	800	1,700	4,000 *

\* Data pending

† Requires special filling procedure. Do not over fill.

## BI-DIRECTIONAL COILED TUBING JARS

OUTSIDE DIAMETER - INCHES		1-11/16	2-1/8	2-7/8
INSIDE DIAMETER - INCHES		17/32	21/32	29/32
CONNECTION SIZE (BOX UP)		1" AMMT	1-1/2 AMMT	2-3/8 PAC
CONNECTION SIZE (PIN DOWN)		1" AMMT	1-1/2 AMMT	2-3/8 PAC
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>616-169</b>	<b>616-213</b>	<b>616-288</b>
<b>COMPONENT PARTS</b>				
TOP SUB	Logan Part No.	CC1000	CC1002	CC1004
TOP SUB SEAL	Logan Part No.	568122	568128	568226
PRESSURE BODY	Logan Part No.	CC2000	CC2002	CC2004
PRESSURE BODY NON-EXTRUSION RING	Logan Part No.	CC14000	CC14002	CC14004
PRESSURE BODY SEAL PROTECTOR RING	Logan Part No.	8-025	8-128	8-226
PRESSURE BODY SEAL	Logan Part No.	568025	568128	568226
PISTON BODY	Logan Part No.	CC3000	CC3002	CC3004
FLOATER BODY	Logan Part No.	CC4000	CC4002	CC4004
FLOATER BODY NON-EXTRUSION RING	Logan Part No.	CC14000	CC14002	CC14004
FLOATER BODY SEAL PROTECTOR RING	Logan Part No.	8-025	8-128	8-226
FLOATER BODY SEAL	Logan Part No.	568025	568128	568226
SPLINE BODY	Logan Part No.	CC5000	CC5002	CC5004
MANDREL	Logan Part No.	CC6000	CC6002	CC6004
MANDREL ID SEAL	Logan Part No.	568118	568120	568220
MANDREL EXTENSION	Logan Part No.	CC7000	CC7002	CC7004
NUT	Logan Part No.	CC8000	CC8002	CC8004
NUT ID SEAL PROTECTOR RING	Logan Part No.	8-117	8-120	8-220
NUT ID SEAL	Logan Part No.	568118	568120	568220
NUT OD NON-EXTRUSION RING	Logan Part No.	CC15000	CC15002	CC15004
	No. Req'd	2	2	2
NUT OD SEAL PROTECTOR RING	Logan Part No.	8-121	8-221	8-327
	No. Req'd	2	2	2
NUT OD SEAL	Logan Part No.	568914	568221	568327
NUT OD OPTISEAL	Logan Part No.	CC19000-001	CC19002-001	CC19004-001
UP PISTON	Logan Part No.	CC9000	CC9002	CC9004
DOWN PISTON	Logan Part No.	CC10000	CC10002	CC10004
FLOATER	Logan Part No.	CC11000	CC11002	CC11004
FLOATER ID NON-EXTRUSION RING	Logan Part No.	CC13000	CC13002	CC13004
FLOATER ID SEAL PROTECTOR RING	Logan Part No.	8-117	8-120	8-220
FLOATER ID SEAL	Logan Part No.	568911	568120	568220
FLOATER ID OPTISEAL	Logan Part No.	CC19000-002	CC22002	CC22004
FLOATER OD NON-EXTRUSION RING	Logan Part No.	CC15000	CC15002	CC15004
FLOATER OD SEAL PROTECTOR RING	Logan Part No.	8-121	8-221	8-327
FLOATER OD SEAL	Logan Part No.	568914	568221	568327
FLOATER OD OPTISEAL	Logan Part No.	CC19000-001	CC19002-001	CC19004-001
SPLINE	Logan Part No.	CC12000	CC12002	CC12004
	No. Req'd	2	2	4

## BI-DIRECTIONAL COILED TUBING JARS

### REDRESS KIT

<i>Consists of:</i>	<b>Logan Part No.</b>	<b>CC21000</b>	<b>CC21002</b>	<b>CC21004</b>
<b>FLOATER ID NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC13000</b>	<b>CC13002</b>	<b>CC13004</b>
	No. Req'd	1	1	1
<b>PRESSURE &amp; FLOATER BODY OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC14000</b>	<b>CC14002</b>	<b>CC14004</b>
	No. Req'd	2	2	2
<b>FLOATER &amp; NUT OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC15000</b>	<b>CC15002</b>	<b>CC15004</b>
	No. Req'd	3	3	3
<b>SEAL KIT *</b>	<b>Logan Part No.</b>	<b>CC20000</b>	<b>CC20002</b>	<b>CC20004</b>
	No. Req'd	1	1	1
<b>SPLINE</b>	<b>Logan Part No.</b>	<b>CC12000</b>	<b>CC12002</b>	<b>CC12004</b>
	No. Req'd	2	2	4

\* Seal Kit includes O-Rings, Seal Protector Rings, and Opti-Seals.

### REQUIRED ACCESSORIES

COMBINATION WRENCH SIZE FOR MANDREL EXTENSION - INCHES		13/16	1	1-3/8
	No. Req'd	2	2	2
SIX-POINT SOCKET SIZE FOR NUT - INCHES		7/8	1-1/8	1-1/2
<b>FLOATER ID SETTING TOOL</b>	<b>Logan Part No.</b>	<b>CC17000</b>	<b>CC17002</b>	<b>CC17004</b>
<b>FLOATER REMOVAL TOOL</b>	<b>Logan Part No.</b>	<b>CC18000</b>	<b>CC18002</b>	<b>CC18004</b>
<b>POLYPAK STRETCHER **</b>	<b>Logan Part No.</b>	<b>CD11000</b>	<b>CD11002</b>	<b>CD11004</b>
<b>POLYPAK INSTALLATION TOOL **</b>	<b>Logan Part No.</b>	<b>CD12000</b>	<b>CD12002</b>	<b>CD12004</b>

\*\* Used for installing seals onto OD of Nut and Floater

## BI-DIRECTIONAL COILED TUBING ENERGIZERS

### Overview

The double-acting, Logan Bi-Directional Coiled Tubing Energizer is an impact enhancement tool designed for slim holes (generally a well bore less than 6 inches in diameter). Its function is to supply intensified impact during the jarring operation by providing or enhancing jar impact from energy stored within its oil-filled compression chambers. It also functions as a shock absorber that prevents impact damage to the tool string at the bottom of the coil, which is often referred to as the bottom hole assembly or BHA. A Logan Bi-Directional Coiled Tubing Energizer is recommended any time a Logan Bi-Directional Coiled Tubing Jar is included in the work string.

### Construction

Each size of Logan Bi-Directional Coiled Tubing Energizer is designed to match the corresponding size of Logan Bi-Directional Coiled Tubing Jar. The pull, push, torque, and lift loads are equal to or exceed those of the matching Logan Bi-Directional Coiled Tubing Jar.

Logan Bi-Directional Coiled Tubing Energizers are hydrostatically pressure balanced and have automatic oil thermal compensation. The independent push (compression) and pull (tension) oil-filled chambers are sealed and isolated from each other to prevent contamination.

### Operation

The Logan Bi-Directional Coiled Tubing Energizer is run in conjunction with a Logan Bi-Directional Coiled Tubing Jar of the same size. It operates by straight push or pull and has splines that are engaged at all times. The Bi-Directional Coiled Tubing Energizer is essentially a fluid spring, which stores energy when a strain is pulled on the fishing string. When the strain is removed by the free stroke of the Bi-Directional Coiled Tubing Jar, the stored energy is released, accelerating portions of the tool and the weight bars until a blow of high impact is struck. The Bi-Directional Coiled Tubing Energizer absorbs much of the jarring shock from the rebounding string to protect the bottom hole assembly from damage.

The Logan Bi-Directional Coiled Tubing Energizer can be run at any depth. It can be dressed with special packing to withstand temperatures above 350° F. The Bi-Directional Coiled Tubing Energizer is also capable of transmitting torque for downhole motors. (See Strength Data below.)

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Outside diameter
- (3) Connections, if other than standard
- (4) Name and number of any desired spares
- (5) Outside diameter of spare parts

## SPECIFICATIONS

COMPLETE ASSEMBLY	617-169	617-213	617-288
OUTSIDE DIAMETER (INCHES)	1-11/16 (1.708)	2-1/8 (2.156)	2-7/8 (2.906)
MINIMUM INSIDE DIAMETER (INCHES)	17/32 (.530)	21/32 (.656) *	29/32 (.906)
CONNECTION	1 AM MT	1-1/4 API REG *	2-3/8 PAC
LENGTH - FULLY CLOSED (FEET & INCHES)	4' - 3-5/16"	5" - 9-3/16"	6' - 11/16"
TOTAL STROKE (INCHES)	3.95	5.50	6
PUMP OPEN AREA (SQ IN)	1.128	2.23 *	3.98

## STRENGTH AND TEST DATA

COMPLETE ASSEMBLY	617-169	617-213	617-288
OUTSIDE DIAMETER (INCHES)	1-11/16 (1.708)	2-1/8 (2.156)	2-7/8 (2.906)
MAX PUSH/PULL LOAD (LBS)			
Jar with Energizer:			
No weight bars between tools	13,500	24,000 *	40,000
With at least one weight bar between tools	15,500	30,000 *	50,000
All Other Cases	15,500	30,000 *	50,000
MAX LIFT LOAD AFTER JARRING			
JAR FULLY EXTENDED	69,000	125,000 *	225,000 *
TENSILE @ YIELD (LBS)			
TORQUE @ YIELD (FT-LBS)	800	1,700 *	4,000 *

\* Data pending



## BI-DIRECTIONAL COILED TUBING ENERGIZERS

OUTSIDE DIAMETER - INCHES		1-11/16	2-1/8	2-7/8
INSIDE DIAMETER - INCHES		17/32	21/32	29/32
CONNECTION SIZE (BOX UP)		1" AMMT	1-1/2 AMMT	2-3/8 PAC
CONNECTION SIZE (PIN DOWN)		1" AMMT	1-1/2 AMMT	2-3/8 PAC
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>617-169</b>	<b>617-213</b>	<b>617-288</b>
<b>COMPONENT PARTS</b>				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>CC1000</b>	<b>CC1002</b>	<b>CC1004</b>
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568122</b>	<b>568128</b>	<b>568226</b>
<b>UPPER PRESSURE BODY</b>	<b>Logan Part No.</b>	<b>CD2000</b>	<b>CD2002</b>	<b>CD2004</b>
<b>UPPER PRESSURE BODY OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC14000</b>	<b>CC14002</b>	<b>CC14004</b>
<b>UPPER PRESSURE BODY OD SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-025</b>	<b>8-128</b>	<b>8-226</b>
<b>UPPER PRESSURE BODY OD SEAL</b>	<b>Logan Part No.</b>	<b>568025</b>	<b>568128</b>	<b>568226</b>
<b>UPPER PRESSURE BODY ID NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CD4000</b>	<b>CD4002</b>	<b>CD4004</b>
	No. Req'd	2	2	2
<b>UPPER PRESSURE BODY ID SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-120</b>	<b>8-217</b>	<b>8-223</b>
	No. Req'd	2	2	2
<b>UPPER PRESSURE BODY ID SEAL</b>	<b>Logan Part No.</b>	<b>568120</b>	<b>568216</b>	<b>568224</b>
<b>LOWER PRESSURE BODY</b>	<b>Logan Part No.</b>	<b>CD3000</b>	<b>CD3002</b>	<b>CD3004</b>
<b>SPLINE BODY</b>	<b>Logan Part No.</b>	<b>CD5000</b>	<b>CC5002</b>	<b>CC5004</b>
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>CD6000</b>	<b>CD6002</b>	<b>CD6004</b>
<b>MANDREL ID SEAL</b>	<b>Logan Part No.</b>	<b>568118</b>	<b>568120</b>	<b>568220</b>
<b>MANDREL OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC15000</b>	<b>CC15002</b>	<b>CC15004</b>
<b>MANDREL OD SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-121</b>	<b>8-221</b>	<b>8-327</b>
<b>MANDREL OD SEAL</b>	<b>Logan Part No.</b>	<b>568914</b>	<b>568221</b>	<b>568327</b>
<b>MANDREL OD POLYPAK</b>	<b>Logan Part No.</b>	<b>BD209-11</b>	<b>BD209-13</b>	<b>BD209-12</b>
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	<b>CD7000</b>	<b>CD7002</b>	<b>CD7004</b>
<b>NUT</b>	<b>Logan Part No.</b>	<b>CD8000</b>	<b>CC8002</b>	<b>CC8004</b>
<b>NUT ID SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-118</b>	<b>8-120</b>	<b>8-220</b>
<b>NUT ID SEAL</b>	<b>Logan Part No.</b>	<b>568118</b>	<b>568120</b>	<b>568220</b>
<b>NUT OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC15000</b>	<b>CC15002</b>	<b>CC15004</b>
	No. Req'd	2	2	2
<b>NUT OD SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-121</b>	<b>8-221</b>	<b>8-327</b>
	No. Req'd	2	2	2
<b>NUT OD SEAL</b>	<b>Logan Part No.</b>	<b>568914</b>	<b>568120</b>	<b>568327</b>
<b>NUT OD OPTISEAL</b>	<b>Logan Part No.</b>	<b>CC19000-001</b>	<b>CC19002-001</b>	<b>CC19004-001</b>
<b>SPLINE</b>	<b>Logan Part No.</b>	<b>CC12000</b>	<b>CC12002</b>	<b>CC12004</b>
	No. Req'd	2	2	4
<b>REDRESS KIT</b>	<b>Logan Part No.</b>	<b>CD10000</b>	<b>CD10002</b>	<b>CD10004</b>
<i>Consists of:</i>				
<b>UPPER PRESSURE BODY OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC14000</b>	<b>CC14002</b>	<b>CC14004</b>
	No. Req'd	1	1	1
<b>NUT &amp; MANDREL OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CC15000</b>	<b>CC15002</b>	<b>CC15004</b>
	No. Req'd	3	3	3
<b>UPPER PRESSURE BODY ID NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>CD4000</b>	<b>CD4002</b>	<b>CD4004</b>
	No. Req'd	2	2	2
<b>SEAL KIT</b>	<b>Logan Part No.</b>	<b>CD9000</b>	<b>CD9002</b>	<b>CD9004</b>
	No. Req'd	1	1	1
<b>SPLINE</b>	<b>Logan Part No.</b>	<b>CC12000</b>	<b>CC12002</b>	<b>CC12004</b>
	No. Req'd	2	2	4
<b>REQUIRED ACCESSORIES</b>				
<b>COMBINATION WRENCH SIZE FOR MANDREL EXTENSION - INCHES</b>		13/16	1	1-3/8
	No. Req'd	2	2	2
<b>SIX-POINT SOCKET SIZE FOR NUT - INCHES</b>		7/8	1-1/8	1-1/2
<b>FLOATER REMOVAL TOOL*</b>	<b>Logan Part No.</b>	<b>CC18000</b>	<b>CC18002</b>	<b>CC18004</b>
<b>POLYPAK STRETCHER</b>	<b>Logan Part No.</b>	<b>CD11000</b>	<b>CD11002</b>	<b>CD11004</b>
<b>POLYPAK INSTALLATION TOOL</b>	<b>Logan Part No.</b>	<b>CD12000</b>	<b>CD12002</b>	<b>CD12004</b>
<b>UPPER PRESSURE BODY SETTING TOOL</b>	<b>Logan Part No.</b>	<b>CD13000</b>	<b>CD13002</b>	<b>CD13004</b>
<b>SAFETY SUB</b>	<b>Logan Part No.</b>	<b>CD15000</b>	<b>CD15002</b>	<b>CD15004</b>

\* Used for removing Nut from Upper Pressure Body



## SUPERIOR HYDRAULIC FISHING JARS

### Overview

The Logan Superior Hydraulic Jar is a straight pull, up only, jarring tool that utilizes a special valve section to meter oil from one side of the piston to the other side. This allows for controlled jarring action during stuck fish recovery. The straight pull load applied by the operator controls the intensity of the jarring blow. The downhole jarring blow is infinitely adjustable without any rig floor adjustments necessary prior to the run. Impact of each blow can be varied by simply changing the pull load.

The Logan Superior Hydraulic Jar is well-suited for milling and washover operations due to its large mandrel design. Since the Jar will not interfere with test equipment, it is also ideal to use for drill stem testing. The seals used in the Logan Superior Hydraulic Jar can handle higher pressures than those normally encountered in drill stem testing.

Among its many uses, the Logan Superior Hydraulic Jar is also ideal for jarring and freeing open-hole or hook-wall packers that have become stuck. With comparatively moderate pull, the Logan Superior Hydraulic Jar can also deliver sufficient impact to break a core.

### Construction

The Jar's operating chambers are sealed and isolated from each other to prevent contamination of the metering section of the Jar and the surrounding well areas.

Logan Superior Hydraulic Jars are hydrostatically pressure balanced and provide maximum inside diameters for passage of wireline tools.

### Assembly

The Logan Superior Hydraulic Jar is shipped in the closed (cocked) position. The Jar should not be left suspended from the elevator in this position, especially with any weight suspended below it, as the Jar may accidentally fire and cause rig damage or bodily harm.

The Logan Superior Hydraulic Jar should be carefully opened and assembled in the string below the concentrated mass such as drill collars and heavyweight drill pipe.

### Operation

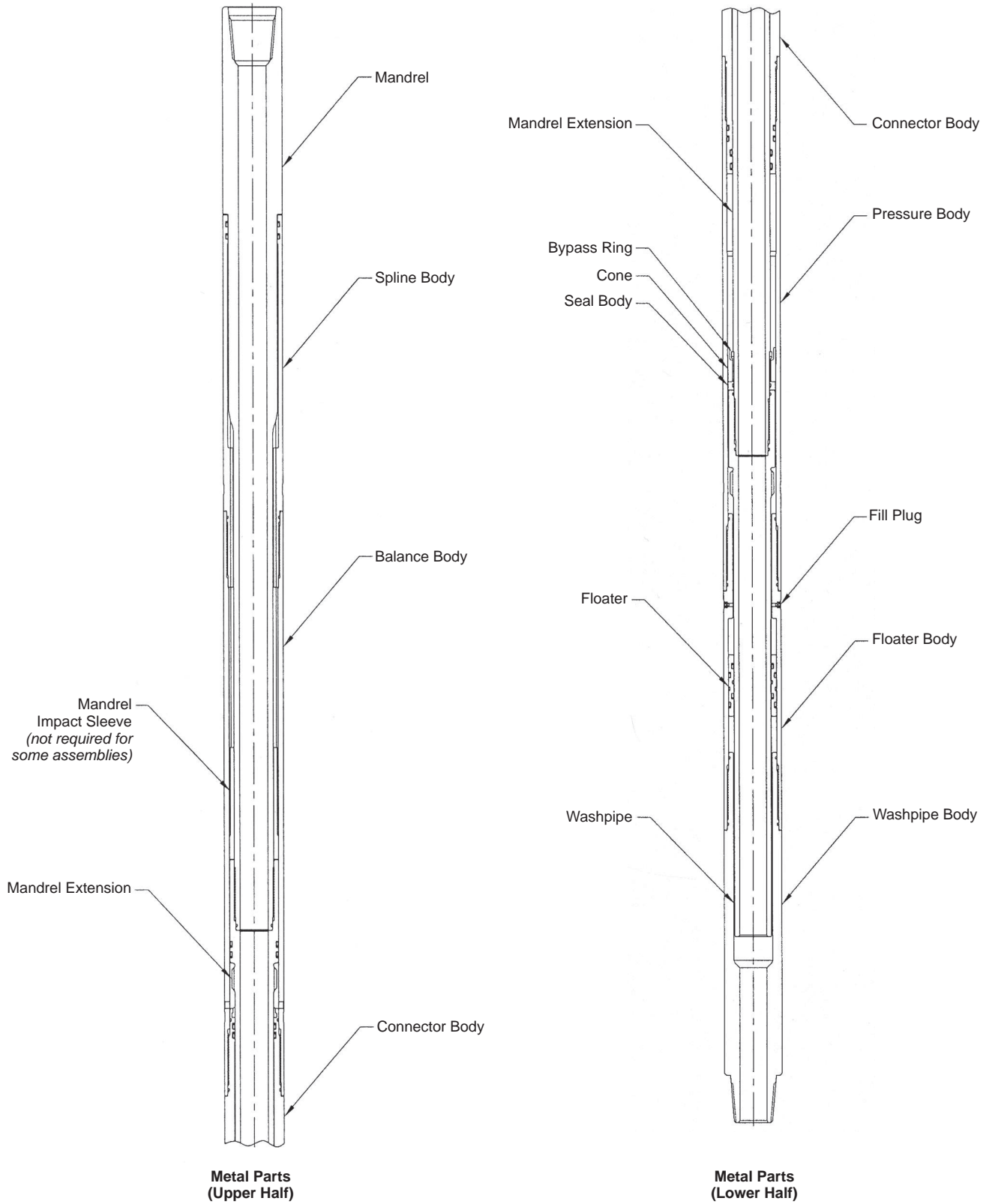
For maximum effectiveness, it is recommended that the Logan Superior Hydraulic Jar be run in combination with a Logan Superior Energizer.

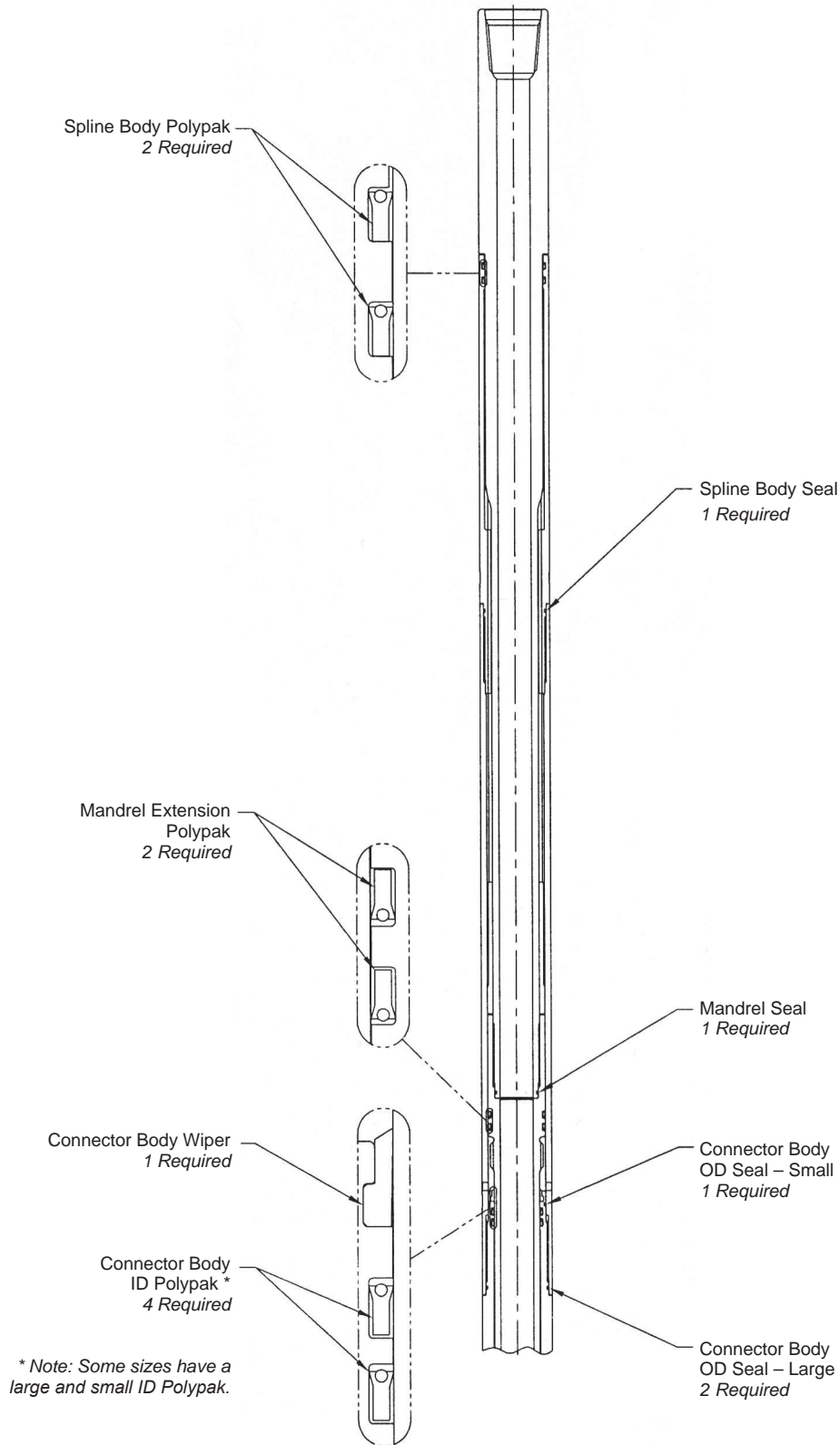
The Logan Superior Hydraulic Jar should be carefully examined prior to use to ensure it has been properly assembled and filled with jar oil. The tool should be tested in a jar tester prior to field use. All connections should be checked to ensure that they have been tightened to the proper torque.

At no time during the pull cycle should the maximum load be exceeded. (See Strength Data Charts on pages 141 – 142 for pull loads.) It is recommended that the operator use a low initial pull load — 30% to 50% of the maximum load — so the effects of the jarring action can be reviewed before the jarring load is increased.

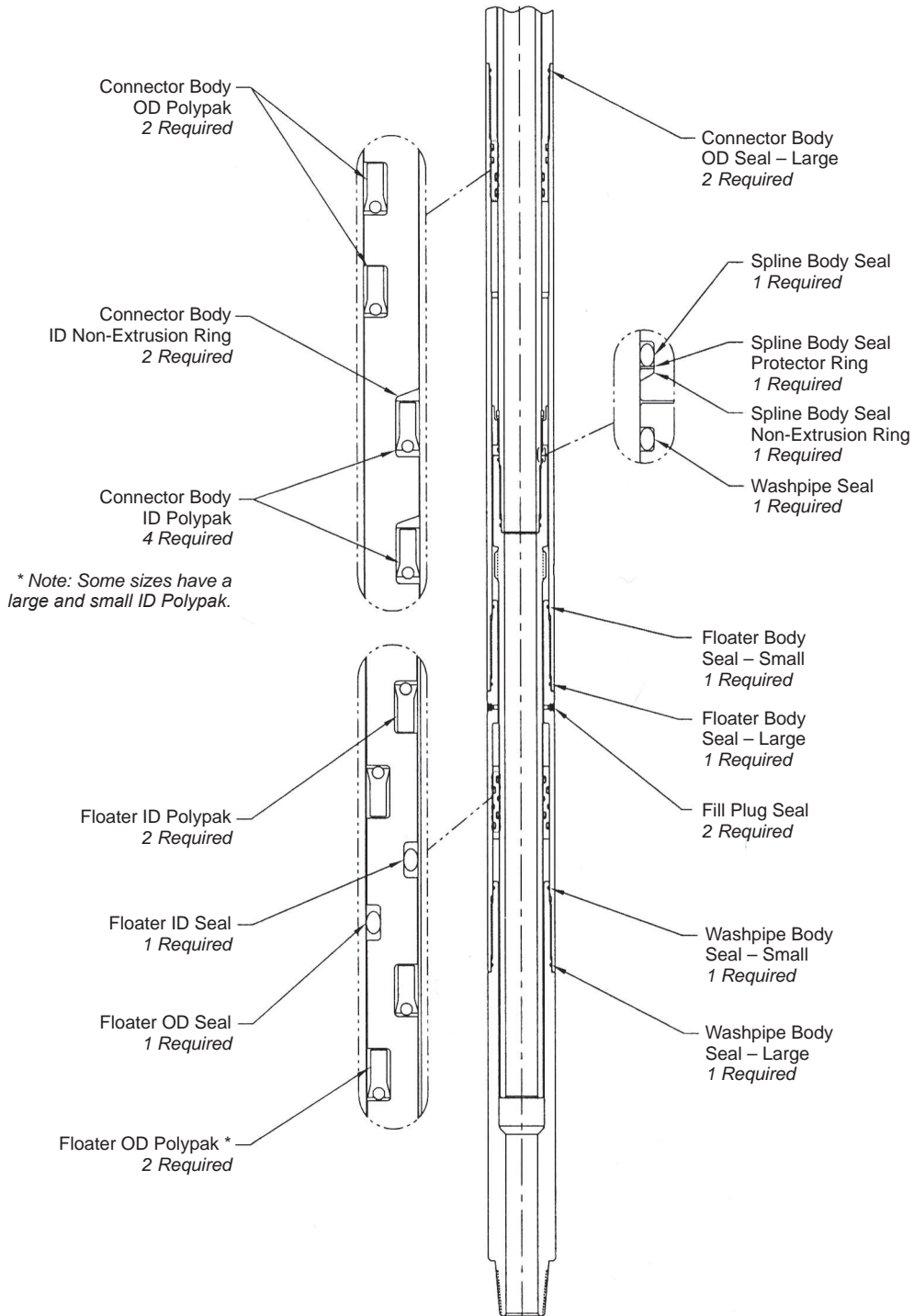
### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection





**Polypaks and Seals  
(Upper Half)**



**Polypaks and Seals  
(Lower Half)**

## SUPERIOR HYDRAULIC FISHING JARS

<b>TOOL JOINT CONNECTION</b>		2-3/8 API EUE	2-3/8 API Reg	2-7/8 PAC	2-3/8 API IF	2-7/8 API Reg	2-3/8 API EUE	2-7/8 API IF
<b>OUTSIDE DIAMETER — INCHES</b>		3-1/16	3-1/8	3-1/8	3-3/4	3-3/4	3-3/4	4-1/4
<b>INSIDE DIAMETER — INCHES</b>		1-1/2	1	1-1/2	1-1/2	1-1/4	1-7/8	2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>611-306</b>	<b>611-312</b>	<b>611-313</b>	<b>611-375</b>	<b>611-377</b>	<b>611-376</b>	<b>611-425</b>
<b>COMPONENTS</b>								
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>BD15</b>	<b>BD10</b>	<b>BD15</b>	<b>BD11</b>	<b>BD11</b>	<b>BD18</b>	<b>BD16</b>
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	...	...	...	<b>568-225</b>	<b>568-225</b>	...	<b>568-229</b>
	<b>No. Req'd</b>	...	...	...	1	1	...	1
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	<b>BD25</b>	<b>BD20</b>	<b>BD25</b>	<b>BD21</b>	<b>BD21</b>	<b>BD28</b>	<b>BD26</b>
<b>MANDREL EXTENSION SEAL</b>	<b>Logan Part No.</b>	<b>568-225</b>	<b>568-224</b>	<b>568-225</b>	...	...	<b>568-229</b>	...
	<b>No. Req'd</b>	1	1	1	...	...	1	...
<b>MANDREL EXTENSION POLYPAK</b>	<b>Logan Part No.</b>	<b>BD205-2</b>	<b>BD205-2</b>	<b>BD205-2</b>	<b>BD201-2</b>	<b>BD201-2</b>	<b>AQ29003</b>	<b>BX144-3</b>
	<b>No. Req'd</b>	1	2	1	2	2	2	2
<b>MANDREL EXTENSION WIPER</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>No. Req'd</b>	...	...	...	...	...	...	...
<b>MANDREL IMPACT SLEEVE</b>	<b>Logan Part No.</b>	<b>BD35</b>	<b>BD30</b>	<b>BD35</b>	...	...	...	...
<b>SPLINE BODY</b>	<b>Logan Part No.</b>	<b>BD45</b>	<b>BD40</b>	<b>BD45</b>	<b>BD41</b>	<b>BD41</b>	<b>BD48</b>	<b>BD46</b>
<b>SPLINE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-230</b>	<b>568-230</b>	<b>568-230</b>	<b>568-234</b>	<b>568-234</b>	<b>568-235</b>	<b>568-238</b>
	<b>No. Req'd</b>	1	1	1	1	1	1	1
<b>SPLINE BODY POLYPAK</b>	<b>Logan Part No.</b>	<b>BD205-1</b>	<b>BD205-1</b>	<b>BD205-1</b>	<b>BD202-3</b>	<b>BD202-3</b>	<b>BX144-3</b>	<b>BD202-2</b>
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>BALANCE BODY</b>	<b>Logan Part No.</b>	<b>BD55</b>	<b>BD50</b>	<b>BD55</b>	<b>BD51</b>	<b>BD51</b>	<b>BD58</b>	<b>BD56</b>
<b>CONNECTOR BODY</b>	<b>Logan Part No.</b>	<b>BD65</b>	<b>BD60</b>	<b>BD65</b>	<b>BD61</b>	<b>BD61</b>	<b>BD68</b>	<b>BD66</b>
<b>CONNECTOR BODY SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-230</b>	<b>568-230</b>	<b>568-230</b>	<b>568-234</b>	<b>568-234</b>	<b>568-235</b>	<b>568-238</b>
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>CONNECTOR BODY SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-228</b>	<b>568-228</b>	<b>568-228</b>	<b>568-232</b>	<b>568-232</b>	<b>568-233</b>	<b>568-236</b>
	<b>No. Req'd</b>	2	2	2	1	1	1	1
<b>CONNECTOR BODY WIPER</b>	<b>Logan Part No.</b>	...	...	...	<b>BD71</b>	<b>BD71</b>	<b>BD78</b>	<b>BD76</b>
<b>CONNECTOR BODY ID POLYPAK (SMALL)</b>	<b>Logan Part No.</b>	<b>BD205-3</b>	<b>BD200-3</b>	<b>BD205-3</b>	<b>BD201-3</b>	<b>BD201-3</b>	<b>BD208-3</b>	<b>AQ29003</b>
	<b>No. Req'd</b>	3	3	3	4	4	4	4
<b>CONNECTOR BODY ID POLYPAK (LARGE)</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>No. Req'd</b>	...	...	...	...	...	...	...
<b>CONNECTOR BODY OD POLYPAK</b>	<b>Logan Part No.</b>	...	...	...	<b>AQ29003</b>	<b>AQ29003</b>	<b>AQ29003</b>	<b>BX144-3</b>
	<b>No. Req'd</b>	...	...	...	2	2	2	2
<b>CONNECTOR BODY SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>8-228</b>	<b>8-228</b>	<b>8-228</b>	<b>L375-34</b>	<b>L375-34</b>	<b>L375-36</b>	...
	<b>No. Req'd</b>	2	2	2	2	2	2	...
<b>CONNECTOR BODY ID NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-32</b>	<b>L365-30</b>	<b>L365-32</b>	<b>BD231</b>	<b>BD231</b>	<b>L365-36</b>	<b>BD236</b>
	<b>No. Req'd</b>	1	2	1	2	2	2	2
<b>CONNECTOR BODY ID NON-EXTRUSION RING SETTING TOOL</b>	<b>Logan Part No.</b>	**	<b>AG1000-30.13</b>	**	**	**	**	**
<b>CONNECTOR BODY OD NON-EXTRUSION RING (LARGE)</b>	<b>Logan Part No.</b>	...	<b>BD240</b>	...	...	...	...	...
	<b>No. Req'd</b>	...	1	...	...	...	...	...
<b>CONNECTOR BODY OD NON-EXTRUSION RING (SMALL)</b>	<b>Logan Part No.</b>	<b>L366-33.5</b>	<b>BD250</b>	<b>L366-33.5</b>	...	...	...	...
	<b>No. Req'd</b>	2	1	2	...	...	...	...
<b>PRESSURE BODY</b>	<b>Logan Part No.</b>	<b>BD-85</b>	<b>BD80</b>	<b>BD85</b>	<b>BD81</b>	<b>BD81</b>	<b>BD88</b>	<b>BD86</b>

# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR HYDRAULIC FISHING JARS

TOOL JOINT CONNECTION	2-3/8 API EUE	2-3/8 API Reg	2-7/8 PAC	2-3/8 API IF	2-7/8 API Reg	2-3/8 API EUE	2-7/8 API IF
OUTSIDE DIAMETER — INCHES	3-1/16	3-1/8	3-1/8	3-3/4	3-3/4	3-3/4	4-1/4
INSIDE DIAMETER — INCHES	1-1/2	1	1-1/2	1-1/2	1-1/4	1-7/8	2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 611-306</b>	<b>611-312</b>	<b>611-313</b>	<b>611-375</b>	<b>611-377</b>	<b>611-376</b>	<b>611-425</b>
<b>COMPONENTS</b>							
FLOATER BODY	Logan Part No. BD95	BD90	BD95	BD91	BD91	BD98	BD96
FLOATER BODY SEAL (LARGE)	Logan Part No. 568-230	568-230	568-230	568-234	568-234	568-235	568-238
No. Req'd	1	1	1	1	1	1	1
FLOATER BODY SEAL (SMALL)	Logan Part No. 568-228	568-228	568-228	568-232	568-232	568-233	568-236
No. Req'd	1	1	1	1	1	1	1
FLOATER BODY FILL PLUG	Logan Part No. AG10002	AG10002	AG10002	AG10002	AG10002	AG10002	AG10002
No. Req'd	2	2	2	2	2	2	2
FLOATER BODY FILL PLUG SEAL	Logan Part No. 568-006	568-006	568-006	568-006	568-006	568-006	568-006
No. Req'd	2	2	2	2	2	2	2
FLOATER	Logan Part No. BD115	BD110	BD115	BD111	BD111	BD118	BD116
FLOATER SEAL (LARGE)	Logan Part No. 568-228	568-228	568-228	568-232	568-232	568-233	568-236
No. Req'd	3	1	3	1	1	1	1
FLOATER SEAL (SMALL)	Logan Part No. 568-226	568-224	568-226	568-228	568-230	568-230	568-232
No. Req'd	3	1	3	1	1	1	1
FLOATER OD POLYPAK	Logan Part No. ...	BD200-4	...	BD201-2	BD201-2	AQ29003	BX144-3
No. Req'd	...	2	...	2	2	2	2
FLOATER ID POLYPAK	Logan Part No. ...	BD200-3	...	BD201-3	BD201-3	BD208-3	AQ29003
No. Req'd	...	2	...	2	2	2	2
FLOATER OD PARBAK RING	Logan Part No. ...	...	...	8-232	8-232	...	...
No. Req'd	...	...	...	1	1	...	...
FLOATER ID PARBAK RING	Logan Part No. 8-226	...	8-226	8-228	8-228	...	...
No. Req'd	3	...	3	1	1	...	...
FLOATER POSITIONING TOOL	Logan Part No. BD295	BD290	BD295	BD291	BD291	BD298	BD296
SEAL BODY	Logan Part No. BD125	BD120	BD125	BD121	BD121	BD128	BD126
SEAL BODY SEAL	Logan Part No. 568-225	568-130	568-225	568-227	568-227	568-143	568-231
No. Req'd	1	1	1	1	1	1	1
NON-EXTRUSION RING	Logan Part No. BD265-001	BD260	L365-30.25	L370-5	L370-5	BD268	L370-9
No. Req'd	1	1	1	1	1	1	1
SEAL PROTECTOR RING	Logan Part No. BD285-001	8-130	L375-30.25	8-227	8-227	8-143	L376-9
No. Req'd	1	1	1	1	1	1	1
SETTING TOOL	Logan Part No. AG1000-30.25	AG1000-29.25	AG1000-30.25	AG1000-33.5	AG1000-33.5	AG1000-35.5	AG1000-37
CONE	Logan Part No. BD135	BD130	BD135	BD131	BD131	BD138	BD136
BYPASS RING	Logan Part No. BD155	BD150	BD155	BD151	BD151	BD158	BD156
WASHPIPE	Logan Part No. BD165	BD160	BD165	BD161	BD161	BD168	BD166
WASHPIPE SEAL (LARGE)	Logan Part No. ...	568-130	...	568-227	568-227	568-143	568-231
No. Req'd	...	1	...	1	1	1	1
WASHPIPE SEAL (SMALL)	Logan Part No. 568-224	568-221	568-224	568-225	568-225	568-228	568-229
No. Req'd	1	1	1	1	1	1	1
WASHPIPE BODY	Logan Part No. BD175	BD170	BD175	BD171	BD171	BD178	BD176
WASHPIPE BODY SEAL (LARGE)	Logan Part No. 568-230	568-230	568-230	568-234	568-234	568-235	568-238
No. Req'd	1	1	1	1	1	1	1
WASHPIPE BODY SEAL (SMALL)	Logan Part No. 568-228	568-228	568-228	568-232	568-232	568-233	568-236
No. Req'd	1	1	1	1	1	1	1

## SUPERIOR HYDRAULIC FISHING JARS

TOOL JOINT CONNECTION	2-3/8 API EUE	2-3/8 API Reg	2-7/8 PAC	2-3/8 API IF	2-7/8 API Reg	2-3/8 API EUE	2-7/8 API IF
<b>OUTSIDE DIAMETER — INCHES</b>	3-1/16	3-1/8	3-1/8	3-3/4	3-3/4	3-3/4	4-1/4
<b>INSIDE DIAMETER — INCHES</b>	1-1/2	1	1-1/2	1-1/2	1-1/4	1-7/8	2
<b>COMPLETE ASSEMBLY</b>	Logan Part No. <b>611-306</b>	<b>611-312</b>	<b>611-313</b>	<b>611-375</b>	<b>611-377</b>	<b>611-376</b>	<b>611-425</b>
<b>COMPONENTS</b>							
<b>REDRESS KITS *</b>	Logan Part No. <b>BD185</b>	<b>BD180</b>	<b>BD185</b>	<b>BD181</b>	<b>BD181</b>	<b>BD188</b>	<b>BD186</b>
<b>COMPLETE O-RING KIT</b>	Logan Part No. <b>BD195</b>	<b>BD190</b>	<b>BD195</b>	<b>BD191</b>	<b>BD191</b>	<b>BD198</b>	<b>BD196</b>
<b>COMPLETE POLYPAK KIT</b>	Logan Part No. <b>BD205</b>	<b>BD200</b>	<b>BD205</b>	<b>BD201</b>	<b>BD201</b>	<b>BD208</b>	<b>BD206</b>
<i>Consists of:</i>							
<b>SPLINE BODY POLYPAK</b>	Logan Part No. <b>BD205-1</b> No. Req'd 2	<b>BD205-1</b> 2	<b>BD205-1</b> 2	<b>BD202-3</b> 2	<b>BD202-3</b> 2	<b>BX144-3</b> 2	<b>BD202-2</b> 2
<b>MANDREL EXTENSION POLYPAK</b>	Logan Part No. <b>BD205-2</b> No. Req'd 1	<b>BD205-2</b> 2	<b>BD205-2</b> 1	<b>BD201-2</b> 2	<b>BD201-2</b> 2	<b>AQ29003</b> 2	<b>BX144-3</b> 2
<b>CONNECTOR BODY ID POLYPAK (SMALL)</b>	Logan Part No. <b>BD205-3</b> No. Req'd 3	<b>BD200-3</b> 3	<b>BD205-3</b> 3	<b>BD201-3</b> 4	<b>BD201-3</b> 4	<b>BD208-3</b> 4	<b>AQ29003</b> 4
<b>CONNECTOR BODY ID POLYPAK (LARGE)</b>	Logan Part No. ... No. Req'd ...	... ...	... ...	... ...	... ...	... ...	... ...
<b>CONNECTOR BODY OD POLYPAK</b>	Logan Part No. ... No. Req'd ...	... ...	... ...	<b>AQ29003</b> 2	<b>AQ29003</b> 2	<b>AQ29003</b> 2	<b>BX144-3</b> 2
<b>FLOATER OD POLYPAK</b>	Logan Part No. ... No. Req'd ...	<b>BD200-4</b> 2	... ...	<b>BD201-2</b> 2	<b>BD201-2</b> 2	<b>AQ29003</b> 2	<b>BX144-3</b> 2
<b>FLOATER ID POLYPAK</b>	Logan Part No. ... No. Req'd ...	<b>BD200-3</b> 2	... ...	<b>BD201-3</b> 2	<b>BD201-3</b> 2	<b>BD208-3</b> 2	<b>AQ29003</b> 2
<b>MANDREL EXTENSION ASSEMBLY SLEEVE †</b>	Logan Part No. <b>BD205-6</b> No. Req'd 1	<b>BD200-6</b> 1	<b>BD205-6</b> 1	<b>BD201-6</b> 1	<b>BD201-6</b> 1	<b>BD208-6</b> 1	<b>BD206-6</b> 1
<b>JAR LUBE</b>							
	Logan Part No. <b>49842-A</b>	<b>49842-B</b>	<b>49842-C</b>	<b>49842-D</b>			
	Bowen No. 49842-A	49842-B	49842-C	49842-D			
	1 Gallon	5 Gallons	20 Gallons	55 Gallons			

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

\*\* To be advised by engineering

† Mandrel Extension Assembly Sleeve is not included in the Redress Kit. Must be purchased separately.

# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR HYDRAULIC FISHING JARS

<b>TOOL JOINT CONNECTION</b>		2-7/8 API EUE	3-1/2 API IF	4-1/2 API IF	6-5/8 API Reg			
<b>OUTSIDE DIAMETER — INCHES</b>		4-1/2	4-3/4	6-1/4	7-3/4			
<b>INSIDE DIAMETER — INCHES</b>		2-3/8	2-1/4	2-1/4	3-1/16			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>611-450</b>	<b>611-475</b>	<b>611-625</b>	<b>611-775</b>			
<b>COMPONENTS</b>								
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>BD19</b>	<b>BD12</b>	<b>BD13</b>	<b>BD14</b>			
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>568-238</b>	<b>568-232</b>	<b>568-236</b>	<b>568-348</b>			
	<b>No. Req'd</b>	1	1	1	1			
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	<b>BD29</b>	<b>BD22</b>	<b>BD23</b>	<b>BD24</b>			
<b>MANDREL EXTENSION SEAL</b>	<b>Logan Part No.</b>	...	...	<b>568-234</b>	<b>568-341</b>			
	<b>No. Req'd</b>	...	...	1	1			
<b>MANDREL EXTENSION POLYPAK</b>	<b>Logan Part No.</b>	<b>BD209-2</b>	<b>BD202-2</b>	<b>BD203-2</b>	<b>BD204-2</b>			
	<b>No. Req'd</b>	2	2	2	2			
<b>MANDREL EXTENSION WIPER</b>	<b>Logan Part No.</b>	...	...	<b>BD223</b>	<b>BD224</b>			
	<b>No. Req'd</b>	...	...	...	1			
<b>MANDREL IMPACT SLEEVE</b>	<b>Logan Part No.</b>	...	<b>BD32</b>	...	...			
<b>SPLINE BODY</b>	<b>Logan Part No.</b>	<b>BD49</b>	<b>BD42</b>	<b>BD43</b>	<b>BD44</b>			
<b>SPLINE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-240</b>	<b>568-242</b>	<b>568-250</b>	<b>568-362</b>			
	<b>No. Req'd</b>	1	1	1	1			
<b>SPLINE BODY POLYPAK</b>	<b>Logan Part No.</b>	<b>BD209-1</b>	<b>BD202-1</b>	<b>BD203-1</b>	<b>BD204-1</b>			
	<b>No. Req'd</b>	2	2	2	2			
<b>BALANCE BODY</b>	<b>Logan Part No.</b>	<b>BD59</b>	<b>BD52</b>	<b>BD53</b>	<b>BD54</b>			
<b>CONNECTOR BODY</b>	<b>Logan Part No.</b>	<b>BD69</b>	<b>BD62</b>	<b>BD63</b>	<b>BD64</b>			
<b>CONNECTOR BODY SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-240</b>	<b>568-242</b>	<b>568-253</b>	<b>568-362</b>			
	<b>No. Req'd</b>	2	2	2	2			
<b>CONNECTOR BODY SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-239</b>	<b>568-239</b>	<b>568-250</b>	<b>568-361</b>			
	<b>No. Req'd</b>	1	1	1	1			
<b>CONNECTOR BODY WIPER</b>	<b>Logan Part No.</b>	<b>BD79</b>	<b>BD72</b>	<b>BD73</b>	<b>BD74</b>			
<b>CONNECTOR BODY ID POLYPAK (SMALL)</b>	<b>Logan Part No.</b>	<b>BX144-3</b>	<b>BD202-3</b>	<b>BD203-3</b>	...			
	<b>No. Req'd</b>	4	2	4	...			
<b>CONNECTOR BODY ID POLYPAK (LARGE)</b>	<b>Logan Part No.</b>	...	<b>BD202-4</b>	...	<b>BD204-3</b>			
	<b>No. Req'd</b>	...	2	...	4			
<b>CONNECTOR BODY OD POLYPAK</b>	<b>Logan Part No.</b>	<b>BD209-4</b>	<b>BD202-5</b>	<b>BD203-5</b>	<b>BD204-2</b>			
	<b>No. Req'd</b>	2	2	2	2			
<b>CONNECTOR BODY SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-41</b>	...	...	<b>BD274</b>			
	<b>No. Req'd</b>	2	...	2	2			
<b>CONNECTOR BODY NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-41</b>	<b>BD232</b>	<b>BD233</b>	<b>BD234</b>			
	<b>No. Req'd</b>	2	2	2	2			
<b>CONNECTOR BODY ID NON-EXTRUSION RING SETTING TOOL</b>	<b>Logan Part No.</b>	**	<b>AG1000-40</b>	**	<b>AG1000-52</b>			
<b>CONNECTOR BODY OD NON-EXTRUSION RING (LARGE)</b>	<b>Logan Part No.</b>	...	...	...	...			
	<b>No. Req'd</b>	...	...	...	...			
<b>CONNECTOR BODY OD NON-EXTRUSION RING (SMALL)</b>	<b>Logan Part No.</b>	...	...	...	...			
	<b>No. Req'd</b>	...	...	...	...			
<b>PRESSURE BODY</b>	<b>Logan Part No.</b>	<b>BD89</b>	<b>BD82</b>	<b>BD83</b>	<b>BD84</b>			
<b>FLOATER BODY</b>	<b>Logan Part No.</b>	<b>BD99</b>	<b>BD92</b>	<b>BD93</b>	<b>BD94</b>			



# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR HYDRAULIC FISHING JARS

<b>TOOL JOINT CONNECTION</b>		2-7/8 API EUE	3-1/2 API IF	4-1/2 API IF	6-5/8 API REG			
<b>OUTSIDE DIAMETER — INCHES</b>		4-1/2	4-3/4	6-1/4	7-3/4			
<b>INSIDE DIAMETER — INCHES</b>		2-3/8	2-1/4	2-1/4	3-1/16			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>611-450</b>	<b>611-475</b>	<b>611-625</b>	<b>611-775</b>			
<b>COMPONENTS</b>								
<b>FLOATER BODY</b>	<b>Logan Part No.</b>	<b>568-240</b>	<b>568-242</b>	<b>568-253</b>	<b>568-362</b>			
<b>SEAL (LARGE)</b>	No. Req'd	1	1	1	1			
<b>FLOATER BODY</b>	<b>Logan Part No.</b>	<b>568-238</b>	<b>568-239</b>	<b>568-250</b>	<b>568-361</b>			
<b>SEAL (SMALL)</b>	No. Req'd	1	1	1	1			
<b>FLOATER BODY</b>	<b>Logan Part No.</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>			
<b>FILL PLUG</b>	No. Req'd	2	2	2	2			
<b>FLOATER BODY</b>	<b>Logan Part No.</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>			
<b>FILL PLUG SEAL</b>	No. Req'd	2	2	2	2			
<b>FLOATER</b>	<b>Logan Part No.</b>	<b>BD119</b>	<b>BD112</b>	<b>BD113</b>	<b>BD114</b>			
<b>FLOATER SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-238</b>	<b>568-341</b>	<b>568-351</b>	<b>568-361</b>			
	No. Req'd	2	2	2	2			
<b>FLOATER SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-235</b>	<b>568-337</b>	<b>268-343</b>	<b>568-349</b>			
	No. Req'd	1	1	1	1			
<b>FLOATER OD POLYPAK</b>	<b>Logan Part No.</b>	<b>BD209-2</b>	<b>BD202-2</b>	<b>BD203-2</b>	<b>BD204-4</b>			
	No. Req'd	2	2	2	2			
<b>FLOATER ID POLYPAK</b>	<b>Logan Part No.</b>	<b>BX144-3</b>	<b>BD202-3</b>	<b>BD203-3</b>	<b>BD204-3</b>			
	No. Req'd	2	2	2	2			
<b>FLOATER OD PARBAK RING</b>	<b>Logan Part No.</b>	...	...	...	...			
	No. Req'd	...	...	...	...			
<b>FLOATER ID PARBAK RING</b>	<b>Logan Part No.</b>	...	...	...	...			
	No. Req'd	...	...	...	...			
<b>FLOATER POSITIONING TOOL</b>	<b>Logan Part No.</b>	<b>BD299</b>	<b>BD292</b>	<b>BD293</b>	<b>BD294</b>			
<b>SEAL BODY</b>	<b>Logan Part No.</b>	<b>BD129</b>	<b>BD122</b>	<b>BD123</b>	<b>BD124</b>			
<b>SEAL BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-234</b>	<b>568-341</b>	<b>568-347</b>			
	No. Req'd	1	1	1	1			
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L370-12</b>	<b>L370-12</b>	<b>L365-44</b>	<b>BD264</b>			
	No. Req'd	1	1	1	1			
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L376-12</b>	<b>L388-12</b>	<b>L375-44</b>	<b>BD284</b>			
	No. Req'd	1	1	1	1			
<b>SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-38</b>	<b>AG1000-40</b>	<b>AG1000-44</b>	<b>AG1000-50</b>			
<b>CONE</b>	<b>Logan Part No.</b>	<b>BD139</b>	<b>BD132</b>	<b>BD133</b>	<b>BD134</b>			
<b>BYPASS RING</b>	<b>Logan Part No.</b>	<b>BD159</b>	<b>BD152</b>	<b>BD153</b>	<b>BD154</b>			
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>BD169</b>	<b>BD162</b>	<b>BD163</b>	<b>BD164</b>			
<b>WASHPIPE SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-234</b>	<b>568-238</b>	<b>568-347</b>			
	No. Req'd	1	1	1	1			
<b>WASHPIPE SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>569-232</b>	<b>568-232</b>	...	...			
	No. Req'd	1	1	...	...			
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>BD179</b>	<b>BD172</b>	<b>BD173</b>	<b>BD174</b>			
<b>WASHPIPE BODY SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-240</b>	<b>568-242</b>	<b>568-253</b>	<b>568-362</b>			
	No. Req'd	1	1	1	1			
<b>WASHPIPE BODY SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-238</b>	<b>568-239</b>	<b>568-250</b>	<b>568-361</b>			
	No. Req'd	1	1	1	1			
<b>REDRESS KITS *</b>	<b>Logan Part No.</b>	<b>BD189</b>	<b>BD182</b>	<b>BD183</b>	<b>BD184</b>			
<b>COMPLETE O-RING KIT</b>	<b>Logan Part No.</b>	<b>BD199</b>	<b>BD192</b>	<b>BD193</b>	<b>BD194</b>			

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR HYDRAULIC FISHING JARS

<b>TOOL JOINT CONNECTION</b>	2-7/8 EUE API Reg	3-1/2 API IF	4-1/2 API IF	5-1/2 API Reg	6-5/8 API Reg		
<b>OUTSIDE DIAMETER — INCHES</b>	4-1/2	4-3/4	6-1/4	6-3/4	7-3/4		
<b>INSIDE DIAMETER — INCHES</b>	2-3/8	2-1/4	2-1/4	2-3/4	3-1/16		
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 611-450	611-475	611-625	611-675	611-775		

### COMPONENTS

<b>COMPLETE POLYPAK KIT</b>	<b>Logan Part No.</b>	BD209	BD202	BD203	BD207	BD204		
<i>Consists of:</i>								
<b>SPLINE BODY POLYPAK</b>	<b>Logan Part No.</b>	BD209-1	BD202-1	BD203-1	**	BD204-1		
	No. Req'd.	2	2	2	...	2		
<b>MANDREL EXTENSION POLYPAK</b>	<b>Logan Part No.</b>	BD209-2	BD202-2	BD203-2	**	BD204-2		
	No. Req'd.	2	2	2	...	2		
<b>CONNECTOR BODY ID POLYPAK (SMALL)</b>	<b>Logan Part No.</b>	BX144-3	BD202-3	BD203-3	**	BD204-3		
	No. Req'd.	4	2	4	...	4		
<b>CONNECTOR BODY ID POLYPAK (LARGE)</b>	<b>Logan Part No.</b>	...	BD202-4	...	**	...		
	No. Req'd.	...	2	...	...	...		
<b>CONNECTOR BODY OD POLYPAK</b>	<b>Logan Part No.</b>	BD209-4	BD202-5	BD203-5	**	BD204-2		
	No. Req'd.	2	2	2	...	2		
<b>FLOATER OD POLYPAK</b>	<b>Logan Part No.</b>	BD209-2	BD202-2	BD203-2	**	BD204-4		
	No. Req'd.	2	2	2	...	2		
<b>FLOATER ID POLYPAK</b>	<b>Logan Part No.</b>	BX144-3	BD202-3	BD203-3	**	BD204-3		
	No. Req'd.	2	2	2	...	2		
<b>MANDREL EXTENSION ASSEMBLY SLEEVE †</b>	<b>Logan Part No.</b>	BD209-6	BD202-6	BD203-6	**	BD204-6		
	No. Req'd.	1	2	1	...	1		

<b>JAR LUBE</b>	<b>Logan Part No.</b>	49842-A	49842-B	49842-C	49842-D		
	Bowen No.	49842-A	49842-B	49842-C	49842-D		
		1 Gallon	5 Gallons	20 Gallons	55 Gallons		

\*\* To be advised by engineering

† Mandrel Extension Assembly Sleeve is not included in the Redress Kit. Must be purchased separately.

## SUPERIOR HYDRAULIC FISHING JAR STRENGTH DATA

### CHART A — SPECIFICATIONS

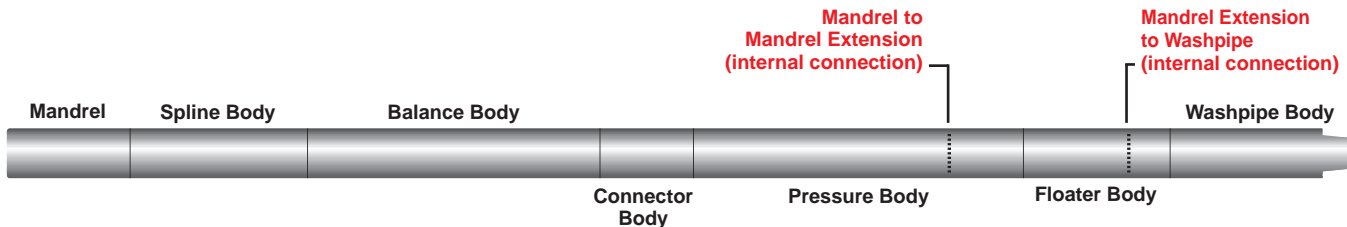
COMPLETE ASSEMBLY	611-306	611-312	611-313	611-375	611-377	611-376
OUTSIDE DIAMETER (INCHES)	3-1/16	3-1/8	3-1/8	3-3/4	3-3/4	3-3/4
INSIDE DIAMETER (INCHES)	1-1/2	1	1-1/2	1-1/2	1-1/4	1-7/8
CONNECTION	2-3/8 API EUE	2-3/8 API REG	2-7/8 PAC	2-3/8 API IF	2-7/8 API REG	2-3/8 API EUE
LENGTH (FEET & INCHES)	10' - 0"	10' - 0"	10' - 0"	12' - 8"	12' - 8"	12' - 8"
STROKE (INCHES)	10	10	10	10	10	10
FLOATER POSITION (INCHES)	MEASURED DISTANCE FROM FLOATER TO END OF FLOATER BODY					
STANDARD TEMPERATURE	8	8	8	9	9	8-3/4
HIGH TEMPERATURE	9-3/4	9-3/4	9-3/4	11	11	10-3/4
DRILL COLLAR WEIGHT RANGE (LBS)	300 – 4,000	300 – 4,000	300 – 4,000	400 – 6,000	400 – 6,000	400 – 6,000
PUMP OPEN AREA (SQ IN)	3	3	3	4	4	4

### CHART B — STRENGTH AND TEST DATA

COMPLETE ASSEMBLY	611-306	611-312	611-313	611-375	611-377	611-376
JAR TESTER LOW TEST PULL LOAD MINIMUM / MAXIMUM (LBS)	7,000/12,000	9,000/12,000	7,000/12,000	12,000/16,000	12,000/16,000	12,000/16,000
JAR TESTER STANDARD PULL TEST (LBS)	18,000	30,000	18,000	35,000	35,000	35,000
FIELD LOAD — MAX PULL LOAD	36,000	55,000	36,000	72,000	72,000	51,000
LIFT LOAD AFTER JARRING						
JAR FULLY EXTENDED TENSILE @ YIELD (LBS)	185,000	253,000	185,000	330,000	330,000	285,000
TORQUE @ YIELD (FT-LBS)	4,200	7,500	4,200	14,500	14,500	9,650

### CHART C — RECOMMENDED TIGHTENING TORQUES (FT-LBS)

COMPLETE ASSEMBLY	611-306	611-312	611-313	611-375	611-377	611-376
SPLINE BODY TO BALANCE BODY	2,100	2,700	2,100	3,500	3,650	3,500
BALANCE BODY TO CONNECTOR BODY	2,100	2,700	2,100	3,500	3,650	3,500
CONNECTOR BODY TO PRESSURE BODY	2,100	2,700	2,100	3,500	3,650	3,500
MANDREL TO MANDREL EXTENSION	500	600	500	700	700	700
PRESSURE BODY TO FLOATER BODY	2,100	2,700	2,100	3,500	3,650	3,500
MANDREL EXTENSION TO WASHPIPE	500	600	500	700	700	700
FLOATER BODY TO WASHPIPE BODY	2,100	2,700	2,100	3,500	3,650	3,500



## SUPERIOR HYDRAULIC FISHING JAR STRENGTH DATA

### CHART A — SPECIFICATIONS

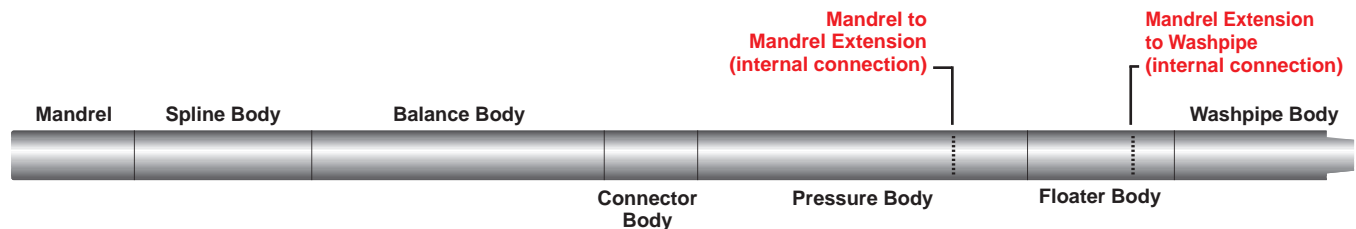
COMPLETE ASSEMBLY	611-425	611-450	611-475	611-625	611-775
OUTSIDE DIAMETER (INCHES)	4-1/4	4-1/2	4-3/4	6-1/4	7-3/4
INSIDE DIAMETER (INCHES)	2	2-3/8	2-1/4	2-1/4	3
CONNECTION	2-7/8 API IF	2-7/8 API EUE	3-1/2 API IF	4-1/2 API IF	6-5/8 API REG
LENGTH (FEET & INCHES)	13' - 6"	13' - 6"	13' - 6"	13' - 6"	15' - 0"
STROKE (INCHES)	12	12	12	12	12
FLOATER POSITION (INCHES)	MEASURED DISTANCE FROM FLOATER TO END OF FLOATER BODY				
STANDARD TEMPERATURE	9	9	10-3/4	10-3/4	11
HIGH TEMPERATURE	11	11	11-1/2	11-1/2	12-1/2
DRILL COLLAR WEIGHT RANGE (LBS)	400 – 6,000	400 – 6,000	500 – 8000	8,500 – 15,000	12,200 – 21,000
PUMP OPEN AREA (SQ IN)	6	7-1/2	7	11	16

### CHART B — STRENGTH AND TEST DATA

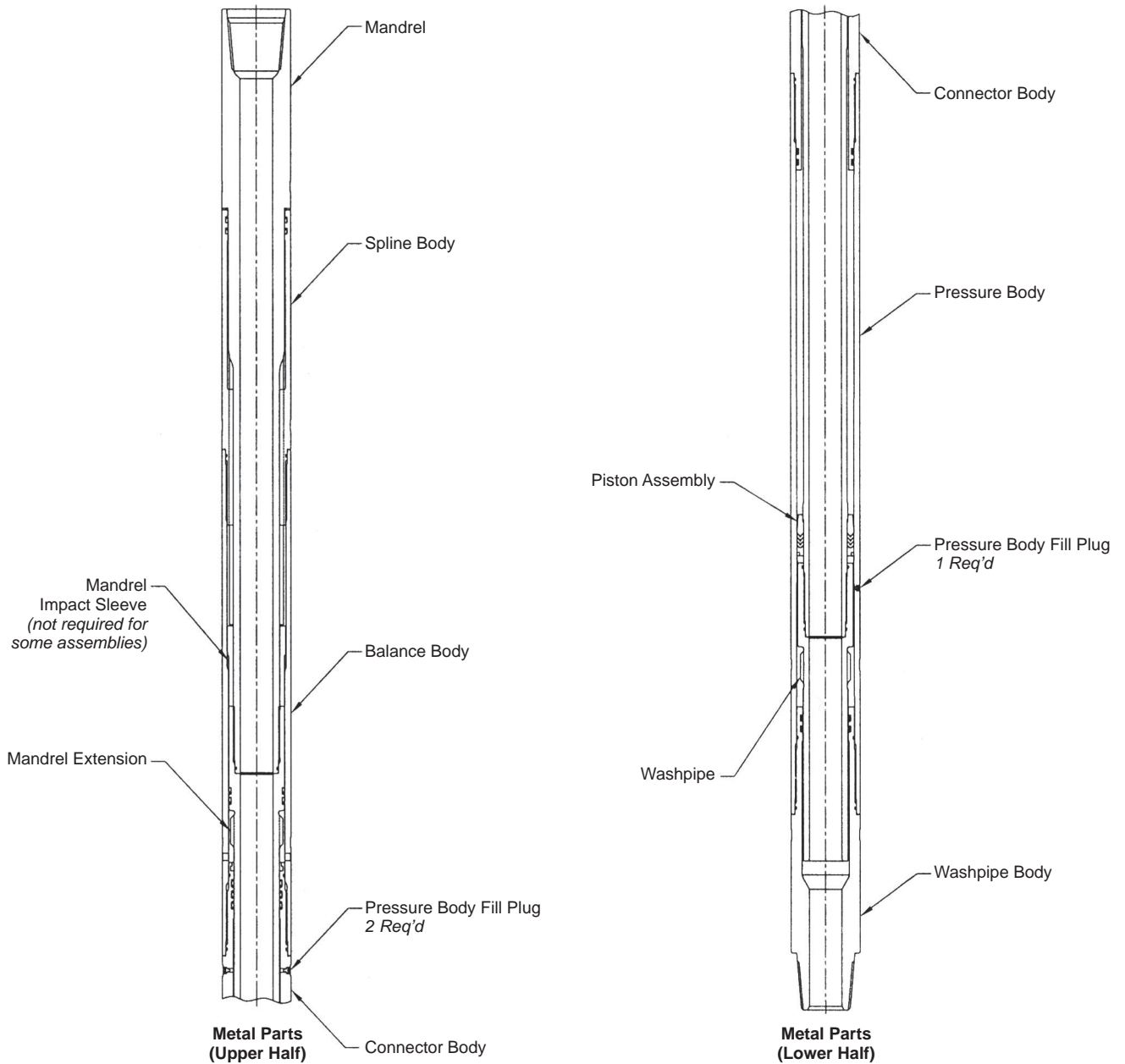
COMPLETE ASSEMBLY	611-425	611-450	611-475	611-625	611-775
JAR TESTER LOW TEST PULL LOAD MINIMUM / MAXIMUM (LBS)	12,000/16,000	12,000/16,000	15,000/20,000	18,000/26,000	18,000/26,000
JAR TESTER STANDARD PULL TEST (LBS)	35,000	30,000	50,000	100,000	100,000
FIELD LOAD — MAX PULL LOAD	75,000	60,000	100,000	200,000	275,000
LIFT LOAD AFTER JARRING					
JAR FULLY EXTENDED TENSILE @ YIELD (LBS)	375,000	360,000	505,000	1,000,000	1,600,000
TORQUE @ YIELD (FT-LBS)	18,500	12,000	18,100	40,800	79,000

### CHART C — RECOMMENDED TIGHTENING TORQUES (FT-LBS)

COMPLETE ASSEMBLY	611-425	611-450	611-475	611-625	611-775
SPLINE BODY TO BALANCE BODY	5,000	5,000	9,090	20,000	39,000
BALANCE BODY TO CONNECTOR BODY	5,000	5,000	9,090	20,000	39,000
CONNECTOR BODY TO PRESSURE BODY	5,000	5,000	9,090	20,000	39,000
MANDREL TO MANDREL EXTENSION	1,500	1,500	1,800	7,000	12,500
PRESSURE BODY TO FLOATER BODY	5,000	5,000	9,090	20,000	39,000
MANDREL EXTENSION TO WASHPIPE	1,500	1,500	1,000	4,800	10,500
FLOATER BODY TO WASHPIPE BODY	5,000	5,000	9,090	20,000	39,000



**NOTES**



**SUPERIOR ENERGIZERS**

**Overview**

The Logan Superior Energizer is run in conjunction with a Logan Superior Fishing Jar of the same size. Its function is to supply intensified impact during the jarring operation. Each size of Logan Superior Energizer is designed to match a corresponding size of Logan Superior Fishing Jar. The Superior Energizer is essentially a fluid spring, which stores energy when a strain is pulled on the fishing string. When the strain is removed by the free stroke of the fishing jar, the

stored energy is released, accelerating the colars upward until a blow of high impact is struck. The tool absorbs much of the jarring shock from the rebounding string to protect tools and string from damage.

**Operation**

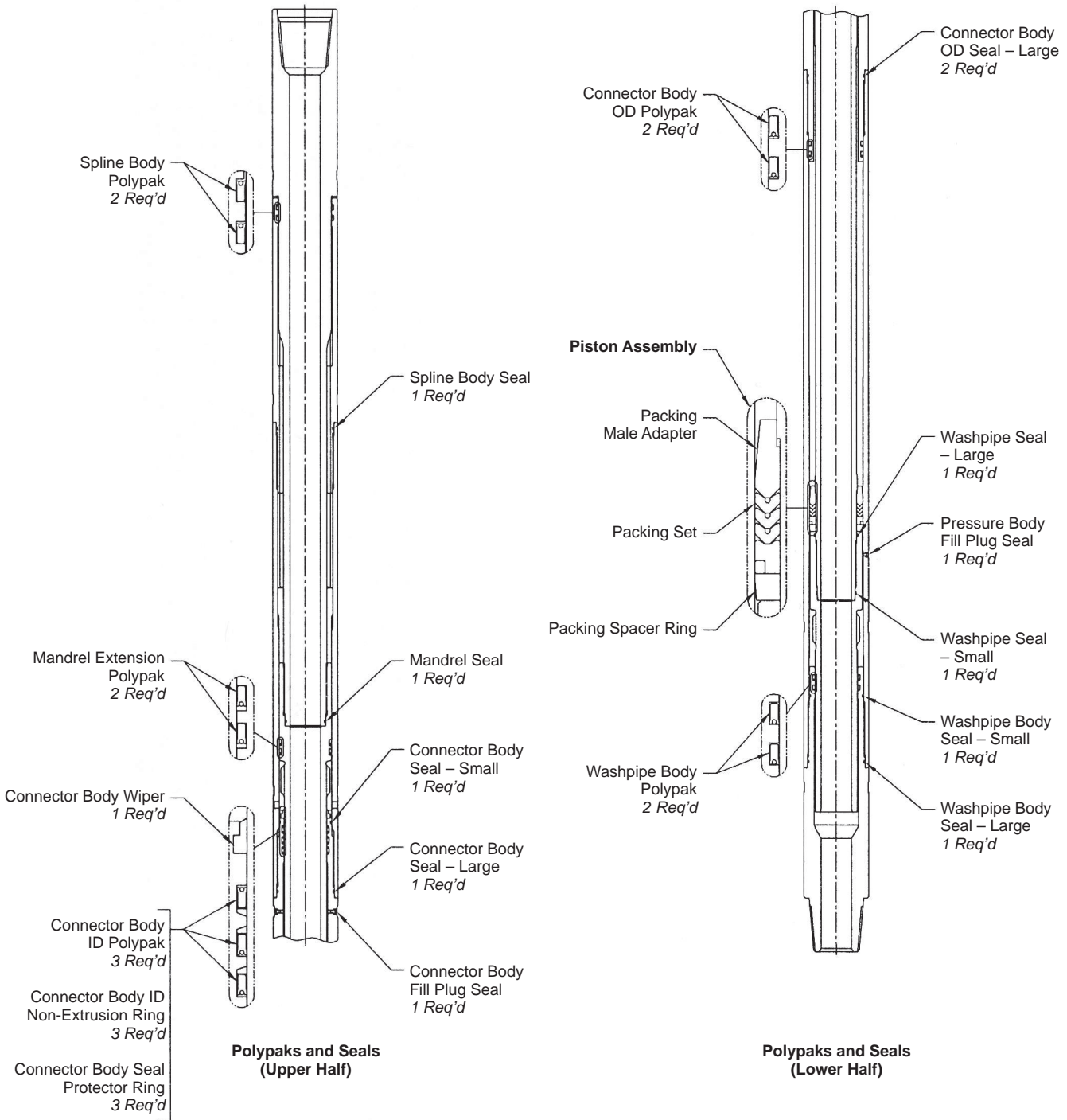
Operation of the Logan Superior Energizer is simple to use and requires only a straight pull at a speed determined by the job. It is com-

pletely safe to assemble since no high pressure pre-loading is required.

The Logan Superior Energizer can transmit full torque in either direction at all times while maintaining full circulation throughout the tool.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard



# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	2-3/8 API Reg	2-3/8 EUE & 2-7/8 PAC	2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	3-1/2 API IF	4-1/2 API IF
<b>OUTSIDE DIAMETER — INCHES</b>	3-1/8	3-1/16 & 3-1/8	3-3/4	3-3/4	4-1/4	4-3/4	6-1/4
<b>INSIDE DIAMETER — INCHES</b>	1	1-1/2	1-1/2	1-7/8	2	2-1/4	2-1/4
<b>COMPLETE ASSEMBLY Logan Part No.</b>	<b>614-312</b>	<b>614-306 &amp; 614-313</b>	<b>614-375</b>	<b>614-376</b>	<b>614-425</b>	<b>614-475</b>	<b>614-625</b>

## COMPONENTS

MANDREL	Logan Part No.	BX10	BX11	BX12	BX18	BX13	BX14	BX15
<b>MANDREL SEAL</b>	Logan Part No.	...	568-225	568-225	**	568-229	568-232	568-236
	No. Req'd	...	1	1	...	1	1	1
<b>SPLINE BODY</b>	Logan Part No.	BX20	BX21	BX22	BX28	BX23	BX24	BX25
<b>SPLINE BODY SEAL</b>	Logan Part No.	568-230	568-230	568-234	**	568-238	568-242	568-254
	No. Req'd	1	1	1	...	1	1	1
<b>SPLINE BODY POLYPAK</b>	Logan Part No.	BD205-1	BD205-1	BD202-3	**	BD202-2	BD202-1	BD203-1
	No. Req'd	2	2	2	...	2	2	2
<b>MANDREL SLEEVE</b>	Logan Part No.	BX30	BX31	...	BX38	...	BX34	...
<b>BALANCE BODY</b>	Logan Part No.	BX40	BX41	BX42	BX48	BX43	BX44	BX45
<b>MANDREL EXTENSION</b>	Logan Part No.	BX50	BX51	BX52	BX58	BX53	BX54	BX55
<b>MANDREL EXTENSION POLYPAK</b>	Logan Part No.	BD205-2	BD205-2	BD201-2	**	BX144-3	BD202-2	BD203-2
	No. Req'd	2	1	2	...	2	2	2
<b>PISTON ASSEMBLY</b>	Logan Part No.	BX60	BX61	BX62	BX68	BX63	BX64	BX65
<i>Consists of:</i>								
<b>PACKING SET</b>	Logan Part No.	BX60-1	BX61-1	BX62-1	BX68-1	BX63-1	BX64-1	BX65-1
<b>PACKING</b>	Logan Part No.	BX60-2	BX61-2	BX62-2	BX68-2	BX63-2	BX64-2	BX65-2
<b>MALE ADAPTER</b>								
<b>PACKING SPACER RING</b>	Logan Part No.	BX60-3	BX61-3	BX62-3	BX68-3	BX63-3	BX64-3	BX65-3
<b>CONNECTOR BODY</b>	Logan Part No.	BX70	BX71	BX72	BX78	BX73	BX74	BX75
<b>CONNECTOR BODY WIPER</b>	Logan Part No.	...	...	BD71	**	BD76	BX84	BD73
<b>CONNECTOR BODY ID POLYPAK</b>	Logan Part No.	BD200-3	BD205-3	BD201-3	**	AQ29005	BX144-3	BD203-3
	No. Req'd	3	3	3	...	3	3	3
<b>CONNECTOR BODY ID NON-EXTRUSION RING</b>	Logan Part No.	L365-30	L365-32	BD231	**	BD236	BX154	BD233
	No. Req'd	2	2	3	...	3	3	3
<b>CONNECTOR BODY SEAL PROTECTOR RING</b>	Logan Part No.	L375-30	8-228	**	**	**	L375-41	BD273
	No. Req'd	2	2	...	...	...	3	3
<b>CONNECTOR BODY OD PARBAK RING</b>	Logan Part No.	8-330	...	...	**	...	...	...
	No. Req'd	1	...	...	...	...	...	...
<b>CONNECTOR BODY OD NON-EXTRUSION RING</b>	Logan Part No.	BX160	L366-33.5	...	**	...	**	...
	No. Req'd	1	2	...	...	...	...	...
<b>CONNECTOR BODY SEAL (SMALL)</b>	Logan Part No.	568-330	568-228	568-232	**	568-236	568-239	568-250
	No. Req'd	2	2	1	...	1	1	1
<b>CONNECTOR BODY SEAL (LARGE)</b>	Logan Part No.	568-230	568-230	568-234	**	568-238	568-242	568-252
	No. Req'd	2	2	2	...	2	2	2
<b>CONNECTOR BODY FILL PLUG</b>	Logan Part No.	AG10002	AG10000	AG10002	**	AG10002	AG10002	AG10002
	No. Req'd	2	2	2	...	2	2	2
<b>CONNECTOR BODY FILL PLUG SEAL</b>	Logan Part No.	568-006	568-005	568-006	**	568-006	568-006	568-006
	No. Req'd	2	2	2	...	2	2	2

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

\*\* To be advised by engineering



# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR ENERGIZERS

TOOL JOINT CONNECTION	2-3/8 API Reg	2-3/8 EUE & 2-7/8 PAC	2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	3-1/2 API IF	4-1/2 API IF
OUTSIDE DIAMETER — INCHES	3-1/8	3-1/16 & 3-1/8	3-3/4	3-3/4	4-1/4	4-3/4	6-1/4
INSIDE DIAMETER — INCHES	1	1-1/2	1-1/2	1-7/8	2	2-1/4	2-1/4
COMPLETE ASSEMBLY Logan Part No.	614-312	614-306 & 614-313	614-375	614-376	614-425	614-475	614-625

## COMPONENTS (CONTINUED)

CONNECTOR BODY	Logan Part No.	...	...	AQ29003	**	AQ29005	BD202-5	BD203-5
OD POLYPAK	No. Req'd	...	...	2	...	2	2	2
PRESSURE BODY	Logan Part No.	BX90	BX91	BX92	BX98	BX93	BX94	BX95
PRESSURE BODY	Logan Part No.	AG10004	AG10004	AG10004	**	AG10000	AG10000	AG10000
FILL PLUG	No. Req'd	1	1	1	...	1	1	1
PRESSURE BODY	Logan Part No.	...	...	...	**	568-005	568-005	568-005
FILL PLUG SEAL	No. Req'd	...	...	...	...	1	1	1
WASHPIPE	Logan Part No.	BX100	BX101	BX102	BX108	BX103	BX104	BX105
WASHPIPE SEAL	Logan Part No.	568-130	...	568-227	**	568-231	568-234	568-238
(LARGE)	No. Req'd	1	...	1	...	1	1	1
WASHPIPE SEAL	Logan Part No.	568-221	568-224	568-225	**	568-229	568-232	568-234
(SMALL)	No. Req'd	1	1	1	...	1	1	1
WASHPIPE BODY	Logan Part No.	BX110	BX111	BX112	BX118	BX113	BX114	BX115
WASHPIPE BODY SEAL	Logan Part No.	568-230	568-230	568-234	**	568-238	568-242	568-252
(LARGE)	No. Req'd	1	1	1	...	1	1	1
WASHPIPE BODY SEAL	Logan Part No.	568-228	568-228	568-232	**	568-236	568-240	568-250
(SMALL)	No. Req'd	1	1	1	...	1	1	1
WASHPIPE BODY	Logan Part No.	BD205-2	BD205-3	BD201-3	**	AQ29003	BX144-3	BD203-3
POLYPAK	No. Req'd	2	2	2	...	2	2	2
REDRESS KITS *	Logan Part No.	BX120	BX121	BX122	BX128	BX123	BX124	BX125
O-RING PACKING SET	Logan Part No.	BX130	BX131	BX132	BX138	BX133	BX134	BX135
POLYPAK KIT	Logan Part No.	BX140	BX141	BX142	BX148	BX143	BX144	BX145
<i>Consists of:</i>								
SPLINE BODY	Logan Part No.	BD205-1	BD205-1	BD202-3	**	BD202-2	BD202-1	BD203-1
POLYPAK	No. Req'd	2	2	2	...	2	2	2
MANDREL EXTENSION	Logan Part No.	BD205-2	BD205-2	BD201-2	**	BX144-3	BD202-2	BD203-2
POLYPAK	No. Req'd	2	1	2	...	2	2	2
CONNECTOR BODY	Logan Part No.	BD200-3	BD205-3	BD201-3	**	AQ29005	BX144-3	BD203-3
ID POLYPAK	No. Req'd	3	3	3	...	3	3	3
CONNECTOR BODY	Logan Part No.	...	...	AQ29003	**	AQ29005	BD202-5	BD203-5
OD POLYPAK	No. Req'd	...	...	2	...	2	2	2
WASHPIPE BODY	Logan Part No.	BD200-3	BD205-3	BD201-3	**	AQ29003	BX144-3	BD203-3
POLYPAK	No. Req'd	2	2	2	...	2	2	2
MANDREL EXTENSION	Logan Part No.	...	BD205-6	BX142-2	**	BX143-5	BX144-5	BX145-5
ASSEMBLY SLEEVE	No. Req'd	...	1	1	...	1	1	1

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

\*\* To be advised by engineering

# LOGAN GENERAL CATALOG

OIL TOOLS

## SUPERIOR ENERGIZERS

TOOL JOINT CONNECTION	5-1/2 API Reg	6-5/8 API Reg				
OUTSIDE DIAMETER — INCHES	6-3/4	7-3/4				
INSIDE DIAMETER — INCHES	2-3/4	3-1/16				
<b>COMPLETE ASSEMBLY Logan Part No.</b>	<b>614-675</b>	<b>614-775</b>				

## COMPONENTS

<b>MANDREL</b>	<b>Logan Part No.</b>	<b>BX16</b>	<b>BX17</b>			
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>SPLINE BODY</b>	<b>Logan Part No.</b>	<b>BX26</b>	<b>BX27</b>			
<b>SPLINE BODY SEAL</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>SPLINE BODY POLYPAK</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>MANDREL SLEEVE</b>	<b>Logan Part No.</b>	<b>BX36</b>	<b>BX37</b>			
<b>BALANCE BODY</b>	<b>Logan Part No.</b>	<b>BX46</b>	<b>BX47</b>			
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	<b>BX56</b>	<b>BX57</b>			
<b>MANDREL EXTENSION POLYPAK</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>BX66</b>	<b>BX67</b>			
<i>Consists of:</i>						
<b>PACKING SET</b>	<b>Logan Part No.</b>	<b>BX66-1</b>	<b>BX67-1</b>			
<b>PACKING</b>	<b>Logan Part No.</b>	<b>BX66-2</b>	<b>BX67-2</b>			
<b>MALE ADAPTER</b>						
<b>PACKING SPACER RING</b>	<b>Logan Part No.</b>	<b>BX66-3</b>	<b>BX67-3</b>			
<b>CONNECTOR BODY</b>	<b>Logan Part No.</b>	<b>BX76</b>	<b>BX77</b>			
<b>CONNECTOR BODY WIPER</b>	<b>Logan Part No.</b>	<b>BX86</b>	<b>BD74</b>			
<b>CONNECTOR BODY ID POLYPAK</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY ID NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY OD PARBAK RING</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY OD NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY SEAL (SMALL)</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY SEAL (LARGE)</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY FILL PLUG</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			
<b>CONNECTOR BODY OD POLYPAK</b>	<b>Logan Part No.</b>	**	**			
	No. Req'd	...	...			

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

\*\* To be advised by engineering

## SUPERIOR ENERGIZERS

TOOL JOINT CONNECTION	5-1/2 API Reg	6-5/8 API Reg				
OUTSIDE DIAMETER — INCHES	6-3/4	7-3/4				
INSIDE DIAMETER — INCHES	2-3/4	3-1/16				
<b>COMPLETE ASSEMBLY</b> Logan Part No.	<b>614-675</b>	<b>614-775</b>				

## COMPONENTS

<b>CONNECTOR BODY</b>	Logan Part No.	**	**			
<b>OD POLYPAK</b>	No. Req'd	...	...			
<b>PRESSURE BODY</b>	Logan Part No.	<b>BX96</b>	<b>BX97</b>			
<b>PRESSURE BODY</b>	Logan Part No.	**	**			
<b>FILL PLUG</b>	No. Req'd	...	...			
<b>PRESSURE BODY</b>	Logan Part No.	**	**			
<b>FILL PLUG SEAL</b>	No. Req'd	...	...			
<b>WASHPIPE</b>	Logan Part No.	<b>BX106</b>	<b>BX107</b>			
<b>WASHPIPE SEAL</b>	Logan Part No.	**	**			
<b>(LARGE)</b>	No. Req'd	...	...			
<b>WASHPIPE SEAL</b>	Logan Part No.	**	**			
<b>(SMALL)</b>	No. Req'd	...	...			
<b>WASHPIPE BODY</b>	Logan Part No.	<b>BX116</b>	<b>BX117</b>			
<b>WASHPIPE BODY SEAL</b>	Logan Part No.	**	**			
<b>(LARGE)</b>						
<b>WASHPIPE BODY SEAL</b>	Logan Part No.	**	**			
<b>(SMALL)</b>	No. Req'd	...	...			
<b>WASHPIPE BODY</b>	Logan Part No.	**	**			
<b>POLYPAK</b>	No. Req'd	...	...			
<b>REDRESS KITS *</b>	Logan Part No.	<b>BX126</b>	<b>BX127</b>			
<b>O-RING PACKING SET</b>	Logan Part No.	<b>BX136</b>	<b>BX137</b>			
<b>POLYPAK KIT</b>	Logan Part No.	<b>BX146</b>	<b>BX147</b>			
<i>Consists of:</i>						
<b>SPLINE BODY</b>	Logan Part No.	**	**			
<b>POLYPAK</b>	No. Req'd	...	...			
<b>MANDREL EXTENSION</b>	Logan Part No.	**	**			
<b>POLYPAK</b>	No. Req'd	...	...			
<b>CONNECTOR BODY</b>	Logan Part No.	**	**			
<b>ID POLYPAK</b>	No. Req'd	...	...			
<b>CONNECTOR BODY</b>	Logan Part No.	**	**			
<b>OD POLYPAK</b>	No. Req'd	...	...			
<b>WASHPIPE BODY</b>	Logan Part No.	**	**			
<b>POLYPAK</b>	No. Req'd	...	...			
<b>MANDREL EXTENSION</b>	Logan Part No.	**	**			
<b>ASSEMBLY SLEEVE</b>	No. Req'd	...	...			

\* Redress Kits include O-Ring Packing Sets, Polypak Kits, and Connector Body Wipers

\*\* To be advised by engineering

## Z TYPE HYDRAULIC JARS

### Overview

The Logan Z Type Hydraulic Jar is used for light drilling, fishing, coring, reaming, testing, side tracking, and washover operations. This straight-pull jar combines the principles of mechanics and hydraulics in a simple to assemble, easy to operate design. The jar has a closed hydraulic system that contains the hydraulic fluid within the jar and well fluids cannot enter the tool. The internal working parts are constantly lubricated by the hydraulic fluid within the tool resulting in long wear life of the parts.

### Construction

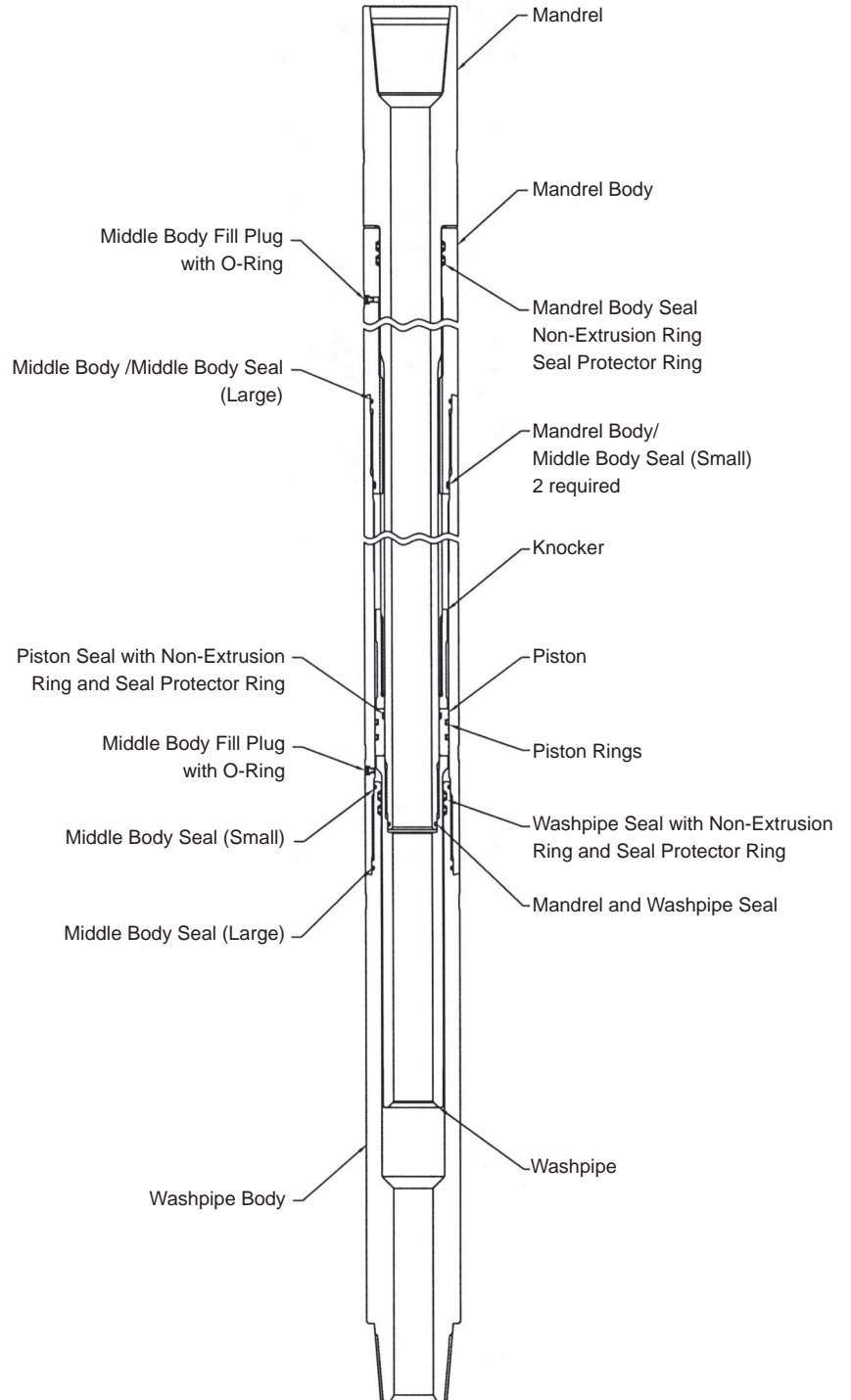
The Logan Z Type Hydraulic Jar consists of a mandrel/piston assembly that slides within a cylinder assembly. The mandrel/piston assembly is composed of a mandrel, piston assembly (a piston, two piston rings, an O-ring seal, a non-extrusion ring, and a seal protector ring), washpipe, knocker, and seal ring assemblies. The cylinder assembly consists of a mandrel body, middle body, washpipe body, fill plugs, and seal assemblies.

### Operation

The Logan Z Type Hydraulic Jar is easy to use. Only straight pull is required to operate the jar. Each blow can be positively controlled by the operator from a very light blow to forceful impact. Successive blows can be struck as often as the operator can raise and slack off the running string. Full circulation through the tool can be maintained for effective flushing. Full torque may be used in either direction and at all times during operation.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard



# LOGAN GENERAL CATALOG

OIL TOOLS

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>	7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>	Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 605-000 Bowen No. 70822	<b>605-001</b> 74723	<b>605-002</b> 54020	<b>605-003</b> 68010	<b>605-004</b> 55670	<b>605-005</b> 52504	<b>605-006</b> 52506
<b>TOP SUB</b>	<b>Logan Part No.</b> AG3000 Bowen No. 70823	<b>AG3001</b> 21156	...	<b>AG3003</b> 68015	<b>AG3004</b> 55889	...	...
<b>MANDREL</b>	<b>Logan Part No.</b> AG4000 Bowen No. 70825	<b>AG4001</b> 21155	<b>AG4002</b> 18780	<b>AG4003</b> 68014	<b>AG4004</b> 55888	<b>AG4005</b> 38056	<b>AG4006</b> 38041
<b>PISTON ASSEMBLY</b> <i>(Ring Type Standard)</i>	<b>Logan Part No.</b> 26000-018 Bowen No. 70853	<b>26000-019</b> 74725	<b>26000-020</b> 59585	<b>26000-021</b> 68019	<b>26000-022</b> 56368	<b>26000-023</b> 61282	<b>26000-024</b> 68128
<b>MANDREL BODY</b>	<b>Logan Part No.</b> AG5000 Bowen No. 70824	<b>AG5001</b> 21153	<b>AG5002</b> 56571	<b>AG5003</b> 68013	<b>AG5004</b> 55887	<b>AG5005</b> 52764	<b>AG5006</b> 52770
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AG6000 Bowen No. 70826	<b>AG6001</b> 74724	<b>AG6002</b> 18777	<b>AG6003</b> 68012	<b>AG6004</b> 55886	<b>AG6005</b> 42737	<b>AG6006</b> 38044
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b> AG7000 Bowen No. 70829	<b>AG7001</b> 21151	<b>AG7002</b> 18776	<b>AG7003</b> 68011	<b>AG7004</b> 55885	<b>AG7005</b> 38064	<b>AG7006</b> 38045
<b>KNOCKER</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>AG8002</b> 18781	...	...	<b>AG8005</b> 38060	<b>AG8006</b> 38049
<b>WASHPIPE</b>	<b>Logan Part No.</b> AG9000 Bowen No. 70828	<b>AG9001</b> 21154	<b>AG9002</b> 18779	<b>AG9003</b> 68016	<b>AG9004</b> 55890	<b>AG9005</b> 42738	<b>AG9006</b> 38046
<b>MANDREL BODY</b>	<b>Logan Part No.</b> AG10000 Bowen No. 617	<b>AG10000</b> 617	<b>AG10002</b> 329	<b>AG10000</b> 617	<b>AG10000</b> 617	<b>AG10002</b> 329	<b>AG10002</b> 329
<b>FILL PLUG</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>AG10000</b> 617	<b>AG10004</b> 10641	<b>AG10004</b> 10641	<b>AG10000</b> 617	<b>AG10000</b> 617
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>AG10000</b> 617	<b>AG10004</b> 10641	<b>AG10004</b> 10641	<b>AG10000</b> 617	<b>AG10000</b> 617
<b>FILL PLUG</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>AG10000</b> 617	<b>AG10004</b> 10641	<b>AG10004</b> 10641	<b>AG10000</b> 617	<b>AG10000</b> 617
<b>PACKING SET</b>	<b>Logan Part No.</b> 26000-036 Bowen No. 70961	<b>26000-037</b> 74802	<b>26000-038</b> 18793	<b>26000-039</b> 68017	<b>26000-040</b> 55924	<b>26000-041</b> 44622	<b>26000-042</b> 38048
<b>JAR LUBE</b>	<b>Logan Part No.</b> 49842-A Bowen No. 49842-A 1 Gallon	<b>49842-B</b> 49842-B 5 Gallons	<b>49842-D</b> 49842-D 55 Gallons				

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

### Recommended Spares:

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>		1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>		Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-000</b>	<b>605-001</b>	<b>605-002</b>	<b>605-003</b>	<b>605-004</b>	<b>605-005</b>	<b>605-006</b>
	<b>Bowen No.</b>	70822	74723	54020	68010	55670	52504	52506
<b>MANDREL NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-16</b>	<b>L365-17</b>	<b>L365-24</b>	<b>L365-30.5</b>	<b>L364-32.5</b>	<b>L365-32</b>	<b>L365-35</b>
	<b>Bowen No.</b>	365-16	365-17	365-24	365-30.5	364-32.5	365-32	365-35
	<b>No. Req'd</b>	8	4	4	8	8	8	8
<b>MANDREL SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-16</b>	<b>L375-17</b>	<b>L375-24</b>	<b>L375-30.5</b>	<b>L375-32.5</b>	<b>L375-32</b>	<b>L375-35</b>
	<b>Bowen No.</b>	375-16	375-17	375-24	375-30.5	375-32.5	375-32	375-35
	<b>No. Req'd</b>	8	4	4	8	8	8	8
<b>MANDREL BODY NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	...	...	<b>L56542</b>	...	...	...	...
	<b>Bowen No.</b>	...	...	56542	...	...	...	...
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>AG11000</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	71254	...	...	...	...	...	...
<b>MANDREL BODY SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	...	...	<b>L227-27.25</b>	...	...	...	...
	<b>Bowen No.</b>	...	...	227-27.25	...	...	...	...

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>	7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>	Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 605-000 Bowen No. 70822	<b>605-001</b> 74723	<b>605-002</b> 54020	<b>605-003</b> 68010	<b>605-004</b> 55670	<b>605-005</b> 52504	<b>605-006</b> 52506
<b>RING TYPE</b>	<b>Logan Part No.</b> 26000-018	<b>26000-019</b>	<b>26000-020</b>	<b>26000-021</b>	<b>26000-022</b>	<b>26000-023</b>	<b>26000-024</b>
<b>PISTON ASSEMBLY</b>	Bowen No. 70853	74725	59585	68019	56368	61282	68128
<i>Consists of:</i>							
<b>PISTON</b>	<b>Logan Part No.</b> AG15000 Bowen No. 70827	...	<b>AG15002</b> 59586	...	...	<b>AG15005</b> 61283	<b>AG15006</b> 68127
<b>WAVE SPRING</b>	<b>Logan Part No.</b> L66164 Bowen No. 66164 No. Req'd 2	...	...	...	...	...	...
<b>PISTON RING</b>	<b>Logan Part No.</b> ... Bowen No. ... No. Req'd ...	...	<b>L18783</b> 18783 2	...	...	<b>L61284</b> 61284 4	<b>L61287</b> 61287 2
<b>SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>568-214</b> 568214	...	...	<b>568-223</b> 568223	<b>568-226</b> 568226
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>L365-19</b> 365-19	<b>L370-1.5</b> 370-1.5	<b>L370-3.5</b> 370-3.5	<b>L370-1</b> 370-1	<b>L370-4</b> 370-4
<b>SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	<b>L375-19</b> 375-19	<b>L376-1.5</b> 376-1.5	<b>L376-3.5</b> 376-3.5	<b>L376-1</b> 376-1	<b>L376-4</b> 376-4
<b>PROTECTOR RING</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>CONE TYPE</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>26000-019</b> 74725	...	...	...	...	...
<b>PISTON ASSEMBLY</b>	<i>Consists of:</i>						
<b>CONE</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>AG14001</b> 74726	...	<b>AG14003</b> 68020	<b>AG14004</b> 55891	...	...
<b>BY-PASS BODY</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>AG13001</b> 74727	...	...	...	...	...
<b>SEAL BODY</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>AG12001</b> 74728	...	<b>AG12003</b> 68021	<b>AG12004</b> 55892	...	...
<b>SEAL BODY SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>568-020</b> 568020	...	<b>568-224</b> 568224	<b>568-226</b> 568226	...	...

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*Special Notes:*

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>	7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>	Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 605-000	<b>605-001</b>	<b>605-002</b>	<b>605-003</b>	<b>605-004</b>	<b>605-005</b>	<b>605-006</b>
	Bowen No. 70822	74723	54020	68010	55670	52504	52506

## OPTIONAL

<b>MANDREL BODY</b>	<b>Logan Part No.</b> AG1000-16	AG1000-17	AG1000-24	AG1000-29.5	AG1000-32.5	AG1000-32	AG1000-35
<b>SETTING TOOL</b>	Bowen No. 22709-16	22709-17	22709-24	22709-29.5	22709-32.5	22709-32	22709-3
<b>PISTON SETTING TOOL</b>	<b>Logan Part No.</b> ...	...	AG1000-19	AG1000-30.5	AG1000-31	AG1000-29	AG1000-32
	Bowen No. ...	...	22709-19	22709-30.5	22709-31	22709-29	22709-32
<b>SERVICE KIT</b>	<b>Logan Part No.</b> 26000-054	26000-055	26000-055	26000-055	26000-055	26000-055	26000-055
	Bowen No. 21279	55403	55403	55403	55403	55403	55403
<b>HI-TEMPERATURE</b>	<b>Logan Part No.</b> ...	26000-73	26000-074	...	26000-076	26000-077	26000-078
<b>PACKING SET</b>	Bowen No. ...	149945	149884	...	148247	73659	80004
<b>PACKING SET</b>	<b>Logan Part No.</b> 26000-036	26000-037	26000-038	26000-039	26000-040	26000-041	26000-042
<i>Consists of:</i>	Bowen No. 70961	74802	18793	68017	55924	44622	38048
<b>MANDREL/ WASHPIPE SEAL</b>	<b>Logan Part No.</b> 568-211	568-212	568-219	568-328	568-330	568-329	568-332
	Bowen No. 568211	568212	568219	568328	568330	568329	568332
	No. Req'd 4	4	4	4	4	4	4
<b>LARGE MIDDLE</b>	<b>Logan Part No.</b> 568-216	568-019	568-224	568-036	568-038	568-231	...
<b>BODY SEAL</b>	Bowen No. 568216	568019	568224	568036	568038	568231	568235
	No. Req'd 2	2	2	2	2	2	2
<b>SMALL MIDDLE</b>	<b>Logan Part No.</b> 568-214	568-027	568-228	568-035	568-036	568-228	568-233
<b>BODY SEAL</b>	Bowen No. 568214	568027	568228	568035	568036	568228	568233
	No. Req'd 3	3	3	3	3	3	3
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b> ...	568-115	568-210	568-224	568-226	568-220	568-222
	Bowen No. ...	568115	568210	568224	568226	568220	568222

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### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

### Recommended Spares:

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool



## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>		1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>		Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-000</b>	<b>605-001</b>	<b>605-002</b>	<b>605-003</b>	<b>605-004</b>	<b>605-005</b>	<b>605-006</b>
	<b>Bowen No.</b>	70822	74723	54020	68010	55670	52504	52506
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	<b>568-006</b>	<b>568-005</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	568005	568005	568006	568005	568006	568006	568006
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	...	...	<b>568-005</b>	...	...	<b>568-005</b>	<b>568-005</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	...	...	568005	...	...	568005	568005
<b>PISTON SEAL</b>	<b>Logan Part No.</b>	...	...	<b>568-214</b>	...	...	<b>568-223</b>	<b>568-226</b>
	<b>Bowen No.</b>	...	...	568214	...	...	568223	568226
<b>MIDDLE BODY / MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>WASHPIPE / MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>BACK-UP RINGS</b>	<b>Logan Part No.</b>	<b>8-024</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	8-024	...	...	...	...	...	...
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>568-015</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	568015	...	...	...	...	...	...
<b>MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-024</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	568024	...	...	...	...	...	...

<b>JAR LUBE</b>	<b>Logan Part No.</b>	<b>49842-A</b>	<b>49842-B</b>	<b>49842-D</b>				
	<b>Bowen No.</b>	49842-A	49842-B	49842-D				
		1 Gallon	5 Gallons	55 Gallons				

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**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		7/8 Sucker Rod	1-13/16 Wilson FJ	1-1/4 API Reg	2-3/8 PH6 5.9# Hyd Bx	2-3/8 EUE	2-3/8 API Reg	2-7/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>		1-5/8	1-13/16	2-1/4	2-29/32	3-1/16	3-1/8	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1/4	5/16	3/8	1	1-1/2	1	1-1/4
<b>TYPE JAR</b>		Sub	Special	Integral Mandrel	Sub	Sub	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-000</b>	<b>605-001</b>	<b>605-002</b>	<b>605-003</b>	<b>605-004</b>	<b>605-005</b>	<b>605-006</b>
	<b>Bowen No.</b>	70822	74723	54020	68010	55670	52504	52506
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	<b>568-006</b>	<b>568-005</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	568005	568005	568006	568005	568006	568006	568006
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	...	...	<b>568-005</b>	...	...	<b>568-005</b>	<b>568-005</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	...	...	568005	...	...	568005	568005
<b>PISTON SEAL</b>	<b>Logan Part No.</b>	...	...	<b>568-214</b>	...	...	<b>568-223</b>	<b>568-226</b>
	<b>Bowen No.</b>	...	...	568214	...	...	568223	568226
<b>MIDDLE BODY / MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>WASHPIPE / MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>BACK-UP RINGS</b>	<b>Logan Part No.</b>	<b>8-024</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	8-024	...	...	...	...	...	...
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>568-015</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	568015	...	...	...	...	...	...
<b>MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-024</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	568024	...	...	...	...	...	...
<b>JAR LUBE</b>	<b>Logan Part No.</b>	<b>49842-A</b>	<b>49842-B</b>	<b>49842-D</b>				
	<b>Bowen No.</b>	49842-A	49842-B	49842-D				
		1 Gallon	5 Gallons	55 Gallons				

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**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	2-7/8 EUE	3-1/2 API FH	3-1/2 API IF	3-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	4-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1-1/2	1-7/8	1-15/16	2-3/8	1-1/2	2	2-1/4
<b>TYPE JAR</b>		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-007</b>	<b>605-008</b>	<b>605-009</b>	<b>605-010</b>	<b>605-011</b>	<b>605-012</b>	<b>605-018</b>
	Bowen No.	52528	52497	52502	52653	52530	52500	...
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AG3007</b>	<b>AG3008</b>	...	...	...	...	...
	Bowen No.	37412	20156	...	...	...	...	...
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AG4007</b>	<b>AG4008</b>	<b>AG4009</b>	<b>AG4010</b>	<b>AG4011</b>	<b>AG4012</b>	<b>AG40125</b>
	Bowen No.	37411	20155	44484	35850	25965	38115	38115
<b>PISTON ASSEMBLY</b> <i>(Ring Type Standard)</i>	<b>Logan Part No.</b>	<b>26000-025</b>	<b>26000-026</b>	<b>26000-027</b>	<b>26000-028</b>	<b>26000-029</b>	<b>26000-030</b>	<b>26000-030</b>
	Bowen No.	61288	61285	68420	68421	55285	55193	55193
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG5007</b>	<b>AG5008</b>	<b>AG5009</b>	<b>AG5010</b>	<b>AG5011</b>	<b>AG5012</b>	<b>AG5012</b>
	Bowen No.	52771	52772	52780	52815	52749	52833	52833
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AG6007</b>	<b>AG6007</b>	<b>AG6009</b>	<b>AG6010</b>	<b>AG6011</b>	<b>AG6012</b>	<b>AG6012</b>
	Bowen No.	20152	20152	41840	35853	25962	38112	38112
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AG7007</b>	<b>AG7008</b>	<b>AG7009</b>	<b>AG7010</b>	<b>AG7011</b>	<b>AG7012</b>	<b>AG70125</b>
	Bowen No.	37407	20151	44487	35854	25961	38111	38111
<b>KNOCKER</b>	<b>Logan Part No.</b>	...	...	<b>AG8009</b>	<b>AG8010</b>	<b>AG8011</b>	<b>AG8012</b>	<b>AG8012</b>
	Bowen No.	...	...	44490	35857	25966	38116	38116
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AG9007</b>	<b>AG9008</b>	<b>AG9009</b>	<b>AG9010</b>	<b>AG9011</b>	<b>AG9012</b>	<b>AG90125</b>
	Bowen No.	37410	20154	44488	35855	25964	38114	38114
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>
<b>FILL PLUG</b>	Bowen No.	329	329	329	329	329	329	329
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>
<b>FILL PLUG</b>	Bowen No.	617	617	617	617	329	329	329
<b>PACKING SET</b>	<b>Logan Part No.</b>	<b>26000-043</b>	<b>26000-044</b>	<b>26000-045</b>	<b>26000-046</b>	<b>26000-047</b>	<b>26000-048</b>	<b>26000-048</b>
	Bowen No.	37415	20163	44491	35858	25892	38120	38120

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### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

### Recommended Spares:

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	2-7/8 EUE	3-1/2 API FH	3-1/2 API IF	3-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	4-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1-1/2	1-7/8	1-15/16	2-3/8	1-1/2	2	2-1/4
<b>TYPE JAR</b>		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-007</b>	<b>605-008</b>	<b>605-009</b>	<b>605-010</b>	<b>605-011</b>	<b>605-012</b>	<b>605-018</b>
	Bowen No.	52528	52497	52502	52653	52530	52500	...
<b>MANDREL NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-36</b>	<b>L365-36</b>	<b>L365-40</b>	<b>L365-42</b>	<b>L365-40</b>	<b>L365-41</b>	<b>L365-41</b>
	Bowen No.	365-36	365-36	365-40	365-42	365-40	365-41	365-41
	No. Req'd	8	8	8	8	8	8	8
<b>MANDREL SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-36</b>	<b>L375-36</b>	<b>L375-40</b>	<b>L375-42</b>	<b>L375-40</b>	<b>L375-41</b>	<b>L375-41</b>
	Bowen No.	375-36	375-36	375-40	375-42	375-40	375-41	375-41
	No. Req'd	8	8	8	8	8	8	8
<b>MANDREL BODY NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>MANDREL BODY SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>RING TYPE PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>26000-025</b>	<b>26000-026</b>	<b>26000-027</b>	<b>26000-028</b>	<b>26000-029</b>	<b>26000-030</b>	<b>26000-030</b>
	Bowen No.	61288	61285	68420	68421	55285	55193	55193
	<i>Consists of:</i>							
<b>PISTON</b>	<b>Logan Part No.</b>	<b>AG15007</b>	<b>AG15008</b>	<b>AG15009</b>	<b>AG15010</b>	<b>AG15011</b>	<b>AG15012</b>	<b>AG15012</b>
	Bowen No.	61289	61286	68413	68415	55286	55194	55194
<b>WAVE SPRING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>PISTON RING</b>	<b>Logan Part No.</b>	<b>L61287</b>	<b>L61287</b>	<b>L68414</b>	<b>L68416</b>	<b>L25968</b>	<b>L25293</b>	<b>L25293</b>
	Bowen No.	61287	61287	68414	68416	25968	25293	25293
	No. Req'd	4	4	3	3	2	2	2
<b>SEAL</b>	<b>Logan Part No.</b>	<b>568-228</b>	<b>568-229</b>	<b>568-231</b>	<b>568-233</b>	<b>568-231</b>	<b>568-232</b>	<b>568-232</b>
	Bowen No.	568228	568229	568231	568233	568231	568232	568232
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L370-6</b>	<b>L52495</b>	<b>L370-9</b>	<b>L370-11</b>	<b>L370-8.5</b>	<b>L370-10</b>	<b>L370-10</b>
	Bowen No.	370-6	52495	370-9	370-11	370-8.5	370-10	370-10
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L376-6</b>	<b>L52496</b>	<b>L376-9</b>	<b>L376-11</b>	<b>L376-8.5</b>	<b>L376-10</b>	<b>L376-10</b>
	Bowen No.	376-6	52496	376-9	376-11	376-8.5	376-10	376-10

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*Special Notes:*

- (1) *Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.*
- (2) *Service Kit does not include Seal Setting Tools, which must be ordered separately.*

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	2-7/8 EUE	3-1/2 API FH	3-1/2 API IF	3-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	4-3/4
<b>INSIDE DIAMETER (INCHES)</b>		1-1/2	1-7/8	1-15/16	2-3/8	1-1/2	2	2-1/4
<b>TYPE JAR</b>		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-007</b>	<b>605-008</b>	<b>605-009</b>	<b>605-010</b>	<b>605-011</b>	<b>605-012</b>	<b>605-018</b>
	Bowen No.	52528	52497	52502	52653	52530	52500	...
<b>CONE TYPE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>PISTON ASSEMBLY</b>	Bowen No.	...	...	...	...	...	...	...
<i>Consists of:</i>		...	...	...	...	...	...	...
<b>CONE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>BY-PASS BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>SEAL BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>SEAL BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

## OPTIONAL

<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1000-36</b>	<b>AG1000-36</b>	<b>AG1000-40</b>	<b>AG1000-42</b>	<b>AG1000-40</b>	<b>AG1000-41</b>	<b>AG1000-41</b>
<b>SETTING TOOL</b>	Bowen No.	22709-36	22709-36	22709-40	22709-42	22709-40	22709-41	22709-41
<b>PISTON SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-34</b>	<b>AG2000</b>	<b>AG1000-37</b>	<b>AG1000-39</b>	<b>AG1000-36.5</b>	<b>AG1000-38</b>	<b>AG1000-38</b>
	Bowen No.	22709-34	54922	22709-37	22709-39	22709-36.5	22709-38	22709-38
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>
	Bowen No.	55403	55403	55403	55403	55403	55403	55403
<b>HI-TEMPERATURE</b>	<b>Logan Part No.</b>	...	...	<b>26000-081</b>	...	<b>26000-083</b>	<b>26000-084</b>	<b>26000-084</b>
<b>PACKING SET</b>	Bowen No.	...	...	78330	...	80115	80005	80005

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

### Recommended Spares:

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

TOOL JOINT CONNECTION	2-3/8 API IF	2-3/8 EUE	2-7/8 API IF	2-7/8 EUE	3-1/2 API FH	3-1/2 API IF	3-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>	3-3/4	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	4-3/4
<b>INSIDE DIAMETER (INCHES)</b>	1-1/2	1-7/8	1-15/16	2-3/8	1-1/2	2	2-1/4
<b>TYPE JAR</b>	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 605-007 Bowen No. 52528	<b>605-008</b> 52497	<b>605-009</b> 52502	<b>605-010</b> 52653	<b>605-011</b> 52530	<b>605-012</b> 52500	<b>605-018</b> ...
<b>PACKING SET</b>	<b>Logan Part No.</b> 26000-043 Bowen No. 37415	<b>26000-044</b> 20163	<b>26000-045</b> 44491	<b>26000-046</b> 35858	<b>26000-047</b> 25892	<b>26000-048</b> 38120	<b>26000-048</b> 38120
<i>Consists of:</i>							
<b>MANDREL / WASHPIPE SEAL</b>	<b>Logan Part No.</b> 568-333 Bowen No. 568333 No. Req'd 4	<b>568-333</b> 568333 4	<b>568-337</b> 568337 4	<b>568-339</b> 568339 4	<b>568-337</b> 568337 4	<b>568-338</b> 568338 4	<b>568-338</b> 568338 4
<b>LARGE MIDDLE BODY SEAL</b>	<b>Logan Part No.</b> 568-235 Bowen No. 568235 No. Req'd 2	<b>568-235</b> 568235 2	<b>568-239</b> 568239 2	<b>568-241</b> 568241 2	<b>568-241</b> 568241 2	<b>568-241</b> 568241 2	<b>568-241</b> 568241 2
<b>SMALL MIDDLE BODY SEAL</b>	<b>Logan Part No.</b> 568-233 Bowen No. 568233 No. Req'd 3	<b>568-233</b> 568233 3	<b>568-237</b> 568237 3	<b>568-239</b> 568239 3	<b>568-239</b> 568239 3	<b>568-239</b> 568239 3	<b>568-239</b> 568239 3
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b> 568-224 Bowen No. 568224	<b>568-227</b> 568227	<b>568-227</b> 568227	<b>568-233</b> 568233	<b>568-228</b> 568228	<b>568-228</b> 568228	<b>568-228</b> 568228
<b>MANDREL BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b> 568-006 Bowen No. 568006	<b>568-006</b> 568006	<b>568-006</b> 568006	<b>568-006</b> 568006	<b>568-006</b> 568006	<b>568-006</b> 568006	<b>568-006</b> 568006
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b> 568-005 Bowen No. 568005	<b>568-005</b> 568005	<b>568-005</b> 568005	<b>568-005</b> 568005	<b>568-006</b> 568006	<b>568-006</b> 568006	<b>568-006</b> 568006
<b>PISTON SEAL</b>	<b>Logan Part No.</b> 568-228 Bowen No. 568228	<b>568-229</b> 568229	<b>568-231</b> 568231	<b>568-233</b> 568233	<b>568-231</b> 568231	<b>568-232</b> 568232	<b>568-232</b> 568232
<b>MIDDLE BODY / MANDREL BODY SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>WASHPIPE / MIDDLE BODY SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>BACK-UP RINGS</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>MANDREL SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>MANDREL BODY SEAL</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...

JAR LUBE	Logan Part No.	49842-A	49842-B	49842-D			
	Bowen No.	49842-A	49842-B	49842-D			
		1 Gallon	5 Gallons	55 Gallons			

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**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		4-1/2 API FH	4-1/2 API IF	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg	
<b>OUTSIDE DIAMETER (INCHES)</b>		6	6-1/4 & 6-1/2	6-3/4	7-3/4 & 8	9	
<b>INSIDE DIAMETER (INCHES)</b>		2	2-1/4	2-3/8	3-1/16	3-3/4	
<b>TYPE JAR</b>		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-013</b>	<b>605-014</b>	<b>605-015</b>	<b>605-016</b>	<b>605-017</b>	
	<b>Bowen No.</b>	52498	52544	52680	52711	68346	
<b>TOP SUB</b>	<b>Logan Part No.</b>	...	...	...	...	...	
	<b>Bowen No.</b>	...	...	...	...	...	
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AG4013</b>	<b>AG4014</b>	<b>AG4015</b>	<b>AG4016</b>	<b>AG4017</b>	
	<b>Bowen No.</b>	14715	12375	11131	15156	66352	
<b>PISTON ASSEMBLY</b> <i>(Ring Type Standard)</i>	<b>Logan Part No.</b>	<b>26000-031</b>	<b>26000-032</b>	<b>26000-033</b>	<b>26000-034</b>	<b>26000-035</b>	
	<b>Bowen No.</b>	55246	55212	55335	68924	66355	
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG5013</b>	<b>AG5014</b>	<b>AG5015</b>	<b>AG5016</b>	<b>AG5017</b>	
	<b>Bowen No.</b>	52834	52835	52836	53088	66354	
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AG6013</b>	<b>AG6014</b>	<b>AG6015</b>	<b>AG6016</b>	<b>AG6017</b>	
	<b>Bowen No.</b>	14712	12372	11133	15158	66347	
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AG7013</b>	<b>AG7014</b>	<b>AG7015</b>	<b>AG7016</b>	<b>AG7017</b>	
	<b>Bowen No.</b>	14711	12371	701	15164	66350	
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AG8013</b>	<b>AG8014</b>	<b>AG8015</b>	<b>AG8016</b>	<b>AG8017</b>	
	<b>Bowen No.</b>	14717	12377	11134	15159	66348	
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AG9013</b>	<b>AG9014</b>	<b>AG9015</b>	<b>AG9016</b>	<b>AG9017</b>	
	<b>Bowen No.</b>	14714	12374	704	15163	66349	
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG10003</b>	<b>AG10003</b>	<b>AG10003</b>	<b>AG10003</b>	<b>AG10003</b>	
<b>FILL PLUG</b>	<b>Bowen No.</b>	508	508	508	508	508	
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	
<b>FILL PLUG</b>	<b>Bowen No.</b>	329	329	329	329	329	
<b>PACKING SET</b>	<b>Logan Part No.</b>	<b>26000-049</b>	<b>26000-050</b>	<b>26000-051</b>	<b>26000-052</b>	<b>26000-053</b>	
	<b>Bowen No.</b>	14720	12383	9738	20980	66359	
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>L453</b>	<b>L365-48</b>	<b>L365-50.75</b>	<b>L365-59</b>	<b>L365-65</b>	
<b>NON-EXTRUSION RING</b>	<b>Bowen No.</b>	453	365-48	708	365-59	365-65	
	<b>No. Req'd</b>	8	8	8	8	8	
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>L449</b>	<b>L375-48</b>	<b>L375-50.75</b>	<b>L375-59</b>	<b>L375-65</b>	
<b>PROTECTOR RING</b>	<b>Bowen No.</b>	449	375-48	709	375-59	375-65	
	<b>No. Req'd</b>	8	8	8	8	8	
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	
<b>NON-EXTRUSION RING</b>	<b>Bowen No.</b>	...	...	...	...	...	

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*Special Notes:*

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 (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

TOOL JOINT CONNECTION	4-1/2 API FH	4-1/2 API IF	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg
<b>OUTSIDE DIAMETER (INCHES)</b>	6	6-1/4 & 6-1/2	6-3/4	7-3/4 & 8	9
<b>INSIDE DIAMETER (INCHES)</b>	2	2-1/4	2-3/8	3-1/16	3-3/4
<b>TYPE JAR</b>	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 605-013</b> Bowen No. 52498	<b>605-014</b> 52544	<b>605-015</b> 52680	<b>605-016</b> 52711	<b>605-017</b> 68346
<b>MANDREL BODY INSERT</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<b>MANDREL BODY SEAL PROTECTOR RING</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<b>RING TYPE PISTON ASSEMBLY</b>	<b>Logan Part No. 26000-031</b> Bowen No. 55246	<b>26000-032</b> 55212	<b>26000-033</b> 55335	<b>26000-034</b> 68924	<b>26000-035</b> 66355
<i>Consists of:</i>					
<b>PISTON</b>	<b>Logan Part No. AG15013</b> Bowen No. 55247	<b>AG15014</b> 55213	<b>AG15015</b> 55339	<b>AG15016</b> 68925	<b>AG15017</b> 66357
<b>WAVE SPRING</b>	<b>Logan Part No. ...</b> No. Req'd ...	...	...	...	...
<b>PISTON RING</b>	<b>Logan Part No. L1999</b> Bowen No. 1999 No. Req'd 1	<b>L12379</b> 12379 2	<b>L719</b> 719 2	<b>L15162</b> 15162 4	<b>L66356</b> 66356 5
<b>SEAL</b>	<b>Logan Part No. 568-236</b> Bowen No. 568236	<b>568-237</b> 568237	<b>568-239</b> 568239	<b>568-426</b> 568426	<b>568-430</b> 568430
<b>NON-EXTRUSION RING</b>	<b>Logan Part No. L370-13.75</b> Bowen No. 370-13.75	<b>L370-15</b> 370-15	<b>L370-17</b> 370-17	<b>L365-53</b> 365-53	<b>L365-57</b> 365-57
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No. L376-13.75</b> Bowen No. 376-13.75	<b>L376-15</b> 376-15	<b>L376-17</b> 376-17	<b>L375-53</b> 375-53	<b>L375-57</b> 375-57
<b>CONE TYPE PISTON ASSEMBLY</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<i>Consists of:</i>					
<b>CONE</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<b>BY-PASS BODY</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<b>SEAL BODY</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...
<b>SEAL BODY SEAL</b>	<b>Logan Part No. ...</b> Bowen No. ...	...	...	...	...

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*Special Notes:*

- (1) *Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.*
- (2) *Service Kit does not include Seal Setting Tools, which must be ordered separately.*

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool



# LOGAN GENERAL CATALOG

## OIL TOOLS

### Z TYPE HYDRAULIC JARS

<b>TOOL JOINT CONNECTION</b>		4-1/2 API FH	4-1/2 API IF	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg	
<b>OUTSIDE DIAMETER (INCHES)</b>		6	6-1/4 & 6-1/2	6-3/4	7-3/4 & 8	9	
<b>INSIDE DIAMETER (INCHES)</b>		2	2-1/4	2-3/8	3-1/16	3-3/4	
<b>TYPE JAR</b>		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-013</b>	<b>605-014</b>	<b>605-015</b>	<b>605-016</b>	<b>605-017</b>	
	Bowen No.	52498	52544	52680	52711	68346	

### OPTIONAL

<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1001</b>	<b>AG1000-48</b>	<b>AG1000-51</b>	<b>AG1000-59</b>	<b>AG1000-65</b>	
<b>SETTING TOOL</b>	Bowen No.	448	22709-48	22709-51	22709-59	22709-65	
<b>PISTON SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-41.75</b>	<b>AG2001</b>	<b>AG1000-45</b>	<b>AG1000-53</b>	<b>AG1000-57</b>	
	Bowen No.	22709-41.75	54309	22709-45	22709-53	22709-57	
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	
	Bowen No.	55403	55403	55403	55403	55403	
<b>HI-TEMPERATURE PACKING SET</b>	<b>Logan Part No.</b>	<b>26000-085</b>	<b>26000-086</b>	<b>26000-087</b>	<b>26000-088</b>	...	
	Bowen No.	148246	79015 & 147932	9738/006	20980/006 & 007	...	
<b>PACKING SET</b>	<b>Logan Part No.</b>	<b>26000-049</b>	<b>26000-050</b>	<b>26000-051</b>	<b>26000-052</b>	<b>26000-053</b>	
<i>Consists of:</i>	Bowen No.	14720	12383	9738	20980	66359	
<b>MANDREL / WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-344</b>	<b>568-345</b>	<b>568-348</b>	<b>568-432</b>	<b>568-438</b>	
	Bowen No.	568344	568345	568348	568432	568438	
	No. Req'd	4	4	4	4	4	
<b>LARGE MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-248</b>	<b>568-252</b>	<b>568-256</b>	<b>568-261</b>	<b>568-265</b>	
	Bowen No.	568248	568252	568256	568261	568265	
	No. Req'd	2	2	2	2	2	
<b>SMALL MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-246</b>	<b>568-250</b>	<b>568-254</b>	<b>568-259</b>	...	
	Bowen No.	568246	568250	568254	568259	...	
	No. Req'd	3	3	3	3	3	
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-235</b>	<b>568-235</b>	<b>568-242</b>	<b>568-246</b>	
	Bowen No.	568234	568235	568235	568242	568246	
<b>MANDREL BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-011</b>	<b>568-011</b>	<b>568-011</b>	<b>568-011</b>	<b>568-011</b>	
	Bowen No.	568011	568011	568011	568011	568011	
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-011</b>	
	Bowen No.	568006	568006	568006	568006	568011	
<b>PISTON SEAL</b>	<b>Logan Part No.</b>	<b>568-236</b>	<b>568-237</b>	<b>568-239</b>	<b>568-426</b>	<b>568-430</b>	
	Bowen No.	568236	568237	568239	568426	568430	

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#### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

#### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

#### Recommended Spares:

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE HYDRAULIC JARS

TOOL JOINT CONNECTION		4-1/2 API FH	4-1/2 API IF	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg		
OUTSIDE DIAMETER (INCHES)		6	6-1/4 & 6-1/2	6-3/4	7-3/4 & 8	9		
INSIDE DIAMETER (INCHES)		2	2-1/4	2-3/8	3-1/16	3-3/4		
TYPE JAR		Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel	Integral Mandrel		
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>605-013</b>	<b>605-014</b>	<b>605-015</b>	<b>605-016</b>	<b>605-017</b>		
	Bowen No.	52498	52544	52680	52711	68346		
<b>MIDDLE BODY / MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	<b>568-441</b>		
	Bowen No.	...	...	...	...	568441		
<b>WASHPIPE / MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	<b>568-263</b>		
	Bowen No.	...	...	...	...	568263		
<b>BACK-UP RINGS</b>	<b>Logan Part No.</b>	...	...	...	...	...		
	Bowen No.	...	...	...	...	...		
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...		
	Bowen No.	...	...	...	...	...		
<b>MANDREL BODY SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...		
	Bowen No.	...	...	...	...	...		

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*Special Notes:*

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard

**Recommended Spares:**

- (1) 1 Service Kit
- (2) 1 Washpipe
- (3) 2 Piston Assemblies
- (4) 16 Non-Extrusion Rings
- (5) 16 Seal Protector Rings
- (6) 4 Mandrel Body Fill Plugs
- (7) 4 Middle Body Fill Plugs
- (8) 8 Packing Sets
- (9) 1 Mandrel Body Setting Tool
- (10) 1 Piston Setting Tool

## Z TYPE ENERGIZERS

### Overview

The Logan Z Type Energizer is run in conjunction with a Logan Z Type Fishing Jar of the same size. Its function is to supply intensified impact during the jarring operation. Each size of Logan Z Type Energizer is designed to match a corresponding size of Logan Z Type Fishing Jar. The Z Type Energizer is essentially a fluid spring, which stores energy when a strain is pulled on the fishing string. When the strain is removed by the free stroke of the fishing jar, the stored energy is released, accelerating the collars upward until a blow of high impact is struck. The tool absorbs much of the jarring shock from the rebounding string to protect tools and string from damage.

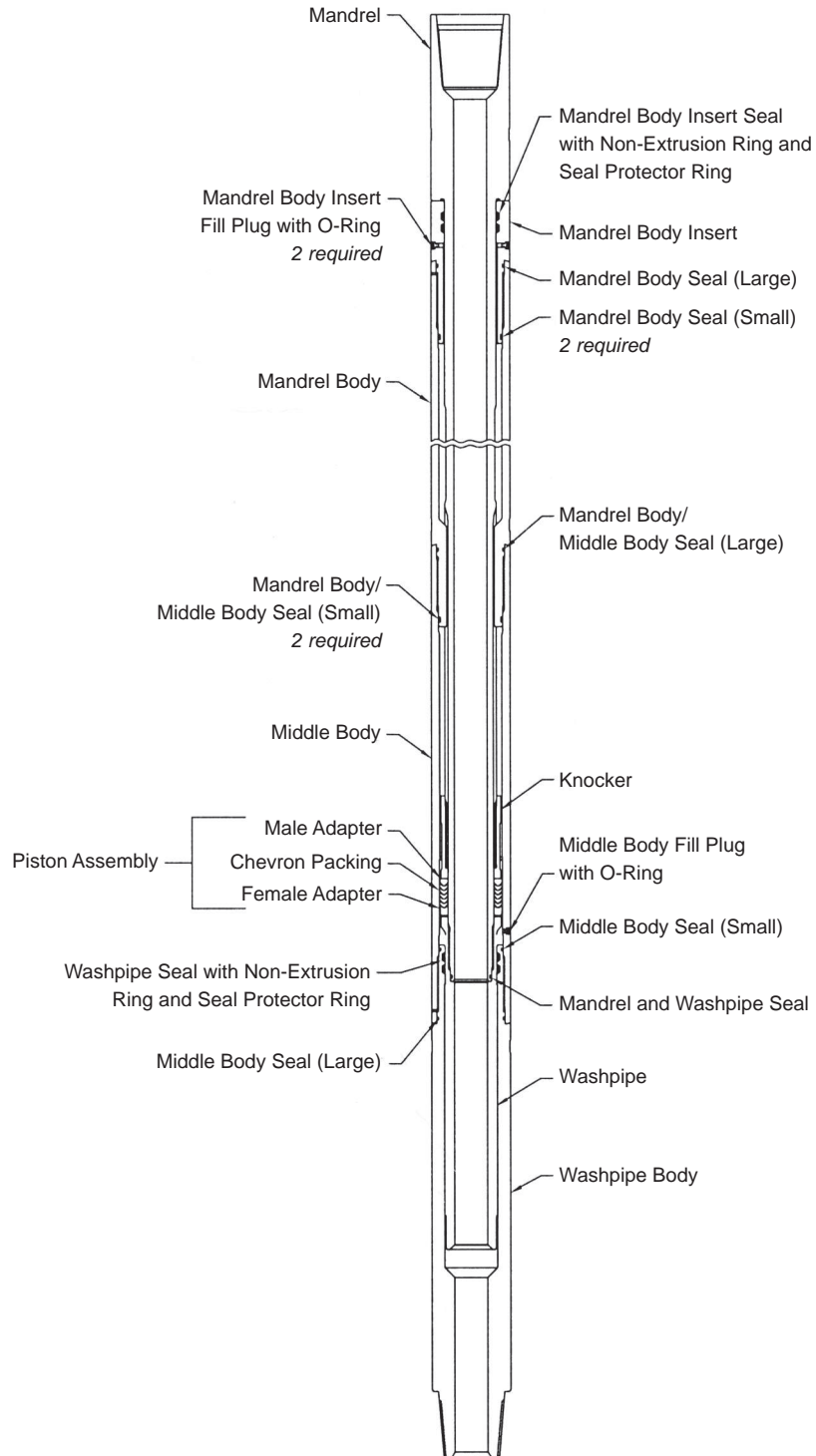
### Operation

Operation of the Logan Z Type Energizer is simple to use and requires only a straight pull at a speed determined by the job. It is completely safe to assemble since no high pressure pre-loading is required.

The Logan Z Type Energizer can transmit full torque in either direction at all times while maintaining full circulation throughout the tool.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard



## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	Per Order	1-13/16 WFJ	1-1/4 API Reg	2-3/8 PH6 5.9# HYD	2-3/8 API Reg	2-3/8 API IF	2-3/8 EUE	
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/8	3-3/4	3-3/4	
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1	1-1/2	1-7/8	
<b>JARS USED WITH</b>	70822	74723	54020	68010	52504	52528	52497	
<b>TOTAL STROKE TO SOLID (INCHES)</b>	6	6	6	12-3/4	8-3/4	7-7/8	7-5/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-000</b>	<b>606-001</b>	<b>606-002</b>	<b>606-003</b>	<b>606-004</b>	<b>606-005</b>	<b>606-006</b>
	Bowen No.	70957	64460	50640	68262	55867	55747	50660
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AG3000</b>	<b>AG3001</b>	...	<b>AG3003</b>	...	<b>AG3007</b>	<b>AG3008</b>
	Bowen No.	70823	21156	...	68015	...	37412	20156
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AH3000</b>	<b>AH3001</b>	<b>AH3002</b>	<b>AH3003</b>	<b>AH3004</b>	<b>AH3005</b>	<b>AH3006</b>
	Bowen No.	70959	64461	50641	68267	55869	55749	50661
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	...	<b>27000-018</b>	<b>27000-019</b>	<b>27000-020</b>	<b>27000-021</b>	<b>27000-022</b>	<b>27000-023</b>
	Bowen No.	...	64455	64317	68268	64234	64211	64330
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>AH4000</b>	<b>AH4001</b>	<b>AH4002</b>	<b>AH4003</b>	<b>AH4004</b>	<b>AH4005</b>	<b>AH4006</b>
	Bowen No.	71254	50634	50642	68266	50650	50283	50283
<b>MANDREL BODY EXTENSION</b>	<b>Logan Part No.</b>	...	...	...	<b>AH5003</b>	...	...	...
	Bowen No.	...	...	...	68265	...	...	...
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AH6000</b>	<b>AH6001</b>	<b>AH6002</b>	<b>AH6003</b>	<b>AH6004</b>	<b>AH6006</b>	<b>AH6006</b>
	Bowen No.	70958	50635	50643	68264	50651	50284	50284
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AH7000</b>	<b>AH7001</b>	<b>AH7002</b>	<b>AH7003</b>	<b>AH7004</b>	<b>AH7005</b>	<b>AH7005</b>
	Bowen No.	70960	50636	50644	68263	55870	55748	55748
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AG7000</b>	<b>AG7001</b>	<b>AG7002</b>	<b>AG7003</b>	<b>AG7005</b>	<b>AG7007</b>	<b>AG7008</b>
	Bowen No.	70829	21151	18776	68011	38064	37407	20151
<b>KNOCKER</b>	<b>Logan Part No.</b>	...	...	<b>AG8002</b>	...	<b>AG8005</b>	...	...
	Bowen No.	...	...	18781	...	38060	...	...
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AG9000</b>	<b>AG9001</b>	<b>AG9002</b>	<b>AG9003</b>	<b>AG9005</b>	<b>AG9007</b>	<b>AG9008</b>
	Bowen No.	70828	21154	18779	68016	42738	37410	20154
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>
<b>FILL PLUG</b>	Bowen No.	617	617	329	617	329	329	329
	No. Req'd	2	2	2	2	2	2	2
<b>MIDDLE BODY FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10004</b>	<b>AG10004</b>	<b>AG10000</b>	<b>AG10004</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>
	Bowen No.	10641	10641	617	10641	617	617	617

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**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	Per Order	1-13/16 WFJ	1-1/4 API Reg	2-3/8 PH6 5.9# HYD	2-3/8 API Reg	2-3/8 API IF	2-3/8 EUE	
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/8	3-3/4	3-3/4	
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1	1-1/2	1-7/8	
<b>JARS USED WITH</b>	70822	74723	54020	68010	52504	52528	52497	
<b>TOTAL STROKE TO SOLID (INCHES)</b>	6	6	6	12-3/4	8-3/4	7-7/8	7-5/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-000</b>	<b>606-001</b>	<b>606-002</b>	<b>606-003</b>	<b>606-004</b>	<b>606-005</b>	<b>606-006</b>
	Bowen No.	70957	64460	50640	68262	55867	55747	50660
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>L8-024</b>	...	<b>L56542</b>	...	...	...	...
<b>NON-EXTRUSION RING</b>	Bowen No.	8-024	...	56542	...	...	...	...
<b>MIDDLE BODY INSERT</b>	<b>Logan Part No.</b>	<b>568-024</b>	<b>L8-027</b>	<b>L227-27.25</b>	...	...	...	...
<b>SEAL RING</b>	Bowen No.	568-024	8-027	227-27.25	...	...	...	...
	No. Req'd	2	2	2	...	...	...	...
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L365-16</b>	<b>L365-17</b>	<b>L365-24</b>	<b>L365-30.5</b>	<b>L365-32</b>	<b>L365-36</b>	<b>L365-36</b>
<b>NON-EXTRUSION RING</b>	Bowen No.	365-16	365-17	365-24	365-30.5	365-32	365-36	365-36
	No. Req'd	8	8	8	8	8	8	8
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L375-16</b>	<b>L375-17</b>	<b>L375-24</b>	<b>L375-30.5</b>	<b>L375-32</b>	<b>L375-36</b>	<b>L375-36</b>
<b>SEAL PROTECTOR RING</b>	Bowen No.	375-16	375-17	375-24	375-30.5	375-32	375-36	375-36
	No. Req'd	8	8	8	8	8	8	8

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- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	Per Order	1-13/16 WFJ	1-1/4 API Reg	2-3/8 PH6 5.9# HYD	2-3/8 API Reg	2-3/8 API IF	2-3/8 EUE	
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/8	3-3/4	3-3/4	
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1	1-1/2	1-7/8	
<b>JARS USED WITH</b>	70822	74723	54020	68010	52504	52528	52497	
<b>TOTAL STROKE TO SOLID (INCHES)</b>	6	6	6	12-3/4	8-3/4	7-7/8	7-5/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-000</b>	<b>606-001</b>	<b>606-002</b>	<b>606-003</b>	<b>606-004</b>	<b>606-005</b>	<b>606-006</b>
	<b>Bowen No.</b>	70957	64460	50640	68262	55867	55747	50660

## OPTIONAL

<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1000-16</b>	<b>AG1000-17</b>	<b>AG1000-24</b>	<b>AG1000-30.5</b>	<b>AG1000-32</b>	<b>AG1000-36</b>	<b>AG1000-36</b>
<b>SETTING TOOL</b>	<b>Bowen No.</b>	22709-16	22709-17	22709-24	22709-30.5	22709-32	22709-36	22709-36
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	...	<b>27000-018</b>	<b>27000-019</b>	<b>27000-020</b>	<b>27000-021</b>	<b>27000-022</b>	<b>27000-023</b>
<i>Consists of:</i>	<b>Bowen No.</b>	...	64455	64317	68268	64234	64211	64330
<b>UPPER ADAPTER</b>	<b>Logan Part No.</b>	...	<b>AH12001</b>	<b>AH12002</b>	<b>AH12003</b>	<b>AH12004</b>	<b>AH12005</b>	<b>AH12006</b>
	<b>Bowen No.</b>	...	64456	64318	68270	64236	64213	64331
<b>PACKING</b>	<b>Logan Part No.</b>	...	<b>AH13001</b>	<b>AH13002</b>	<b>AH13003</b>	<b>AH13004</b>	<b>AH13005</b>	<b>AH13006</b>
	<b>Bowen No.</b>	...	64458	64320	68271	64237	64214	64333
<b>LOWER ADAPTER</b>	<b>Logan Part No.</b>	...	<b>AH14001</b>	<b>AH14002</b>	<b>AH14003</b>	<b>AH14004</b>	<b>AH14005</b>	<b>AH14006</b>
	<b>Bowen No.</b>	...	64457	64319	68269	64235	64212	64332
<b>CONE</b>	<b>Logan Part No.</b>	<b>AH15000</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	77514	...	...	...	...	...	...
<b>BY-PASS BODY</b>	<b>Logan Part No.</b>	<b>AH16000</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	77513	...	...	...	...	...	...
<b>SEAL BODY</b>	<b>Logan Part No.</b>	<b>AH17000</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	77515	...	...	...	...	...	...
<b>O-RING SEAL</b>	<b>Logan Part No.</b>	<b>L2-019</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	2-019	...	...	...	...	...	...

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### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	Per Order	1-13/16 WFJ	1-1/4 API Reg	2-3/8 PH6 5.9# HYD	2-3/8 API Reg	2-3/8 API IF	2-3/8 EUE	
<b>OUTSIDE DIAMETER (INCHES)</b>	1-5/8	1-13/16	2-1/4	2-29/32	3-1/8	3-3/4	3-3/4	
<b>INSIDE DIAMETER (INCHES)</b>	1/4	5/16	3/8	1	1	1-1/2	1-7/8	
<b>JARS USED WITH</b>	70822	74723	54020	68010	52504	52528	52497	
<b>TOTAL STROKE TO SOLID (INCHES)</b>	6	6	6	12-3/4	8-3/4	7-7/8	7-5/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-000</b>	<b>606-001</b>	<b>606-002</b>	<b>606-003</b>	<b>606-004</b>	<b>606-005</b>	<b>606-006</b>
	Bowen No.	70957	64460	50640	68262	55867	55747	50660
<b>O-RING PACKING SET</b>	<b>Logan Part No.</b>	<b>27000-034</b>	<b>27000-035</b>	<b>27000-036</b>	<b>27000-037</b>	<b>27000-038</b>	<b>27000-039</b>	<b>27000-040</b>
<i>Consists of:</i>	Bowen No.	70961	50638	50835	68272	55873	55816	55497
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-211</b>	<b>568-115</b>	<b>568-210</b>	<b>568-224</b>	<b>568-220</b>	<b>568-224</b>	<b>568-227</b>
	Bowen No.	568211	568115	568210	568224	568220	568224	568227
<b>MANDREL &amp; WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-015</b>	<b>568-212</b>	<b>568-219</b>	<b>568-328</b>	<b>568-329</b>	<b>568-333</b>	<b>568-333</b>
	Bowen No.	568015	568212	568219	568328	568329	568333	568333
	No. Req'd	1	2	4	5	4	4	3
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – LARGE</b>	<b>Logan Part No.</b>	<b>568-016</b>	<b>568-219</b>	<b>568-224</b>	<b>568-036</b>	<b>568-231</b>	<b>568-235</b>	<b>568-235</b>
	Bowen No.	568016	568219	568224	568036	568231	568235	568235
	No. Req'd	3	3	3	4	3	3	3
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – SMALL</b>	<b>Logan Part No.</b>	<b>568-214</b>	<b>568-027</b>	<b>568-222</b>	<b>568-035</b>	<b>568-228</b>	<b>568-233</b>	<b>568-233</b>
	Bowen No.	568214	568027	568222	568035	568228	568233	568233
	No. Req'd	3	3	3	8	5	5	5
<b>MANDREL BODY INSERT FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-001</b>	...	<b>568-006</b>	<b>568-005</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>
	Bowen No.	568001	...	568006	568005	568006	568006	568006
	No. Req'd	2	...	2	2	2	2	2
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	...	<b>568-005</b>	<b>568-005</b>	...	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>
	Bowen No.	...	568005	568005	...	568005	568005	568005
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-054</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>
	Bowen No.	21279	55403	55403	55403	55403	55403	55403
<b>ENERGIZER FLUID</b>	<b>Logan Part No.</b>	<b>50529-A</b>	<b>50529-B</b>	<b>50529-C</b>	<b>50529-D</b>	<b>50529-E</b>		
	Bowen No.	50529-A	50529-B	50529-C	50529-D	50529		
		1 Gallon	2 Gallons	5 Gallons	30 Gallons	55 Gallons		

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- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

# LOGAN GENERAL CATALOG

OIL TOOLS

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>		2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4 & 6-1/2
<b>INSIDE DIAMETER (INCHES)</b>		1-1/4	1-15/16	2-3/8	1-1/2	2	2	2-1/4
<b>JARS USED WITH</b>		52506	52502	52653	52530	52500	52498	52544
<b>TOTAL STROKE TO SOLID (INCHES)</b>		8-1/4	8-5/8	10-3/8	8-7/8	10-1/8	8-5/8	13
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-007</b>	<b>606-008</b>	<b>606-009</b>	<b>606-010</b>	<b>606-011</b>	<b>606-012</b>	<b>606-013</b>
	<b>Bowen No.</b>	55895	55664	50708	50700	55812	55860	55905
<b>TOP SUB</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AH3007</b>	<b>AH3008</b>	<b>AH3009</b>	<b>AH3010</b>	<b>AH3011</b>	<b>AH3012</b>	<b>AH3013</b>
	<b>Bowen No.</b>	55897	55769	50709	50701	55817	55862	55908
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>27000-024</b>	<b>27000-025</b>	<b>27000-026</b>	<b>27000-027</b>	<b>27000-028</b>	<b>27000-029</b>	<b>27000-030</b>
	<b>Bowen No.</b>	64248	64206	64340	64995	64264	64268	64272
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>AH4008</b>	<b>AH4009</b>	<b>AH4010</b>	<b>AH4011</b>	<b>AH4012</b>	<b>AH4013</b>	<b>AH4014</b>
	<b>Bowen No.</b>	50591	49412	50710	50702	49394	49635	50598
<b>MANDREL BODY EXTENSION</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AH6007</b>	<b>AH6008</b>	<b>AH6009</b>	<b>AH6010</b>	<b>AH6011</b>	<b>AH6012</b>	<b>AH6013</b>
	<b>Bowen No.</b>	50589	50371	50711	50703	50374	49634	50597
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AH7007</b>	<b>AH7008</b>	<b>AH7009</b>	<b>AH7010</b>	<b>AH7011</b>	<b>AH7012</b>	<b>AH7013</b>
	<b>Bowen No.</b>	55898	55660	50712	50704	55814	55863	55920
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AG7006</b>	<b>AG7009</b>	<b>AG7010</b>	<b>AG7011</b>	<b>AG7012</b>	<b>AG7013</b>	<b>AG7014</b>
	<b>Bowen No.</b>	38045	44487	35854	25961	38111	14711	12371
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AG8006</b>	<b>AH9008</b>	<b>AG8010</b>	<b>AG8011</b>	<b>AG8012</b>	<b>AG8013</b>	<b>AG8014</b>
	<b>Bowen No.</b>	38049	51185	35857	25966	38116	14717	12377
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AG9006</b>	<b>AG9009</b>	<b>AH10009</b>	<b>AG9011</b>	<b>AG9012</b>	<b>AG9013</b>	<b>AH10013</b>
	<b>Bowen No.</b>	38046	44488	64344	25964	38114	14714	55907
<b>MANDREL BODY INSERT FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10003</b>	<b>AG10003</b>
	<b>Bowen No.</b>	329	329	329	329	329	508	508
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>MIDDLE BODY FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10002</b>
	<b>Bowen No.</b>	617	617	617	329	617	329	329

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- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard



# LOGAN GENERAL CATALOG

OIL TOOLS

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>		2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4 & 6-1/2
<b>INSIDE DIAMETER (INCHES)</b>		1-1/4	1-15/16	2-3/8	1-1/2	2	2	2-1/4
<b>JARS USED WITH</b>		52506	52502	52653	52530	52500	52498	52544
<b>TOTAL STROKE TO SOLID (INCHES)</b>		8-1/4	8-5/8	10-3/8	8-7/8	10-1/8	8-5/8	13
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-007</b>	<b>606-008</b>	<b>606-009</b>	<b>606-010</b>	<b>606-011</b>	<b>606-012</b>	<b>606-013</b>
	Bowen No.	55895	55664	50708	50700	55812	55860	55905
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>NON-EXTRUSION RING</b>	Bowen No.	...	...	...	...	...	...	...
<b>MIDDLE BODY INSERT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>SEAL RING</b>	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L365-35</b>	<b>L365-40</b>	<b>L365-42</b>	<b>L365-40</b>	<b>L365-41</b>	<b>L453</b>	<b>L365-48</b>
<b>NON-EXTRUSION RING</b>	Bowen No.	365-35	365-40	365-42	365-40	365-41	453	365-48
	No. Req'd	8	8	8	8	8	8	8
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L375-35</b>	<b>L375-40</b>	<b>L375-42</b>	<b>L375-40</b>	<b>L375-41</b>	<b>L449</b>	<b>L375-48</b>
<b>SEAL PROTECTOR RING</b>	Bowen No.	375-35	375-40	375-42	375-40	375-41	449	375-48
	No. Req'd	8	8	8	8	8	8	8

## OPTIONAL

<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1000-35</b>	<b>AG1000-40</b>	<b>AG1000-42</b>	<b>AG1000-40</b>	<b>AG1000-41</b>	<b>AG1001</b>	<b>AG1000-48</b>
<b>SETTING TOOL</b>	Bowen No.	22709-35	22709-40	22709-42	22709-40	22709-41	448	22709-48
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>27000-024</b>	<b>27000-025</b>	<b>27000-026</b>	<b>27000-027</b>	<b>27000-028</b>	<b>27000-029</b>	<b>27000-030</b>
<i>Consists of:</i>	Bowen No.	64248	64206	64340	64995	64264	64268	64272
<b>UPPER ADAPTER</b>	<b>Logan Part No.</b>	<b>AH12007</b>	<b>AH12008</b>	<b>AH12009</b>	<b>AH12010</b>	<b>AH12011</b>	<b>AH12012</b>	<b>AH12013</b>
	Bowen No.	64250	64208	64341	64997	64266	64269	64273
<b>PACKING</b>	<b>Logan Part No.</b>	<b>AH13007</b>	<b>AH13008</b>	<b>AH13009</b>	<b>AH13010</b>	<b>AH13011</b>	<b>AH13012</b>	<b>AH13013</b>
	Bowen No.	64251	64209	64343	64998	64267	64271	64275
<b>LOWER ADAPTER</b>	<b>Logan Part No.</b>	<b>AH14007</b>	<b>AH14008</b>	<b>AH14009</b>	<b>AH14010</b>	<b>AH14011</b>	<b>AH14012</b>	<b>AH14013</b>
	Bowen No.	64249	64207	64342	64996	64265	64270	64274
<b>CONE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>BY-PASS BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>SEAL BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>O-RING SEAL</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

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- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>		2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4 & 6-1/2
<b>INSIDE DIAMETER (INCHES)</b>		1-1/4	1-15/16	2-3/8	1-1/2	2	2	2-1/4
<b>JARS USED WITH</b>		52506	52502	52653	52530	52500	52498	52544
<b>TOTAL STROKE TO SOLID (INCHES)</b>		8-1/4	8-5/8	10-3/8	8-7/8	10-1/8	8-5/8	13
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-007</b>	<b>606-008</b>	<b>606-009</b>	<b>606-010</b>	<b>606-011</b>	<b>606-012</b>	<b>606-013</b>
	Bowen No.	55895	55664	50708	50700	55812	55860	55905
<b>O-RING PACKING SET</b>	<b>Logan Part No.</b>	<b>27000-041</b>	<b>27000-042</b>	<b>27000-043</b>	<b>27000-044</b>	<b>27000-045</b>	<b>27000-046</b>	<b>27000-047</b>
<i>Consists of:</i>	Bowen No.	55902	55666	50840	50841	55815	55866	55919
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-222</b>	<b>568-227</b>	<b>568-233</b>	<b>568-228</b>	<b>568-228</b>	<b>568-234</b>	<b>568-232</b>
	Bowen No.	568222	568227	568233	568228	568228	568234	568232
<b>MANDREL &amp; WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-332</b>	<b>568-327</b>	<b>568339</b>	<b>568-337</b>	<b>568-338</b>	<b>568-344</b>	<b>568-345</b>
	Bowen No.	568332	568327	568339	568337	568338	568344	568345
	No. Req'd	4	4	4	4	4	4	4
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – LARGE</b>	<b>Logan Part No.</b>	<b>568-235</b>	<b>568-239</b>	<b>568-241</b>	<b>568-241</b>	<b>568-241</b>	<b>568-248</b>	<b>568-252</b>
	Bowen No.	568235	568239	568241	568241	568241	568248	568252
	No. Req'd	3	3	3	3	3	3	3
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – SMALL</b>	<b>Logan Part No.</b>	<b>568-233</b>	<b>568-237</b>	<b>568-239</b>	<b>568-239</b>	<b>568-239</b>	<b>568-246</b>	<b>568-250</b>
	Bowen No.	568233	568237	568239	568239	568239	568246	568250
	No. Req'd	5	5	5	5	5	3	5
<b>MANDREL BODY INSERT FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-011</b>	<b>568-011</b>
	Bowen No.	568006	568006	568006	568006	568006	568011	568011
	No. Req'd	2	2	2	2	2	2	2
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-006</b>	<b>568-005</b>	<b>568-006</b>	<b>568-006</b>
	Bowen No.	568005	568005	568005	568006	568005	568006	568006
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>
	Bowen No.	55403	55403	55403	55403	55403	55403	55403

<b>ENERGIZER FLUID</b>	<b>Logan Part No.</b>	<b>50529-A</b>	<b>50529-B</b>	<b>50529-C</b>	<b>50529-D</b>	<b>50529-E</b>		
	Bowen No.	50529-A	50529-B	50529-C	50529-D	50529		
		1 Gallon	2 Gallons	5 Gallons	30 Gallons	55 Gallons		

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- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
<b>OUTSIDE DIAMETER (INCHES)</b>	6-3/4	7-3/4 & 8	9				
<b>INSIDE DIAMETER (INCHES)</b>	2-3/8	3-1/16	3-3/4				
<b>JARS USED WITH</b>	52680	52711	66346				
<b>TOTAL STROKE TO SOLID (INCHES)</b>	13	13	13				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 606-014	<b>606-015</b>	<b>606-016</b>				
	Bowen No. 50720	55910	66372				
<b>TOP SUB</b>	<b>Logan Part No.</b> ...	...	...				
	Bowen No. ...	...	...				
<b>MANDREL</b>	<b>Logan Part No.</b> AH3014	<b>AH3015</b>	<b>AH3016</b>				
	Bowen No. 50721	50146	66376				
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b> 27000-031	<b>27000-032</b>	<b>27000-033</b>				
	Bowen No. 64240	64276	66382				
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b> AH4015	<b>AH4016</b>	<b>AH4017</b>				
	Bowen No. 50722	50149	66380				
<b>MANDREL BODY EXTENSION</b>	<b>Logan Part No.</b> ...	...	...				
	Bowen No. ...	...	...				
<b>MANDREL BODY</b>	<b>Logan Part No.</b> AH6014	<b>AH6015</b>	<b>AH6016</b>				
	Bowen No. 50723	50147	66377				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AH7014	<b>AH7015</b>	<b>AH7016</b>				
	Bowen No. 50724	55911	66373				
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b> AG7015	<b>AG7016</b>	<b>AG7017</b>				
	Bowen No. 701	15164	66350				
<b>KNOCKER</b>	<b>Logan Part No.</b> AG8015	<b>AH9015</b>	<b>AG8017</b>				
	Bowen No. 11134	50150	66348				
<b>WASHPIPE</b>	<b>Logan Part No.</b> AG9015	<b>AH10015</b>	<b>AG9017</b>				
	Bowen No. 704	55912	66349				
<b>MANDREL BODY INSERT FILL PLUG</b>	<b>Logan Part No.</b> AG10003	<b>AG10003</b>	<b>AG10003</b>				
	Bowen No. 508	508	508				
	No. Req'd 2	2	2				
<b>MIDDLE BODY FILL PLUG</b>	<b>Logan Part No.</b> AG10002	<b>AG10002</b>	...				
	Bowen No. 329	329	...				

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- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>		5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
<b>OUTSIDE DIAMETER (INCHES)</b>		6-3/4	7-3/4 & 8	9				
<b>INSIDE DIAMETER (INCHES)</b>		2-3/8	3-1/16	3-3/4				
<b>JARS USED WITH</b>		52680	52711	66346				
<b>TOTAL STROKE TO SOLID (INCHES)</b>		13	13	13				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-014</b>	<b>606-015</b>	<b>606-016</b>				
	Bowen No.	50720	55910	66372				
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	...	...	...				
<b>NON-EXTRUSION RING</b>	Bowen No.	...	...	...				
<b>MIDDLE BODY INSERT</b>	<b>Logan Part No.</b>	...	...	...				
<b>SEAL RING</b>	Bowen No.	...	...	...				
	No. Req'd	...	...	...				
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L365-50.75</b>	<b>L365-59</b>	<b>L365-65</b>				
<b>NON-EXTRUSION RING</b>	Bowen No.	708	365-59	365-65				
	No. Req'd	8	8	8				
<b>MANDREL &amp; WASHPIPE</b>	<b>Logan Part No.</b>	<b>L375-50.75</b>	<b>L375-59</b>	<b>L375-65</b>				
<b>SEAL PROTECTOR RING</b>	Bowen No.	709	375-59	375-65				
	No. Req'd	8	8	8				

## OPTIONAL

<b>MANDREL BODY SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-51</b>	<b>AG1000-59</b>	<b>AG1017</b>				
	Bowen No.	22709-51	22709-59	22709-65				
<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>27000-031</b>	<b>27000-032</b>	<b>27000-033</b>				
<i>Consists of:</i>	Bowen No.	64240	64276	66382				
<b>UPPER ADAPTER</b>	<b>Logan Part No.</b>	<b>AH12014</b>	<b>AH12015</b>	<b>AH12016</b>				
	Bowen No.	64242	64277	66378				
<b>PACKING</b>	<b>Logan Part No.</b>	<b>AH13014</b>	<b>AH13015</b>	<b>AH13016</b>				
	Bowen No.	64243	64279	66384				
<b>LOWER ADAPTER</b>	<b>Logan Part No.</b>	<b>AH14014</b>	<b>AH14015</b>	<b>AH14016</b>				
	Bowen No.	64241	64278	66379				
<b>CONE</b>	<b>Logan Part No.</b>	...	...	...				
	Bowen No.	...	...	...				
<b>BY-PASS BODY</b>	<b>Logan Part No.</b>	...	...	...				
	Bowen No.	...	...	...				
<b>SEAL BODY</b>	<b>Logan Part No.</b>	...	...	...				
	Bowen No.	...	...	...				
<b>O-RING SEAL</b>	<b>Logan Part No.</b>	...	...	...				
	Bowen No.	...	...	...				

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

### Special Notes:

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## Z TYPE ENERGIZERS

<b>TOOL JOINT CONNECTION</b>		5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
<b>OUTSIDE DIAMETER (INCHES)</b>		6-3/4	7-3/4 & 8	9				
<b>INSIDE DIAMETER (INCHES)</b>		2-3/8	3-1/16	3-3/4				
<b>JARS USED WITH</b>		52680	52711	66346				
<b>TOTAL STROKE TO SOLID (INCHES)</b>		13	13	13				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>606-014</b>	<b>606-015</b>	<b>606-016</b>				
	Bowen No.	50720	55910	66372				
<b>O-RING PACKING SET</b>	<b>Logan Part No.</b>	<b>27000-048</b>	<b>27000-049</b>	<b>27000-050</b>				
<i>Consists of:</i>	Bowen No.	50842	55921	66383				
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-235</b>	<b>568-242</b>	<b>568-246</b>				
	Bowen No.	568235	568242	568246				
<b>MANDREL &amp; WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-348</b>	<b>568-432</b>	<b>568-438</b>				
	Bowen No.	568348	568432	568438				
	No. Req'd	4	4	4				
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – LARGE</b>	<b>Logan Part No.</b>	<b>568-256</b>	<b>568-261</b>	<b>568-265</b>				
	Bowen No.	568256	568261	568265				
	No. Req'd	3	3	3				
	Price	\$6.90	\$7.00	\$8.25				
<b>MANDREL BODY &amp; MIDDLE BODY SEAL – SMALL</b>	<b>Logan Part No.</b>	<b>568-254</b>	<b>568-259</b>	<b>568-263</b>				
	Bowen No.	568254	568259	568263				
	No. Req'd	5	3	1				
<b>MANDREL BODY INSERT FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-011</b>	<b>568-011</b>	<b>568-441</b>				
	Bowen No.	568011	568011	568441				
	No. Req'd	2	2	2				
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-006</b>	<b>568-006</b>	<b>568-011</b>				
	Bowen No.	568006	568006	568011				
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>				
	Bowen No.	55403	55403	55403				

<b>ENERGIZER FLUID</b>	<b>Logan Part No.</b>	<b>50529-A</b>	<b>50529-B</b>	<b>50529-C</b>	<b>50529-D</b>	<b>50529-E</b>		
	Bowen No.	50529-A	50529-B	50529-C	50529-D	50529		
		1 Gallon	2 Gallons	5 Gallons	30 Gallons	55 Gallons		

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**Special Notes:**

- (1) Packing Sets include all seals necessary to dress the tool. Non-Extrusion Rings and Seal Protector Rings are not included, and must be ordered separately.
- (2) Service Kit does not include Seal Setting Tools, which must be ordered separately.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) Outside diameter, if other than standard

## SURFACE BUMPER JARS

### Overview

The Logan Surface Bumper Jar is installed in the drill string at the surface and is used whenever the downhole drilling, fishing, or washover running string becomes stuck and requires a heavy downward force to release it. It is often used to free key seated drill pipe and drill collars, and initiate sharp jarring blows down the string to actuate drilling bumper subs, bumper safety joints, and other similar downhole bumping tools. It is also useful for transmitting heavy downward impact to release imbedded grappling tools. Since it is not necessary that the two striking surfaces meet, the tool's 48-inch stroke allows the fish to be hammered down farther than what is possible with conventional jarring tools. Because it is intermittently used only on the surface to release a stuck fish, this tool has an extended service life when compared to conventional bumper subs.

### Construction

The Surface Bumper Jar basically consists of a mandrel assembly working inside a bowl assembly.

### Operation

Full circulation through the tool can be maintained during operation and full torque may be utilized in either direction. The jarring force is set by a simple adjustment.

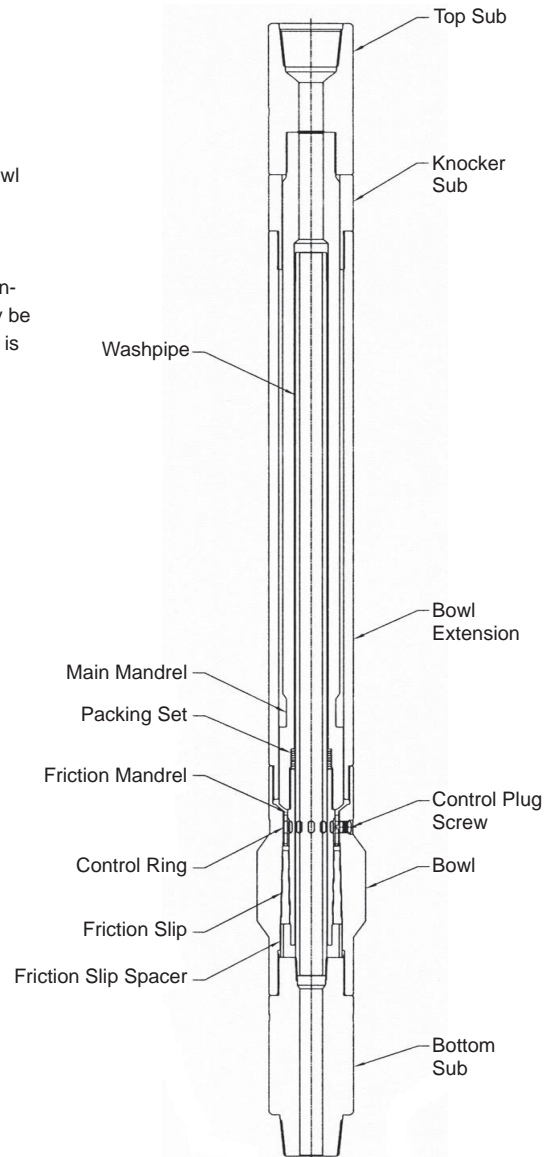
### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 2 Washpipes
- (2) 1 Friction Mandrel
- (3) 1 Control Ring
- (4) 1 Friction Slip
- (5) 1 Control Ring Plug
- (6) 6 Packing Sets

<b>TOOL JOINT CONNECTION</b>		4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		7
<b>INSIDE DIAMETER (INCHES)</b>		1-7/8
<b>STROKE</b>		48
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>609-001</b>
	Bowen No.	74520
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AS1000</b>
	Bowen No.	13587
<b>KNOCKER SUB</b>	<b>Logan Part No.</b>	<b>AS2000</b>
	Bowen No.	74522
<b>BOWL EXTENSION</b>	<b>Logan Part No.</b>	<b>AS3000</b>
	Bowen No.	74523
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AS4000</b>
	Bowen No.	74524
<b>BOTTOM SUB</b>	<b>Logan Part No.</b>	<b>AS5000</b>
	Bowen No.	74525
<b>MAIN MANDREL</b>	<b>Logan Part No.</b>	<b>AS6000</b>
	Bowen No.	78609
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AS7000</b>
	Bowen No.	13588
<b>PACKING SET</b>	<b>Logan Part No.</b>	<b>AS8000</b>
	Bowen No.	66816
<b>FRICTION MANDREL</b>	<b>Logan Part No.</b>	<b>AS9000</b>
	Bowen No.	78610
<b>CONTROL RING</b>	<b>Logan Part No.</b>	<b>AS10000</b>
	Bowen No.	844
<b>FRICTION SLIP</b>	<b>Logan Part No.</b>	<b>AS11000</b>
	Bowen No.	B-236



### REPLACEMENT PARTS

<b>FRICTION SLIP SPACER</b>	<b>Logan Part No.</b>	<b>AS12000</b>
	Bowen No.	13594
<b>CONTROL RING PLUG</b>	<b>Logan Part No.</b>	<b>AS13000</b>
	Bowen No.	4144
<b>PLUG &amp; CONTROL RING WRENCH</b>	<b>Logan Part No.</b>	<b>AS14000</b>
<i>1 with each Assembly</i>	Bowen No.	86
<b>MANDREL SOCKET WRENCH</b>	<b>Logan Part No.</b>	<b>AS15000</b>
<i>Sold Separately</i>	Bowen No.	14773
<b>LIFTING SUB</b>	<b>Logan Part No.</b>	<b>AS17000</b>
<i>Sold Separately</i>	Bowen No.	242
<b>FRICTION SLIP LUBE (1 Tube)</b>	<b>Logan Part No.</b>	<b>AS18000</b>
<i>Sold Separately</i>	Bowen No.	74285

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## LUBRICATED FISHING BUMPER SUBS

### Overview

The Logan Lubricated Fishing Bumper Sub is a dependable accessory that is suitable for all fishing operations, especially harsh, downhole applications and deep workover operations. It can also meet the demands of tools that require sharp, sustained bumping action to actuate or release them. The tool enables the operator to release the fishing tool in the event it becomes impossible to pull the fish. It can provide the necessary impact in either direction and deliver the required torque.

### Construction

The Logan Lubricated Fishing Bumper Sub is constructed from specially high-strength, heat-treated alloy steel to withstand severe stress caused by tension, jarring, and torque.

The tool permits a vertical stroke, either upward or downward, whether it is rotating or not.

The Lubricated Fishing Bumper Sub is composed of six major parts: a mandrel, mandrel body, middle body, knocker, washpipe, and a washpipe body. Critical seal points between the mandrel and washpipe are fitted with seal/ring assemblies that increase the life of the rings and prevent O-ring extrusion.

### Operation

The Logan Lubricated Fishing Bumper Sub is typically run directly above the spear, overshot, screw-in sub, or safety joint. When lift load is applied, the bumper sub will slide open until the knocker hits the mandrel body. Slacking weight off the work string to the fishing bumper sub will cause the mandrel body to slide back down the mandrel until the bottom shoulder of the mandrel body hits the top shoulder of the mandrel.

### To Apply a Downward Blow

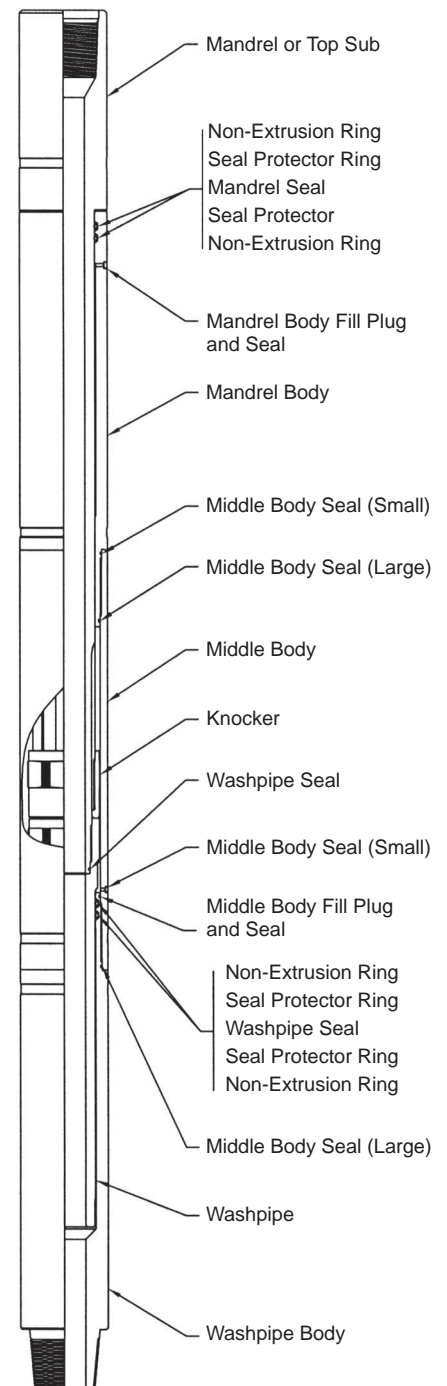
At the surface, mark the pipe to indicate the open and closed positions of the Lubricated Fishing Bumper Sub. Raise the fishing string to open the bumper sub and allow for extra string stretch. Sharply drop the string and stop with the brake approximately four to six inches above the closed position of the bumper sub to deliver a sharp downward blow. To deliver a solid downward blow, drop the full weight of the fishing string without braking.

### To Apply an Upward Blow

At the surface, mark the pipe to indicate the open and closed positions of the Lubricated Fishing Bumper Sub. Raise the fishing string to open the bumper sub and allow for additional string stretch. Drop the string by the amount of the stretch only and stop it with the brake. As the pipe recoils at the bottom of the hole, the bumper sub will deliver a sharp upward blow.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard
- (4) Name and number of any desired spares



## LUBRICATED FISHING BUMPER SUBS

<b>CONNECTION</b>		1-13/16 WILSON FJ	1-1/4 API Reg	2-3/8 API Reg	2-7/8 API Reg	2-3/8 API IF	2-3/8 EUE	2-7/8 API IF
<b>OUTSIDE DIAMETER</b>		1-13/16	2-1/4	3-1/8	3-3/4	3-3/4	3-3/4	4-1/4
<b>INSIDE DIAMETER</b>		3/8	3/8	1	1-1/4	1-1/2	1-7/8	1-15/16
<b>STROKE LENGTH</b>		10	10	15-1/2	15-1/2	15-1/2	15-1/2	15-1/2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>607-181</b>	<b>607-225</b>	<b>607-312</b>	<b>607-375</b>	<b>607-376</b>	<b>607-377</b>	<b>607-425</b>
	<b>Bowen No.</b>	54781	41490	43501	43509	43470	43521	43531
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AJ1000</b>	...	...	...	...	...	...
	<b>Bowen No.</b>	36811	...	...	...	...	...	...
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AJ2000</b>	<b>AJ2001</b>	<b>AJ2002</b>	<b>AJ2003</b>	<b>AJ2004</b>	<b>AJ2005</b>	<b>AJ2006</b>
	<b>Bowen No.</b>	36742	41491	43502	43510	43471	43522	43532
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AJ3000</b>	<b>AJ3001</b>	<b>AJ3002</b>	<b>AJ3003</b>	<b>AJ3004</b>	<b>AJ3005</b>	<b>AJ3006</b>
	<b>Bowen No.</b>	36744	41492	43503	43511	43472	43523	43533
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AJ4000</b>	<b>AJ4001</b>	<b>AJ4002</b>	<b>AJ4003</b>	<b>AJ4004</b>	<b>AJ4005</b>	<b>AJ4006</b>
	<b>Bowen No.</b>	54783	41493	43504	43512	43473	43524	43534
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AJ5000</b>	<b>AJ5001</b>	<b>AJ5002</b>	<b>AJ5003</b>	<b>AJ5004</b>	<b>AJ5005</b>	<b>AJ5006</b>
	<b>Bowen No.</b>	53721	41520	43506	43514	43475	43526	43536
<b>WASHPIPE</b>	<b>Logan Part No.</b>	...	<b>AJ6001</b>	<b>AJ6002</b>	<b>AJ6003</b>	<b>AJ6004</b>	<b>AJ6005</b>	<b>AJ6006</b>
	<b>Bowen No.</b>	...	41495	43505	43513	43474	43525	43535
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-19</b>	<b>L365-24</b>	<b>L365-32</b>	<b>L365-35</b>	<b>L365-36</b>	<b>L365-37.5</b>	<b>L365-40</b>
	<b>Bowen No.</b>	365-19	365-24	365-32	365-35	365-36	365-37.5	365-40
	<b>No. Req'd</b>	4	8	8	8	8	8	8
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-19</b>	<b>L375-24</b>	<b>L375-32</b>	<b>L375-35</b>	<b>L375-36</b>	<b>L375-37.5</b>	<b>L375-40</b>
	<b>Bowen No.</b>	375-19	375-24	375-32	375-35	375-36	375-37.5	375-40
	<b>No. Req'd</b>	4	8	8	8	8	8	8
<b>MANDREL BODY FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>
	<b>Bowen No.</b>	617	329	329	329	329	329	329
<b>MIDDLE BODY FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10004</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>
	<b>Bowen No.</b>	617	617	10641	617	617	617	617
<b>KNOCKER</b>	<b>Logan Part No.</b>	...	<b>AJ7001</b>	<b>AJ7002</b>	<b>AJ7003</b>	<b>AJ7004</b>	<b>AJ7005</b>	<b>AJ7006</b>
	<b>Bowen No.</b>	...	41845	43508	43516	39845	43528	43538

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- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard
- (4) Name and number of any desired spares

### Recommended Spare Parts:

- (1) 1 Service Kit
- (2) 6 Seal Packing Sets
- (3) 4 Middle Body Fill Plugs
- (4) 4 Mandrel Body Fill Plugs
- (5) 16 Main Mandrel Non-Extrusion Rings
- (6) 16 Main Mandrel Seal Protector Rings
- (7) 1 Seal Ring Setting Tool



## LUBRICATED FISHING BUMPER SUBS

<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>
	<b>Bowen No.</b>	55403	55403	55403	55403	55403	55403	55403
<b>SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-19</b>	<b>AG1000-24</b>	<b>AG1000-32</b>	<b>AG1000-35</b>	<b>AG1000-36</b>	<b>AG1000-37.5</b>	<b>AG1000-40</b>
	<b>Bowen No.</b>	22709-19	22709-24	22709-32	22709-35	22709-36	22709-37.5	22709-40
<b>SEAL PACKING</b>	<b>Logan Part No.</b>	<b>28000-013</b>	<b>28000-014</b>	<b>28000-015</b>	<b>28000-016</b>	<b>28000-017</b>	<b>28000-018</b>	<b>28000-019</b>
<i>Consists of:</i>	<b>Bowen No.</b>	54784	41846	43519	43517	39720	43529	43539
<b>MAIN MANDREL &amp; WASHPIPE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-211</b>	<b>568-219</b>	<b>568-329</b>	<b>568-332</b>	<b>568-333</b>	<b>568-334</b>	<b>568-337</b>
	<b>Bowen No.</b>	568211	568219	568329	568332	568333	568334	568337
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>MIDDLE BODY SEAL LARGE</b>	<b>Logan Part No.</b>	<b>568-029</b>	<b>568-224</b>	<b>568-231</b>	<b>568-235</b>	<b>568-235</b>	<b>568-236</b>	<b>568-239</b>
	<b>Bowen No.</b>	568029	568224	568231	568235	568235	568236	568239
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>MIDDLE BODY SEAL SMALL</b>	<b>Logan Part No.</b>	<b>568-027</b>	<b>568-222</b>	<b>568-229</b>	<b>568-233</b>	<b>568-233</b>	<b>568-233</b>	<b>568-237</b>
	<b>Bowen No.</b>	568027	568222	568229	568233	568233	568233	568237
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	...	<b>568-210</b>	<b>568-220</b>	<b>568-222</b>	<b>568-223</b>	<b>568-229</b>	<b>568-227</b>
	<b>Bowen No.</b>	...	568210	568220	568222	568223	568229	568227
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	...	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>
	<b>Bowen No.</b>	568005	568005	...	568005	568005	568005	568005
<b>MANDREL BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>
	<b>Bowen No.</b>	568005	568006	568006	568006	568006	568006	568006

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- (4) Name and number of any desired spares

**Recommended Spare Parts:**

- (1) 1 Service Kit
- (2) 6 Seal Packing Sets
- (3) 4 Middle Body Fill Plugs
- (4) 4 Mandrel Body Fill Plugs
- (5) 16 Main Mandrel Non-Extrusion Rings
- (6) 16 Main Mandrel Seal Protector Rings
- (7) 1 Seal Ring Setting Tool

## LUBRICATED FISHING BUMPER SUBS

<b>CONNECTION</b>		2-7/8 EUE	3-1/2 API IF or FH	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF or FH	5-1/2 API Reg	6-5/8 API Reg
<b>OUTSIDE DIAMETER</b>		4-1/2	4-3/4	4-3/4	6	6-1/4	6-3/4	7-3/4
<b>INSIDE DIAMETER</b>		2-3/8	2	2-1/4	2-13/16	3-1/8	2-3/4	3-1/2
<b>STROKE LENGTH</b>		15-1/2	15-1/2	15-1/2	18	18	18	18
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>607-450</b>	<b>607-475</b>	<b>607-476</b>	<b>607-600</b>	<b>607-625</b>	<b>607-675</b>	<b>607-775</b>
	<b>Bowen No.</b>	42700	39727	...	39732	39737	39778	39752
<b>TOP SUB</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AJ2007</b>	<b>AJ2008</b>	<b>AJ2008</b>	<b>AJ2009</b>	<b>AJ2010</b>	<b>AJ2011</b>	<b>AJ2012</b>
	<b>Bowen No.</b>	42701	39861	39861	30541	34966	33244	34992
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AJ3007</b>	<b>AJ3008</b>	<b>AJ3008</b>	<b>AJ3009</b>	<b>AJ3010</b>	<b>AJ3011</b>	<b>AJ3012</b>
	<b>Bowen No.</b>	42702	33156	33156	30542	34967	33245	34993
<b>WASHPIPE BODY</b>	<b>Logan Part No.</b>	<b>AJ4007</b>	<b>AJ4008</b>	<b>AJ40085</b>	<b>AJ4009</b>	<b>AJ4010</b>	<b>AJ4011</b>	<b>AJ4012</b>
	<b>Bowen No.</b>	42703	39728	...	39733	39738	39779	39753
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AJ5007</b>	<b>AJ5008</b>	<b>AJ50085</b>	<b>AJ5009</b>	<b>AJ5010</b>	<b>AJ5011</b>	<b>AJ5012</b>
	<b>Bowen No.</b>	42705	39860	...	30545	34970	33248	34996
<b>WASHPIPE</b>	<b>Logan Part No.</b>	<b>AJ6007</b>	<b>AJ6008</b>	<b>AJ60085</b>	<b>AJ6009</b>	<b>AJ6010</b>	<b>AJ6011</b>	<b>AJ6012</b>
	<b>Bowen No.</b>	42704	39729	...	39734	39739	39780	39754
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-43</b>	<b>L365-42</b>	<b>L365-42</b>	<b>L365-50.25</b>	<b>L365-53</b>	<b>L365-54</b>	<b>L365-61</b>
	<b>Bowen No.</b>	365-43	365-42	365-42	365-50.25	365-53	365-54	365-61
	<b>No. Req'd</b>	8	8	8	8	8	8	8
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-43</b>	<b>L375-42</b>	<b>L375-42</b>	<b>L375-50.25</b>	<b>L375-53</b>	<b>L375-54</b>	<b>L375-61</b>
	<b>Bowen No.</b>	375-43	375-42	375-42	375-50.25	375-53	375-54	375-61
	<b>No. Req'd</b>	8	8	8	8	8	8	8
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>	<b>AG10002</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	329	329	329	329	329	329	329
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>
<b>FILL PLUG SEAL</b>	<b>Bowen No.</b>	617	617	617	617	617	617	617
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AJ7007</b>	<b>AJ7008</b>	<b>AJ7008</b>	<b>AJ7009</b>	<b>AJ7010</b>	<b>AJ7011</b>	<b>AJ7012</b>
	<b>Bowen No.</b>	42708	39863	39863	30546	34972	33250	34998

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard
- (4) Name and number of any desired spares

### Recommended Spare Parts:

- (1) 1 Service Kit
- (2) 6 Seal Packing Sets
- (3) 4 Middle Body Fill Plugs
- (4) 4 Mandrel Body Fill Plugs
- (5) 16 Main Mandrel Non-Extrusion Rings
- (6) 16 Main Mandrel Seal Protector Rings
- (7) 1 Seal Ring Setting Tool

## LUBRICATED FISHING BUMPER SUBS

<b>CONNECTION</b>		2-7/8 EUE	3-1/2 API IF or FH	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF or FH	5-1/2 API Reg	6-5/8 API Reg
<b>OUTSIDE DIAMETER</b>		4-1/2	4-3/4	4-3/4	6	6-1/4	6-3/4	7-3/4
<b>INSIDE DIAMETER</b>		2-3/8	2	2-1/4	2-13/16	3-1/8	2-3/4	3-1/2
<b>STROKE LENGTH</b>		15-1/2	15-1/2	15-1/2	18	18	18	18
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>607-450</b>	<b>607-475</b>	<b>607-476</b>	<b>607-600</b>	<b>607-625</b>	<b>607-675</b>	<b>607-775</b>
	<b>Bowen No.</b>	42700	39727	...	39732	39737	39778	39752
<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>	<b>26000-055</b>
	<b>Bowen No.</b>	55403	55403	55403	55403	55403	55403	55403
<b>SETTING TOOL</b>	<b>Logan Part No.</b>	<b>AG1000-43</b>	<b>AG1000-42</b>	<b>AG1000-42</b>	<b>AJ8000</b>	<b>AG1000-53</b>	<b>AG1000-54</b>	<b>AG1000-61</b>
	<b>Bowen No.</b>	22709-43	22709-42	22709-42	10572	22709-53	22709-54	22709-61
<b>SEAL PACKING</b>	<b>Logan Part No.</b>	<b>28000-020</b>	<b>28000-021</b>	<b>28000-021</b>	<b>28000-022</b>	<b>28000-023</b>	<b>28000-024</b>	<b>28000-025</b>
<i>Consists of:</i>	<b>Bowen No.</b>	42709	39730	...	39735	39740	39781	39755
<b>MAIN MANDREL &amp; W.P. BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-340</b>	<b>568-339</b>	<b>568-339</b>	<b>568-347</b>	<b>568-426</b>	<b>568-427</b>	<b>568-434</b>
	<b>Bowen No.</b>	568340	568339	568339	568347	568426	568427	568434
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>MIDDLE BODY SEAL LARGE</b>	<b>Logan Part No.</b>	<b>568-242</b>	<b>568-242</b>	<b>568-242</b>	<b>568-250</b>	<b>568-253</b>	<b>568-256</b>	<b>568-261</b>
	<b>Bowen No.</b>	568242	568242	568242	568250	568253	568256	568261
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>MIDDLE BODY SEAL SMALL</b>	<b>Logan Part No.</b>	<b>568-239</b>	<b>568-239</b>	<b>568-239</b>	<b>568-247</b>	<b>568-251</b>	<b>568-254</b>	<b>568-260</b>
	<b>Bowen No.</b>	568239	568239	568239	568247	568251	568254	568260
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>WASHPIPE SEAL</b>	<b>Logan Part No.</b>	<b>568-231</b>	<b>568-229</b>	<b>568-229</b>	<b>568-236</b>	<b>568-239</b>	<b>568-238</b>	<b>568-246</b>
	<b>Bowen No.</b>	568231	568229	...	568236	568239	568238	568246
<b>MIDDLE BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>
	<b>Bowen No.</b>	568005	568005	568005	568005	568005	568005	568005
<b>MANDREL BODY FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>	<b>568-006</b>
	<b>Bowen No.</b>	568006	568006	568006	568006	568006	568006	568006

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**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Outside diameter, if other than standard
- (4) Name and number of any desired spares

**Recommended Spare Parts:**

- (1) 1 Service Kit
- (2) 6 Seal Packing Sets
- (3) 4 Middle Body Fill Plugs
- (4) 4 Mandrel Body Fill Plugs
- (5) 16 Main Mandrel Non-Extrusion Rings
- (6) 16 Main Mandrel Seal Protector Rings
- (7) 1 Seal Ring Setting Tool

**FISHING BUMPER SUBS**

**Overview**

One of the most common tools used for any kind of fishing job is the bumper sub. The tool's design allows full torque and unrestricted fluid circulation at all times. The Logan Fishing Bumper Sub can bump up or down to engage or disengage overshots or spears, or be used as a feed-off tool in milling or cutting operations. Other typical operations include releasing stuck drill pipe, drill collars, tubing, test tools, and safety joints. The fishing bumper sub can be used in conjunction with an overshot or spear.

**Construction**

This simple tool consists of five major components: a top sub, knocker, middle body, mandrel, and a mandrel body. All components are manufactured from high quality, heat-treated alloy steels.

The mandrel's hexagon shape allows it to slide in and out of the mandrel body's matching shape to transmit downhole torque. The standard stroke length of 20 inches is suitable for most purposes, although longer stroke lengths of 30, 36, 42, 48, and 60 inches are available.

A knocker seal ring, seal protector ring, and non-extrusion ring are provided on a standard knocker. Chevron packing knocker assemblies are available upon request and are recommended for extensive circulation through the fishing bumper sub.

**Operation**

The Logan Fishing Bumper Sub is typically run directly above the spear, overshot, screw-in sub, or safety joint. When lift load is applied, the bumper sub will slide open until the knocker hits the mandrel body. Slacking weight off the workstring to the fishing bumper sub will cause the mandrel body to slide back down the mandrel until the bottom shoulder of the mandrel body hits the top shoulder of the mandrel.

**To Apply a Downward Blow**

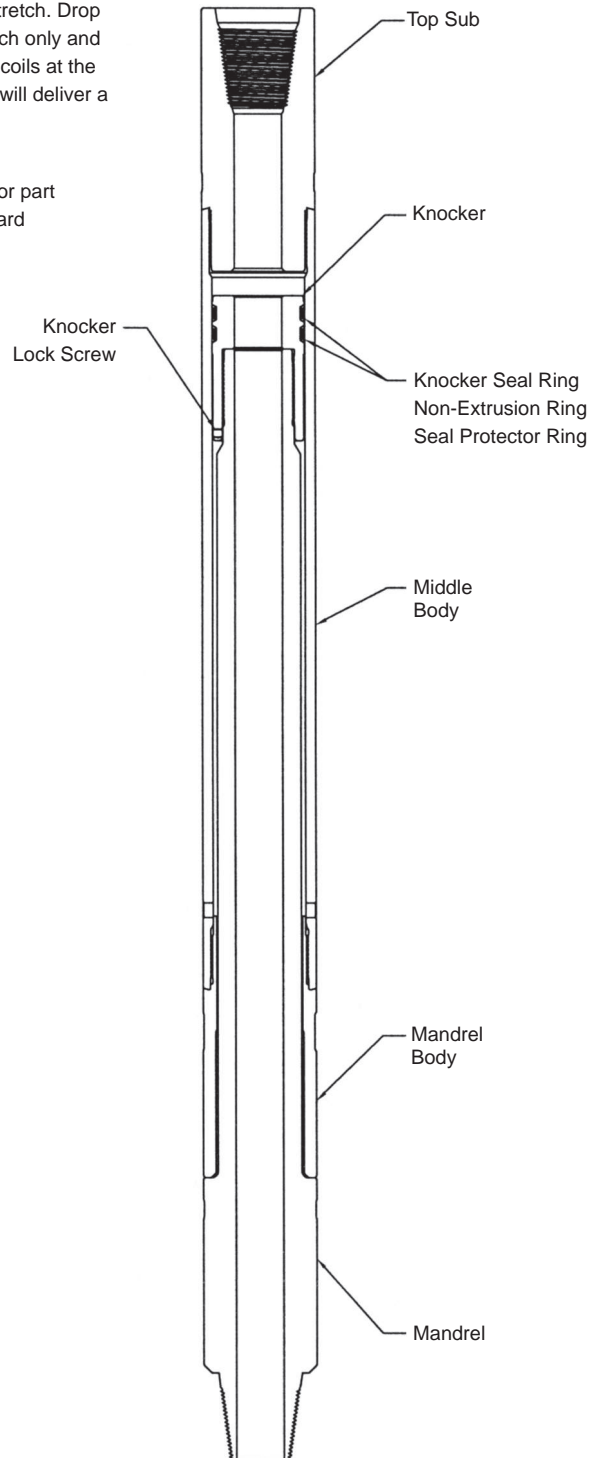
At the surface, mark the pipe to indicate the open and closed positions of the fishing bumper sub. Raise the fishing string to open the bumper sub and allow for extra string stretch. Sharply drop the string and stop with the brake approximately four to six inches above the closed position of the bumper sub to deliver a sharp downward blow. To deliver a solid downward blow, drop the full weight of the fishing string without braking.

**To Apply an Upward Blow**

At the surface, mark the pipe to indicate the open and closed positions of the fishing bumper sub. Raise the fishing string to open the bumper sub and allow for additional string stretch. Drop the string by the amount of the stretch only and stop it with the brake. As the pipe recoils at the bottom of the hole, the bumper sub will deliver a sharp upward blow.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard



## FISHING BUMPER SUBS

<b>CONNECTION</b>		1-13/16 WFJ	1-1/4 API Reg	2-3/8 EUE	2-3/8 API Reg	2-3/8 API IF	2-3/8 API IF	2-3/8 EUE
<b>OUTSIDE DIAMETER (INCHES)</b>		1-13/16	2-1/4	3-1/8	3-5/32	3-3/8	3-3/4	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>		3/8	1/2	1-17/32	1	1	1-1/2	1-7/8
<b>STROKE (INCHES)</b>		20	20	20	20	20	20	20
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>604-181</b>	<b>604-225</b>	<b>604-313</b>	<b>604-315</b>	<b>604-338</b>	<b>604-375</b>	<b>604-376</b>
	<b>Bowen No.</b>	10120	18785	42592	10105	10190	39887	39893
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AF1000</b>	<b>AF1001</b>	<b>AF10015</b>	<b>AF1002</b>	<b>AF10025</b>	<b>AF1003</b>	<b>AF1004</b>
	<b>Bowen No.</b>	10121	18786	42593	10106	10191	39888	39894
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AF2000</b>	<b>AF2001</b>	<b>AF20015</b>	<b>AF2002</b>	<b>AF20025</b>	<b>AF2003</b>	<b>AF2004</b>
	<b>Bowen No.</b>	10123	18788	42596	10108	10193	39890	39896
<b>MIDDLE BODY 20" STROKE</b>	<b>Logan Part No.</b>	<b>AF3000-20</b>	<b>AF3001-20</b>	<b>AF30015-20</b>	<b>AF3002-20</b>	<b>AF30025-20</b>	<b>AF3003-20</b>	<b>AF3004-20</b>
	<b>Bowen No.</b>	10122	18787	42594	10107	10192	39889	39895
<b>MANDREL 20" STROKE</b>	<b>Logan Part No.</b>	<b>AF4000-20</b>	<b>AF4001-20</b>	<b>AF40015-20</b>	<b>AF4002-20</b>	<b>AF40025-20</b>	<b>AF4003-20</b>	<b>AF4004-20</b>
	<b>Bowen No.</b>	10125	18789	42597	10110	10194	39891	39897
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AF5000</b>	<b>AF5001</b>	<b>AF50015</b>	<b>AF5002</b>	<b>AF50025</b>	<b>AF5003</b>	<b>AF5004</b>
	<b>Bowen No.</b>	10126	18790	42595	10111	10195	39892	39898
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L385-22</b>	<b>L385-27</b>	<b>L216-34</b>	<b>L387-6</b>	<b>L385-35</b>	<b>L216-38</b>	<b>L216-38</b>
	<b>Bowen No.</b>	385-22	385-27	216-34	387-6	385-35	216-38	216-38
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L386-22</b>	<b>L386-27</b>	<b>L227-34</b>	<b>L388-6</b>	<b>L386-35</b>	<b>L227-38</b>	<b>L227-38</b>
	<b>Bowen No.</b>	386-22	386-27	227-34	388-6	386-35	227-38	227-38
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>KNOCKER SEAL RING</b>	<b>Logan Part No.</b>	<b>568-217</b>	<b>568-222</b>	<b>568-331</b>	<b>568-228</b>	<b>568-332</b>	<b>568-335</b>	<b>568-335</b>
	<b>Bowen No.</b>	568217	568222	568331	568228	568332	568335	568335
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>KNOCKER LOCK SCREW</b>	<b>Logan Part No.</b>	...	...	<b>AF6001</b>	<b>AF6000</b>	<b>AF6000</b>	<b>AF6000</b>	<b>AF6001</b>
	<b>Bowen No.</b>	...	...	54775	48879	48879	48879	54775

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### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

<b>CONNECTION</b>	1-13/16 WFJ	1-1/4 API Reg	2-3/8 EUE	2-3/8 API Reg	2-3/8 API IF	2-3/8 API IF	2-3/8 EUE
<b>OUTSIDE DIAMETER (INCHES)</b>	1-13/16	2-1/4	3-1/8	3-5/32	3-3/8	3-3/4	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>	3/8	1/2	1-17/32	1	1	1-1/2	1-7/8
<b>STROKE (INCHES)</b>	20	20	20	20	20	20	20
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No. 10120	18785	42592	10105	10190	39887	39893

## OPTIONAL ACCESSORIES

### CHEVRON PACKING KNOCKER ASSEMBLY - BREAKDOWN:

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>KNOCKER</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>PACKING RING</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>CENTER RING</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>CHEVRON PACKING SET</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>RETAINING RING</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
<b>PACKING RETAINER</b>	<b>Logan Part No.</b> ...	...	...	...	...	...	...
	Bowen No. ...	...	...	...	...	...	...
	No. Req'd ...	...	...	...	...	...	...

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#### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

#### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

#### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Klocker Seals

## FISHING BUMPER SUBS

CONNECTION	1-13/16 WFJ	1-1/4 API Reg	2-3/8 EUE	2-3/8 API Reg	2-3/8 API IF	2-3/8 API IF	2-3/8 EUE
OUTSIDE DIAMETER (INCHES)	1-13/16	2-1/4	3-1/8	3-5/32	3-3/8	3-3/4	3-3/4
INSIDE DIAMETER (INCHES)	3/8	1/2	1-17/32	1	1	1-1/2	1-7/8

## 30" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No.	29523	29529	46881	29535	29538	46863	46866
<b>MANDREL</b>	Logan Part No.	AF4000-30	AF4001-30	AF40015-30	AF4002-30	AF40025-30	AF4003-30	AF4004-30
	Bowen No.	29524	29530	46882	29536	29539	46864	46867
<b>MIDDLE BODY</b>	Logan Part No.	AF3000-30	AF3001-30	AF30015-30	AF3002-30	AF30025-30	AF3003-30	AF3004-30
	Bowen No.	29525	29531	46883	29537	29540	46865	46868

## 36" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No.	29574	29580	49608	29586	29589	46890	46893
<b>MANDREL</b>	Logan Part No.	AF4000-36	AF4001-36	AF40015-36	AF4002-36	AF40025-36	AF4003-36	AF4004-36
	Bowen No.	29575	29581	46909	29587	29590	46891	46894
<b>MIDDLE BODY</b>	Logan Part No.	AF3000-36	AF3001-36	AF30015-36	AF3002-36	AF30025-36	AF3003-36	AF3004-36
	Bowen No.	29576	29582	46910	29588	29591	46892	46895

## 42" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No.	29619	29625	46935	16933	29643	46917	46920
<b>MANDREL</b>	Logan Part No.	AF4000-42	AF4001-42	AF40015-42	AF4002-42	AF40025-42	AF4003-42	AF4004-42
	Bowen No.	29620	29626	46936	16935	26944	46918	46921
<b>MIDDLE BODY</b>	Logan Part No.	AF3000-42	AF3001-42	AF30015-42	AF3002-42	AF30025-42	AF3003-42	AF3004-42
	Bowen No.	29621	29627	46937	16934	26945	46919	46922

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### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

<b>CONNECTION</b>	1-13/16 WFJ	1-1/4 API Reg	2-3/8 EUE	2-3/8 API Reg	2-3/8 API IF	2-3/8 API IF	2-3/8 EUE
<b>OUTSIDE DIAMETER (INCHES)</b>	1-13/16	2-1/4	3-1/8	3-5/32	3-3/8	3-3/4	3-3/4
<b>INSIDE DIAMETER (INCHES)</b>	3/8	1/2	1-17/32	1	1	1-1/2	1-7/8

## 48" STROKE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No. 29682	29688	46962	16936	29694	46944	46947
<b>MANDREL</b>	<b>Logan Part No.</b> AF4000-48	AF4001-48	AF40015-48	AF4002-48	AF40025-48	AF4003-48	AF4004-48
	Bowen No. 29683	29689	46963	16938	29695	46945	46948
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AF3000-48	AF3001-48	AF30015-48	AF3002-48	AF30025-48	AF3003-48	AF3004-48
	Bowen No. 29684	29690	46964	16937	29696	46946	46949

## 60" STROKE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-181	604-225	604-313	604-315	604-338	604-375	604-376
	Bowen No. 29748	29754	46989	29760	29763	46971	46974
<b>MANDREL</b>	<b>Logan Part No.</b> AF4000-60	AF4001-60	AF40015-60	AF4002-60	AF40025-60	AF4003-60	AF4004-60
	Bowen No. 29749	29755	46990	29761	29764	46972	46975
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AF3000-60	AF3001-60	AF30015-60	AF3002-60	AF30025-60	AF3003-60	AF3004-60
	Bowen No. 29750	29756	46991	29762	29765	46973	46976

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

*Special Notes:*

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

**Recommended Spare Parts:**

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals



# LOGAN GENERAL CATALOG

OIL TOOLS

## FISHING BUMPER SUBS

<b>CONNECTION</b>		2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4
<b>INSIDE DIAMETER (INCHES)</b>		1-1/4	1-15/16	2-3/8	2	1-1/2	2	2-1/4
<b>STROKE (INCHES)</b>		20	20	20	20	20	20	20
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>604-377</b>	<b>604-425</b>	<b>604-450</b>	<b>604-475</b>	<b>604-476</b>	<b>604-600</b>	<b>604-625</b>
	<b>Bowen No.</b>	10090	41824	36794	39905	10225	10135	10257
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AF1005</b>	<b>AF1006</b>	<b>AF1007</b>	<b>AF1008</b>	<b>AF10085</b>	<b>AF1009</b>	<b>AF1010</b>
	<b>Bowen No.</b>	10091	41825	36795	39906	10226	10136	1025
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AF2005</b>	<b>AF2006</b>	<b>AF2007</b>	<b>AF2008</b>	<b>AF20085</b>	<b>AF2009</b>	<b>AF2010</b>
	<b>Bowen No.</b>	10093	10158	36797	39908	10228	10138	10267
<b>MIDDLE BODY</b> <i>(20-inch stroke)</i>	<b>Logan Part No.</b>	<b>AF3005-20</b>	<b>AF3006-20</b>	<b>AF3007-20</b>	<b>AF3008-20</b>	<b>AF30085-20</b>	<b>AF3009-20</b>	<b>AF3010-20</b>
	<b>Bowen No.</b>	10092	10157	36796	39907	10227	10137	10262
<b>MANDREL</b> <i>(20-inch stroke)</i>	<b>Logan Part No.</b>	<b>AF4005-20</b>	<b>AF4006-20</b>	<b>AF4007-20</b>	<b>AF4008-20</b>	<b>AF40085-20</b>	<b>AF4009-20</b>	<b>AF4010-20</b>
	<b>Bowen No.</b>	10095	41828	36798	39909	10229	10140	10268
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AF5005</b>	<b>AF5006</b>	<b>AF5007</b>	<b>AF5008</b>	<b>AF50085</b>	<b>AF5009</b>	<b>AF5010</b>
	<b>Bowen No.</b>	10096	41829	36799	39910	10230	10141	10250
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L385-37</b>	<b>L385-41</b>	<b>L216-44.5</b>	<b>L385-44</b>	<b>L385-44</b>	<b>L385-52</b>	<b>L385-54</b>
	<b>Bowen No.</b>	385-37	385-41	216-44.5	385-44	385-44	385-52	385-54
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L386-37</b>	<b>L386-41</b>	<b>L227-44.5</b>	<b>L386-44</b>	<b>L386-44</b>	<b>L386-52</b>	<b>L386-54</b>
	<b>Bowen No.</b>	386-37	386-41	227-44.5	386-44	386-44	386-52	386-54
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>KNOCKER SEAL RING</b>	<b>Logan Part No.</b>	<b>568-334</b>	<b>568-338</b>	<b>568-341</b>	<b>568-341</b>	<b>568-341</b>	<b>568-349</b>	<b>568-427</b>
	<b>Bowen No.</b>	568334	568338	568341	568341	568341	568349	568427
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>KNOCKER LOCK SCREW</b>	<b>Logan Part No.</b>	<b>AF6002</b>	<b>AF6000</b>	<b>AF6000</b>	<b>AF6000</b>	<b>AF6002</b>	<b>AF6003</b>	<b>AF6003</b>
	<b>Bowen No.</b>	54769	48879	48879	48879	54769	43305	43305

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### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

<b>CONNECTION</b>		2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
<b>OUTSIDE DIAMETER (INCHES)</b>		3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4
<b>INSIDE DIAMETER (INCHES)</b>		1-1/4	1-15/16	2-3/8	2	1-1/2	2	2-1/4
<b>STROKE (INCHES)</b>		20	20	20	20	20	20	20
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>604-377</b>	<b>604-425</b>	<b>604-450</b>	<b>604-475</b>	<b>604-476</b>	<b>604-600</b>	<b>604-625</b>
	<b>Bowen No.</b>	10090	41824	36794	39905	10225	10135	10257

## OPTIONAL ACCESSORIES

<b>CHEVRON PACKING KNOCKER ASSEMBLY</b>								
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>25000-014</b>	<b>25000-015</b>	<b>25000-016</b>	<b>25000-017</b>	<b>25000-023</b>	<b>25000-018</b>	<b>25000-019</b>
	<b>Bowen No.</b>	30910	59191	62774	59177	81172	50321	62205
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AF7000</b>	<b>AF7001</b>	<b>AF7002</b>	<b>AF7003</b>	<b>AF70035</b>	<b>AF7004</b>	<b>AF7005</b>
	<b>Bowen No.</b>	30911	59192	62775	59178	81173	50322	62206
<b>PACKING RING</b>	<b>Logan Part No.</b>	<b>AF8000</b>	<b>AF8001</b>	<b>AF8002</b>	<b>AF8003</b>	<b>AF80035</b>	<b>AF8004</b>	<b>AF8005</b>
	<b>Bowen No.</b>	30912	59193	62776	59179	81174	50323	62207
<b>CENTER RING</b>	<b>Logan Part No.</b>	<b>AF9000</b>	<b>AF9001</b>	<b>AF9002</b>	<b>AF9003</b>	<b>AF90035</b>	<b>AF9004</b>	<b>AF9005</b>
	<b>Bowen No.</b>	30913	59194	62777	59180	81175	50324	62208
<b>CHEVRON PACKING SET</b>	<b>Logan Part No.</b>	<b>AF10000</b>	<b>AF10001</b>	<b>AF10002</b>	<b>AF10003</b>	<b>AF100035</b>	<b>AF10004</b>	<b>AF10005</b>
	<b>Bowen No.</b>	30914	59195	62778	59181	81176	50325	62209
<b>RETAINING RING</b>	<b>Logan Part No.</b>	<b>AF11000</b>	<b>AF11001</b>	<b>AF11002</b>	<b>AF11003</b>	<b>AF110035</b>	<b>AF11004</b>	<b>AF11005</b>
	<b>Bowen No.</b>	19812	59196	59182	59182	81177	50326	13177
<b>PACKING RETAINER</b>	<b>Logan Part No.</b>	<b>AF12000</b>	<b>AF12001</b>	<b>AF12002</b>	<b>AF12003</b>	...	<b>AF12004</b>	<b>AF12005</b>
	<b>Bowen No.</b>	62345	59197	62780	59183	...	50009	62210
	<b>No. Req'd</b>	2	2	2	2	...	2	2

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### Special Notes:

(1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Klocker Seals

## FISHING BUMPER SUBS

CONNECTION	2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
OUTSIDE DIAMETER (INCHES)	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4
INSIDE DIAMETER (INCHES)	1-1/4	1-15/16	2-3/8	2	1-1/2	2	2-1/4

### 30" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-377	604-425	604-450	604-475	604-476	604-600	604-625
	Bowen No.	29541	46869	46875	46878	29562	16150	20005
<b>MANDREL</b>	Logan Part No.	AF4005-30	AF4006-30	AF4007-30	AF4008-30	AF40085-30	AF4009-30	AF4010-30
	Bowen No.	29542	46870	46876	46879	29563	16151	20007
<b>MIDDLE BODY</b>	Logan Part No.	AF3005-30	AF3006-30	AF3007-30	AF3008-30	AF30085-30	AF3009-30	AF3010-30
	Bowen No.	29543	46871	46877	46880	29564	16152	20006

### 36" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-377	604-425	604-450	604-475	604-476	604-600	604-625
	Bowen No.	25180	46896	46902	46905	29604	10147	29610
<b>MANDREL</b>	Logan Part No.	AF4005-36	AF4006-36	AF4007-36	AF4008-36	AF40085-36	AF4009-36	AF4010-36
	Bowen No.	25182	46897	46903	46906	29605	10149	29611
<b>MIDDLE BODY</b>	Logan Part No.	AF3005-36	AF3006-36	AF3007-36	AF3008-36	AF30085-36	AF3009-36	AF3010-36
	Bowen No.	25181	46898	46904	46907	29606	10148	29612

### 42" STROKE

<b>COMPLETE ASSEMBLY</b>	Logan Part No.	604-377	604-425	604-450	604-475	604-476	604-600	604-625
	Bowen No.	29646	46923	46929	46932	29661	29667	29670
<b>MANDREL</b>	Logan Part No.	AF4005-42	AF4006-42	AF4007-42	AF4008-42	AF40085-42	AF4009-42	AF4010-42
	Bowen No.	29647	46924	46930	46933	29662	29668	29671
<b>MIDDLE BODY</b>	Logan Part No.	AF3005-42	AF3006-42	AF3007-42	AF3008-42	AF30085-42	AF3009-42	AF3010-42
	Bowen No.	29648	46925	46931	46934	29663	29669	29672

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*Special Notes:*

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

**Recommended Spare Parts:**

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

CONNECTION	2-7/8 API Reg	2-7/8 API IF	2-7/8 EUE	3-1/2 API IF	3-1/2 API IF	4-1/2 API FH	4-1/2 API IF
OUTSIDE DIAMETER (INCHES)	3-3/4	4-1/4	4-1/2	4-3/4	4-3/4	6	6-1/4
INSIDE DIAMETER (INCHES)	1-1/4	1-15/16	2-3/8	2	1-1/2	2	2-1/4

## 48" STROKE

COMPLETE ASSEMBLY	Logan Part No.	604-377	604-425	604-450	604-475	604-476	604-600	604-625
	Bowen No.	29697	46950	46956	46959	29715	19880	29736
MANDREL	Logan Part No.	AF4005-48	AF4006-48	AF4007-48	AF4008-48	AF40085-48	AF4009-48	AF4010-48
	Bowen No.	29698	46951	46957	46960	29716	19881	29737
MIDDLE BODY	Logan Part No.	AF3005-48	AF3006-48	AF3007-48	AF3008-48	AF30085-48	AF3009-48	AF3010-48
	Bowen No.	29699	46952	46958	46961	29717	19882	29738

## 60" STROKE

COMPLETE ASSEMBLY	Logan Part No.	604-377	604-425	604-450	604-475	604-476	604-600	604-625
	Bowen No.	29766	46977	46983	46986	29781	29790	25385
MANDREL	Logan Part No.	AF4005-60	AF4006-60	AF4007-60	AF4008-60	AF40085-60	AF4009-60	AF4010-60
	Bowen No.	29767	46978	46984	46987	29782	29791	25387
MIDDLE BODY	Logan Part No.	AF3005-60	AF3006-60	AF3007-60	AF3008-60	AF30085-60	AF3009-60	AF3010-60
	Bowen No.	29768	46979	46985	46988	29786	29792	25386

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### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

<b>CONNECTION</b>		5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
<b>OUTSIDE DIAMETER (INCHES)</b>		6-3/4	7-3/4	9				
<b>INSIDE DIAMETER (INCHES)</b>		2-3/4	3-1/2	4				
<b>STROKE (INCHES)</b>		20	20	20				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>604-675</b>	<b>604-775</b>	<b>604-900</b>				
	Bowen No.	10690	26595	61596				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AF1011</b>	<b>AF1012</b>	<b>AF1013</b>				
	Bowen No.	10691	26596	61597				
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AF2011</b>	<b>AF2012</b>	<b>AF2013</b>				
	Bowen No.	10693	26598	61599				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AF3011-20</b>	<b>AF3012-20</b>	<b>AF3013-20</b>				
20- inch Stroke	Bowen No.	10692	26597	61598				
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AF4011-20</b>	<b>AF4012-20</b>	<b>AF4013-20</b>				
20- inch Stroke	Bowen No.	10694	26599	61600				
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AF5011</b>	<b>AF5012</b>	<b>AF5013</b>				
	Bowen No.	10695	26594	61601				
<b>NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L385-58</b>	<b>L385-65</b>	<b>L216-68.5</b>				
	Bowen No.	385-58	385-65	216-68.5				
	No. Req'd	4	4	4				
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L386-58</b>	<b>L386-65</b>	<b>L227-68.5</b>				
	Bowen No.	386-58	386-65	227-68.5				
	No. Req'd	4	4	4				
<b>KNOCKER SEAL RING</b>	<b>Logan Part No.</b>	<b>568-431</b>	<b>568-438</b>	<b>568-441</b>				
	Bowen No.	568431	568438	568441				
	No. Req'd	2	2	2				
<b>KNOCKER LOCK SCREW</b>	<b>Logan Part No.</b>	<b>AF6003</b>	<b>AF6003</b>	<b>AF6004</b>				
	Bowen No.	43305	43305	54770				

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**Special Notes:**

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**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

**Recommended Spare Parts:**

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Klocker Seals

## FISHING BUMPER SUBS

<b>CONNECTION</b>		5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg			
<b>OUTSIDE DIAMETER (INCHES)</b>		6-3/4	7-3/4	9			
<b>INSIDE DIAMETER (INCHES)</b>		2-3/4	3-1/2	4			
<b>STROKE (INCHES)</b>		20	20	20			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>604-675</b>	<b>604-775</b>	<b>604-900</b>			
	<b>Bowen No.</b>	10690	26595	61596			

## OPTIONAL ACCESSORIES

<b>CHEVRON PACKING KNOCKER ASSEMBLY</b>							
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>25000-020</b>	<b>25000-021</b>	...			
	<b>Bowen No.</b>	57013	61103	...			
<b>KNOCKER</b>	<b>Logan Part No.</b>	<b>AF7006</b>	<b>AF7007</b>	...			
	<b>Bowen No.</b>	57014	61104	...			
<b>PACKING RING</b>	<b>Logan Part No.</b>	<b>AF8006</b>	<b>AF8007</b>	...			
	<b>Bowen No.</b>	57015	61105	...			
<b>CENTER RING</b>	<b>Logan Part No.</b>	<b>AF9006</b>	<b>AF9007</b>	...			
	<b>Bowen No.</b>	62374	62378	...			
<b>CHEVRON PACKING SET</b>	<b>Logan Part No.</b>	<b>AF10006</b>	<b>AF10007</b>	...			
	<b>Bowen No.</b>	57016	61106	...			
<b>RETAINING RING</b>	<b>Logan Part No.</b>	<b>AF11006</b>	<b>AF11007</b>	...			
	<b>Bowen No.</b>	57017	59907	...			
<b>PACKING RETAINER</b>	<b>Logan Part No.</b>	<b>AF12006</b>	<b>AF12007</b>	...			
	<b>Bowen No.</b>	62375	62379	...			
	<b>No. Req'd</b>	2	2	...			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Knocker Seals

## FISHING BUMPER SUBS

CONNECTION	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
OUTSIDE DIAMETER (INCHES)	6-3/4	7-3/4	9				
INSIDE DIAMETER (INCHES)	2-3/4	3-1/2	4				

## 30" STROKE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-675	604-775	604-900				
	Bowen No. 14520	29568	70408				
<b>MANDREL</b>	<b>Logan Part No.</b> AF4011-30	AF4012-30	AF4013-30				
	Bowen No. 14522	29569	70410				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AF3011-30	AF3012-30	AF3013-30				
	Bowen No. 14521	29570	70409				

## 36" STROKE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-675	604-775	604-900				
	Bowen No. 13590	29616	70411				
<b>MANDREL</b>	<b>Logan Part No.</b> AF4011-36	AF4012-36	AF4013-36				
	Bowen No. 13592	29617	70413				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AF3011-36	AF3012-36	AF3013-36				
	Bowen No. 13591	29618	70412				

## 42" STROKE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 604-675	604-775	604-900				
	Bowen No. 29676	29679	70414				
<b>MANDREL</b>	<b>Logan Part No.</b> AF4011-42	AF4012-42	AF4013-42				
	Bowen No. 29677	29680	70416				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AF3011-42	AF3012-42	AF3013-42				
	Bowen No. 29678	29681	70415				

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

(1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Klocker Seals

## FISHING BUMPER SUBS

CONNECTION	5-1/2 API Reg	6-5/8 API Reg	7-5/8 API Reg				
OUTSIDE DIAMETER (INCHES)	6-3/4	7-3/4	9				
INSIDE DIAMETER (INCHES)	2-3/4	3-1/2	4				

## 48" STROKE

COMPLETE ASSEMBLY	Logan Part No.	604-675	604-775	604-900			
	Bowen No.	29742	29745	70417			
MANDREL	Logan Part No.	AF4011-48	AF4012-48	AF4013-48			
	Bowen No.	29743	29746	70419			
MIDDLE BODY	Logan Part No.	AF3011-48	AF3012-48	AF3013-48			
	Bowen No.	29744	29747	70418			

## 60" STROKE

COMPLETE ASSEMBLY	Logan Part No.	604-675	604-775	604-900			
	Bowen No.	29796	29799	70420			
MANDREL	Logan Part No.	AF4011-60	AF4012-60	AF4013-60			
	Bowen No.	29797	29800	70422			
MIDDLE BODY	Logan Part No.	AF3011-60	AF3012-60	AF3013-60			
	Bowen No.	29798	29801	70421			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) Standard stroke for Bumper Subs is 20". Only the Mandrel and Middle Body need to be ordered to convert a standard 20" stroke assembly to one of greater stroke length. All other parts interchange for a given size. When a long stroke assembly is ordered by assembly number, the entire tool is ordered. To convert, order only the Mandrel and Middle Body by part number.

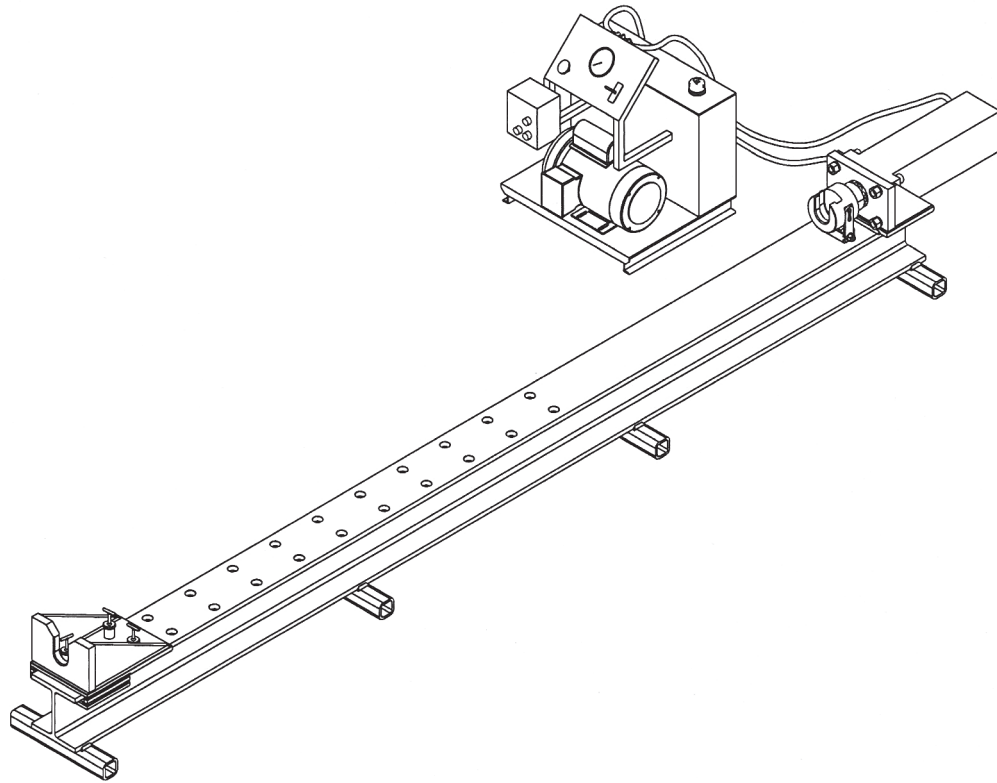
### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Stroke length
- (4) O.D., if other than standard

### Recommended Spare Parts:

- (1) 8 Non-Extrusion Rings
- (2) 8 Seal Protector Rings
- (3) 16 Klocker Seals





## JAR TESTER

### Overview

The Logan Jar Tester is a versatile machine for setting, checking, or testing pull loads of a variety of tools with outer diameters up to 11 inches. The Jar Tester is capable of exerting tension or compression loads in a controlled manner. The Logan Jar Tester provides an effective and accurate means for shop testing hydraulic jars; setting and checking pull loads of mechanical rotary jars, safety joints, bumper subs, and other similar tools; and testing formation tools. It is especially useful when many such tools must be maintained on a recurring basis.

### Construction

The Logan Jar Tester is composed of two basic components: a frame and a prime mover. A pull plate and cross head cradle the tool to be tested. The cross head is attached to a hydraulic cylinder that supplies the tensile or compressive load. The prime mover, which is also referred to as the power-pak, is an electric, motor-driven hydraulic power supply. It is composed of a hydraulic pump, an electric motor, a hydraulic reservoir, a start/stop switch, a pressure gauge, a filter, and appropriate valve fittings to properly operate and maintain the system.

All components of the Logan Jar Tester are manufactured from high-grade materials. All main load bearing members are made from selected heat-treated alloy steel for maximum strength and durability.

All Logan Jar Testers are completely assembled and tested before shipment. The unit requires very little maintenance. However, usual wear parts must be occasionally replaced.

### When ordering, please specify:

(1) Test Subs, size and type connection

# LOGAN GENERAL CATALOG

OIL TOOLS



J1045-001  
3/8" Fill Plug  
Adapter



J1046-001  
7/16" Fill Plug  
Adapter



J1224-001  
5/8" Fill Plug  
Adapter



J1086  
1/4" Female Couplers



J1374  
Hex Bushing



J1373  
Box Coupler



J1376  
Hose Fitting



J1085  
1/4" Male Couplers



J1078  
1/4" x 1" Pipe Nipple



J1073  
Installation Tool



J1074  
O-Ring Installation Tool

J1077  
Fill Plug Wrench



J1075  
Torx Head  
Fill Plug Wrench



568010-100  
O-Ring



568005-100  
O-Rings



J1080  
Line Filter

Note: Photos of parts are not actual size.

# LOGAN GENERAL CATALOG

OIL TOOLS



Pump Hose



J1072  
6 Ft. Exhaust Hose



J1069  
Volume Pump



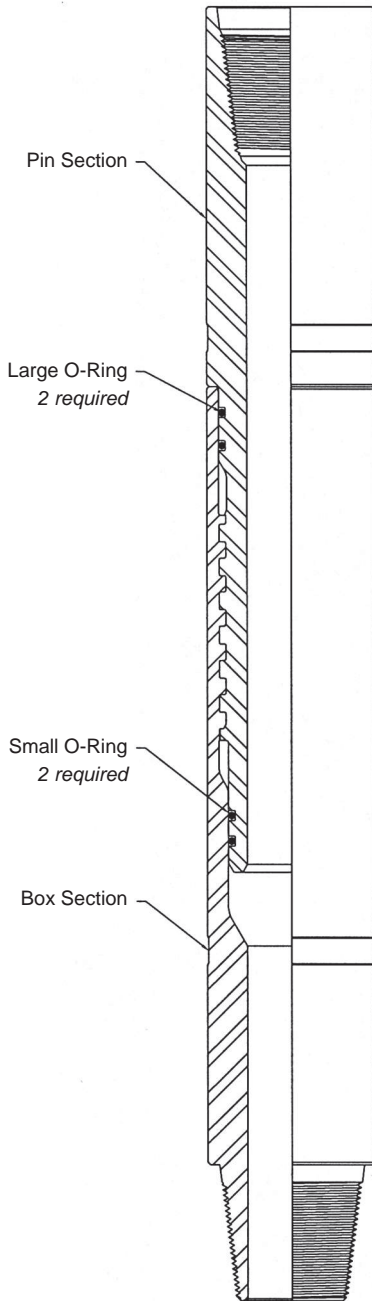
J1070  
Metal Box

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>26000-055</b>
<i>Consists of:</i>	<b>Bowen No.</b>	145213
<b>SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>J1073</b>
<b>INSTALLATION TOOL</b>	<b>Bowen No.</b>	625
<b>O-RING</b>	<b>Logan Part No.</b>	<b>J1074</b>
<b>INSTALLATION TOOL</b>	<b>Bowen No.</b>	626
<b>FILL PLUG WRENCH — T30 TORX HEAD</b>	<b>Logan Part No.</b>	<b>J1075</b>
	<b>Bowen No.</b>	359T
<b>FILL PLUG WRENCH — ALLEN HEAD</b>	<b>Logan Part No.</b>	<b>J1077</b>
	<b>Bowen No.</b>	620A
<b>1/4" x 1" PIPE NIPPLE</b>	<b>Logan Part No.</b>	<b>J1078</b>
	<b>Bowen No.</b>	36953
<b>LINE FILTER</b>	<b>Logan Part No.</b>	<b>J1080</b>
	<b>Bowen No.</b>	56565
<b>1/4" MALE COUPLER</b>	<b>Logan Part No.</b>	<b>J1085</b>
	<b>Bowen No.</b>	656
<b>1/4" FEMALE COUPLER</b>	<b>Logan Part No.</b>	<b>J1086</b>
	<b>Bowen No.</b>	655
<b>3/8" BOX x 1/4" GALVANIZED BOX COUPLER</b>	<b>Logan Part No.</b>	<b>J1373</b>
	<b>Bowen No.</b>	...
<b>1/8" BOX x 1/4" PIN HEX BUSHING</b>	<b>Logan Part No.</b>	<b>J1374</b>
	<b>Bowen No.</b>	...

<b>1/4" 19 NPT PIN HOSE FITTING</b>	<b>Logan Part No.</b>	<b>J1376</b>
	<b>Bowen No.</b>	...
<b>6 FT. EXHAUST HOSE</b>	<b>Logan Part No.</b>	<b>J1072</b>
	<b>Bowen No.</b>	33435
<b>PUMP HOSE</b>	<b>Logan Part No.</b>	...
	<b>Bowen No.</b>	2581
<b>VOLUME PUMP</b>	<b>Logan Part No.</b>	<b>J1069</b>
	<b>Bowen No.</b>	2580
<b>METAL BOX</b>	<b>Logan Part No.</b>	<b>J1070</b>
	<b>Bowen No.</b>	1995
<b>5/8" FILL PLUG ADAPTER</b>	<b>Logan Part No.</b>	<b>J1224-001</b>
	<b>Bowen No.</b>	...
<b>7/16" 20 NF FILL PLUG ADAPTER</b>	<b>Logan Part No.</b>	<b>J1046-001</b>
	<b>Bowen No.</b>	...
<b>3/8" 24 NF FILL PLUG ADAPTER</b>	<b>Logan Part No.</b>	<b>J1045-001</b>
	<b>Bowen No.</b>	...
<b>O-RING</b>	<b>Logan Part No.</b>	<b>568010-100</b>
	<b>Bowen No.</b>	568010
<b>O-RING — 70 DURO NITRILE</b>	<b>Logan Part No.</b>	<b>568005-100</b>
	<b>Bowen No.</b>	568005

**When ordering, please specify:**  
(1) Name and number of assembly or part

**DRILL PIPE SAFETY JOINTS**



**Overview**

The Logan Drill Pipe Safety Joint is designed for the safe and dependable release from drilling, fishing, tubing, washover, or testing strings should they become stuck. The simple design of the Logan Drill Pipe Safety Joint has no release ring, which allows for quick disen-gagement procedures of the tool.

**Construction**

The Logan Drill Pipe Safety Joint comes in a variety of popular sizes for drill pipe strings. Logan will also design and manufacture safety joints to meet a customer's specific need. The Logan Drill Pipe Safety Joint is made up of a box section and a pin section. Each Safety Joint is designed to withstand internal and external pressures through the use of O-ring seals above and below the threads.

The O.D. and the I.D. of the Logan Drill Pipe Safety Joint match the standard O.D. and I.D. of the tool joint connection that is requested.

**Operation**

The coarse thread design of the Logan Drill Pipe Safety Joint is resistant to wedging or loosening of the tool during operation. The Safety Joint's design allows for the transmission of torque in the left-hand or right-hand direction.

**To Disengage the Safety Joint in the Hole**

1. Pick up on the drill string until 500 to 1,000 lbs. remains on the Safety Joint. If too much weight is left sitting on the Safety Joint, there is a possibility that damage could occur to the shoulder of the box section when the tool disengages.
2. Rotate the string to the left until approximately 20% to 40% of the tool's right-hand make-up torque is applied.
3. Pick up on the string slowly while rotating to the left to unscrew the Safety Joint. The coarse threads will lift the pipe approximately 1/2" to 1-1/2" (depending on the size of the Safety Joint) for each revolution of the string.
4. Care should be taken to keep a little weight on the Safety Joint as the tool is unscrewed as recommended in Step 1. The operator will be able to see a weight decrease as the Safety Joint separates.

**To Reengage the Safety Joint in the Hole**

1. Lower the string into the hole until the Pin Section contacts the Box Section.
2. Apply approximately 1,000 lbs. of weight and rotate the string slowly to the right. An increase in torque will indicate that the Safety Joint has reengaged.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard

## DRILL PIPE SAFETY JOINTS

<b>CONNECTION SIZE</b>		2-3/8	2-3/8	2-7/8	2-7/8	2-7/8	3-1/2	3-1/2
<b>CONNECTION TYPES</b>		API Reg ACME Reg	API IF API FH HYD IF	API Reg ACME Reg	HYD IF	Int Flush	API Reg	HYD IF
<b>TOOL O.D.</b>		3-1/8	3-3/8	3-3/4	3-7/8	4-1/8	4-1/4	4-1/2
<b>BORE</b>		1	1-3/4	1-1/4	2-1/8	2-1/8	1-1/2	2-9/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>601-313</b>	<b>601-338</b>	<b>601-375</b>	<b>601-388</b>	<b>601-413</b>	<b>601-425</b>	<b>601-450</b>
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y1000</b>	<b>Y1001</b>	<b>Y1002</b>	<b>Y1003</b>	<b>Y1004</b>	<b>Y1005</b>	<b>Y1006</b>
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y2000</b>	<b>Y2001</b>	<b>Y2002</b>	<b>Y2003</b>	<b>Y2004</b>	<b>Y2005</b>	<b>Y2006</b>
<b>O-RING – SMALL</b>	<b>Logan Part No.</b>	<b>568-325</b>	<b>568-226</b>	<b>568-227</b>	...	<b>568-333</b>	<b>568-333</b>	...
	No. Req'd	2	2	2	...	2	2	...
<b>O-RING – LARGE</b>	<b>Logan Part No.</b>	<b>568-329</b>	<b>568-332</b>	<b>568-333</b>	...	<b>568-337</b>	<b>568-337</b>	...
	No. Req'd	2	2	2	...	2	2	...

<b>CONNECTION SIZE</b>		3-1/2	3-1/2	3-1/2	4	4	4-1/2	4-1/2
<b>CONNECTION TYPES</b>		API FH	API Reg	API IF	API FH	Int Flush	API Reg	API FH
<b>TOOL O.D.</b>		4-5/8	4-3/4	4-3/4	5-1/4	5-3/4	5-1/2	5-3/4
<b>BORE</b>		2-7/16	1-1/2	2-11/16	2-13/16	3-1/4	2-1/4	3
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>601-463</b>	<b>601-475</b>	<b>601-476</b>	<b>601-525</b>	<b>601-575</b>	<b>601-550</b>	<b>601-575</b>
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y1007</b>	<b>Y1008</b>	<b>Y1009</b>	<b>Y1010</b>	<b>Y1011</b>	<b>Y1012</b>	<b>Y1013</b>
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y2007</b>	<b>Y2008</b>	<b>Y2009</b>	<b>Y2010</b>	<b>Y2011</b>	<b>Y2012</b>	<b>Y2013</b>
<b>O-RING – SMALL</b>	<b>Logan Part No.</b>	<b>568-337</b>	...	<b>568-337</b>	...	...	...	<b>568-344</b>
	No. Req'd	2	...	2	...	...	...	2
<b>O-RING – LARGE</b>	<b>Logan Part No.</b>	<b>568-341</b>	...	<b>568-341</b>	...	...	...	<b>568-349</b>
	No. Req'd	2	...	2	...	...	...	2

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

*Special Notes:*

(1) Left-hand connections available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard.

## DRILL PIPE SAFETY JOINTS

CONNECTION SIZE		4-1/2	4-1/2	5-1/2	5-1/2	5-1/2	6-5/8	6-5/8
CONNECTION TYPES		X-HOLE	API IF HYD IF	API Reg	API Reg	API Reg	API Reg	API Reg
TOOL O.D.		6	6-1/8	6-3/4	7	7-3/8	7-3/4	8
BORE		3-1/4	3-3/4	2-3/4	4	4-13/16	3-1/2	5
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>601-600</b>	<b>601-613</b>	<b>601-675</b>	<b>601-700</b>	<b>601-738</b>	<b>601-775</b>	<b>601-800</b>
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y1014</b>	<b>Y1015</b>	<b>Y1016</b>	<b>Y1017</b>	<b>Y1018</b>	<b>Y1019</b>	<b>Y1020</b>
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y2014</b>	<b>Y2015</b>	<b>Y2016</b>	<b>Y2017</b>	<b>Y2018</b>	<b>Y2019</b>	<b>Y2020</b>
<b>O-RING – SMALL</b>	<b>Logan Part No.</b>	...	568-347	...	...	...	568-355	568-435
	No. Req'd	...	2	...	...	...	2	2
<b>O-RING – LARGE</b>	<b>Logan Part No.</b>	...	568-429	...	...	...	568-359	568-438
	No. Req'd	...	2	...	...	...	2	2

CONNECTION SIZE		6-5/8	7-5/8	8-5/8				
CONNECTION TYPES		API IF	API Reg	API Reg				
TOOL O.D.		8-1/2	9	10				
BORE		5-29/32	4	4-3/4				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>601-850</b>	<b>601-900</b>	<b>601-1000</b>				
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y1021</b>	<b>Y1022</b>	<b>Y1023</b>				
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y2021</b>	<b>Y2022</b>	<b>Y2023</b>				
<b>O-RING – SMALL</b>	<b>Logan Part No.</b>	...	568-361	...				
	No. Req'd	...	2	...				
<b>O-RING – LARGE</b>	<b>Logan Part No.</b>	...	568-363	...				
	No. Req'd	...	2	...				

Logan Oil Tools reserves the right to change or discontinue designs without notice.

*Special Notes:*

(1) Left-hand connections available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard.

## TUBING SAFETY JOINTS

### Overview

The Logan Tubing Safety Joint is designed for the safe and dependable release from drilling, fishing, tubing, washover, or testing strings should they become stuck. The simple design of the Logan Tubing Safety Joint has no release ring, which allows for quick disengagement procedures of the tool.

### Construction

The Logan Tubing Safety Joint comes in a variety of popular sizes for tubing strings. Logan will also design and manufacture safety joints to meet a customer's specific need. The Logan Tubing Safety Joint is made up of a box section and a pin section. Each Safety Joint is designed to withstand internal and external pressures through the use of O-ring seals above and below the threads.

Logan Tubing Safety Joints will have an O.D. the same as the coupling O.D. and an I.D. the same as the I.D. of the tubing connection.

### Operation

The coarse thread design of the Logan Tubing Safety Joint is resistant to wedging or loosening of the tool during operation. The Safety Joint's design allows for the transmission of torque in the left-hand or right-hand direction.

### To Disengage the Safety Joint in the Hole

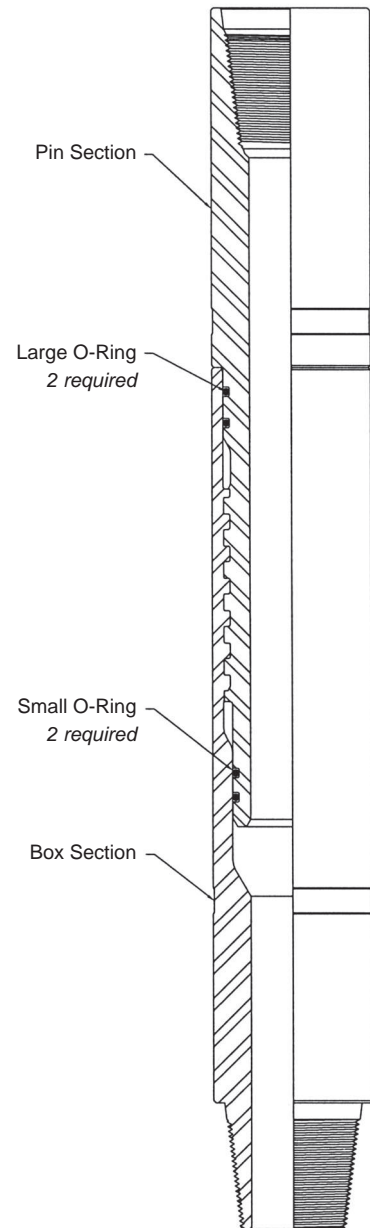
1. Pick up on the tubing string until 500 to 1,000 lbs. remains on the Safety Joint. If too much weight is left sitting on the Safety Joint, there is a possibility that damage could occur to the shoulder of the box section when the tool disengages.
2. Rotate the string to the left until approximately 20% to 40% of the tool's right-hand make-up torque is applied.
3. Pick up on the string slowly while rotating to the left to unscrew the Safety Joint. The coarse threads will lift the pipe approximately 1/2" for each revolution of the string.
4. Care should be taken to keep a little weight on the Safety Joint as the tool is unscrewed as recommended in Step 1. The operator will be able to see a weight decrease as the Safety Joint separates.

### To Reengage the Safety Joint in the Hole

1. Lower the string into the hole until the Pin Section contacts the Box Section.
2. Apply approximately 1,000 lbs. of weight and rotate the string slowly to the right. An increase in torque will indicate that the Safety Joint has reengaged.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard



## TUBING SAFETY JOINTS

CONNECTION SIZE		3/4	1	1	1-1/2	2	2-1/2	2-7/8
CONNECTION TYPE		EUE HARDY GRIFFIN	DSS	EUE	CS	EUE	EUE C-100	HYDRIL
TOOL O.D.		1.660	1.590	1-29/32	2-1/8	3-1/16	3-21/32	3-1/2
BORE		.812	.812	1	1-1/2	2	2-7/16	2-3/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>602-166</b>	<b>602-159</b>	<b>602-191</b>	<b>602-213</b>	<b>602-306</b>	<b>602-366</b>	<b>602-350</b>
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y3000</b>	<b>Y3001</b>	<b>Y3002</b>	<b>Y3003</b>	<b>Y3004</b>	<b>Y3005</b>	<b>Y3006</b>
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y4000</b>	<b>Y4001</b>	<b>Y4002</b>	<b>Y4003</b>	<b>Y4004</b>	<b>Y4005</b>	<b>Y4006</b>
<b>O-RING – SMALL</b>	<b>Logan Part No.</b>	...	...	<b>568-025</b>	<b>568-131</b>	<b>568-138</b>	<b>568-228</b>	...
	<b>No. Req'd</b>	...	...	2	2	2	2	...
<b>O-RING – LARGE</b>	<b>Logan Part No.</b>	...	...	<b>568-128</b>	<b>568-225</b>	<b>568-332</b>	<b>568-336</b>	...
	<b>No. Req'd</b>	...	...	2	2	2	2	...

CONNECTION SIZE		3	3					
CONNECTION TYPE		EUE	EUE					
TOOL O.D.		4-1/2	5					
BORE		3	3					
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>602-450</b>	<b>602-500</b>					
<b>PIN SECTION</b>	<b>Logan Part No.</b>	<b>Y3007</b>	<b>Y3008</b>					
<b>BOX SECTION</b>	<b>Logan Part No.</b>	<b>Y4007</b>	<b>Y4008</b>					
<b>O-RING - SMALL</b>	<b>Logan Part No.</b>	<b>568-152</b>	...					
	<b>No. Req'd</b>	2	...					
<b>O-RING - LARGE</b>	<b>Logan Part No.</b>	<b>568-241</b>	...					
	<b>No. Req'd</b>	2	...					

Logan Oil Tools reserves the right to change or discontinue designs without notice.

*Special Notes:*

(1) Left-hand connections available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard.



## WASHOVER SAFETY JOINTS

### Overview

The Logan Washover Safety Joint is designed for the safe and dependable release from drilling, fishing, tubing, washover, or testing strings should they become stuck. The simple design of the Logan Washover Safety Joint has no release ring, which allows for quick disengagement procedures of the tool.

### Construction

The Logan Washover Safety Joint comes in a variety of popular sizes for drill pipe strings. Logan will also design and manufacture safety joints to meet a customer's specific need. The Logan Washover Safety Joint is made up of a box section and a pin section. Each Safety Joint is designed to withstand internal and external pressures through the use of O-ring seals above and below the threads.

Logan Washover Safety Joints come with a drill pipe box top connection and a washover string pin bottom connection. This allows the Safety Joint to be run between the washover pipe and the drill string. The O.D. of the Washover Safety Joint will match the O.D. of the washover pipe.

### Operation

The coarse thread design of the Logan Washover Safety Joint is resistant to wedging or loosening of the tool during operation. The Safety Joint's design allows for the transmission of torque in the left-hand or right-hand direction.

### To Disengage the Safety Joint in the Hole

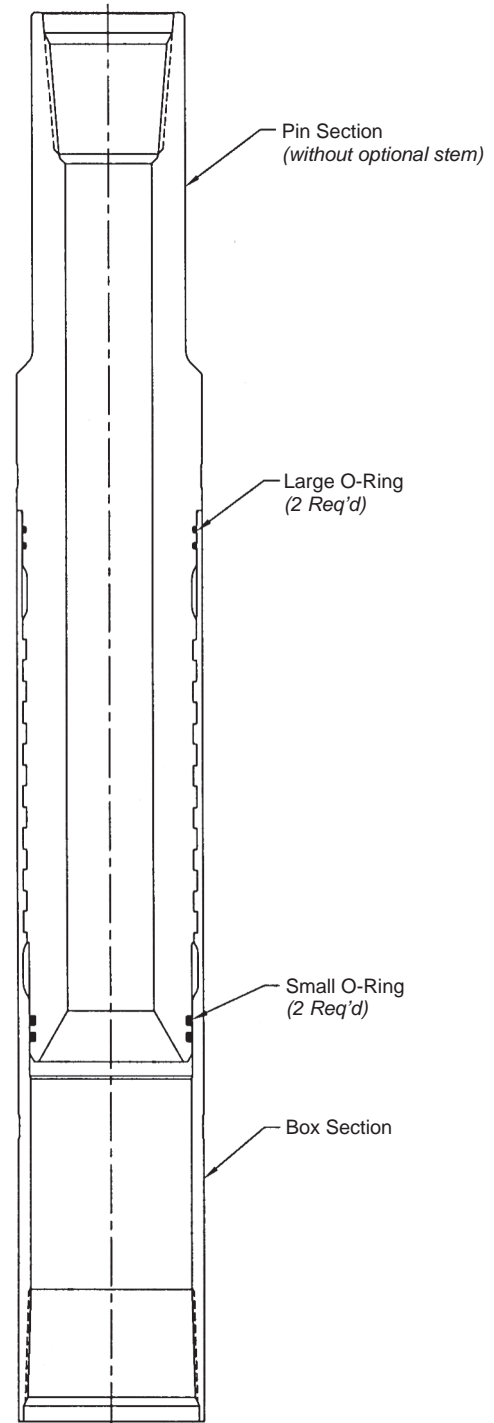
1. Pick up on the drill string until 500 to 1,000 lbs. remains on the Safety Joint. If too much weight is left sitting on the Safety Joint, there is a possibility that damage could occur to the shoulder of the box section when the tool disengages.
2. Rotate the string to the left until approximately 20% to 40% of the tool's right-hand make-up torque is applied.
3. Pick up on the string slowly while rotating to the left to unscrew the Safety Joint. The coarse threads will lift the pipe approximately 1/2" for each revolution of the string.
4. Care should be taken to keep a little weight on the Safety Joint as the tool is unscrewed as recommended in Step 1. The operator will be able to see a weight decrease as the Safety Joint separates.

### To Reengage the Safety Joint in the Hole

1. Lower the string into the hole until the Pin Section contacts the Box Section.
2. Apply approximately 1,000 lbs. of weight and rotate the string slowly to the right. An increase in torque will indicate that the Safety Joint has reengaged.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) O.D., if other than standard



## WASHOVER SAFETY JOINTS

CONNECTION SIZE		4	4-1/2	5	5-1/2	5-3/4	7	7-3/8
CONNECTION TYPE		FJ	FJ	FJ	FJ	FJ	HYDRIL FJ	FJ
TOOL O.D.		4	4-1/2	5-3/8	5-5/8	5-3/4	7-5/16	7-3/8
BORE		1-1/4	1-1/4	2-1/8	2-9/16	2-7/16	3-3/4	3
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	603-400	603-450	603-538	603-563	603-575	603-731	603-738
<b>PIN SECTION WITHOUT STEM</b>	Logan Part No.	Y5000-B	Y5001-B	Y5002-B	Y5003-B	Y5004-B	Y5005-B	Y5006-B
<b>BOX SECTION</b>	Logan Part No.	Y6000	Y6001	Y6002	Y6003	Y6004	Y6005	Y6006
<b>O-RING</b>	Logan Part No.	...	...	...	...	...	...	568-261
	No. Req'd	...	...	...	...	...	...	2

## OPTIONAL

<b>PIN SECTION WITH STEM</b>	Logan Part No.	Y5000-A	Y5001-A	Y5002-A	Y5003-A	Y5004-A	Y5005-A	Y5006-A
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CONNECTION SIZE		7-5/8	8-1/8	9	9-5/8	10-3/4	11-3/4	
CONNECTION TYPE		FJ	FJ	FJ	FJ	FJ	FJ	
TOOL O.D.		8	8-5/32	9-3/8	10-1/8	11-1/16	11-3/4	
BORE		3-3/4	3-5/32	4		4		
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	603-800	603-816	603-938	603-1013	603-1106	603-1175	
<b>PIN SECTION WITHOUT STEM</b>	Logan Part No.	Y5007-B	Y5008-B	Y5009-B	Y5010-B	Y5011-B	Y5012-B	
<b>BOX SECTION</b>	Logan Part No.	Y6007	Y6008	Y6009	Y6010	Y6011	Y6012	
<b>O-RING</b>	Logan Part No.	568-262	...	...	...	...	...	
	No. Req'd	2	...	...	...	...	...	

## OPTIONAL

<b>PIN SECTION WITH STEM</b>	Logan Part No.	Y5007-A	Y5008-A	Y5009-A	Y5010-A	Y5011-A	Y5012-A	
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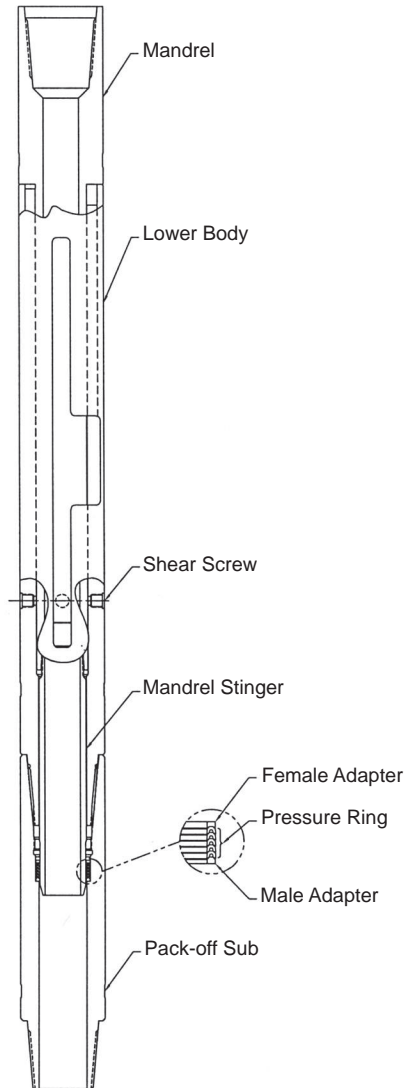
Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

(1) Left-hand connections available upon request

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard
- (3) Name and number of any desired spares
- (4) If ordering Pin Section With Stem, specify stem length
- (5) O.D., if other than standard.



## TYPE J SAFETY JOINTS

### Overview

The Logan Type J Safety Joint provides a release option from tools such as taper taps or die collars that are normally non-releasable. It also provides a way to connect or disconnect fishing string and stuck fish.

### Construction

Simple two-piece construction made of heat-treated alloy steel allows easy make-up and release. Special shear screws securely fasten the tool to prevent accidental unlatching before the fish is engaged.

### Operation

The lugs on the top half of the Logan Type J Safety Joint are secured when they engage with the J-slots on the bottom half.

### To Release the Safety Joint

Once the fish is engaged, a tension load is applied to the string to shear the shear screws. After the screws have been sheared and the tension released, slight left-hand torque is applied to the string while it is elevated. The lugs will shift into the release slots and the two halves of the safety joint will separate.

### To Reengage the Safety Joint

Slowly rotate the string to the right. Lower the string until the lugs on the top half engage the J-slots in the lower half. Stop rotation. Maintain right-hand torque on the lowered string until the joint is fully engaged. The joint will remain engaged until it is released.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) O.D. of assembly
- (3) Size and type of connection
- (4) O.D., if other than standard. For oversize, add 10% for each additional 1/4" or portion thereof to Pin Section and Box Section.

STANDARD TOOL O.D.		4-1/8	4-3/4	6-1/4	7-3/4			
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	610-413	610-475	610-625	610-775			
<b>MANDREL</b>	Logan Part No.	Y7000	Y7001	Y7002	Y7003			
<b>MANDREL STINGER</b>	Logan Part No.	Y8000	Y8001	Y8002	Y8003			
<b>LOWER BODY</b>	Logan Part No.	Y9000	Y9001	Y9002	Y9003			
<b>PACK-OFF SUB</b>	Logan Part No.	Y10000	Y10001	Y10002	Y10003			
<b>GLAND NUT</b>	Logan Part No.	Y11000	Y11001	Y11002	Y11002			
<b>FEMALE ADAPTER</b>	Logan Part No.	SC3131-480	SC2652-480	SC3123-480	SC3433-480			
<b>MALE ADAPTER</b>	Logan Part No.	SC3132-280	SC2652-280	SC3123-280	SC3433-280			
<b>CHEVRON PACKING</b>	Logan Part No.	SC3132-160	SC2652-160	SC3123-160	SC3433-160			
<b>SHEAR SCREW</b>	Logan Part No.	Y12000	Y12000	Y12000	Y12000			
	No. Req'd.	2	2	4	4			
<b>GLAND WRENCH</b>	Logan Part No.	Y13000	Y13001	Y13002	Y13002			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**NOTES**

## WELDED CUP JUNK SUBS

### Overview

The Logan Welded Cup Junk Sub is an accessory tool that prevents cuttings from milling or drilling operations that are too heavy to be circulated from settling at the bottom of the hole.

### Construction

The Logan Welded Cup Junk Sub is manufactured from high strength, heat-treated alloy steel to withstand wear.

Cup support ribs are welded to the main body of the tool. These ribs attach to the cup and guide the tool through tight places and prevent it from being crushed.

The standard welded assembly has a 10-inch-deep cup. Long (20-inch) and extra long (30-inch) cup lengths are available.

### Assembly

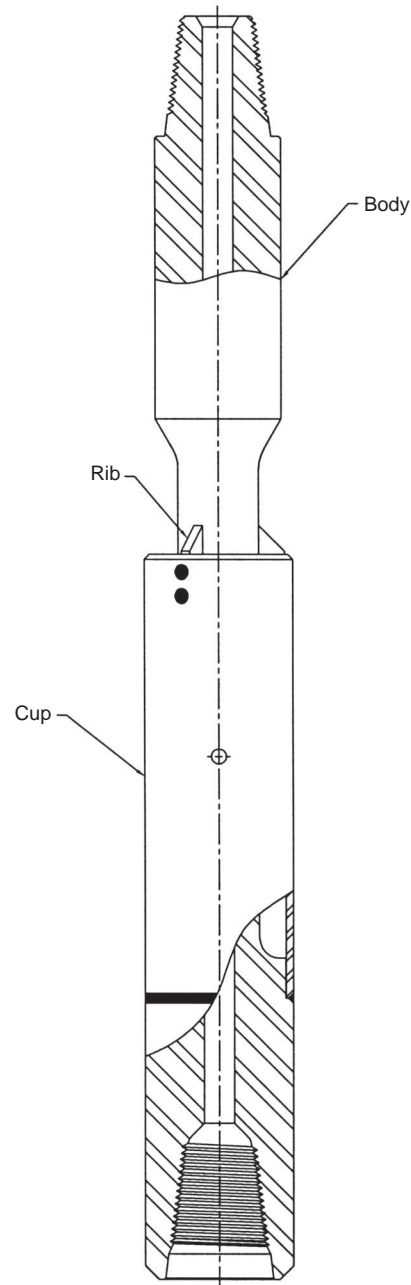
Welded cup junk subs are placed directly above the mill or drill bit. For severe milling jobs, it is customary to run two or three junk subs in tandem above the mill to increase cutting removal capacity and provide extra stabilization for the mill.

### Operation

Welded cup junk subs can be run in an open hole or inside casing. When running inside casing, hard-faced pads dressed to the same O.D. as the mill or bit should be used.

### When ordering, please specify:

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Cup length



## WELDED CUP JUNK SUBS

SIZE RANGE (HOLE SIZE)	4-1/4 to 5-5/8	4-5/8 to 4-7/8	5-1/8 to 5-7/8	6 to 6-3/8	6-1/2 to 7-1/2	7-1/2 to 8-1/2	8-5/8 to 9-5/8	
CONNECTION (STD. API REG)	2-3/8	2-7/8	3-1/2	3-1/2	3-1/2	4-1/2	4-1/2	
DIAMETER OF BORE	3/4	1-1/4	1-1/2	1-1/2	1-1/2	2-1/4	2-1/4	
O.D. OF TOP CONNECTION BODY	3-1/8	3-3/4	4-1/4	4-1/4	4-1/4	5-1/2	5-1/2	
O.D. UNDER TOP CONNECTION	2	2-5/8	3-1/8	3-1/4	3-1/4	4-1/2	4-1/2	
O.D. OF CUP	3-11/16	4	4-1/2	5	5-1/2	6-5/8	7	
I.D. OF CUP	3-5/16	3-5/8	4-1/4	4-9/16	4-7/8	5-15/16	6-9/32	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-000-010</b>	<b>200-001-010</b>	<b>200-002-010</b>	<b>200-003-010</b>	<b>200-004-010</b>	<b>200-005-010</b>	<b>200-006-010</b>
	Bowen No.	20340	15450	15455	15460	15465	15470	15475
	Cup Length (in)	10	10	10	10	10	10	10

## LONG TYPE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-000-020</b>	<b>200-001-020</b>	<b>200-002-020</b>	<b>200-003-020</b>	<b>200-004-020</b>	<b>200-005-020</b>	<b>200-006-020</b>
	Bowen No.	20345	17060	17065	17070	17075	17080	17085
	Cup Length (in)	20	20	20	20	20	20	20

## EXTRA LONG TYPE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-000-030</b>	<b>200-001-030</b>	<b>200-002-030</b>	<b>200-003-030</b>	<b>200-004-030</b>	<b>200-005-030</b>	<b>200-006-030</b>
	Bowen No.	20295	20300	20305	20310	20315	20320	20325
	Cup Length (in)	30	30	30	30	30	30	30

SIZE RANGE (HOLE SIZE)	9-5/8 to 11-5/8	11-1/2 to 13	14-3/4 to 17-1/2	
CONNECTION (STD. API REG)	6-5/8	6-5/8	7-5/8	
DIAMETER OF BORE	3-1/2	3-1/2	4	
O.D. OF TOP CONNECTION BODY	7-3/4	7-3/4	8-7/8	
O.D. UNDER TOP CONNECTION	5-3/4	5-3/4	7-5/8	
O.D. OF CUP	8-5/8	9-5/8	12-7/8	
I.D. OF CUP	7-15/16	8-17/32	11-5/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-007-010</b>	<b>200-008-010</b>	<b>200-009-010</b>
	Bowen No.	15480	15485	55306
	Cup Length (in)	10	10	10

## LONG TYPE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-007-020</b>	<b>200-008-020</b>	<b>200-009-020</b>
	Bowen No.	17090	17095	62533
	Cup Length (in)	20	20	20

## EXTRA LONG TYPE

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>200-007-030</b>	<b>200-008-030</b>	<b>200-009-030</b>
	Bowen No.	20330	20335	62536
	Cup Length (in)	30	30	30

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Cup length

**THREADED CUP JUNK SUBS**

**Overview**

The Logan Threaded Cup Junk Sub is an accessory tool that prevents cuttings from milling or drilling operations that are too heavy to be circulated from settling at the bottom of the hole. The removable threaded cup design allows easy inspection of the body. Damaged cups can easily be removed and replaced.

**Construction**

The Logan Threaded Cup Junk Sub is manufactured from high strength, heat-treated alloy steel to withstand wear.

The tool's strength is further enhanced by cup support ribs that are machined from the main body of the tool, not welded. These heavy-duty ribs support the cup and guide the tool through tight places and prevent it from being crushed.

The standard assembly has a 20-inch-deep cup. Standard (20-inch) and long (30-inch) cup lengths are available.

**Assembly**

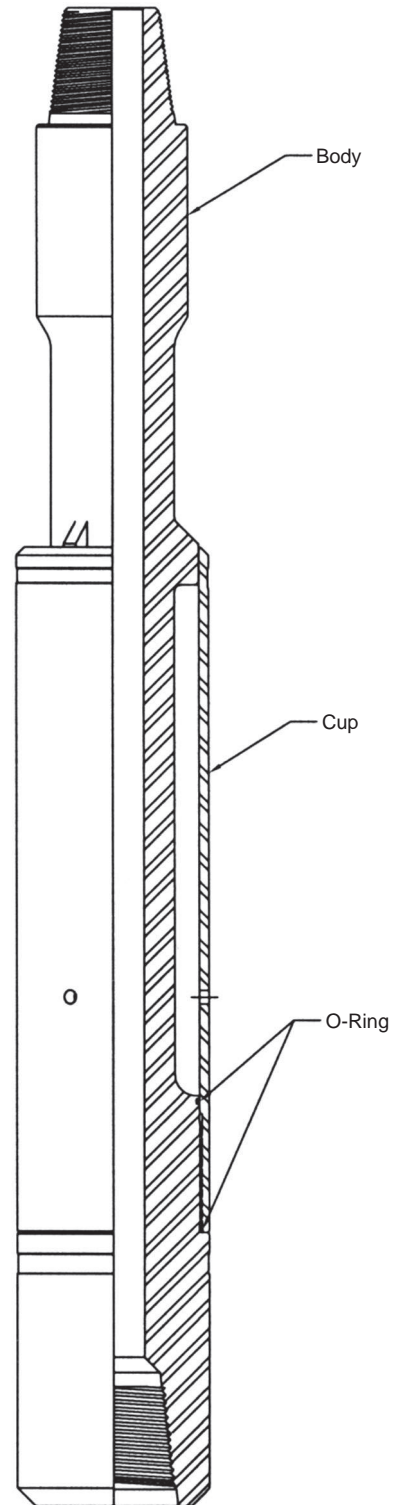
Threaded cup junk subs are placed directly above the mill or drill bit. For severe milling jobs, it is customary to run two or three junk subs in tandem above the mill to increase cutting removal capacity and provide extra stabilization for the mill.

**Operation**

Threaded cup junk subs can be run in an open hole or inside casing. When running inside casing, hard-faced pads dressed to the same O.D. as the mill or bit should be used.

**When ordering, please specify:**

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Cup length



## THREADED CUP JUNK SUBS

CASING SIZE RANGE (HOLE SIZE)		4-1/4 to 5-5/8	4-5/8 to 4-7/8	4-5/8 to 4-7/8	5-1/8 to 5-7/8	6 to 6-3/8	6-1/2 to 7-1/2
CONNECTION (STD API REG)	2-3/8	2-3/8	2-7/8	2-7/8	3-1/2	3-1/2	3-1/2
DIAMETER OF BORE	3/4	3/4	1-1/4	1-1/4	1-1/2	1-1/2	1-1/2
O.D. OF TOP CONNECTION BODY	2-15/16	3-1/8	3-1/2	3-1/2	4-1/4	4-1/4	4-1/4
O.D. UNDER TOP CONNECTION	2	2	2-5/8	2-5/8	3-1/8	3-1/4	3-1/4
O.D. OF CUP (Determines Part Number)	3-1/2	3-3/4	4	4-1/4	4-1/2	5	5-1/2
I.D. OF CUP	3	3-5/16	3-9/16	3-3/4	4-1/4	4-9/16	4-7/8

## LONG TYPE

CUP LENGTH (INCHES)		20	20	20	20	20	20	
COMPLETE ASSEMBLY	Logan Part No.	201-014-20	201-000-20	201-013-20	201-001-20	201-002-20	201-003-20	201-004-20
BODY	Logan Part No.	KA1014-20	KA1000-20	KA1013-20	KA1001-20	KA1002-20	KA1003-20	KA1004-20
O-RING FOR GROOVE	Logan Part No.	*	568-234	568-237	*	*	568-244	568-247
O-RING FOR THREADED RELIEF GROOVE	Logan Part No.	*	568-151	568-238	*	*	568-157	568-157
THREADED CUP	Logan Part No.	KA2014-20	KA2000-20	KA2013-20	KA2001-20	KA2002-20	KA2003-20	KA2004-20

## EXTRA LONG TYPE

CUP LENGTH (INCHES)		30	30	30	30	30	30	
COMPLETE ASSEMBLY	Logan Part No.	201-014-30	201-000-30	201-013-30	201-001-30	201-002-30	201-003-30	201-004-30
BODY	Logan Part No.	KA1014-30	KA1000-30	KA1013-30	KA1001-30	KA1002-30	KA1003-30	KA1004-30
O-RING FOR GROOVE	Logan Part No.	*	568-234	568-237	*	*	568-244	568-247
O-RING FOR THREADED RELIEF GROOVE	Logan Part No.	*	568-151	568-238	*	*	568-157	568-157
THREADED CUP	Logan Part No.	KA2014-30	KA2000-30	KA2013-30	KA2001-30	KA2002-30	KA2003-30	KA2004-30

Logan Oil Tools reserves the right to change or discontinue designs without notice.

\* To be advised upon request.

When ordering, please specify:

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Length of cup



### THREADED CUP JUNK SUBS

CASING SIZE RANGE (HOLE SIZE)	7-1/2 to 8-1/2	8-5/8 to 9-5/8		9-5/8 to 11-5/8		11-1/2 to 13	
CONNECTION (STD API REG)	4-1/2	4-1/2	4-1/2	6-5/8	6-5/8	6-5/8	6-5/8
DIAMETER OF BORE	2-1/4	2-1/4	2-1/4	3-1/2	3-1/2	3-1/2	3-1/2
O.D. OF TOP CONNECTION BODY	5-1/2	5-1/2	5-1/2	8	7-3/4	8	8
O.D. UNDER TOP CONNECTION	4-1/2	4-1/2	5-1/2	5-3/4	5-3/4	6	6
O.D. OF CUP (Determines Part Number)	6-5/8	7	8-1/2	8-5/8	9	9-5/8	10
I.D. OF CUP	5-15/16	6-9/32	7-9/16	7-15/16	8-1/8	8-17/32	8-29/32

### LONG TYPE

CUP LENGTH		20	20	20	20	20	20	20
COMPLETE ASSEMBLY	Logan Part No.	201-005-20	201-006-20	201-007-20	201-008-20	201-009-20	201-010-20	201-011-20
BODY	Logan Part No.	KA1005-20	KA1006-20	KA1007-20	KA1008-20	KA1009-20	KA1010-20	KA1011-20
O-RING FOR GROOVE	Logan Part No.	568-256	568-258	568-263	*	568-265	568-267	568-268
O-RING FOR THREADED RELIEF GROOVE	Logan Part No.	568-163	568-258	568-264	*	568-266	568-268	568-269
THREADED CUP	Logan Part No.	KA2005-20	KA2006-20	KA2007-20	KA2008-20	KA2009-20	KA2010-20	KA2011-20

### EXTRA LONG TYPE

CUP LENGTH		30	30	30	30	30	30	30
COMPLETE ASSEMBLY	Logan Part No.	201-005-30	201-006-30	201-007-30	201-008-30	201-009-30	201-010-30	201-011-30
BODY	Logan Part No.	KA1005-30	KA1006-30	KA1007-30	KA1008-30	KA1009-30	KA1010-30	KA1011-30
O-RING FOR GROOVE	Logan Part No.	568-256	568-258	568-263	*	568-265	568-267	568-268
O-RING FOR THREADED RELIEF GROOVE	Logan Part No.	568-163	568-258	568-264	*	568-266	568-268	568-269
THREADED CUP	Logan Part No.	KA2005-30	KA2006-30	KA2007-30	KA2008-30	KA2009-30	KA2010-30	KA2011-30

Logan Oil Tools reserves the right to change or discontinue designs without notice.

\* To be advised upon request.

When ordering, please specify:

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Length of cup

## THREADED CUP JUNK SUBS

CASING SIZE RANGE (HOLE SIZE)	14-3/4 to 17-1/2	14-3/4 to 17-1/2				
CONNECTION (STD API REG)	7-5/8	7-5/8				
DIAMETER OF BORE	4	4				
O.D. OF TOP CONNECTION BODY	8-7/8	8-7/8				
O.D. UNDER TOP CONNECTION	7-5/8	7-5/8				
O.D. OF CUP (Determines Part Number)	12-3/4	12-7/8				
I.D. OF CUP	11-1/2	11-5/8				

## LONG TYPE

CUP LENGTH		20	20			
COMPLETE ASSEMBLY	Logan Part No.	201-039-20	201-012-20			
BODY	Logan Part No.	KA10115-20	KA1012-20			
O-RING FOR GROOVE	Logan Part No.	568-276	*			
O-RING FOR THREADED	Logan Part No.	568-277	*			
RELIEF GROOVE						
THREADED CUP	Logan Part No.	KA20115-20	KA2012-20			

## EXTRA LONG TYPE

CUP LENGTH		30	30			
COMPLETE ASSEMBLY	Logan Part No.	201-039-30	201-012-30			
BODY	Logan Part No.	KA10115-30	KA1012-30			
O-RING FOR GROOVE	Logan Part No.	568-276	*			
O-RING FOR THREADED	Logan Part No.	568-277	*			
RELIEF GROOVE						
THREADED CUP	Logan Part No.	KA20115-30	KA2012-30			

Logan Oil Tools reserves the right to change or discontinue designs without notice.

\* To be advised upon request.

When ordering, please specify:

- (1) Complete assembly number
- (2) Size and type of connections
- (3) Length of cup

## CROSSOVER SUBS

### Overview

Logan Crossover Subs provide safe connection between joints of different sizes or types of drilling, tubing, or washover string sections having different end connections. Crossover subs may be used when it is necessary to have frequent disconnection points.

### Construction

Logan Crossover Subs are machined from high grade, heat-treated alloy steel for maximum strength and durability, and threaded to customer specifications. A crossover sub can be a combination of a box section up with a pin section down, a box section up with tool joint connection down, or pin sections up and down.

### When ordering, please specify:

- (1) OD, ID, and length (shoulder-to-shoulder).
- (2) Size and type of connection or thread on each end.

LARGEST OD	1-1/2	1-3/4	2	2-1/4	2-1/2	2-3/4	3
Min. Base Length	10	10	10	10	10	10	10

LARGEST OD	3-1/4	3-3/8	3-1/2	3-5/8	3-3/4	4	4-1/8
Min. Base Length	10	10	10	10	10	10	10

LARGEST OD	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4
Min. Base Length	10	10	12	12	12	12	12

LARGEST OD	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2
Min. Base Length	12	12	12	12	12	14	14

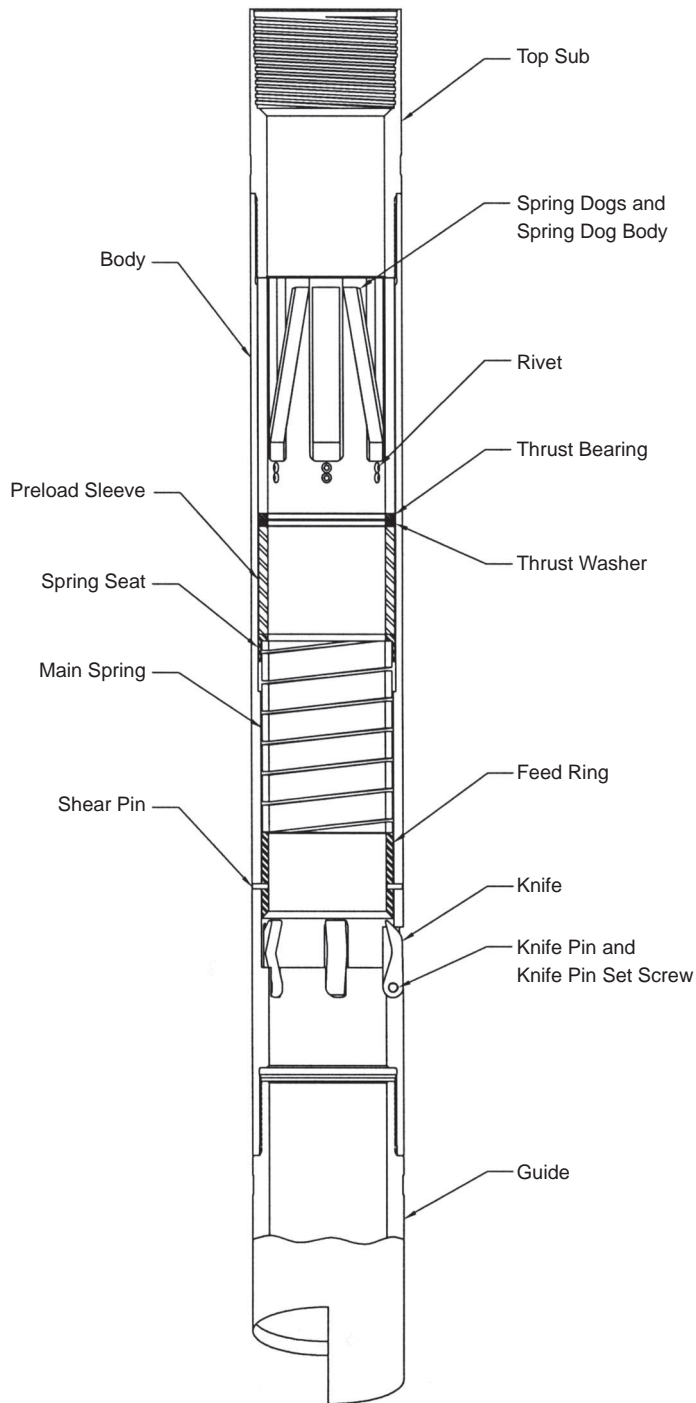
LARGEST OD	7-3/4	8	8-1/4	8-1/2	8-3/4	9	9-1/4
Min. Base Length	14	14	14	14	14	16	16

LARGEST OD	9-1/2	9-3/4	10	10-1/4	10-1/2	10-3/4	11
Min. Base Length	16	16	16	16	16	16	16

LARGEST OD	11-1/4	11-1/2	11-3/4	12	12-1/4	12-1/2	12-3/4
Min. Base Length	16	16	16	16	16	16	16

LARGEST OD	13	13-1/4	13-1/2	13-3/4	14		
Min. Base Length	16	16	16	16	16		

Logan Oil Tools reserves the right to change or discontinue designs without notice.



**STANDARD EXTERNAL CUTTERS**

**Overview**

The automatic spring-fed knives feature of this tool prevents excessive strain from being applied from the rig floor that could cause the knives to burn or break before the cut is completed.

**Construction**

The tool consists of a top sub, body, guide, knives, spring dog assembly, thrust washer, thrust bearing, preload sleeve, feed ring, main spring, and shear pins.

**Spring Dog Assembly**

The Spring Dog Assembly is standard equipment on all Logan External Cutters. The Spring Dog Assembly catches square shouldered collars or couplings and retains the cut off section after the cut is made. A variety of pipe sizes can be caught by each assembly for each different size of cutter.

**Ratchet Pawl Assembly**

The Ratchet Pawl Assembly is designed to catch tapered upset integral tool joints. They are also capable of catching square shouldered collars or couplings. Ratchet Pawl Assemblies fit only one particular size of pipe and will be provided upon request.

*Special Note:*

*Single Pawl Spacer is required when using a Ratchet Pawl Assembly.*

**Slip Assembly**

This optional assembly is designed to cut and retain pipe with external tool joints. The slips will grip the pipe at any point and retain the cut-off section after making the cut. Slip assemblies will be provided upon request.

**Operation**

Run the cutter to the desired depth. Apply enough pull load on the work string to pull the spring dog assembly (or ratchet pawl assembly if used) up against a coupling or upset of a tool joint. This will apply load to the thrust bearings, preload ring, and main spring that will shear the pins on the feed ring. This allows the main spring to apply sufficient load on the knives so the cut can be made.

## STANDARD EXTERNAL CUTTERS

TUBING/CASING SIZE TO CUT	1.050 to 1.315 Tbg	1.315 to 2-3/8 Tbg	1.660 to 2-3/8 Tbg	1.900 to 2-7/8 Tbg	2-1/16 to 3-1/2 Tbg	2-3/8 to 3-1/2 Tbg	2 3/8 to 4 Tbg
<b>MAX SIZE WILL PASS OVER</b>	1.552	3-1/16	3-1/8	3-3/4	4-1/4	4-1/2	4-3/4
<b>INSIDE DIAMETER (CUTTER)</b>	1-5/8	3-1/8	3-1/4	3-7/8	4-3/8	4-5/8	4-7/8
<b>OUTSIDE DIAMETER (CUTTER)</b>	2-5/16	3-7/8	4-1/2	4-11/16	5-5/8	5-7/8	6-1/16
<b>MINIMUM SIZE HOLE TO RUN IN</b>	2-7/16	4-1/8	4-3/4	4-15/16	5-7/8	6-1/8	6-1/4
<b>COMPLETE ASSEMBLY w/SPRING DOG</b>	Logan Part No. <b>410-231</b> Bowen No. 32848	<b>410-388</b> 47127	<b>410-450</b> 47167	<b>410-468</b> 47210	<b>410-563</b> 47309	<b>410-588</b> 47264	<b>410-606</b> 47360
<b>TOP SUB</b>	Logan Part No. <b>P1000</b> Bowen No. 13626	<b>P1001</b> 47128	<b>P1002</b> 47168	<b>P1003</b> 47211	<b>P1004</b> 33574	<b>P1005</b> 47265	<b>P1006</b> 33648
<b>BODY</b>	Logan Part No. <b>P2000</b> Bowen No. 13627	<b>P2001</b> 47129	<b>P2002</b> 47169	<b>P2003</b> 47212	<b>P2004</b> 47310	<b>P2005</b> 47266	<b>P2006</b> 47361
<b>THRUST WASHER</b>	Logan Part No. <b>P3000</b> Bowen No. 13633	<b>P3001</b> 32904	<b>P3002</b> 47171	<b>P3003</b> 33083	<b>P3004</b> 36484	<b>P3005</b> 47268	<b>P3006</b> 33650
<b>THRUST BEARING</b>	Logan Part No. <b>P4000</b> Bowen No. 32852	<b>P4001</b> 32905	<b>P4002</b> 47172	<b>P4003</b> 33084	<b>P4004</b> 33595	<b>P4005</b> 47269	<b>P4006</b> 33651
<b>PRELOAD SLEEVE</b>	Logan Part No. <b>P5000</b> Bowen No. 32891	<b>P5001</b> 45844	<b>P5002</b> 47173	<b>P5003</b> 47214	<b>P5004</b> 33582	<b>P5005</b> 47270	<b>P5006</b> 47362
<b>SPRING SEAT</b>	Logan Part No. <b>P6000</b> Bowen No. 80149	<b>P6001</b> 14209	<b>P6002</b> 47174	<b>P6003</b> 47215	<b>P6004</b> 33583	<b>P6005</b> 49254	<b>P6006</b> 47363
<b>MAIN SPRING</b>	Logan Part No. <b>P7000</b> Bowen No. 13634	<b>P7001</b> 14217	<b>P7002</b> 33020	<b>P7003</b> 33085	<b>P7004</b> 9994	<b>P7005</b> 39164	<b>P7006</b> 33652
<b>FEED RING</b>	Logan Part No. <b>P8000</b> Bowen No. 13635	<b>P8001</b> 32907	<b>P8002</b> 47175	<b>P8003</b> 33086	<b>P8004</b> 33579	<b>P8005</b> 47577	<b>P8006</b> 33653
<b>SHEAR PIN</b>	Logan Part No. <b>P9000</b> Bowen No. 14205 No. Req'd 2	<b>P9000</b> 14205	<b>P9002</b> 47578	<b>P9000</b> 14205	<b>P9004</b> 33580	<b>P9004</b> 33580	<b>P9006</b> 33654
<b>KNIFE</b>	Logan Part No. <b>P10000</b> Bowen No. 13637 No. Req'd 5	<b>P10001</b> 32909	<b>P10002</b> 33023	<b>P10003</b> 33088	<b>P10004</b> 34553	<b>P10004</b> 34553	<b>P10006</b> 33655
<b>KNIFE PIN</b>	Logan Part No. <b>P11000</b> Bowen No. 37015 No. Req'd 5	<b>P11001</b> 32910	<b>P11002</b> 33024	<b>P11003</b> 33089	<b>P11004</b> 34554	<b>P11004</b> 34554	<b>P11006</b> 33656
<b>KNIFE PIN SET SCREW</b>	Logan Part No. ... Bowen No. ... No. Req'd ...	<b>P12001</b> 32911	<b>P12002</b> 23687	<b>P12003</b> 23664	<b>P12004</b> 23703	<b>P12004</b> 23703	<b>P12006</b> 23685
<b>GUIDE</b>	Logan Part No. <b>P13000</b> Bowen No. 13628	<b>P13001</b> 14203	<b>P13002</b> 47176	<b>P13003</b> 33093	<b>P13004</b> 33584	<b>P13005</b> 39169	<b>P13006</b> 33660

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**Special Notes:**

- (1) Assembly includes one Spring Dog assembly, which differs from Ratchet Pawl or Slip assemblies; see chart above.
- (2) Connections other than API available upon request.
- (3) Single Pawl Spacer is required when using Ratchet Pawl Assembly.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Any desired options by name and number
- (4) Any desired spares by name and number

**Recommended Spare Parts:**

- (1) 2 sets Knife Pins
- (2) 1 Feed Ring
- (3) 24 Shear Pins
- (4) 6 sets of Knives
- (5) 2 Spring Dog, Ratchet Pawl, or Slip Assemblies
- (6) 1 set Knife Pin Screws

## STANDARD EXTERNAL CUTTERS

<b>TUBING/CASING SIZE TO CUT</b>	1.050 to 1.315 Tbg	1.315 to 2-3/8 Tbg	1.660 to 2-3/8 Tbg	1.900 to 2-7/8 Tbg	2-1/16 to 3-1/2 Tbg	2-3/8 to 3-1/2 Tbg	2 3/8 to 4 Tbg	
<b>MAXIMUM SIZE WILL PASS OVER</b>	1.552	3-1/16	3-1/8	3-3/4	4-1/4	4-1/2	4-3/4	
<b>INSIDE DIAMETER (CUTTER)</b>	1-5/8	3-1/8	3-1/4	3-7/8	4-3/8	4-5/8	4-7/8	
<b>OUTSIDE DIAMETER (CUTTER)</b>	2-5/16	3-7/8	4-1/2	4-11/16	5-5/8	5-7/8	6-1/16	
<b>MINIMUM SIZE HOLE TO RUN IN</b>	2-7/16	4-1/8	4-3/4	4-15/16	5-7/8	6-1/8	6-1/4	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>410-231</b>	<b>410-388</b>	<b>410-450</b>	<b>410-468</b>	<b>410-563</b>	<b>410-588</b>	<b>410-606</b>
<b>w/SPRING DOG</b>	Bowen No.	32848	47127	47167	47210	47309	47264	47360

## SPRING DOG ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>11000-000</b>	<b>11000-001</b>	<b>11000-002</b>	<b>11000-003</b>	<b>11000-004</b>	<b>11000-005</b>	<b>11000-006</b>
<i>Consists of:</i>	Bowen No.	13629	47131	47177	47216	47313	47271	47365
<b>SPRING DOG BODY</b>	<b>Logan Part No.</b>	<b>P14000</b>	<b>P14001</b>	<b>P14002</b>	<b>P14003</b>	<b>P14004</b>	<b>P14005</b>	<b>P14006</b>
	Bowen No.	13630	47132	47178	47217	47314	47272	47366
<b>SPRING DOG</b>	<b>Logan Part No.</b>	<b>P15000</b>	<b>P15001</b>	<b>P15002</b>	<b>P15003</b>	<b>P15004</b>	<b>P15004</b>	<b>P15006</b>
	Bowen No.	13631	32917	47179	33103	33644	33644	33663
	No. Req'd	6	6	6	6	6	6	6
<b>RIVET</b>	<b>Logan Part No.</b>	<b>P16000</b>	<b>P16001</b>	<b>P16002</b>	<b>P16003</b>	<b>P16004</b>	<b>P16002</b>	<b>P16004</b>
	Bowen No.	13632	45626	47180	45842	44803	47180	44803
	No. Req'd	12	12	12	12	12	12	12

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Special Notes:

- (1) Assembly includes one Spring Dog assembly, which differs from Ratchet Pawl or Slip assemblies; see chart above.
- (2) Connections other than API available upon request.
- (3) Single Pawl Spacer is required when using Ratchet Pawl Assembly.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Any desired options by name and number
- (4) Any desired spares by name and number

### Recommended Spare Parts:

- (1) 2 sets Knife Pins
- (2) 1 Feed Ring
- (3) 24 Shear Pins
- (4) 6 sets of Knives
- (5) 2 Spring Dog, Ratchet Pawl, or Slip Assemblies
- (6) 1 set Knife Pin Screws

# LOGAN GENERAL CATALOG

OIL TOOLS

## STANDARD EXTERNAL CUTTERS

<b>TUBING/CASING SIZE TO CUT</b>	1.050 to 1.315 Tbg	1.315 to 2-3/8 Tbg	1.660 to 2-3/8 Tbg	1.900 to 2-7/8 Tbg	2-1/16 to 3-1/2 Tbg	2-3/8 to 3-1/2 Tbg	2 3/8 to 4 Tbg	
<b>MAXIMUM SIZE WILL PASS OVER</b>	1.552	3-1/16	3-1/8	3-3/4	4-1/4	4-1/2	4-3/4	
<b>INSIDE DIAMETER (CUTTER)</b>	1-5/8	3-1/8	3-1/4	3-7/8	4-3/8	4-5/8	4-7/8	
<b>OUTSIDE DIAMETER (CUTTER)</b>	2-5/16	3-7/8	4-1/2	4-11/16	5-5/8	5-7/8	6-1/16	
<b>MINIMUM SIZE HOLE TO RUN IN</b>	2-7/16	4-1/8	4-3/4	4-15/16	5-7/8	6-1/8	6-1/4	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>410-231</b>	<b>410-388</b>	<b>410-450</b>	<b>410-468</b>	<b>410-563</b>	<b>410-588</b>	<b>410-606</b>
<b>w/SPRING DOG</b>	Bowen No.	32848	47127	47167	47210	47309	47264	47360

## OPTIONAL RATCHET PAWL ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>11000-009</b>	<b>11000-010</b>	<b>11000-011</b>	<b>11000-012</b>	<b>11000-013</b>	<b>11000-014</b>	<b>11000-015</b>
<i>Consists of:</i>	Bowen No.	13666	47138	47181	47218	47315	47275	47367
<b>PAWL BODY</b>	<b>Logan Part No.</b>	<b>P17000</b>	<b>P17001</b>	<b>P17002</b>	<b>P17003</b>	<b>P17004</b>	<b>P17005</b>	<b>P17006</b>
	Bowen No.	13667	47139	47182	47219	47316	47276	47368
<b>RATCHET PAWL</b>	<b>Logan Part No.</b>	<b>P18000</b>	<b>P18001</b>	<b>P18002</b>	<b>P18003</b>	<b>P18004</b>	<b>P18005</b>	<b>P18006</b>
	Bowen No.	13668	32946	47183	47220	47317	47277	47369
	No. Req'd	6	6	6	6	6	6	6
<b>PAWL SPRING</b>	<b>Logan Part No.</b>	<b>P19000</b>	<b>P19001</b>	<b>P19002</b>	<b>P19003</b>	<b>P19002</b>	<b>P19002</b>	<b>P19002</b>
	Bowen No.	14213	15656	14829	18729	14829	14829	14829
	No. Req'd	6	6	6	6	6	6	6
<b>PAWL PIN</b>	<b>Logan Part No.</b>	<b>P20000</b>	<b>P20001</b>	<b>P20002</b>	<b>P20001</b>	<b>P20004</b>	<b>P20005</b>	<b>P20002</b>
	Bowen No.	37011	33128	37019	33128	37031	47253	37019
	No. Req'd	6	6	6	6	6	6	6
<b>SINGLE PAWL SPACER</b>	<b>Logan Part No.</b>	<b>P27000</b>	<b>P27001</b>	<b>P27002</b>	<b>P27003</b>	<b>P27004</b>	<b>P27005</b>	<b>P27006</b>
<i>(See Note 3)</i>	Bowen No.	32890	47141	47190	47227	47326	47286	47378

## OPTIONAL SLIP ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	...	<b>11000-019</b>	<b>11000-020</b>	<b>11000-021</b>	<b>11000-022</b>	<b>11000-023</b>	<b>11000-024</b>
<i>Consists of:</i>	Bowen No.	...	47133	47185	47221	47319	47279	47371
<b>SLIP</b>	<b>Logan Part No.</b>	...	<b>P21001</b>	<b>P21002</b>	<b>P21003</b>	<b>P21004</b>	<b>P21005</b>	<b>P21006</b>
	Bowen No.	...	47134	47186	47222	47320	47280	47372
<b>SLIP BOWL</b>	<b>Logan Part No.</b>	...	<b>P22001</b>	<b>P22002</b>	<b>P22003</b>	<b>P22004</b>	<b>P22005</b>	<b>P22006</b>
	Bowen No.	...	47135	47187	47223	47321	47281	47373
<b>SLIP BOWL RETAINER</b>	<b>Logan Part No.</b>	...	<b>P23001</b>	<b>P23002</b>	<b>P23003</b>	<b>P23004</b>	<b>P23005</b>	<b>P23006</b>
	Bowen No.	...	47136	47188	47224	47322	47282	47374
<b>SLIP SPRING</b>	<b>Logan Part No.</b>	...	<b>P24001</b>	<b>P24002</b>	<b>P24003</b>	<b>P24004</b>	<b>P24005</b>	<b>P24006</b>
	Bowen No.	...	47137	47189	47225	47323	47283	47375
<b>SLIP BOWL SHEAR PIN</b>	<b>Logan Part No.</b>	...	<b>P25001</b>	<b>P25001</b>	<b>P25001</b>	<b>P25004</b>	<b>P25004</b>	<b>P25004</b>
	Bowen No.	...	47208	47208	47208	47324	47324	47324
	No. Req'd	...	4	4	4	4	4	4
<b>SLIP ADAPTER</b>	<b>Logan Part No.</b>	...	<b>P26001</b>	<b>P26002</b>	<b>P26003</b>	<b>P26004</b>	<b>P26005</b>	<b>P26006</b>
	Bowen No.	...	47130	47170	47213	47311	47267	47364

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# LOGAN GENERAL CATALOG

OIL TOOLS

## STANDARD EXTERNAL CUTTERS

TUBING/CASING SIZE TO CUT	3-1/2, 4, 4-1/2 & 5 DP	4 to 5-3/4 Csg
MAXIMUM SIZE WILL PASS OVER	6-1/4	6-1/2
INSIDE DIAMETER (CUTTER)	6-3/8	6-5/8
OUTSIDE DIAMETER (CUTTER)	7-5/8	8-1/8
MINIMUM SIZE HOLE TO RUN IN	8-1/4	8-5/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 410-763</b>	<b>410-813</b>
<b>w/SPRING DOG</b>	Bowen No. 47422	47541
<i>Consists of:</i>		
<b>TOP SUB</b>	<b>Logan Part No. P1007</b>	<b>P1008</b>
	Bowen No. 33885	33959
<b>BODY</b>	<b>Logan Part No. P2007</b>	<b>P2008</b>
	Bowen No. 47423	47542
<b>THRUST WASHER</b>	<b>Logan Part No. P3007</b>	<b>P3008</b>
	Bowen No. 33887	33961
<b>THRUST BEARING</b>	<b>Logan Part No. P4007</b>	<b>P4008</b>
	Bowen No. 33888	33962
<b>PRELOAD SLEEVE</b>	<b>Logan Part No. P5007</b>	<b>P5008</b>
	Bowen No. 47424	47543
<b>SPRING SEAT</b>	<b>Logan Part No. P6007</b>	<b>P6008</b>
	Bowen No. 49255	49258
<b>MAIN SPRING</b>	<b>Logan Part No. P7007</b>	<b>P7008</b>
	Bowen No. 33889	33963
<b>FEED RING</b>	<b>Logan Part No. P8007</b>	<b>P8008</b>
	Bowen No. 33890	33964
<b>SHEAR PIN</b>	<b>Logan Part No. P9007</b>	<b>P9008</b>
	Bowen No. 33891	33965
	No. Req'd 2	2
<b>KNIFE</b>	<b>Logan Part No. P10004</b>	<b>P10008</b>
	Bowen No. 34553	44802
	No. Req'd 5	5
<b>KNIFE PIN</b>	<b>Logan Part No. P11004</b>	<b>P11008</b>
	Bowen No. 34554	33966
	No. Req'd 5	5
<b>KNIFE PIN SET SCREW</b>	<b>Logan Part No. P12004</b>	<b>P12008</b>
	Bowen No. 23703	23705
	No. Req'd 5	5
<b>GUIDE</b>	<b>Logan Part No. P13007</b>	<b>P13008</b>
	Bowen No. 33897	33969

TUBING/CASING SIZE TO CUT	3-1/2, 4, 4-1/2 & 5 DP	4 to 5-3/4 Csg
MAXIMUM SIZE WILL PASS OVER	6-1/4	6-1/2
INSIDE DIAMETER (CUTTER)	6-3/8	6-5/8
OUTSIDE DIAMETER (CUTTER)	7-5/8	8-1/8
MINIMUM SIZE HOLE TO RUN IN	8-1/4	8-5/8

## SPRING DOG ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 11000-007</b>	<b>11000-008</b>
<i>Consists of:</i>	Bowen No. 33949	47545
<b>SPRING DOG BODY</b>	<b>Logan Part No. P14007</b>	<b>P14008</b>
	Bowen No. 33950	47546
<b>SPRING DOG</b>	<b>Logan Part No. P15007</b>	<b>P15007</b>
	Bowen No. 50192	50192
	No. Req'd 6	6
<b>RIVET</b>	<b>Logan Part No. P16004</b>	<b>P16008</b>
	Bowen No. 44803	50191
	No. Req'd 12	12

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

### Special Notes:

- (1) Assembly includes one Spring Dog Assembly which differs from Ratchet Pawl or Slip Assemblies. See table on next page.
- (2) Connections other than API available upon request.
- (3) Single Pawl Spacer is required when using Ratchet Pawl Assembly. It is not included in the Complete Assembly.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Any desired options by name and number
- (4) Any desired spares by name and number

### Recommended Spare Parts:

- (1) 2 sets Knife Pins
- (2) 1 Feed Ring
- (3) 24 Shear Pins
- (4) 6 sets of Knives
- (5) 2 Spring Dog, Ratchet Pawl, or Slip Assemblies
- (6) 1 set Knife Pin Screws



## STANDARD EXTERNAL CUTTERS

TUBING/CASING SIZE TO CUT	3-1/2, 4, 4-1/2 & 5 DP	4 to 5-3/4 Csg
MAXIMUM SIZE WILL PASS OVER	6-1/4	6-1/2
INSIDE DIAMETER (CUTTER)	6-3/8	6-5/8
OUTSIDE DIAMETER (CUTTER)	7-5/8	8-1/8
MINIMUM SIZE HOLE TO RUN IN	8-1/4	8-5/8

TUBING/CASING SIZE TO CUT	3-1/2, 4, 4-1/2 & 5 DP	4 to 5-3/4 Csg
MAXIMUM SIZE WILL PASS OVER	6-1/4	6-1/2
INSIDE DIAMETER (CUTTER)	6-3/8	6-5/8
OUTSIDE DIAMETER (CUTTER)	7-5/8	8-1/8
MINIMUM SIZE HOLE TO RUN IN	8-1/4	8-5/8

## OPTIONAL RATCHET PAWL ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	Logan Part No. <b>11000-016</b>	<b>11000-017</b>
Consists of:	Bowen No. 47426	47547
<b>PAWL BODY</b>	Logan Part No. <b>P17007</b>	<b>P17008</b>
	Bowen No. 47427	47548
<b>RATCHET PAWL</b>	Logan Part No. <b>P18007</b>	<b>P18008</b>
	Bowen No. 47428	47549
	No. Req'd 6	6
<b>PAWL SPRING</b>	Logan Part No. <b>P19002</b>	<b>P19008</b>
	Bowen No. 14829	47443
	No. Req'd 6	6
<b>PAWL PIN</b>	Logan Part No. <b>P20004</b>	<b>P20008</b>
	Bowen No. 37031	47550
	No. Req'd 6	6
<b>SINGLE PAWL SPACER</b>	Logan Part No. <b>P27007</b>	<b>P27008</b>
(See Note 3)	Bowen No. 47437	47557

## OPTIONAL SLIP ASSEMBLY

<b>COMPLETE ASSEMBLY</b>	Logan Part No. <b>11000-025</b>	<b>11000-026</b>
Consists of:	Bowen No. 47430	47551
<b>SLIP</b>	Logan Part No. <b>P21007</b>	<b>P21008</b>
	Bowen No. 47431	47552
<b>SLIP BOWL</b>	Logan Part No. <b>P22007</b>	<b>P22008</b>
	Bowen No. 47432	47553
<b>SLIP BOWL RETAINER</b>	Logan Part No. <b>P23007</b>	<b>P23008</b>
	Bowen No. 47433	47554
<b>SLIP SPRING</b>	Logan Part No. <b>P24007</b>	<b>P24008</b>
	Bowen No. 47434	47556
<b>SLIP BOWL SHEAR PIN</b>	Logan Part No. <b>P25007</b>	<b>P25008</b>
	Bowen No. 47435	47555
	No. Req'd 4	4
<b>SLIP ADAPTER</b>	Logan Part No. <b>P26007</b>	<b>P26008</b>
	Bowen No. 47425	47544

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### Special Notes:

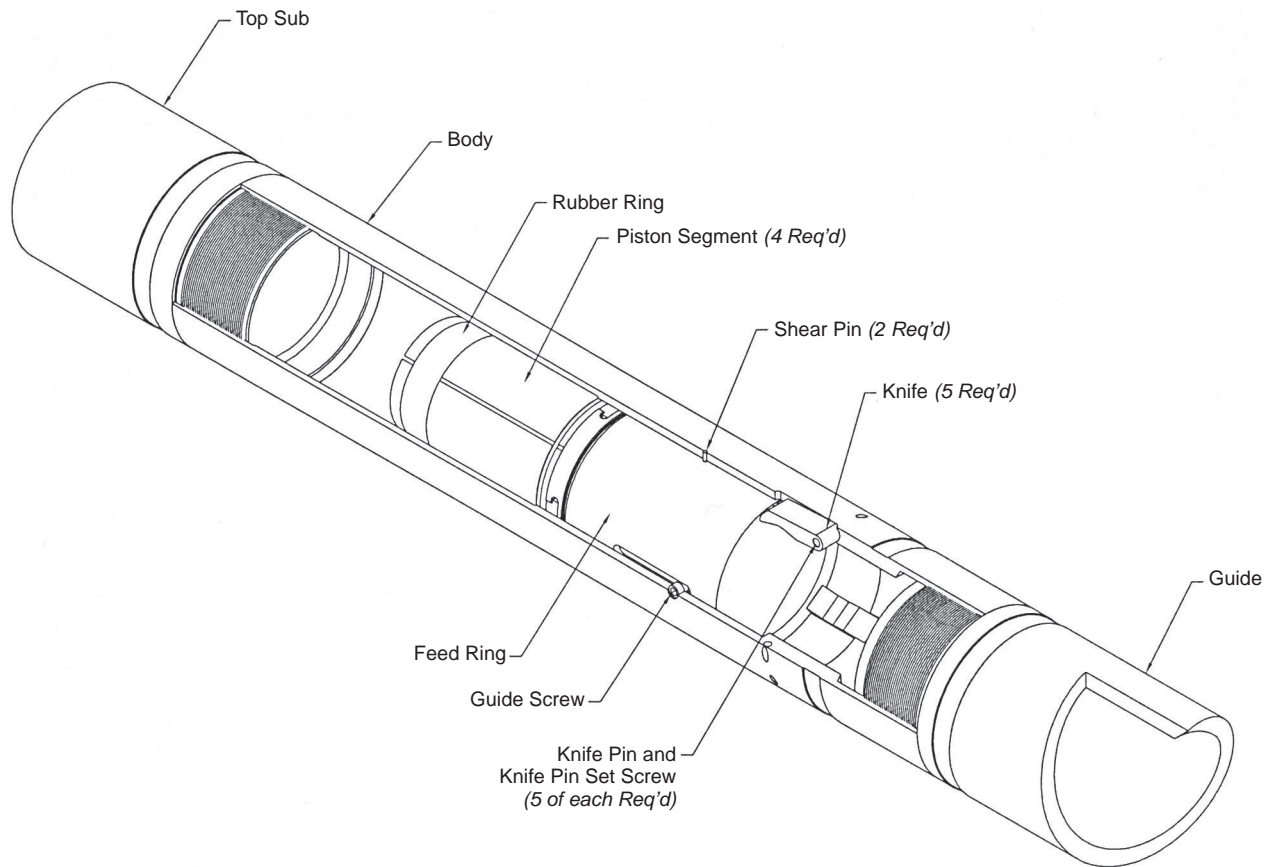
- (1) Assembly includes one Spring Dog Assembly which differs from Ratchet Pawl or Slip Assemblies. See table on next page.
- (2) Connections other than API available upon request.
- (3) Single Pawl Spacer is required when using Ratchet Pawl Assembly. It is not included in the Complete Assembly.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Any desired options by name and number
- (4) Any desired spares by name and number

### Recommended Spare Parts:

- (1) 2 sets Knife Pins
- (2) 1 Feed Ring
- (3) 24 Shear Pins
- (4) 6 sets of Knives
- (5) 2 Spring Dog, Ratchet Pawl, or Slip Assemblies
- (6) 1 set Knife Pin Screws



## HYDRAULIC EXTERNAL CUTTERS

### Overview

These quick, smooth operating tools allow for fast recovery of tubing or drill pipe. A hydraulically fed piston forces the knives of this cutter into the pipe to give the operator sensitive cutting control.

### Construction

The tool consists of a top sub, segmented piston assembly, knives, knife pins, guide screw, body, and guide. The segmented piston assembly's feed ring has four interlocking conical piston segments. A heavy-duty rubber ring stretched around the top of the segments firmly holds them in place. A fluid jet hole in each piston segment restricts fluid to provide sufficient pump down force against the piston to feed the knives while allowing enough fluid to cool and lubricate the knives during the cut. Each piston assembly is designed for one particular pipe size.

### Operation

Begin by assembling the cutter with the proper size piston assembly for the size of the pipe that will be cut. Run the cutter to the desired cutting depth and engage the mud pumps with all lines open. Slowly close the standpipe valve until sufficient pressure forces down the drill string and shears the shear pins. The amount of pressure required depends on the size of cutter and piston assembly being used. Open the standpipe valve to relieve the pressure going downhole. Begin rotating the drill string at 15 to 25 rpm. Gradually close the standpipe valve until sufficient pressure is exerted downhole to feed the piston assembly into the knives to begin making the cut.

Avoid pump surges during the cut. Contraction and expansion of the string during the cut will cause the cutter to move up and down the string. This motion will damage the knives.

Completion of the cut is signaled by initial rough chattering followed by smooth rotation.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Name and number of any desired options

# LOGAN GENERAL CATALOG

OIL TOOLS

## HYDRAULIC EXTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>	1.315 to 2-1/16	1.315 to 2-3/8	1.900 to 2-7/8	1.900 to 2-7/8	1.900 to 2-7/8	2-1/16 to 4 FJ	
<b>MAXIMUM SIZE WILL PASS OVER</b>	2-3/4	3-1/16	3-7/16	3-9/16	3-5/8	4-1/8	
<b>INSIDE DIAMETER (CUTTER)</b>	2-7/8	3-3/16	3-5/8	3-13/16	3-7/8	4-5/16	
<b>OUTSIDE DIAMETER (CUTTER)</b>	3-3/4	4-1/16	4-7/16	4-9/16	4-11/16	5-5/8	
<b>MINIMUM SIZE HOLE TO RUN IN</b>	4	4-5/16	4-11/16	4-13/16	4-15/16	5-7/8	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 411-375	411-406	411-444	411-456	411-468	411-563	
	Bowen No.	70086	34415	70209	79215	41727	34551
<b>TOP SUB</b>	<b>Logan Part No.</b> N1001	N10027	N1002	N10025	N1003	N1004	
	Bowen No.	70087	34416	70210	79271	33081	33574
<b>BODY</b>	<b>Logan Part No.</b> N2001	N2004	N2002	N20025	N2005	N2006	
	Bowen No.	70088	34417	70211	79272	41728	34552
<b>FEED RING</b>	<b>Logan Part No.</b> N3001	N3004	N3002	N30025	N3005	N3006	
	Bowen No.	70089	49819	70212	79273	49824	49829
<b>SHEAR PIN</b>	<b>Logan Part No.</b> P9000	P9000	P9000	N40015	P9000	N4006	
	Bowen No.	33087	33087	33087	34420	33087	34555
	No. Req'd	2	2	2	2	2	2
<b>KNIFE</b>	<b>Logan Part No.</b> N5001	N5004	P10003	N50025	P10003	P10004	
	Bowen No.	80147	34421	33088	79275	33088	34553
	No. Req'd	5	5	5	5	5	5
<b>KNIFE PIN</b>	<b>Logan Part No.</b> N6001	N6004	P11003	N60025	P11003	P11004	
	Bowen No.	80148	34422	33089	A14348	33089	34554
	No. Req'd	5	5	5	5	5	5
<b>KNIFE PIN SET SCREW</b>	<b>Logan Part No.</b> N7001	N7002	N7002	...	N7002	P12004	
	Bowen No.	23654	23666	23666	...	23666	23703
	No. Req'd	5	5	5	...	5	5
<b>FEED RING O-RING</b>	<b>Logan Part No.</b> 568-235	568-237	568-241	568-242	568-243	568-247	
	Bowen No.	568235	568237	568241	568242	568243	568247
<b>GUIDE</b>	<b>Logan Part No.</b> N8001	N8004	N8002	N80025	P13003	N8006	
	Bowen No.	70090	34424	70213	79274	33093	187
<b>GUIDE SCREW</b>	<b>Logan Part No.</b> N9001	N9001	N9001	N9001	N9001	N9006	
	Bowen No.	34418	34418	34418	34418	34418	34556
	No. Req'd	2	2	2	2	2	2
<b>PISTON ASSEMBLY</b> (Consists of):	<b>Logan Part No.</b> 10000-010	10000-013	10000-011	10000-047	10000-014	10000-015	
	Bowen No.	70091	34425	70232	79283	41733	34559
	Pipe Size	2-1/16	2-3/8	2-7/8	2-7/8	2-7/8	3-1/2
<b>PISTON SEGMENT SET</b>	<b>Logan Part No.</b> N10001	N10004	N10002	N100025	N10005	N10006	
	Bowen No.	70092	49814	70233	79284	49825	49830
<b>RUBBER RING</b>	<b>Logan Part No.</b> N11002	N11001	N11001	N11001	N11001	N11006	
	Bowen No.	70093	34564	34564	34564	34564	34561
<b>PISTON O-RING</b>	<b>Logan Part No.</b> 568-234	568-236	568-235	568-236	568-237	568-246	
	Bowen No.	568234	568236	568235	568236	568237	568246

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Name and number of any desired options

### Recommended Spare Parts:

- |                         |                          |
|-------------------------|--------------------------|
| (1) 2 Piston Assemblies | (6) 5 Pin Screws         |
| (2) 1 Feed Ring         | (7) 6 Rubber Rings       |
| (3) 24 Shear Pins       | (8) 6 Piston O-rings     |
| (4) 30 Knives           | (9) 6 Feed Rings O-rings |
| (5) 10 Knife Pins       |                          |

## HYDRAULIC EXTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>		1.315 to 2-1/16	1.315 to 2-3/8	1.900 to 2-7/8	1.900 to 2-7/8	1.900 to 2-7/8	2-1/16 to 4 FJ
<b>MAXIMUM SIZE WILL PASS OVER</b>		2-3/4	3-1/16	3-7/16	3-9/16	3-5/8	4-1/8
<b>INSIDE DIAMETER (CUTTER)</b>		2-7/8	3-3/16	3-5/8	3-13/16	3-7/8	4-5/16
<b>OUTSIDE DIAMETER (CUTTER)</b>		3-3/4	4-1/16	4-7/16	4-9/16	4-11/16	5-5/8
<b>MINIMUM SIZE HOLE TO RUN IN</b>		4	4-5/16	4-11/16	4-13/16	4-15/16	5-7/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>411-375</b>	<b>411-406</b>	<b>411-444</b>	<b>411-456</b>	<b>411-468</b>	<b>411-563</b>
	<b>Bowen No.</b>	70086	34415	70209	79215	41727	34551

## OPTIONAL

<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>10000-019</b>	<b>10000-022</b>	<b>10000-020</b>	<b>10000-048</b>	<b>10000-023</b>	<b>10000-024</b>
<i>Consists of:</i>	<b>Bowen No.</b>	70094	34427	70214	79281	41736	34562
	<b>Pipe Size</b>	1.900	2-1/16	2-3/8	2-3/8	2-3/8	2-7/8
<b>PISTON SEGMENT SET</b>	<b>Logan Part No.</b>	<b>N12001</b>	<b>N12004</b>	<b>N12002</b>	<b>N120025</b>	<b>N12005</b>	<b>N12006</b>
	<b>Bowen No.</b>	70095	49817	70215	79282	49828	49831
<b>RUBBER RING</b>	<b>Logan Part No.</b>	<b>N13001</b>	<b>N13002</b>	<b>N13002</b>	<b>N11001</b>	<b>N13002</b>	<b>N11001</b>
	<b>Bowen No.</b>	70096	34567	34567	34564	34567	34564
<b>PISTON O-RING</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-236</b>	<b>568-235</b>	<b>568-236</b>	<b>568-237</b>	<b>568-246</b>
	<b>Bowen No.</b>	568234	568236	568235	568236	568237	568246

<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>10000-028</b>	<b>10000-031</b>	<b>10000-029</b>	<b>10000-049</b>	<b>10000-032</b>	<b>10000-033</b>
<i>Consists of:</i>	<b>Bowen No.</b>	70097	34429	70217	79279	41738	34565
	<b>Pipe Size</b>	1.660	1.900	2-1/16	2-1/16	2-1/16	2-3/8
<b>PISTON SEGMENT SET</b>	<b>Logan Part No.</b>	<b>N14001</b>	<b>N14004</b>	<b>N14002</b>	<b>N140025</b>	<b>N14005</b>	<b>N14006</b>
	<b>Bowen No.</b>	70098	49818	70218	79280	49826	49832
<b>RUBBER RING</b>	<b>Logan Part No.</b>	<b>N13001</b>	<b>N13002</b>	<b>N13002</b>	<b>N13002</b>	<b>N13002</b>	<b>N11001</b>
	<b>Bowen No.</b>	70096	34567	34567	34567	34567	34564
<b>PISTON O-RING</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-236</b>	<b>568-235</b>	<b>568-236</b>	<b>568-237</b>	<b>568-246</b>
	<b>Bowen No.</b>	568234	568236	568235	568236	568237	568246

<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	<b>10000-037</b>	<b>10000-040</b>	<b>10000-038</b>	<b>10000-050</b>	<b>10000-041</b>	<b>10000-042</b>
<i>Consists of:</i>	<b>Bowen No.</b>	70100	34432	70219	79277	41740	34568
	<b>Pipe Size</b>	1.315	1.600	1.900	1.900	1.900	2-1/16
<b>PISTON SEGMENT SET</b>	<b>Logan Part No.</b>	<b>N16001</b>	<b>N16004</b>	<b>N16002</b>	<b>N160025</b>	<b>N16005</b>	<b>N16006</b>
	<b>Bowen No.</b>	70101	49815	70220	79278	49827	49833
<b>RUBBER RING</b>	<b>Logan Part No.</b>	<b>N17001</b>	<b>N17004</b>	<b>N13002</b>	<b>N13002</b>	<b>N13002</b>	<b>N13002</b>
	<b>Bowen No.</b>	70102	34431	34567	34567	34567	34567
<b>PISTON O-RING</b>	<b>Logan Part No.</b>	<b>568-234</b>	<b>568-236</b>	<b>568-235</b>	<b>568-236</b>	<b>568-237</b>	<b>568-246</b>
	<b>Bowen No.</b>	568234	568236	568235	568236	568237	568246

<b>PISTON ASSEMBLY</b>	<b>Logan Part No.</b>	...	<b>10000-045</b>	...	...	...	<b>10000-046</b>
<i>Consists of:</i>	<b>Bowen No.</b>	...	34434	...	...	...	53881
	<b>Pipe Size</b>	...	1.315	...	...	...	4
<b>PISTON SEGMENT SET</b>	<b>Logan Part No.</b>	...	<b>N18004</b>	...	...	...	<b>N18006</b>
	<b>Bowen No.</b>	...	49816	...	...	...	53880
<b>RUBBER RING</b>	<b>Logan Part No.</b>	...	<b>N19004</b>	...	...	...	<b>N19006</b>
	<b>Bowen No.</b>	...	34436	...	...	...	51153
<b>PISTON O-RING</b>	<b>Logan Part No.</b>	...	<b>568-236</b>	...	...	...	<b>568-246</b>
	<b>Bowen No.</b>	...	568236	...	...	...	568246

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# LOGAN GENERAL CATALOG

OIL TOOLS

## HYDRAULIC EXTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>	2-3/8 to 4	3-1/2 to 5
<b>MAXIMUM SIZE WILL PASS OVER</b>	4-13/16	6-3/8
<b>INSIDE DIAMETER (CUTTER)</b>	4-7/8	6-1/2
<b>OUTSIDE DIAMETER (CUTTER)</b>	6-1/16	8
<b>MINIMUM SIZE HOLE TO RUN IN</b>	6-1/4	8-1/2
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 411-606</b>	<b>411-800</b>
	Bowen No. 51148	35957
<b>TOP SUB</b>	<b>Logan Part No. N1005</b>	<b>N1006</b>
	Bowen No. 13177	35958
<b>BODY</b>	<b>Logan Part No. N2007</b>	<b>N2008</b>
	Bowen No. 56992	35959
<b>FEED RING</b>	<b>Logan Part No. N3007</b>	<b>N3008</b>
	Bowen No. 51150	49834
<b>SHEAR PIN</b>	<b>Logan Part No. N4007</b>	<b>N4006</b>
	Bowen No. 7227	34555
	No. Req'd 2	2
<b>KNIFE</b>	<b>Logan Part No. N5007</b>	<b>N5008</b>
	Bowen No. 12382	35960
	No. Req'd 5	5
<b>KNIFE PIN</b>	<b>Logan Part No. N6007</b>	<b>P11004</b>
	Bowen No. 37022	34554
	No. Req'd 5	5
<b>KNIFE PIN SET SCREW</b>	<b>Logan Part No. ...</b>	<b>P12004</b>
	Bowen No. ...	23703
	No. Req'd ...	5
<b>FEED RING O-RING</b>	<b>Logan Part No. 568-251</b>	<b>568-438</b>
	Bowen No. 568251	568438
<b>GUIDE</b>	<b>Logan Part No. N8007</b>	<b>N8008</b>
	Bowen No. 13412	35932
<b>GUIDE SCREW</b>	<b>Logan Part No. N9007</b>	<b>N9006</b>
	Bowen No. 51149	34556
	No. Req'd 2	2

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection
- (3) Name and number of any desired options

### Recommended Spare Parts:

- (1) 2 Piston Assemblies
- (2) 1 Feed Ring
- (3) 24 Shear Pins
- (4) 30 Knives
- (5) 10 Knife Pins
- (6) 5 Pin Screws
- (7) 6 Rubber Rings
- (8) 6 Piston O-rings
- (9) 6 Feed Rings O-rings

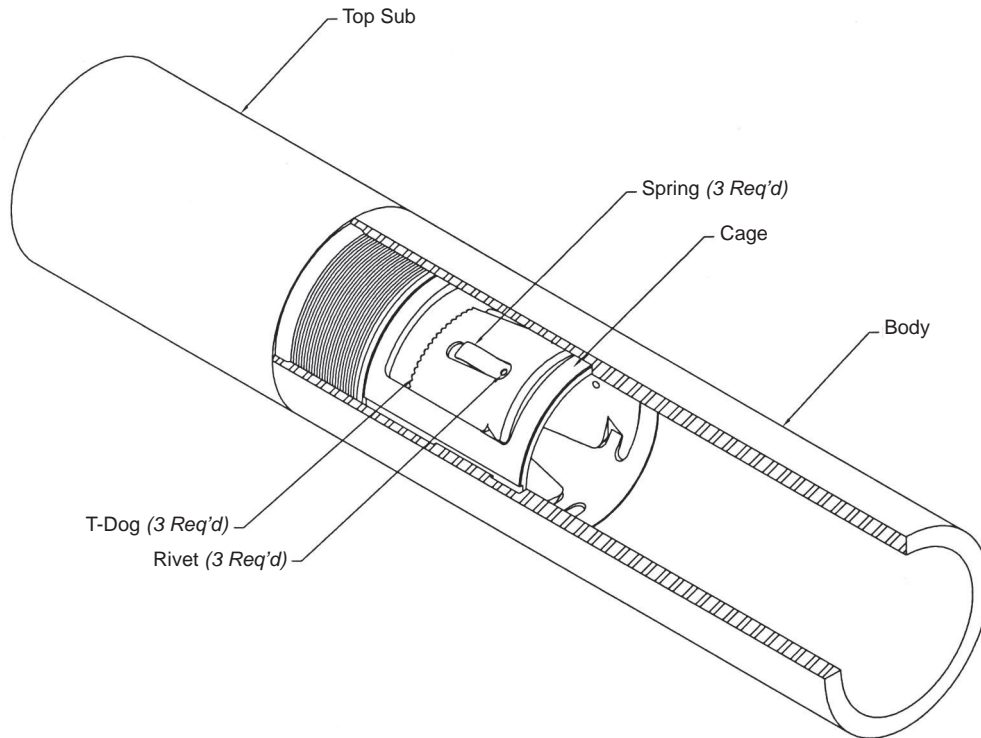
<b>PISTON ASSEMBLY</b>	<b>Logan Part No. 10000-025</b>	<b>10000-017</b>
<i>Consists of:</i>	Bowen No. 51230	35963
	Pipe Size 3-1/2	5
<b>PISTON SEGMENT SET</b>	<b>Logan Part No. N12007</b>	<b>N10008</b>
	Bowen No. 51231	49821
<b>RUBBER RING</b>	<b>Logan Part No. N11006</b>	<b>N11008</b>
	Bowen No. 34561	35965
<b>PISTON O-RING</b>	<b>Logan Part No. 568-250</b>	<b>568-259</b>
	Bowen No. 568250	568259

## OPTIONAL

<b>PISTON ASSEMBLY</b>	<b>Logan Part No. 10000-034</b>	<b>10000-026</b>
<i>Consists of:</i>	Bowen No. 51345	35966
	Pipe Size 2-7/8	4-1/2
<b>PISTON SEGMENT SET</b>	<b>Logan Part No. N14007</b>	<b>N12008</b>
	Bowen No. 51346	49823
<b>RUBBER RING</b>	<b>Logan Part No. N11001</b>	<b>N11008</b>
	Bowen No. 34564	35965
<b>PISTON O-RING</b>	<b>Logan Part No. 568-250</b>	<b>568-259</b>
	Bowen No. 568250	568259

<b>PISTON ASSEMBLY</b>	<b>Logan Part No. 10000-043</b>	<b>10000-035</b>
<i>Consists of:</i>	Bowen No. 51344*	35968
	Pipe Size 2-3/8	4
<b>PISTON SEGMENT SET</b>	<b>Logan Part No. N16007</b>	<b>N14008</b>
	Bowen No. 51343	49822
<b>RUBBER RING</b>	<b>Logan Part No. N11001</b>	<b>N15008</b>
	Bowen No. 34564	35970
<b>PISTON O-RING</b>	<b>Logan Part No. 568-250</b>	<b>568-259</b>
	Bowen No. 568250	568259

<b>PISTON ASSEMBLY</b>	<b>Logan Part No. 10000-016</b>	<b>10000-044</b>
<i>Consists of:</i>	Bowen No. 51151	35971
	Pipe Size 4	3-1/2
<b>PISTON SEGMENT SET</b>	<b>Logan Part No. N10007</b>	<b>N16008</b>
	Bowen No. 51152	49820
<b>RUBBER RING</b>	<b>Logan Part No. N11007</b>	<b>N11001</b>
	Bowen No. 51153	34564
<b>PISTON O-RING</b>	<b>Logan Part No. 568-250</b>	<b>568-259</b>
	Bowen No. 568250	568259



## T-DOG OVERSHOTS

### Overview

The Logan T-Dog Overshot is designed to catch collared pipe or tubing and is releasable. The release operation may be repeated several times without damage the tool's ability to re-engage.

### Construction

The body of the Logan T-Dog Overshot is constructed from heat-treated alloy steel with flame-hardened slip teeth for positive engagement under the coupling. The solid body construction, with no windows, enables the T-Dog Overshot to be used in the washover string for

one-trip recovery. Box-pin washpipe connections allow the overshot to be positioned at any point in the washover string. The cage design allows the coupling to pass unrestricted through the tool to allow the washover of several joints of pipe at one time.

### Operation

Although the Logan T-Dog Overshot may be run anywhere in the washpipe, it is generally placed directly above the guide or rotary shoe. The tool is run down over the string of pipe, past a collar, or connection. The spring-loaded

T-dogs expand to pass over the collar. When the string is elevated the T-dogs firmly engage the coupling and the fish is retrieved.

The T-Dog Overshot may be released at any time by picking up and engaging a collar. A slight strain is maintained while the tool is slowly rotated to the right. This action enables the T-dogs to expand and release the coupling.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and type of top connection

OVERSHOT O.D.		3-7/8	4-5/8	5-3/4	8-1/8			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	195-388	195-463	195-575	195-813			
<b>TOP SUB</b>	<b>Logan Part No.</b>	BB1000	BB1001	BB1002	BB1003			
<b>BODY</b>	<b>Logan Part No.</b>	BB2000	BB2001	BB2002	BB2003			
<b>CAGE</b>	<b>Logan Part No.</b>	BB3000	BB3001	BB3002	BB3003			
<b>T-DOG</b>	<b>Logan Part No.</b>	BB4000	BB4001	BB4002	BB4003			
	To Catch	2-3/8 EUE	2-7/8 EUE	...	...			
<b>SPRING</b>	<b>Logan Part No.</b>	BB5000	BB5000	BB5001	BB5002			
<b>RIVET</b>	<b>Logan Part No.</b>	P16002	P16002	P16002	P16002			

**INTERNAL CUTTERS**

**Overview**

Logan Internal Cutters are used to cut tubing, casing, and drill pipe and may also be run on sucker rods and macaroni strings. These mechanically operated cutters permit alternate sizes of pipe to be cut when redressing an assembly. All Logan Internal Cutters feature a device that permits the operator to set the cutter to any depth, release the tool, and reset it to another depth without coming out of the hole.

Each cutter is designed to cut a given range of tubing when dressed with correctly sized components. Collar finders are also available for each size.

**Construction**

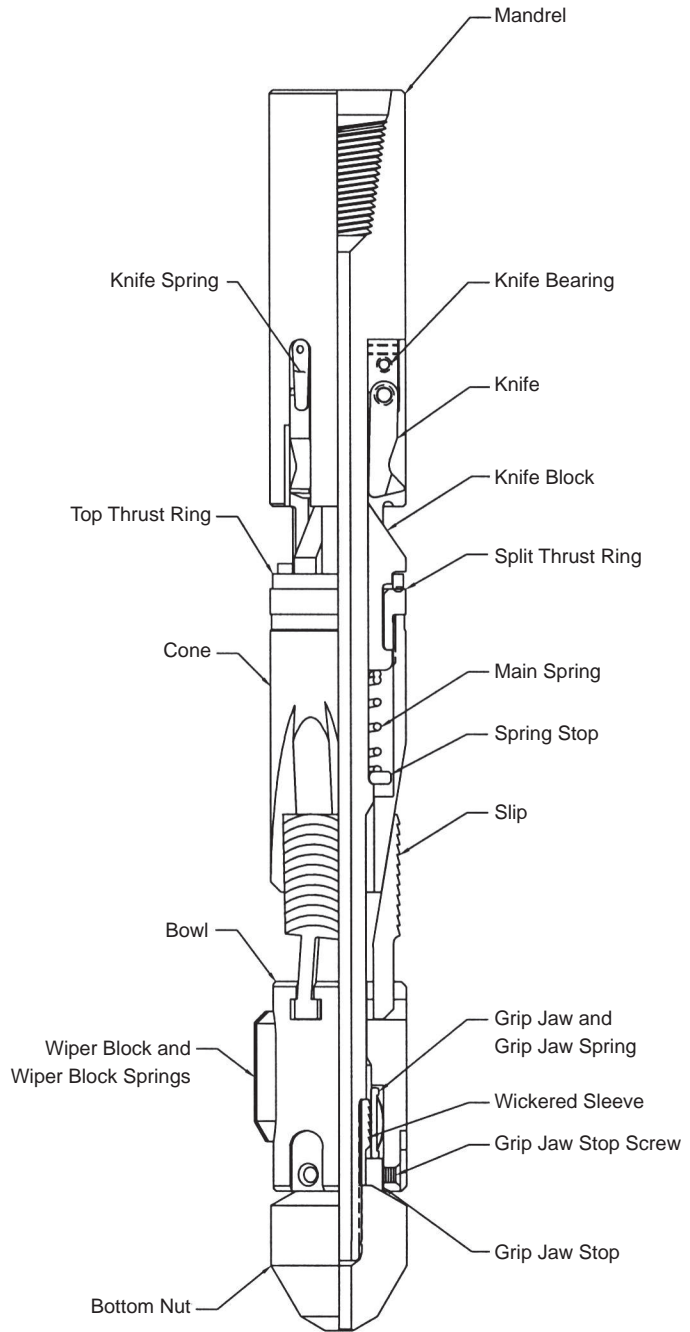
Logan Internal Cutters consist of either a wiper block or drag spring assembly for setting in the pipe. Slips and a cone assembly anchor the cutter. A main spring aids in maintaining uniform feed to the knives. Knife blocks drive the knives upward and outward to engage the pipe. Precision ground knives easily cut the pipe.

**Operation**

After the cutter has been lowered to desired cutting depth, anchor the cutter by slowly rotating while continuing to lower. This will set the slips and allow the mandrel to travel down under the knife blocks. The knife blocks will force the knives up and outward to engage the pipe so the cut can be made. Apply minimum weight while slow rotation (8 to 18 rpm) of the work string is continued. Cutting is best accomplished by slacking off in increments while making the cut. Lack of reverse torque and free rotation of the work string will indicate that the cut has been made.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut



# LOGAN GENERAL CATALOG

OIL TOOLS

## INTERNAL CUTTERS

PIPE SIZE TO CUT	1.900 Tbg	2-3/8 Tbg	2-7/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4-1/2 FH DP	4-1/2 IF DP
CAN BE DRESSED FOR	...	2-7/8 IF DP	...	3-1/2 IF DP	4 Tub	4-1/2 IF DP	4-1/2, 4-3/4, 5 & 5-1/2 Csg
MINIMUM CUTTER O.D.	1-1/2	1-13/16	2-1/4	2-1/4	2-5/8	2-1/2	3-3/8
STANDARD ASSEMBLY	Drag Spring	Drag Spring	Drag Spring	Drag Spring	Wiper Block	Drag Spring	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 409-000	<b>409-002</b>	<b>409-003</b>	<b>409-004</b>	<b>409-005</b>	<b>409-006</b>	<b>409-007</b>
Consists of:	Bowen No. 25940	2174	8505	9176	8570	9465	8844
<b>MANDREL</b>	<b>Logan Part No.</b> Q1000	<b>Q1002</b>	<b>Q1003</b>	<b>Q1004</b>	<b>Q1005</b>	<b>Q1006</b>	<b>Q1007</b>
	Bowen No. 25941	2175	8506	9177	8571	9466	8845
<b>KNIFE BEARING</b>	<b>Logan Part No.</b> Q2000	<b>Q2002</b>	<b>Q2002</b>	<b>Q2004</b>	<b>Q2004</b>	<b>Q2004</b>	<b>Q2004</b>
	Bowen No. 25942	8433	8433	8575	8575	8575	8575
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE SPRING SCREW</b>	<b>Logan Part No.</b> Q3000	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>
	Bowen No. 13834	8181	8181	8181	8181	8181	8181
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE SPRING</b>	<b>Logan Part No.</b> Q4000	<b>Q4002</b>	<b>Q4002</b>	<b>Q4004</b>	<b>Q4004</b>	<b>Q4004</b>	<b>Q4004</b>
	Bowen No. 25959	8434	8434	8629	8629	8629	8629
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE</b>	<b>Logan Part No.</b> Q5000	<b>Q5002</b>	<b>Q5002</b>	<b>Q5004</b>	<b>Q5004</b>	<b>Q5006</b>	<b>Q5004</b>
	Bowen No. 25943	8432	8432	8572	8572	6807	8572
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE BEARING SCREW</b>	<b>Logan Part No.</b> Q6000	<b>Q6002</b>	<b>Q6003</b>	<b>Q6004</b>	<b>Q6005</b>	<b>Q6005</b>	<b>Q6005</b>
	Bowen No. 23501	8529	8567	9189	8576	8576	8576
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE PIN</b>	<b>Logan Part No.</b> Q7000	<b>Q7002</b>	<b>Q7002</b>	<b>Q7004</b>	<b>Q7004</b>	<b>Q7006</b>	<b>Q7004</b>
	Bowen No. 25944	8501	8501	8573	8573	9467	8573
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE PIN SCREW</b>	<b>Logan Part No.</b> AA9001	<b>Q8002</b>	<b>Q8002</b>	<b>Q8004</b>	<b>Q8004</b>	<b>Q8002</b>	<b>Q8004</b>
	Bowen No. 12484	8445	8445	8574	8574	8445	8574
	No. Req'd 3	3	3	3	3	3	3
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b> Q9000	<b>Q9002</b>	<b>Q9003</b>	<b>Q9004</b>	<b>Q9004</b>	<b>Q9006</b>	<b>Q9007</b>
	Bowen No. 25945	8436	8507	8580	8580	6809	8846
	No. Req'd 3	3	3	3	3	3	3
<b>TOP THRUST</b>	<b>Logan Part No.</b> Q10000	<b>Q10002</b>	<b>Q10003</b>	<b>Q10004</b>	<b>Q10005</b>	<b>Q10006</b>	<b>Q10007</b>
	Bowen No. 25946	9421	8508	9422	8612	6810	8931
<b>SPLIT THRUST</b>	<b>Logan Part No.</b> Q11000	<b>Q11002</b>	<b>Q11003</b>	<b>Q11004</b>	<b>Q11005</b>	<b>Q11006</b>	<b>Q11007</b>
	Bowen No. 25947	8438	8509	9179	8582	7496	8848

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Notes:

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

Recommended Spare Parts:

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws



## INTERNAL CUTTERS

PIPE SIZE TO CUT CAN BE DRESSED FOR	1.900 Tbg	2-3/8 Tbg	2-7/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4-1/2 FH DP	4-1/2 IF DP	
	...	2-7/8 IF DP 2-7/8 Tbg	...	3-1/2 IF DP	4 Tbg 4-1/2 Tbg	4-1/2 IF DP 4-1/2 Csg	4-1/2, 4-3/4, 5 & 5-1/2 Csg	
MINIMUM CUTTER O.D.	1-1/2	1-13/16	2-1/4	2-1/4	2-5/8	2-1/2	3-3/8	
STANDARD ASSEMBLY	Drag Spring	Drag Spring	Drag Spring	Drag Spring	Wiper Block	Drag Spring	Wiper Block	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-000</b>	<b>409-002</b>	<b>409-003</b>	<b>409-004</b>	<b>409-005</b>	<b>409-006</b>	<b>409-007</b>
	Bowen No.	25940	2174	8505	9176	8570	9465	8844
<b>CONE</b>	<b>Logan Part No.</b>	<b>Q12000</b>	<b>Q12002</b>	<b>Q12003</b>	<b>Q12004</b>	<b>Q12005</b>	<b>Q12006</b>	<b>Q12007</b>
	Bowen No.	25948	2177	8510	9180	8583	9468	8849
<b>MAIN SPRING</b>	<b>Logan Part No.</b>	<b>Q13000</b>	<b>Q13002</b>	<b>Q13002</b>	<b>Q13004</b>	<b>Q13005</b>	<b>Q13006</b>	<b>Q13007</b>
	Bowen No.	25949	8440	8440	9191	8584	9469	8850
<b>SPRING STOP</b>	<b>Logan Part No.</b>	<b>Q14000</b>	<b>Q14002</b>	<b>Q14002</b>	<b>Q14004</b>	<b>Q14005</b>	<b>Q14005</b>	<b>Q14007</b>
	Bowen No.	25950	8442	8442	9192	8585	8585	8851
<b>SLIP</b>	<b>Logan Part No.</b>	<b>Q15000</b>	<b>Q15002</b>	<b>Q15003</b>	<b>Q15004</b>	<b>Q15005</b>	<b>Q15006</b>	<b>Q15007</b>
	Bowen No.	25958	2180	4005	2178	8586	7201	8852
	No. Req'd	3	3	3	3	3	2	3
<b>GRIP JAW SET</b>	<b>Logan Part No.</b>	<b>Q16000</b>	<b>Q16002</b>	<b>Q16002</b>	<b>Q16002</b>	<b>Q16005</b>	<b>Q16005</b>	<b>Q16005</b>
	Bowen No.	25951	8443	8443	8443	8588	8588	8588
<b>GRIP JAW SPRING</b>	<b>Logan Part No.</b>	<b>Q17000</b>	<b>Q17000</b>	<b>Q17000</b>	<b>Q17000</b>	<b>Q17005</b>	<b>Q17005</b>	<b>Q17005</b>
	Bowen No.	8444	8444	8444	8444	8589	8589	8589
	No. Req'd	3	3	3	3	3	3	3
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Q18000</b>	<b>Q18002</b>	<b>Q18003</b>	<b>Q18004</b>	<b>Q18005</b>	<b>Q18006</b>	<b>Q18007</b>
	Bowen No.	25952	8521	8520	9181	8597	9470	8853
<b>GRIP JAW STOP</b>	<b>Logan Part No.</b>	<b>Q19000</b>	<b>Q19002</b>	<b>Q19003</b>	<b>Q19004</b>	<b>Q19005</b>	<b>Q19006</b>	<b>Q19005</b>
	Bowen No.	25953	8446	8515	9182	8590	9471	8590
<b>GRIP JAW STOP SCREW</b>	<b>Logan Part No.</b>	<b>Q20000</b>	<b>Q20002</b>	<b>Q20002</b>	<b>Q20002</b>	<b>Q20005</b>	<b>Q20005</b>	<b>Q20005</b>
	Bowen No.	23096	62517	62517	62517	62681	62681	62681
	No. Req'd	3	3	3	3	3	3	3
<b>WICKERED SLEEVE LONG</b>	<b>Logan Part No.</b>	<b>Q21000</b>	<b>Q21002</b>	<b>Q21002</b>	<b>Q21004</b>	<b>Q21005</b>	<b>Q21006</b>	<b>Q21005</b>
	Bowen No.	25954	8568	8568	9185	8591	9475	8591
<b>BOTTOM NUT</b>	<b>Logan Part No.</b>	<b>Q22000</b>	<b>Q22002</b>	<b>Q22003</b>	<b>Q22003</b>	<b>Q22005</b>	<b>Q22006</b>	<b>Q22007</b>
	Bowen No.	25955	8565	8566	8566	8596	9476	8857

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**Notes:**

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- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

PIPE SIZE TO CUT CAN BE DRESSED FOR	1.900 Tbg	2-3/8 Tbg	2-7/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4-1/2 FH DP	4-1/2 IF DP	
	...	2-7/8 IF DP 2-7/8 Tbg	...	3-1/2 IF DP	4 Tbg 4-1/2 Tbg	4-1/2 IF DP 4-1/2 Csg	4-1/2, 4-3/4, 5 & 5-1/2 Csg	
MINIMUM CUTTER O.D.	1-1/2	1-13/16	2-1/4	2-1/4	2-5/8	2-1/2	3-3/8	
STANDARD ASSEMBLY	Drag Spring	Drag Spring	Drag Spring	Drag Spring	Wiper Block	Drag Spring	Wiper Block	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-000</b>	<b>409-002</b>	<b>409-003</b>	<b>409-004</b>	<b>409-005</b>	<b>409-006</b>	<b>409-007</b>
	Bowen No.	25940	2174	8505	9176	8570	9465	8844
<b>WIPER BLOCK</b>	<b>Logan Part No.</b>	...	...	...	...	<b>Q23005</b>	...	<b>Q23007</b>
	Bowen No.	...	...	...	...	8598	...	8854
	No. Req'd	...	...	...	...	3	...	3
<b>WIPER BLOCK SPRING</b>	<b>Logan Part No.</b>	...	...	...	...	<b>Q24005</b>	...	<b>Q24007</b>
	Bowen No.	...	...	...	...	8599	...	8863
	No. Req'd	...	...	...	...	9	...	9
<b>WIPER BLOCK SCREW</b>	<b>Logan Part No.</b>	...	...	...	...	<b>Q25005</b>	...	<b>Q25005</b>
	Bowen No.	...	...	...	...	8856	...	8856
	No. Req'd	...	...	...	...	6	...	6
<b>BOWL DRAG SPRING TYPE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	...	...	...	<b>Q27004</b>	<b>Q27005</b>	<b>Q27006</b>	<b>Q27005</b>
	Bowen No.	...	...	...	9183	8595	9472	8595
<b>DRAG SPRING</b>	<b>Logan Part No.</b>	<b>Q28000</b>	<b>Q28002</b>	<b>Q28002</b>	<b>Q28002</b>	<b>Q28005</b>	<b>Q28005</b>	<b>Q28005</b>
	Bowen No.	25956	8569	8569	8569	8592	8592	8592
	No. Req'd	3	3	3	3	3	3	3
<b>DRAG SPRING RING</b>	<b>Logan Part No.</b>	<b>Q29000</b>	<b>Q29002</b>	<b>Q29003</b>	<b>Q29003</b>	<b>Q29005</b>	<b>Q29006</b>	<b>Q29007</b>
	Bowen No.	25957	8500	8518	8518	8594	9473	8855
<b>DRAG SPRING SCREW</b>	<b>Logan Part No.</b>	<b>Q20000</b>	<b>Q20002</b>	<b>Q20002</b>	<b>Q20002</b>	<b>Q30005</b>	<b>Q20005</b>	<b>AK6004</b>
	Bowen No.	23096	62517	62517	62517	62734	62681	8593
	No. Req'd	6	6	6	6	6	6	6
<b>WICKERED SLEEVE SHORT</b>	<b>Logan Part No.</b>	...	<b>Q21002</b>	<b>Q31003</b>	...	...	...	...
	Bowen No.	...	8568	8564	...	...	...	...
<b>DRAG SPRING SHORT</b>	<b>Logan Part No.</b>	...	...	<b>Q32003</b>	...	...	...	...
	Bowen No.	...	...	8449	...	...	...	...
	No. Req'd	...	...	3	...	...	...	...
<b>ROD KNIFE</b>	<b>Logan Part No.</b>	...	...	<b>Q33003</b>	<b>Q33003</b>	...	...	...
	Bowen No.	...	...	9423	9423	...	...	...

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- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
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- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

PIPE SIZE TO CUT	1.900 Tbg	2-3/8 Tbg	2-7/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4-1/2 FH DP	4 1/2 IF DP
CAN BE DRESSED FOR	...	2-7/8 IF DP 2-7/8 Tbg	...	3-1/2 IF DP	4-Tbg 4-1/2 Tbg	4-1/2 IF DP 4-1/2 Csg	4-1/2, 4-3/4, 5 & 5-1/2 Csg
MINIMUM CUTTER O.D.	1-1/2	1-13/16	2-1/4	2-1/4	2-5/8	2-1/2	3-3/8
STANDARD ASSEMBLY	Drag Spring	Drag Spring	Drag Spring	Drag Spring	Wiper Block	Drag Spring	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 409-000 Bowen No. 25940	<b>409-002</b> 2174	<b>409-003</b> 8505	<b>409-004</b> 9176	<b>409-005</b> 8570	<b>409-006</b> 9465	<b>409-007</b> 8844
<b>TOP THRUST TO CUT COUPLING</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	...	...	...
<b>TOP THRUST</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	<b>Q34005</b> 8581	...	...
<b>SLIP</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	<b>Q35005</b> 8587	...	...
<b>WIPER BLOCK</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	<b>Q36005</b> 8605	...	...
<b>BOTTOM NUT</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	<b>Q37005</b> 8634	...	...
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b> ... Bowen No. ...	...	...	...	<b>Q38005</b> 22278	...	...

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- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

PIPE SIZE TO CUT CAN BE DRESSED FOR	5 IUDP	5 Csg	6 Csg	7 Csg	8-5/8 to 9 Csg	9-5/8 Csg	11-3/4 Csg	
	...	5-1/2 Csg	6-5/8 Csg 7 Csg	7-5/8, 8 Csg 8-1/2 Csg	9-5/8 Csg	10-3/4 Csg 11-3/4 Csg	12 LP	
MINIMUM CUTTER O.D.	3-3/8	4	5	5-11/16	7-1/4	8-1/4	...	
STANDARD ASSEMBLY	Drag Spring	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-008</b>	<b>409-009</b>	<b>409-010</b>	<b>409-011</b>	<b>409-012</b>	<b>409-013</b>	<b>409-014</b>
	Bowen No.	9081	8200	14785	8745	15532	15080	41876
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>Q1008</b>	<b>Q1009</b>	<b>Q1010</b>	<b>Q1011</b>	<b>Q1012</b>	<b>Q1013</b>	<b>Q1014</b>
	Bowen No.	9082	8176	14786	8746	15533	15081	41877
<b>KNIFE BEARING</b>	<b>Logan Part No.</b>	<b>Q2004</b>	<b>Q2009</b>	<b>Q2009</b>	<b>Q2009</b>	<b>Q2012</b>	<b>Q2012</b>	<b>Q2012</b>
	Bowen No.	8575	8179	8179	8179	15110	15110	15110
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE SPRING SCREW</b>	<b>Logan Part No.</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3002</b>	<b>Q3012</b>	<b>Q3012</b>	<b>Q3012</b>
	Bowen No.	8181	8181	8181	8181	9558	9558	9558
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE SPRING</b>	<b>Logan Part No.</b>	<b>Q4004</b>	<b>Q4009</b>	<b>Q4009</b>	<b>Q4009</b>	<b>Q4012</b>	<b>Q4012</b>	<b>Q4012</b>
	Bowen No.	8629	8180	8180	8180	15111	15111	15111
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE</b>	<b>Logan Part No.</b>	<b>Q5008</b>	<b>Q5009</b>	<b>Q5009</b>	<b>Q5009</b>	<b>Q5012</b>	<b>Q5012</b>	<b>Q5012</b>
	Bowen No.	9042	8177	8177	8177	15102	15102	15102
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE BEARING SCREW</b>	<b>Logan Part No.</b>	<b>Q6005</b>	<b>Q6009</b>	<b>Q6009</b>	<b>Q6009</b>	<b>Q6012</b>	<b>Q6013</b>	<b>Q6013</b>
	Bowen No.	8576	8229	8229	8229	15553	15112	15112
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE PIN</b>	<b>Logan Part No.</b>	<b>Q7004</b>	<b>Q7009</b>	<b>Q7009</b>	<b>Q7009</b>	<b>Q7012</b>	<b>Q7013</b>	<b>Q7013</b>
	Bowen No.	8573	8178	8178	8178	15558	15113	15113
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE PIN SCREW</b>	<b>Logan Part No.</b>	<b>Q8004</b>	<b>Q8009</b>	<b>Q8009</b>	<b>Q8009</b>	<b>Q8012</b>	<b>Q8012</b>	<b>Q8012</b>
	Bowen No.	8574	8208	8208	8208	15114	15114	15114
	No. Req'd	3	3	3	3	5	5	5
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b>	<b>Q9007</b>	<b>Q9009</b>	<b>Q9009</b>	<b>Q9009</b>	<b>Q9012</b>	<b>Q9012</b>	<b>Q9012</b>
	Bowen No.	8846	8183	8183	8183	15115	15115	15115
	No. Req'd	3	3	3	3	5	5	5
<b>TOP THRUST</b>	<b>Logan Part No.</b>	<b>Q10008</b>	<b>Q10009</b>	<b>Q10010</b>	<b>Q10011</b>	<b>Q10012</b>	<b>Q10013</b>	<b>Q10014</b>
	Bowen No.	8847	8241	14787	8748	15534	15099	41878

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### Notes:

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

### Recommended Spare Parts:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

## INTERNAL CUTTERS

PIPE SIZE TO CUT	5 IUDP	5 Csg	6 Csg	7 Csg	8-5/8 to 9 Csg	9-5/8 Csg	11-3/4 Csg	
CAN BE DRESSED FOR	...	5-1/2 Csg	6-5/8 Csg 7 Csg	7-5/8, 8 Csg 8-1/2 Csg	9-5/8 Csg	10-3/4 Csg 11-3/4 Csg	12 LP	
MINIMUM CUTTER O.D.	3-3/8	4	5	5-11/16	7-1/4	8-1/4	...	
STANDARD ASSEMBLY	Drag Spring	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-008</b>	<b>409-009</b>	<b>409-010</b>	<b>409-011</b>	<b>409-012</b>	<b>409-013</b>	<b>409-014</b>
	Bowen No.	9081	8200	14785	8745	15532	15080	41876
<b>SPLIT THRUST</b>	<b>Logan Part No.</b>	<b>Q11007</b>	<b>Q11009</b>	<b>Q11010</b>	<b>Q11011</b>	<b>Q11012</b>	<b>Q11013</b>	<b>Q11014</b>
	Bowen No.	8848	8185	14788	8750	15535	15084	41879
<b>CONE</b>	<b>Logan Part No.</b>	<b>Q12008</b>	<b>Q12009</b>	<b>Q12010</b>	<b>Q12011</b>	<b>Q12012</b>	<b>Q12013</b>	<b>Q12014</b>
	Bowen No.	9083	8186	14789	8751	15536	15085	41880
<b>MAIN SPRING</b>	<b>Logan Part No.</b>	<b>Q13008</b>	<b>Q13009</b>	<b>Q13010</b>	<b>Q13011</b>	<b>Q13012</b>	<b>Q13013</b>	<b>Q13014</b>
	Bowen No.	9084	8187	14790	8752	15537	15086	41881
<b>SPRING STOP</b>	<b>Logan Part No.</b>	<b>Q14007</b>	<b>Q14009</b>	<b>Q14010</b>	<b>Q14011</b>	<b>Q14012</b>	<b>Q14013</b>	<b>Q14014</b>
	Bowen No.	8851	8209	14791	8753	15538	15087	41882
<b>SLIP</b>	<b>Logan Part No.</b>	<b>Q15008</b>	<b>Q15009</b>	<b>Q15010</b>	<b>Q15011</b>	<b>Q15012</b>	<b>Q15013</b>	<b>Q15014</b>
	Bowen No.	9043	1924	14792	8754	15539	15275	41883
	No. Req'd	3	3	3	3	3	3	3
<b>GRIP JAW SET</b>	<b>Logan Part No.</b>	...	<b>Q16009</b>	<b>Q16010</b>	<b>Q16011</b>	<b>Q16012</b>	<b>Q16013</b>	<b>Q16014</b>
	Bowen No.	...	8193	14793	8755	15540	15089	41884
<b>GRIP JAW SPRING</b>	<b>Logan Part No.</b>	...	<b>Q17009</b>	<b>Q17010</b>	<b>Q17011</b>	<b>Q17012</b>	<b>Q17013</b>	<b>Q17014</b>
	Bowen No.	...	8194	14797	8756	15108	15108	15108
	No. Req'd	...	3	3	3	3	3	3
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Q18008</b>	<b>Q18009</b>	<b>Q18010</b>	<b>Q18011</b>	<b>Q18012</b>	<b>Q18013</b>	<b>Q18014</b>
	Bowen No.	9044	8190	14794	8761	15542	15090	41885
<b>GRIP JAW STOP</b>	<b>Logan Part No.</b>	<b>Q19005</b>	<b>Q19009</b>	<b>Q19010</b>	<b>Q19011</b>	<b>Q19012</b>	<b>Q19013</b>	<b>Q19014</b>
	Bowen No.	8590	8202	14795	8757	15543	15091	41886
<b>GRIP JAW STOP SCREW</b>	<b>Logan Part No.</b>	<b>Q20005</b>	<b>Q20009</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>
	Bowen No.	62681	25221	8251	8251	8251	8251	8251
	No. Req'd	3	3	3	3	3	3	3
<b>WICKERED SLEEVE LONG</b>	<b>Logan Part No.</b>	<b>Q21008</b>	<b>Q21009</b>	<b>Q21010</b>	<b>Q21011</b>	<b>Q21012</b>	<b>Q21013</b>	<b>Q21014</b>
	Bowen No.	9045	8236	14799	8762	15546	15096	41888
<b>BOTTOM NUT</b>	<b>Logan Part No.</b>	<b>Q22007</b>	<b>Q22009</b>	<b>Q22010</b>	<b>Q22011</b>	<b>Q22012</b>	<b>Q22013</b>	<b>Q22014</b>
	Bowen No.	8857	8196	14800	8763	15547	15097	41889

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**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either. If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

PIPE SIZE TO CUT CAN BE DRESSED FOR	5 IUDP	5 Csg	6 Csg	7 Csg	8-5/8 to 9 Csg	9-5/8 Csg	11-3/4 Csg	
	...	5-1/2 Csg	6-5/8 Csg 7 Csg	7-5/8, 8 Csg, & 8-1/2 Csg	9-5/8 Csg	10-3/4 Csg 11-3/4 Csg	12 LP	
MINIMUM CUTTER O.D.	3-3/8	4	5	5-11/16	7-1/4	8-1/4	...	
STANDARD ASSEMBLY	Drag Spring	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-008</b>	<b>409-009</b>	<b>409-010</b>	<b>409-011</b>	<b>409-012</b>	<b>409-013</b>	<b>409-014</b>
	Bowen No.	9081	8200	14785	8745	15532	15080	41876
<b>WIPER BLOCK</b>	<b>Logan Part No.</b>	...	<b>Q23009</b>	<b>Q23010</b>	<b>Q23011</b>	<b>Q23012</b>	<b>Q23013</b>	<b>Q23014</b>
	Bowen No.	...	8191	14801	8758	15548	15098	41887
	No. Req'd	...	3	3	3	3	3	3
<b>WIPER BLOCK SPRING</b>	<b>Logan Part No.</b>	...	<b>Q24005</b>	<b>Q24010</b>	<b>Q24010</b>	<b>Q24012</b>	<b>Q24012</b>	<b>Q24012</b>
	Bowen No.	...	8599	8759	8759	15276	15276	15276
	No. Req'd	...	24	24	24	36	36	36
<b>WIPER BLOCK SCREW</b>	<b>Logan Part No.</b>	...	<b>Q25005</b>	<b>Q25010</b>	<b>Q25010</b>	<b>Q25010</b>	<b>Q25010</b>	<b>Q25010</b>
	Bowen No.	...	8856	8760	8760	8760	8760	8760
	No. Req'd	...	6	6	6	6	6	6
<b>BOWL DRAG SPRING TYPE</b>	<b>Logan Part No.</b>	...	<b>Q26005</b>	...	...	...	...	...
	Bowen No.	...	8201	...	...	...	...	...
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b>	<b>Q27008</b>	<b>Q27009</b>	<b>Q27010</b>	<b>Q27011</b>	<b>Q27012</b>	<b>Q27013</b>	<b>Q27014</b>
	Bowen No.	9093	8237	14796	8246	15544	15092	41892
<b>DRAG SPRING</b>	<b>Logan Part No.</b>	<b>Q28008</b>	<b>Q28009</b>	<b>Q28010</b>	<b>Q28010</b>	<b>Q28012</b>	<b>Q28012</b>	<b>Q28014</b>
	Bowen No.	9092	8203	8247	8247	15093	15093	41890
	No. Req'd	3	3	3	3	3	3	3
<b>DRAG SPRING RING</b>	<b>Logan Part No.</b>	<b>Q29007</b>	<b>Q29009</b>	<b>Q29010</b>	<b>Q29011</b>	<b>Q29012</b>	<b>Q29013</b>	<b>Q29014</b>
	Bowen No.	8855	8205	14798	8248	15545	15095	41891
<b>DRAG SPRING SCREW</b>	<b>Logan Part No.</b>	<b>Q20005</b>	<b>Q20009</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>	<b>Q20010</b>
	Bowen No.	62681	25221	8251	8251	8251	8251	8251
	No. Req'd	6	3	3	3	3	3	3
<b>WICKERED SLEEVE SHORT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
<b>DRAG SPRING SHORT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...
	No. Req'd	...	...	...	...	...	...	...
<b>ROD KNIFE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	Bowen No.	...	...	...	...	...	...	...

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### Notes:

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

### Recommended Spare Parts:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>		5 IUDP	5 Csg	6 Csg	7 Csg	8-5/8 to 9 Csg	9-5/8 Csg	11-3/4 Csg
<b>CAN BE DRESSED FOR</b>		...	5-1/2 Csg	6-5/8 Csg 7 Csg	7-5/8, 8 Csg, & 8-1/2 Csg	9-5/8 Csg	10-3/4 Csg 11-3/4 Csg	12 LP
<b>MINIMUM CUTTER O.D.</b>		3-3/8	4	5	5-11/16	7-1/4	8-1/4	...
<b>STANDARD ASSEMBLY</b>		Drag Spring	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-008</b>	<b>409-009</b>	<b>409-010</b>	<b>409-011</b>	<b>409-012</b>	<b>409-013</b>	<b>409-014</b>
	<b>Bowen No.</b>	9081	8200	14785	8745	15532	15080	41876
<b>TOP THRUST</b>	<b>Logan Part No.</b>	...	<b>Q34009</b>	<b>Q34010</b>	<b>Q34011</b>	<b>Q34012</b>	<b>Q39015</b>	<b>Q34014</b>
<b>TO CUT COUPLING</b>	<b>Bowen No.</b>	...	8184	14802	8749	15541	15083	41896
<b>TOP THRUST</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>SLIP</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>WIPER BLOCK</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>BOTTOM NUT</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...

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**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>		13 & & 13-3/8 Csg	16 Csg	20 Tbg				
<b>CAN BE DRESSED FOR</b>		...	18-5/8 Csg	20-3/4 Csg				
<b>MINIMUM CUTTER O.D.</b>		11-3/4	14-1/2	18-5/8				
<b>STANDARD ASSEMBLY</b>		Wiper Block	Wiper Block	Wiper Block				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-015</b>	<b>409-016</b>	<b>409-017</b>				
	Bowen No.	19525	21240	19760				
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>Q1015</b>	<b>Q1016</b>	<b>Q1017</b>				
	Bowen No.	19526	21241	19761				
<b>KNIFE BEARING</b>	<b>Logan Part No.</b>	<b>Q2012</b>	<b>Q2012</b>	<b>Q2012</b>				
	Bowen No.	15110	15110	15110				
	No. Req'd	5	5	5				
<b>KNIFE SPRING SCREW</b>	<b>Logan Part No.</b>	<b>Q3012</b>	<b>Q3012</b>	<b>Q3012</b>				
	Bowen No.	9558	9558	9558				
	No. Req'd	5	5	5				
<b>KNIFE SPRING</b>	<b>Logan Part No.</b>	<b>Q4012</b>	<b>Q4012</b>	<b>Q4012</b>				
	Bowen No.	15111	15111	15111				
	No. Req'd	5	5	5				
<b>KNIFE</b>	<b>Logan Part No.</b>	<b>Q5012</b>	<b>Q5012</b>	<b>Q5012</b>				
	Bowen No.	15102	15102	15102				
	No. Req'd	5	5	5				
<b>KNIFE BEARING SCREW</b>	<b>Logan Part No.</b>	<b>Q6013</b>	<b>Q6013</b>	<b>Q6013</b>				
	Bowen No.	23003	15112	15112				
	No. Req'd	5	5	5				
<b>KNIFE PIN</b>	<b>Logan Part No.</b>	<b>Q7015</b>	<b>Q7013</b>	<b>Q7013</b>				
	Bowen No.	39231	15113	15113				
	No. Req'd	5	5	5				
<b>KNIFE PIN SCREW</b>	<b>Logan Part No.</b>	<b>Q8012</b>	<b>Q8012</b>	<b>Q8012</b>				
	Bowen No.	15114	15114	15114				
	No. Req'd	5	5	5				
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b>	<b>Q9012</b>	<b>Q9012</b>	<b>Q9012</b>				
	Bowen No.	15115	15115	15115				
	No. Req'd	5	5	5				

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |



## INTERNAL CUTTERS

PIPE SIZE TO CUT		13 & 13-3/8 Csg	16 Csg	20 Csg				
CAN BE DRESSED FOR		...	18-5/8 Csg	20-3/4 Csg				
MINIMUM CUTTER O.D.		11-3/4	14-1/2	18-5/8				
STANDARD ASSEMBLY		Wiper Block	Wiper Block	Wiper Block				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-015</b>	<b>409-016</b>	<b>409-017</b>				
	Bowen No.	19525	21240	19760				
<b>TOP THRUST</b>	<b>Logan Part No.</b>	<b>Q10015</b>	<b>Q10016</b>	<b>Q10017</b>				
	Bowen No.	19527	21242	19762				
<b>SPLIT THRUST</b>	<b>Logan Part No.</b>	<b>Q11015</b>	<b>Q11016</b>	<b>Q11017</b>				
	Bowen No.	19528	21243	19763				
<b>CONE</b>	<b>Logan Part No.</b>	<b>Q12015</b>	<b>Q12016</b>	<b>Q12017</b>				
	Bowen No.	19529	21244	19764				
<b>MAIN SPRING</b>	<b>Logan Part No.</b>	<b>Q13015</b>	<b>Q13016</b>	<b>Q13017</b>				
	Bowen No.	19530	21245	19765				
<b>SPRING STOP</b>	<b>Logan Part No.</b>	<b>Q14015</b>	<b>Q14016</b>	<b>Q14017</b>				
	Bowen No.	19531	21246	19766				
<b>SLIP</b>	<b>Logan Part No.</b>	<b>Q15015</b>	<b>Q15016</b>	<b>Q15017</b>				
	Bowen No.	19532	21247	19767				
	No. Req'd	3	3	3				
<b>GRIP JAW SET</b>	<b>Logan Part No.</b>	<b>Q16015</b>	<b>Q16016</b>	<b>Q16017</b>				
	Bowen No.	19533	21248	19768				
<b>GRIP JAW SPRING</b>	<b>Logan Part No.</b>	<b>Q17015</b>	<b>Q17016</b>	<b>8234</b>				
	Bowen No.	19534	21249	19769				
	No. Req'd	4	4	4				
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Q18015</b>	<b>Q18016</b>	<b>Q18017</b>				
	Bowen No.	19535	21250	19770				
<b>GRIP JAW STOP</b>	<b>Logan Part No.</b>	<b>Q19015</b>	<b>Q19016</b>	<b>Q19017</b>				
	Bowen No.	19536	21251	19771				
<b>GRIP JAW STOP SCREW</b>	<b>Logan Part No.</b>	<b>Q20015</b>	<b>Q20016</b>	<b>Q20010</b>				
	Bowen No.	41871	21679	8251				
	No. Req'd	3	3	3				

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**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either. If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

# LOGAN GENERAL CATALOG

OIL TOOLS

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>	13 &	16 Csg	20 Csg				
	13-3/8 Csg						
<b>CAN BE DRESSED FOR</b>	...	18-5/8 Csg	20-3/4 Csg				
<b>CUTTER O.D. (MINIMUM)</b>	11-3/4	14-1/2	18-5/8				
<b>STANDARD ASSEMBLY</b>	Wiper Block	Wiper Block	Wiper Block				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 409-015	409-016	409-017				
	Bowen No.	19525	21240	19760			
<b>WICKERED SLEEVE LONG</b>	<b>Logan Part No.</b> Q21015	Q21016	Q21017				
	Bowen No.	19540	21253	19778			
<b>BOTTOM NUT</b>	<b>Logan Part No.</b> Q22015	Q22016	Q22017				
	Bowen No.	19541	21254	19779			
<b>WIPER BLOCK</b>	<b>Logan Part No.</b> Q23015	Q23016	Q23017				
	Bowen No.	19542	21252	19772			
	No. Req'd	6	8	6			
<b>WIPER BLOCK SPRING</b>	<b>Logan Part No.</b> Q24012	Q24012	Q24012				
	Bowen No.	15276	15276	15276			
	No. Req'd	72	54	48			
<b>WIPER BLOCK SCREW</b>	<b>Logan Part No.</b> Q25010	Q25016	Q25010				
	Bowen No.	8760	21678	8760			
	No. Req'd	6	12	6			
<b>BOWL DRAG SPRING TYPE</b>	<b>Logan Part No.</b> ...	...	...				
	Bowen No.	...	...	...			
<b>MANDREL EXTENSION</b>	<b>Logan Part No.</b> Q27015	Q27016	Q27017				
	Bowen No.	19537	21255	19773			
<b>DRAG SPRING</b>	<b>Logan Part No.</b> Q28015	Q28016	Q28017				
	Bowen No.	19538	21256	19774			
	No. Req'd	6	6	6			
<b>DRAG SPRING RING</b>	<b>Logan Part No.</b> Q29015	Q29016	Q29017				
	Bowen No.	19539	21257	19799			
<b>DRAG SPRING SCREW</b>	<b>Logan Part No.</b> Q20010	Q20010	Q20010				
	Bowen No.	8251	8251	8251			
	No. Req'd	6	6	6			

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### Notes:

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

### Recommended Spare Parts:

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

## INTERNAL CUTTERS

PIPE SIZE TO CUT	13 & 13-3/8 Csg	16 Csg	20 Csg				
CAN BE DRESSED FOR	...	18-5/8 Csg	20-3/4 Csg				
MINIMUM CUTTER O.D.	11-3/4	14-1/2	18-5/8				
STANDARD ASSEMBLY	Wiper Block	Wiper Block	Wiper Block				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 409-015</b>	<b>409-016</b>	<b>409-017</b>				
	Bowen No. 19525	21240	19760				
<b>WICKERED SLEEVE SHORT</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>DRAG SPRING SHORT</b> (3 req'd)	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
	No. Req'd ...	...	...				
<b>ROD KNIFE</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>TOP THRUST TO CUT COUPLING</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>TOP THRUST</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>SLIP</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>WIPER BLOCK</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>BOTTOM NUT</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				
<b>KNIFE BLOCK</b>	<b>Logan Part No. ...</b>	...	...				
	Bowen No. ...	...	...				

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**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either. If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>		2-3/8 Tbg	3-1/2 OD Tbg	3-1/2 OD Tbg	4-1/2 FH DP	4-1/2 FH DP	4-1/2 IF DP	4-1/2 IF DP
<b>CAN BE DRESSED TO CUT</b>		2-7/8 IF DP & 2-7/8 Tbg	4 OD Tbg	4-1/2 OD Tbg	4-1/2 X-Hole DP	4-1/2 OD Csg	4-1/2 OD Tbg & Csg	4-3/4 OD Csg
<b>CUTTER O.D. (MINIMUM)</b>		1-13/16	2-5/8	2-5/8	2-1/2	2-1/2	3-3/8	3-3/8
<b>STANDARD ASSEMBLY</b>		Drag Spring	Wiper Block	Wiper Block	Drag Spring	Drag Spring	Wiper Block	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-002</b>	<b>409-005</b>	<b>409-005</b>	<b>409-006</b>	<b>409-006</b>	<b>409-007</b>	<b>409-007</b>
	<b>Bowen No.</b>	2174	8570	8570	9465	9465	8844	8844
<b>TOP THRUST</b>	<b>Logan Part No.</b>	<b>Q39000</b>	<b>Q39003</b>	<b>Q34005</b>	...	...	...	<b>Q10008</b>
	<b>Bowen No.</b>	8437	8613	8581	...	...	...	8847
<b>SLIP</b>	<b>Logan Part No.</b>	<b>Q40000</b>	<b>Q40003</b>	<b>Q35005</b>	...	<b>Q40006</b>	<b>Q40007</b>	<b>Q40007</b>
	<b>Bowen No.</b>	2181	8577	8587	...	23945	8932	8932
	<b>No. Req'd</b>	3	3	3	...	3	3	3
<b>WIPER BLOCK</b>	<b>Logan Part No.</b>	...	<b>Q41003</b>	<b>Q36005</b>	...	...	<b>Q41007</b>	<b>Q41007</b>
	<b>Bowen No.</b>	...	8614	8605	...	...	8933	8933
	<b>No. Req'd</b>	...	3	3	...	...	3	3
<b>DRAG SPRING</b>	<b>Logan Part No.</b>	...	<b>Q42003</b>	...	<b>Q42005</b>	<b>Q42006</b>	...	<b>Q42005</b>
	<b>Bowen No.</b>	...	8611	...	8611	23946	...	8611
	<b>No. Req'd</b>	...	3	...	3	3	...	3
<b>BOTTOM NUT</b>	<b>Logan Part No.</b>	...	<b>Q43003</b>	<b>Q43004</b>	<b>Q43005</b>	...	...	<b>Q43008</b>
	<b>Bowen No.</b>	...	8602	8634	9457	...	...	8934
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b>	...	...	<b>Q38005</b>	...	...	...	...
	<b>Bowen No.</b>	...	...	22278	...	...	...	...
	<b>No. Req'd</b>	...	...	3	...	...	...	...
<b>TOP THRUST CUT COUPLING</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...
<b>KNIFE</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
	<b>Bowen No.</b>	...	...	...	...	...	...	...

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**Notes:**

(1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.

(2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.

If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>		4-1/2	4-1/2	5 OD	5-1/2	6 OD	6 OD	7 OD
		IFDP	IFDP	Csg	Csg	Csg	Csg	Csg
<b>CAN BE DRESSED TO CUT</b>		5 OD	5-1/2 OD	5-1/2 OD	5-3/4 OD	6-5/8 OD	7 OD	7-5/8 OD
		Csg	Csg	Csg	Csg	Csg	Csg	Csg
<b>CUTTER O.D. (MINIMUM)</b>		3-3/8	3-3/8	4	4	5	5	5-11/16
<b>STANDARD ASSEMBLY</b>		Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>409-007</b>	<b>409-007</b>	<b>409-009</b>	<b>409-009</b>	<b>409-010</b>	<b>409-010</b>	<b>409-011</b>
	<b>Bowen No.</b>	8844	8844	8200	8200	14785	14785	8745
<b>TOP THRUST</b>	<b>Logan Part No.</b>	<b>Q10008</b>	<b>Q10008</b>	<b>Q39009</b>	<b>Q39020</b>	<b>Q34010</b>	...	<b>Q34011</b>
	<b>Bowen No.</b>	8847	8847	8242	54550	14802	...	8749
<b>SLIP</b>	<b>Logan Part No.</b>	<b>Q40008</b>	<b>Q40020</b>	<b>Q40009</b>	<b>Q40021</b>	<b>Q40010</b>	<b>Q40011</b>	<b>Q40012</b>
	<b>Bowen No.</b>	14004	53055	8405	54551	14803	29499	8764
	<b>No. Req'd</b>	3	3	3	3	3	3	3
<b>WIPER BLOCK</b>	<b>Logan Part No.</b>	<b>Q41008</b>	<b>Q41020</b>	<b>Q41009</b>	<b>Q41021</b>	<b>Q41010</b>	<b>Q41011</b>	<b>Q41012</b>
	<b>Bowen No.</b>	14001	53056	8219	54552	14818	20982	8770
	<b>No. Req'd</b>	3	3	3	3	3	3	3
<b>DRAG SPRING</b>	<b>Logan Part No.</b>	<b>Q42005</b>	...	<b>Q42009</b>	<b>Q42013</b>	<b>Q42010</b>	...	<b>Q42010</b>
	<b>Bowen No.</b>	8611	...	8207	54553	8249	...	8249
	<b>No. Req'd</b>	3	...	3	3	3	...	3
<b>BOTTOM NUT</b>	<b>Logan Part No.</b>	<b>Q43009</b>	<b>Q43009</b>	<b>Q43010</b>	<b>Q43010</b>	<b>Q43011</b>	<b>Q43012</b>	<b>Q43013</b>
	<b>Bowen No.</b>	14002	14002	8234	8234	14817	36498	8774
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b>	<b>Q44009</b>	<b>Q44010</b>	...	...	...	...	...
	<b>Bowen No.</b>	14003	53057	...	...	...	...	...
	<b>No. Req'd</b>	3	3	...	...	...	...	...
<b>TOP THRUST CUT COUPLING</b>	<b>Logan Part No.</b>	...	...	...	...	<b>Q45011</b>	<b>Q45011</b>	...
	<b>Bowen No.</b>	...	...	...	...	14816	14816	...
<b>KNIFE</b>	<b>Logan Part No.</b>	...	<b>Q5008</b>	...	...	...	...	...
	<b>Bowen No.</b>	...	9042	...	...	...	...	...

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**Notes:**

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- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- (1) 6 sets of Knives
- (2) 2 sets of Knife Pins
- (3) 6 sets of Knife Springs
- (4) 2 sets of Knife Spring Screws
- (5) 1 set of Slips
- (6) 1 set of Wiper Blocks
- (7) 1 set of Wiper Block Springs
- (8) 1 set of Wiper Block Screws
- (9) 1 set of Grip Jaws
- (10) 1 set of Grip Jaw Springs
- (11) 1 Wickered Sleeve
- (12) 1 set of Drag Springs
- (13) 1 set of Drag Springs Screws

## INTERNAL CUTTERS

<b>PIPE SIZE TO CUT</b>	7 OD Csg	8 5/8 - 9 OD Csg	9-5/8 OD Csg	9-5/8 OD Csg	11.75 OD Csg	16 OD Csg	20 OD Csg
<b>CAN BE DRESSED TO CUT</b>	8 & 8-1/8 OD Csg	9-5/8 OD Csg	10-3/4 OD Csg	11-3/4 OD Csg	12 LP	18-5/8 OD Csg	20-3/4 OD Csg
<b>CUTTER O.D. (MINIMUM)</b>	5-11/16	7-1/4	8-1/4	8-1/4	...	14-1/2	18-5/8
<b>STANDARD ASSEMBLY</b>	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block	Wiper Block
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 409-011 Bowen No. 8745	<b>409-012</b> 15532	<b>409-013</b> 15080	<b>409-013</b> 15080	<b>409-014</b> 41876	<b>409-016</b> 21240	<b>409-017</b> 19760
<b>TOP THRUST</b>	<b>Logan Part No.</b> Q34011 Bowen No. 8749	<b>Q34012</b> 15541	<b>Q39015</b> 15083	<b>Q45015</b> 15116	<b>Q34014</b> 41896	...	<b>Q39019</b> 19776
<b>SLIP</b>	<b>Logan Part No.</b> Q40013 Bowen No. 15408 No. Req'd 3	<b>Q40014</b> 15551 3	<b>Q40015</b> 15088 3	<b>Q40016</b> 15079 3	<b>Q40017</b> 41894 3	<b>Q40018</b> 21672 3	<b>Q40019</b> 19777 3
<b>WIPER BLOCK</b>	<b>Logan Part No.</b> Q41013 Bowen No. 15407 No. Req'd 3	<b>Q41014</b> 15554 3	<b>Q41015</b> 15101 3	<b>Q41016</b> 15078 3	<b>Q41017</b> 41893 3	<b>Q41018</b> 21671 3	<b>Q41019</b> 19775 3
<b>DRAG SPRING</b>	<b>Logan Part No.</b> Q42010 Bowen No. 8249 No. Req'd 3	<b>Q42011</b> 15109 3	<b>Q42011</b> 15109 3	<b>Q42012</b> 15129 3	...	...	...
<b>BOTTOM NUT</b>	<b>Logan Part No.</b> Q43014 Bowen No. 15405	<b>Q43017</b> 15552	<b>Q43015</b> 15268	<b>Q43016</b> 15077	<b>Q43018</b> 41895	...	...
<b>KNIFE BLOCK</b>	<b>Logan Part No.</b> ... Bowen No. ... No. Req'd ...	...	...	...	...	...	...
<b>TOP THRUST CUT COUPLING</b>	<b>Logan Part No.</b> ... Bowen No. ...	<b>Q45014</b> 15549	<b>Q45015</b> 15116	...	...	...	...
<b>KNIFE</b>	<b>Logan Part No.</b> Q46013 Bowen No. 15406	...	...	...	<b>Q46018</b> 21673	...	...

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**Notes:**

- (1) Slip number Q15009 is for 5" 15-21# Csg, for 5" 11.5-13# Csg use Slip number Q40009.
- (2) Where both Wiper Block and Drag Spring parts are shown, the cutter can be ordered with either.  
If not specified, Wiper Block parts will be furnished. (Note: Assemblies are priced differently.)

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size of pipe to cut
- (3) Whether or not Bottom Nut is to be fitted for collar finder
- (4) Knives with carbide tips available upon request

**Recommended Spare Parts:**

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) 6 sets of Knives              | (8) 1 set of Wiper Block Screws   |
| (2) 2 sets of Knife Pins          | (9) 1 set of Grip Jaws            |
| (3) 6 sets of Knife Springs       | (10) 1 set of Grip Jaw Springs    |
| (4) 2 sets of Knife Spring Screws | (11) 1 Wickered Sleeve            |
| (5) 1 set of Slips                | (12) 1 set of Drag Springs        |
| (6) 1 set of Wiper Blocks         | (13) 1 set of Drag Springs Screws |
| (7) 1 set of Wiper Block Springs  |                                   |

## INTERNAL PRESSURE PIPE CUTTERS

### Overview

The Logan Internal Pressure Pipe Cutter utilizes pump pressure to actuate three carbide-coated knives to cut single and multiple strings of pipe from 4 inches O.D. to 36-inches O.D. Each different size cutter can be dressed with different lengths of knives to cut different sizes of pipe. Pump pressure is preset by a simple adjustment so the knives will extend at the exact desired diameter. Flow restriction across an orifice feeds

a piston that forces the knives out. When the knives reach a pre-set diameter, the operator will see a sudden pressure drop that indicates that the pipe has been cut.

### Construction

The Logan Internal Pressure Pipe Cutter consists of a body, multiple knives with knife pins and retainer screws, a piston with a pressure relief valve system consisting of a valve stem,

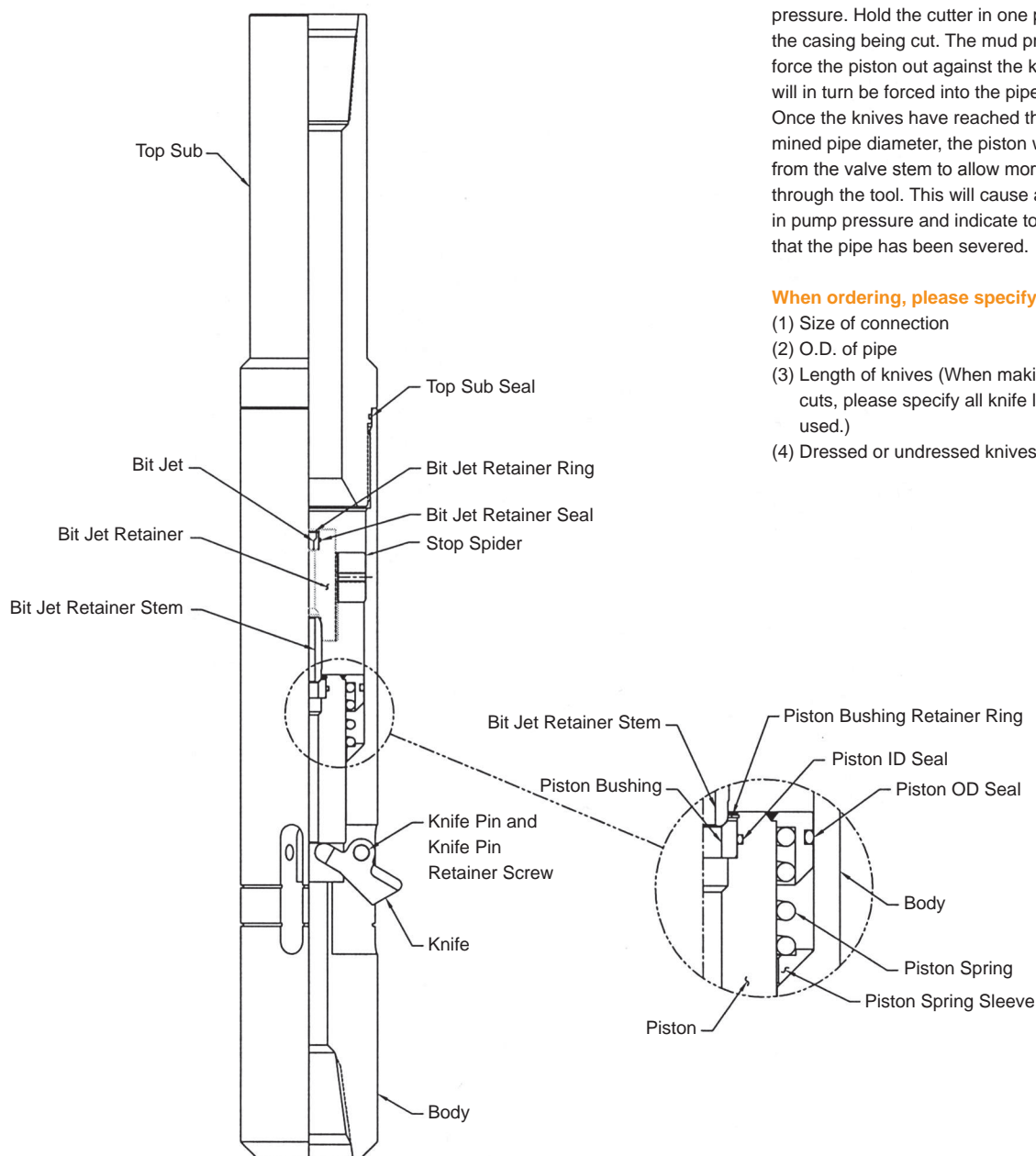
flow bushing, flow bean retainer, stop spider, flow bean, and set screws. All component parts are manufactured from specially selected alloys.

### Operation

The Logan Internal Pressure Pipe Cutter is run on tubing or drill pipe with the knives wired so that they stay in their grooves until the desired cutting depth is reached. Stabilization should be run above the cutter. Begin rotation of the drill string at approximately 35 to 50 rpm. Engage the mud pumps at about 900 psi pump pressure. Hold the cutter in one position inside the casing being cut. The mud pressure will force the piston out against the knives, which will in turn be forced into the pipe being cut. Once the knives have reached the predetermined pipe diameter, the piston will separate from the valve stem to allow more mud to flow through the tool. This will cause a rapid drop in pump pressure and indicate to the operator that the pipe has been severed.

### When ordering, please specify:

- (1) Size of connection
- (2) O.D. of pipe
- (3) Length of knives (When making multiple cuts, please specify all knife lengths to be used.)
- (4) Dressed or undressed knives when ordering



# LOGAN GENERAL CATALOG

OIL TOOLS

## INTERNAL PRESSURE PIPE CUTTERS

<b>PIPE SIZE TO CUT</b>		4	4-1/2 to 6-1/8	6-5/8 to 7-5/8	8-5/8 to 11-3/4	9-5/8 to 36	10-3/4 to 36	13-3/8 to 36
<b>CUTTER O.D.</b>		3-1/4	3-5/8	5-9/16	7-3/8	8-1/4	9-1/2	11-3/4
<b>CONNECTION SIZE (BOX UP)</b>		2-3/8 Reg	2-3/8 IF	3-1/2 IF	Blank	Blank	Blank	Blank
<b>CONNECTION SIZE (BOX DOWN)</b>		2-3/8 Reg	2-3/8 Reg	3-1/2 Reg	Blank	Blank	Blank	Blank
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>412-325</b>	<b>412-363</b>	<b>412-556</b>	<b>412-738</b>	<b>412-825</b>	<b>412-950</b>	<b>412-1175</b>
	Bowen No.	150444	147483	147489	150959	147495	147343	147369
<b>BODY</b>	<b>Logan Part No.</b>	<b>R1000</b>	<b>R1001</b>	<b>R1002</b>	<b>R1003</b>	<b>R1004</b>	<b>R1005</b>	<b>R1006</b>
	Bowen No.	150445	147484	147490	151022	147496	147344	147370
<b>KNIFE (UNDRESSED)</b>	<b>Logan Part No.</b>	<b>R2000</b>	<b>R2001</b>	<b>R2002</b>	<b>R2003</b>	<b>R2004</b>	<b>R2005</b>	<b>R2013</b>
	Bowen No.	150446	80357	80717	151023	147008	147357	147358
	No. Req'd	3	3	3	3	3	3	3
<b>KNIFE PIN</b>	<b>Logan Part No.</b>	<b>R3000</b>	<b>R3000</b>	<b>R3002</b>	<b>R3003</b>	<b>R3004</b>	<b>R3005</b>	<b>R3005</b>
	Bowen No.	80359	80359	80719	151024	147009	147371	147371
	No. Req'd	3	3	3	3	3	3	3
<b>KNIFE PIN RETAINER SCREW</b>	<b>Logan Part No.</b>	<b>AK9004</b>	<b>AK9004</b>	<b>R4002</b>	<b>R4003</b>	<b>R4003</b>	<b>R4004</b>	<b>R4004</b>
	Bowen No.	23508	23508	13847	148526	148526	148256	148256
	No. Req'd	3	3	3	3	3	3	3
<b>SPRING SLEEVE</b>	<b>Logan Part No.</b>	...	<b>R5001</b>	<b>R5002</b>	...	<b>R5003</b>	...	...
	Bowen No.	...	147487	147493	...	147499	...	...
<b>SPRING</b>	<b>Logan Part No.</b>	<b>R6000</b>	<b>R6001</b>	<b>R6002</b>	<b>R6003</b>	<b>R6003</b>	<b>R6004</b>	<b>R6004</b>
	Bowen No.	150449	147488	147494	147500	147500	147384	147384
<b>PISTON</b>	<b>Logan Part No.</b>	<b>R7000</b>	<b>R7001</b>	<b>R7002</b>	<b>R7003</b>	<b>R7004</b>	<b>R7005</b>	<b>R7005</b>
	Bowen No.	150450	147485	147491	151025	147497	147373	147373
<b>PISTON O.D. SEAL</b>	<b>Logan Part No.</b>	<b>568-330</b>	<b>568-333</b>	<b>568-346</b>	<b>R8003</b>	<b>R8004</b>	<b>R8005</b>	<b>R8005</b>
	Bowen No.	27-33	27-36	27-49	151026	147012	147374	147374
<b>PISTON I.D. SEAL</b>	<b>Logan Part No.</b>	<b>568-220</b>	<b>568-220</b>	<b>568-220</b>	<b>568-228</b>	<b>568-331</b>	<b>568-331</b>	<b>568-331</b>
	Bowen No.	27-25	27-25	27-25	568228	27-34	27-34	27-34
<b>PISTON BUSHING</b>	<b>Logan Part No.</b>	<b>R10000</b>	<b>R10000</b>	<b>R10000</b>	<b>R10002</b>	<b>R10002</b>	<b>R10002</b>	<b>R10002</b>
	Bowen No.	80356	80356	80356	147013	147013	147013	147013
<b>PISTON BUSHING RETAINER RING</b>	<b>Logan Part No.</b>	<b>R11000</b>	<b>R11000</b>	<b>R11000</b>	<b>R11001</b>	<b>R11001</b>	<b>R11001</b>	<b>R11001</b>
	Bowen No.	21116	21116	21116	147014	147014	147014	147014
<b>BIT JET RETAINER</b>	<b>Logan Part No.</b>	<b>R12000</b>	<b>R12000</b>	<b>R12001</b>	<b>R12002</b>	<b>R12002</b>	<b>R12003</b>	<b>R12003</b>
	Bowen No.	80352	80352	80714	147015	147015	147377	147377

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Special Note:

(1) Optional bullnose nut available upon request.

When ordering, please specify:

- (1) Size of connection
- (2) O.D. of pipe
- (3) Length of knives (When making multiple cuts, please specify all knife lengths to be used.)
- (4) Dressed or undressed knives when ordering



# LOGAN GENERAL CATALOG

OIL TOOLS

## INTERNAL PRESSURE PIPE CUTTERS

PIPE SIZE TO CUT	4	4-1/2 to 6-1/8	6-5/8 to 7-5/8	8-5/8 to 11-3/4	9-5/8 to 36	10-3/4 to 36	13-3/8 to 36
CUTTER O.D.	3-1/4	3-5/8	5-9/16	7-3/8	8-1/4	9-1/2	11-3/4
CONNECTION SIZE (BOX UP)	2-3/8 Reg	2-3/8 IF	3-1/2 IF	Blank	Blank	Blank	Blank
CONNECTION SIZE (BOX DOWN)	2-3/8 Reg	2-3/8 Reg	3-1/2 Reg	Blank	Blank	Blank	Blank
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 412-325	412-363	412-556	412-738	412-825	412-950	412-1175
	Bowen No.	150444	147483	147489	150959	147495	147343
<b>BIT JET RETAINER SEAL</b>	<b>Logan Part No.</b> 568-117	568-117	568-117	568-219	568-219	568-219	568-219
	Bowen No.	568117	568117	568117	27-24	27-24	27-24
<b>BIT JET RETAINER STEM</b>	<b>Logan Part No.</b> R16000	R16000	R16000	R16001	R16001	R16001	R16001
	Bowen No.	80354	80354	80354	147017	147017	147017
<b>STOP SPIDER</b>	<b>Logan Part No.</b> R17000	R17001	R17002	R17003	R17004	R17005	R17006
	Bowen No.	150451	80353	80715	151027	145168	147354
<b>STOP SPIDER SET SCREW</b>	<b>Logan Part No.</b> R18000	R18001	R18002	AX10002	AX10002	AX10002	R18004
	Bowen No.	23705	23706	23709	145165	145165	145165
	No. Req'd	3	3	3	3	3	3
<b>BIT JET</b>	<b>Logan Part No.</b> R14000	R14001	R14001	R14002	R14002	R14002	R14002
	Bowen No.	150682	80453	80453	147016	147016	147016
<b>BIT JET RETAINER RING</b>	<b>Logan Part No.</b> R15000	R15000	R15000	R15002	R15002	R15002	R15002
	Bowen No.	54131	54131	54131	33788	33788	33788
<b>TOP SUB</b>	<b>Logan Part No.</b> R19000	R19001	R19002	R19003	R19004	R19005	R19006
	Bowen No.	150452	80351	80713	151028	147018	147356
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b> 568-231	568-234	568-249	568-359	568-438	568-440	568-447
	Bowen No.	30-9	30-12	30-27	568359	27-65	568440
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b> ...	...	...	...	568-437	...	...
	Bowen No.	...	...	...	27-64	...	...

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Special Note:

(1) Optional bullnose nut available upon request.

When ordering, please specify:

- (1) Size of connection
- (2) O.D. of pipe
- (3) Length of knives (When making multiple cuts, please specify all knife lengths to be used.)
- (4) Dressed or undressed knives when ordering

## INTERNAL PRESSURE PIPE CUTTERS

### CENTRALIZING TOP SUBS

5" O.D.	Logan Part No.	...	R2100	...	...	...	...	...
	Bowen No.	...	80566	...	...	...	...	...
5-1/2" O.D.	Logan Part No.	...	R2101	...	...	...	...	...
	Bowen No.	...	80567	...	...	...	...	...
7" O.D.	Logan Part No.	...	...	R2102	...	...	...	...
	Bowen No.	...	...	80720	...	...	...	...
7-5/8" O.D.	Logan Part No.	...	...	R2103	...	...	...	...
	Bowen No.	...	...	80721	...	...	...	...

### KNIVES (UNDRESSED)

7-5/8" to 9-5/8" O.D.	Logan Part No.	...	...	R2006	...	...	...	...
	Bowen No.	...	...	81896	...	...	...	...
10-3/4" O.D.	Logan Part No.	...	...	...	R2007	R2008	...	...
	Bowen No.	...	...	...	151029	147021	...	...
11-3/4" to 13-3/8" O.D.	Logan Part No.	...	...	...	R2007	...	R2010	...
	Bowen No.	...	...	...	151029	...	147358	...
13-3/8" to 16" O.D.	Logan Part No.	...	...	...	...	R2011	R2014	R2013
	Bowen No.	...	...	...	...	147022	147359	147358
16" to 18-5/8" O.D.	Logan Part No.	...	...	...	...	...	...	R2014
	Bowen No.	...	...	...	...	...	...	147359
18" to 20" O.D.	Logan Part No.	...	...	...	...	R2015	R2017	...
	Bowen No.	...	...	...	...	147023	147360	...
18-5/8 to 24" O.D.	Logan Part No.	...	...	...	...	...	...	R2017
	Bowen No.	...	...	...	...	...	...	147360
24" to 30" O.D.	Logan Part No.	...	...	...	...	R2018	R2020	...
	Bowen No.	...	...	...	...	147024	147361	...
26" to 30" O.D.	Logan Part No.	...	...	...	...	...	...	R2020
	Bowen No.	...	...	...	...	...	...	147361
30" to 34" O.D.	Logan Part No.	...	...	...	...	R2021	...	...
	Bowen No.	...	...	...	...	147025	...	...
34" to 36" O.D.	Logan Part No.	...	...	...	...	R2022	R2024	R2024
	Bowen No.	...	...	...	...	147026	147362	147362

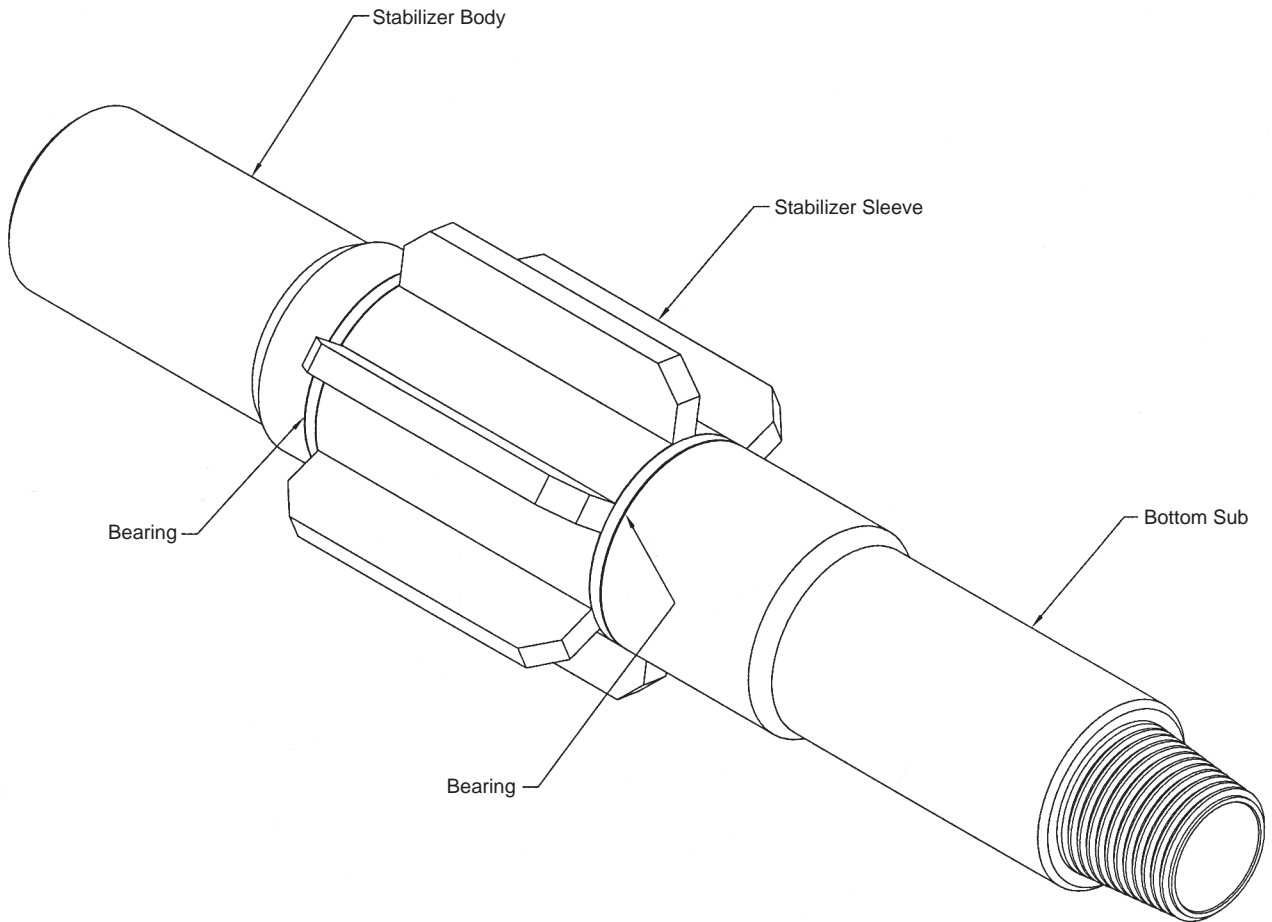
Logan Oil Tools reserves the right to change or discontinue designs without notice.

**Special Note:**

(1) Optional bullnose nut available upon request.

**When ordering, please specify:**

- (1) Size of connection
- (2) O.D. of pipe
- (3) Length of knives (When making multiple cuts, please specify all knife lengths to be used.)
- (4) Dressed or undressed knives when ordering



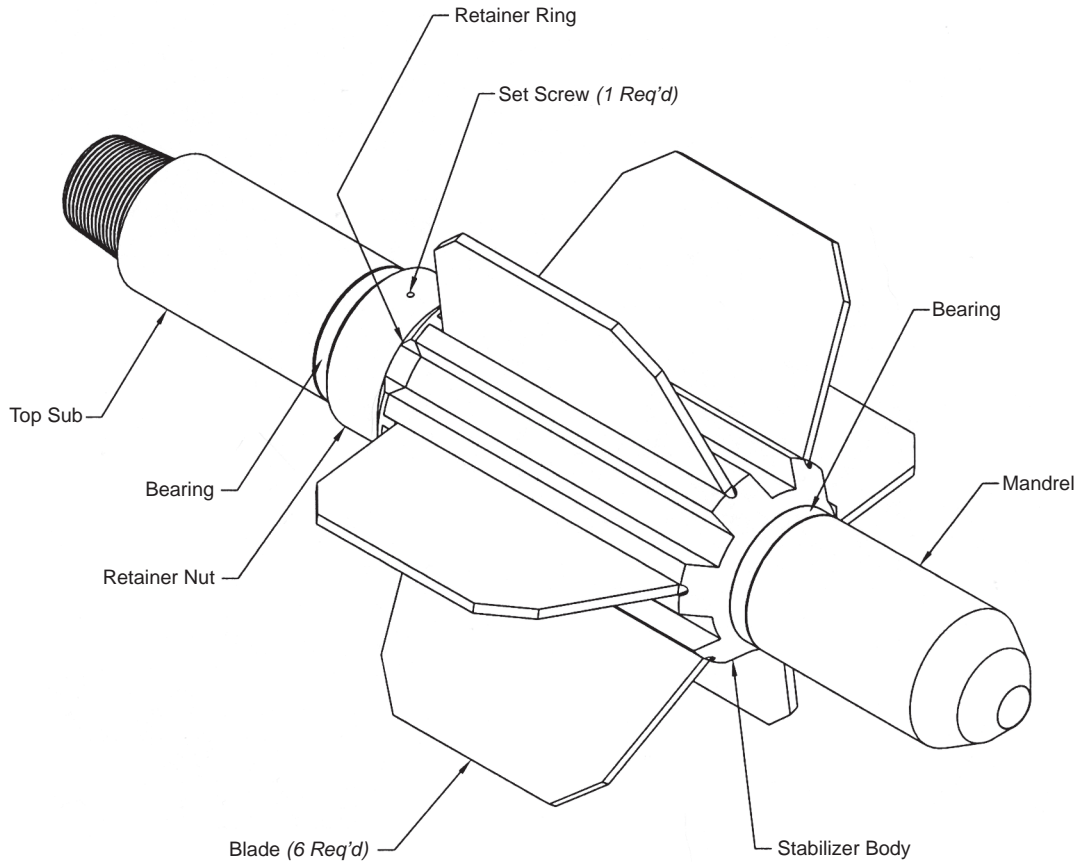
### FIXED BLADE NON-ROTATING STABILIZERS

TOOL JOINT CONNECTION	2-3/8 API Reg	3-1/2 API IF	4-1/2 API IF	6-5/8 API Reg			
OUTSIDE DIAMETER — INCHES	3-1/8	4-3/4	6-1/2	8			
INSIDE DIAMETER — INCHES	1	2-11/16	3-3/4	3-1/2			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 903-313</b>	<b>903-475</b>	<b>903-650</b>	<b>903-800</b>			

### COMPONENTS

	Logan Part No.	BW100	BW101	BW102	BW103			
<b>BODY</b>								
<b>BEARING</b>	Logan Part No.	BW200	BW201	BW202	BW203			
	No. Req'd	2	2	2	2			
<b>STABILIZER</b>	Logan Part No.	BW300	BW301	BW302	BW303			
<b>BOTTOM SUB</b>	Logan Part No.	BW400	BW401	BW402	BW403			

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### VARIABLE BLADE NON-ROTATING STABILIZERS

TOOL JOINT CONNECTION	2-3/8 API Reg	3-1/2 API IF	4-1/2 API IF	6-5/8 API Reg			
OUTSIDE DIAMETER — INCHES	3-1/8	4-3/4	6-5/8	8			
INSIDE DIAMETER — INCHES	**	**	2	**			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No. 904-313</b>	<b>904-475</b>	<b>904-663</b>	<b>904-800</b>			

### COMPONENTS

<b>TOP SUB</b>	Logan Part No.	NRS100	NRS101	NRS102	NRS103			
<b>MANDREL</b>	Logan Part No.	NRS200	NRS201	NRS202	NRS203			
<b>STABILIZER BODY</b>	Logan Part No.	NRS300	NRS301	NRS302	NRS303			
<b>STABILIZER BLADE</b>	Logan Part No.	NRS400	NRS401	NRS402	NRS403			
<b>BEARING</b>	Logan Part No.	NRS500	NRS501	NRS502	NRS503			
	No. Req'd	2	2	2	2			
<b>RETAINER RING</b>	Logan Part No.	NRS600	NRS601	NRS602	NRS603			
<b>RETAINER RING NUT</b>	Logan Part No.	NRS700	NRS701	NRS702	NRS703			
<b>SET SCREW</b>	Logan Part No.	NRS800	NRS801	AX10002	NRS803			

\*\* To be advised by engineering

Logan Oil Tools reserves the right to change or discontinue designs without notice.

## ROTARY SHOES

### Overview

Logan Rotary Shoes are designed in various styles and sizes to service the many different conditions encountered in fishing and washover operations. Hard-faced dressing material is used to form the cutting or milling surfaces on the Rotary Shoes that are subjected to high abrasion and severe impact.

### Construction

Logan Rotary Shoes are dressed with a special hard-face compound made of crushed sintered tungsten carbide particles and a resilient matrix of nickel-silver alloy. Tungsten carbide particles have a hardness nearly equal to that of diamonds. They retain their hardness at high temperatures and are not affected by the heat generated from the cutting operation. The tough nickel-silver alloy matrix holds the tungsten carbide particles in place and cushions the particles against strong impact.

### Styles and Usage

#### Type A

Cuts on the inside diameter and bottom. Does not cut on the outside diameter. Used to cut metal on fish without cutting the casing.

#### Type B

Cuts on the outside diameter and bottom. Does not cut on the inside diameter. Used to wash over a fish and cut metal or formation in an open hole.

#### Type C

Cuts on the inside and outside diameters and bottom. Used to wash over and cut metal, formation, or cement.

#### Type D

Used where clearances are limited. Cuts on the inside diameter and bottom. Does not cut on the outside diameter. Cuts metal on the fish without cutting the casing.

#### Type E

Used where clearances are limited. Cuts on the outside diameter and bottom. Does not cut on the inside diameter. Used to wash over a fish or cut metal, formation, or cement in an open hole.

#### Type F

Used to size and dress the top of a fish inside the casing. Makes a tapered cut on the inside diameter and cuts on the bottom. Does not cut on the outside diameter.

#### Type G

Cuts on the inside and outside diameters and on the bottom. Used to wash over a fish or cut metal, formation, or cement in an open hole where inside clearances are limited.

#### Type H

Cuts on the inside and outside diameters and on the bottom. Used to wash over a fish or cut metal, formation, or cement in an open hole where outside clearances are limited.

#### Type I

Cuts on the bottom only. Does not cut on the inside or outside diameters. Saw-tooth design allows maximum circulation. Used only for washing over and cutting formation.

#### Type J

Cuts on the outside diameter and bottom. Does not cut on the inside diameter. Saw-tooth design allows maximum circulation. Used only for washing over and cutting formation.

#### Type K

Cuts on the bottom only. Does not cut on the inside or outside diameters. Used only for washing over and cutting formation.

### When ordering, please specify:

- (1) Type of shoe
- (2) Size, type, and weight of connection
- (3) O.D. and I.D. of shoe



Type A



Type B



Type C



Type D



Type E



Type F



Type G



Type H



Type I



Type J



Type K

## JUNK MILLS

### Overview

Logan Junk Mills are hard-faced with sintered tungsten carbide particles that mill away stuck fish that can not be retrieved with conventional fishing methods. These tools are highly resistant to impact and their super rates of penetration result in fewer round trips. Their maximum useful life is enhanced by their self-sharpening feature.

Milling tool selection should be based on the ratio of milling edges to the material being milled, the replacement of milling edges as wear occurs, and the amount of circulation required to remove cuttings.

Logan Oil Tools supplies many types of milling tools, each well suited for a specific operation, including:

- Bladed Junk Mills
- Blunt Nose Tapered Mills
- Cement Junk Mills
- Concave "Cone Buster" Junk Mills
- Econo Mills
- Flat Bottom Junk Mills
- Long Nose Tapered Mills
- Pilot Mills
- Round Nose Mills
- Skirted Junk Mills
- String Mills
- Super Junk Mills
- Tapered Mills
- Watermelon Mills

## CASING ROLLERS

### Overview

The Logan Casing Roller repairs and restores dented, collapsed, or buckled tubing or casing of any size and weight to its original inside diameter and roundness.

### Construction

The Logan Casing Roller is composed of a mandrel with eccentric roll surfaces, three heavy-duty, precision ground rollers, a nose cone, and rugged ball bearings. Special wear resistant alloy steels are used in the manufacture of the tool. The rollers are hardened to improve their wear resistance. The rollers are secured to the mandrel by the nose cone that is retained by rugged ball bearings. Circulation capabilities are provided by a through bore.

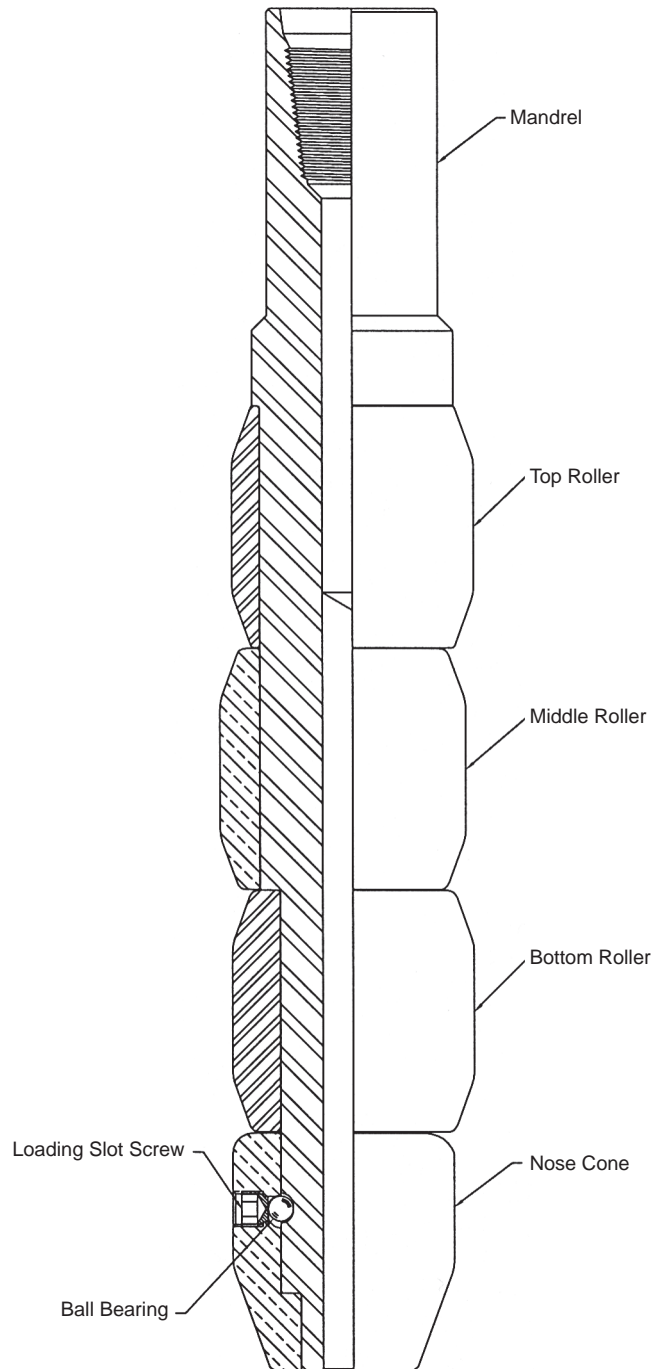
Logan Casing Rollers can be redressed with larger size rollers to restore larger size casing. The casing roller can be used in right-hand or left-hand rotation and can be ordered with either right- or left-hand connections. Special nose cones can be ordered with a tool joint connection so that lower stinger assemblies can be run if desired.

### Operation

Good fluid circulation and slow rotary speeds make the operation of the Logan Casing Roller a simple, effective process. The casing roller is made up to the bottom of the drill string. Slowly lower and rotate the string until the damaged section is reached. Begin circulation and continue to slowly lower the string while increasing rotation speed. The tapered nose cone will guide the tool and allow it to enter and open the collapsed section. Adequate downward pressure must be maintained. Too little pressure will cause wear on the tool without restoring the casing. If string weight is insufficient for downward progress, add drill collars.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Casing O.D. and weight
- (3) Top connection, if other than standard



# LOGAN GENERAL CATALOG

OIL TOOLS

## CASING ROLLERS

<b>CASING SIZE TO ROLL</b>		2-3/8 Tbg	2-7/8 Tbg	3-1/2 Tbg	4 3-1/2 LP 4 Tbg	4-1/2 4-3/4 5	5-1/2 5-3/4 6	6-5/8 7
<b>TOP CONNECTION</b>		...	1-13/16 WFJ	API 1-1/4 Reg	API 2-3/8 Reg	API 2-3/8 Reg	API 2-7/8 Reg	API 3-1/2 Reg
<b>CIRCULATION HOLE</b>		3/8	3/8	5/16	1/4	1/2	5/8	1
<b>ROLLER LENGTH</b>		3	3	3	4	4	5	6
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>502-238</b>	<b>502-288</b>	<b>502-350</b>	<b>502-400</b>	<b>502-450</b>	<b>502-550</b>	<b>502-663</b>
	Bowen No.	28802	26395	29046	28963	20660	20910	20920
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>W1000</b>	<b>W1001</b>	<b>W1002</b>	<b>W1003</b>	<b>W1004</b>	<b>W1005</b>	<b>W1006</b>
	Bowen No.	28803	26396	29501	28964	20661	20911	20921
<b>NOSE CONE</b>	<b>Logan Part No.</b>	<b>W2000</b>	<b>W2001</b>	<b>W2002</b>	<b>W2003</b>	<b>W2004</b>	<b>W2005</b>	<b>W2006</b>
	Bowen No.	28807	26400	29050	28965	20662	20912	20922
<b>BOTTOM ROLLER</b>	<b>Logan Part No.</b>	<b>W3000</b>	<b>W3001</b>	<b>W3002</b>	<b>W3003</b>	<b>W3004</b>	<b>W3005</b>	<b>W3006</b>
	Bowen No.	28806	26399	29049	28966	20663	20913	20923
<b>MIDDLE ROLLER</b>	<b>Logan Part No.</b>	<b>W4000</b>	<b>W4001</b>	<b>W4002</b>	<b>W4003</b>	<b>W4004</b>	<b>W4005</b>	<b>W4006</b>
	Bowen No.	28805	26398	29048	28967	20664	20914	20924
<b>TOP ROLLER</b>	<b>Logan Part No.</b>	<b>W5000</b>	<b>W5001</b>	<b>W5002</b>	<b>W5003</b>	<b>W5004</b>	<b>W5005</b>	<b>W5006</b>
	Bowen No.	28804	26397	29047	28968	20665	20915	20925
<b>BALL BEARINGS</b>	<b>Logan Part No.</b>	<b>W6000</b>	<b>W6000</b>	<b>W6002</b>	<b>W6003</b>	<b>W6003</b>	<b>W6003</b>	<b>W6006</b>
	Bowen No.	17294	17294	27940	20666	20666	20666	20926
	No. Req'd	9	13	9	7	9	13	15
<b>SET SCREW (LOADING SLOT)</b>	<b>Logan Part No.</b>	<b>W7000</b>	<b>W7001</b>	<b>W7002</b>	<b>W7005</b>	<b>W7005</b>	<b>W7005</b>	<b>W7006</b>

<b>CASING SIZE TO ROLL</b>		7-5/8 8-5/8	9 9-5/8 10	10-3/4 11-3/4 12	13 13-3/8	16 18-5/8		
<b>TOP CONNECTION</b>		API 4-1/2 Reg	API 4-1/2 Reg	API 6-5/8 Reg	API 6-5/8 Reg	API 6-5/8 Reg		
<b>CIRCULATION HOLE</b>		1-1/4	1-1/2	1-3/4	2	2		
<b>ROLLER LENGTH</b>		7	8	9	10	11		
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>502-763</b>	<b>502-900</b>	<b>502-1075</b>	<b>502-1300</b>	<b>502-1600</b>		
	Bowen No.	20930	20940	20950	20960	20970		
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>W1007</b>	<b>W1008</b>	<b>W1009</b>	<b>W1010</b>	<b>W1011</b>		
	Bowen No.	20931	20941	20951	20961	20971		
<b>NOSE CONE</b>	<b>Logan Part No.</b>	<b>W2007</b>	<b>W2008</b>	<b>W2009</b>	<b>W2010</b>	<b>W2011</b>		
	Bowen No.	20932	20942	20952	20962	20972		
<b>BOTTOM ROLLER</b>	<b>Logan Part No.</b>	<b>W3007</b>	<b>W3008</b>	<b>W3009</b>	<b>W3010</b>	<b>W3011</b>		
	Bowen No.	20933	20943	20953	20963	20973		
<b>MIDDLE ROLLER</b>	<b>Logan Part No.</b>	<b>W4007</b>	<b>W4008</b>	<b>W4009</b>	<b>W4010</b>	<b>W4011</b>		
	Bowen No.	20934	20944	20954	20964	20974		
<b>TOP ROLLER</b>	<b>Logan Part No.</b>	<b>W5007</b>	<b>W5008</b>	<b>W5009</b>	<b>W5010</b>	<b>W5011</b>		
	Bowen No.	20935	20945	20955	20965	20975		
<b>BALL BEARINGS</b>	<b>Logan Part No.</b>	<b>W6007</b>	<b>W6007</b>	<b>W6007</b>	<b>W6010</b>	<b>W6010</b>		
	Bowen No.	20936	20936	20936	20966	20966		
	No. Req'd	12	16	24	21	28		
<b>SET SCREW (LOADING SLOT)</b>	<b>Logan Part No.</b>	<b>W7007</b>	<b>W7007</b>	<b>W7009</b>	<b>W7010</b>	<b>W7011</b>		
	Bowen No.							

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**CASING ROLLER RANGE SHEET**

CASING DATA		UPPER ROLLER			MIDDLE ROLLER			
SIZE	CASING WEIGHT	PART NO.	OUTSIDE DIA.	SEQ. NO.	PART NO.	OUTSIDE DIA.	SEQ. NO.	
2-3/8	4.6	W5000 28804	1.750	001	W4000 28805	1.938	001	
2-7/8	6.4	W5001 26397	2.1871	001	W4001 26398	2.360	001	
3-1/2	7.7	W5002 29047	2.8121	001	W4002 29048	2.674	001	
4	9.5	W5003 28968	3.219	001	W4003 28967	3.281	001	
4-1/2	9.5	W5004 20665	3.688	001	W4004 20664	3.875	002	
	11.6					3.688	001	
	13.6					3.526	003	
4-3/4	15.8		4.250	002		3.875	001	
5	11.5					4.250	008	
	13.0					4.114	005	
	15.0		4.192	006				
	17.7		3.976	007				
	18.0		3.965	004				
	21.0	3.688	001	4.000	009			
5-1/2	13.0	W5005 20915	4.662	005	W4005 20914	4.554	004	
	14.0					4.738	005	
	15.0		4.609	001		4.666	003	
	15.5					4.802	001	
	17.0					4.574	002	
	20.0					4.358	006	
5-3/4	23.0		4.359	002		5.082	007	
	14.0		4.875	004		4.894	008	
	17.0		4.662	005		4.694	009	
	19.5					5.300	010	
6	22.5		5.125	006		5.250	011	
	15.0					5.100	012	
	16.0	4.956			013			
	18.0	4.982			014			
	20.0	4.875			004	5.910	001	
23.0	5.745		002					
6-5/8	17.0	W5006 20925	5.734	007	W4006 20924	5.609	003	
	20.0		5.609	002		5.478	004	
	22.0					5.442	005	
	24.0					5.350	006	
	26.0					5.547	007	
	7		26.0	5.359		003	5.375	008
			28.0				6.202	009
			29.0	6.250		004	6.038	010
32.0			6.164				011	
17.0			6.000	001		6.108	012	
20.0						6.048	013	
22.0						6.094	014	
23.0						5.970	015	
7	24.0		5.830	006		5.910	001	
	26.0					5.854	016	
	28.0		5.734	007		5.830	017	
	29.0	5.776			018			
	30.0	5.609	002	5.609	003			
	32.0			5.442	005			
	35.0							
	38.0							
40.0								

## CASING ROLLER RANGE SHEET

CASING DATA		LOWER ROLLER			NOSE CONE		
SIZE	CASING WEIGHT	PART NO.	OUTSIDE DIA.	SEQ. NO.	PART NO.	OUTSIDE DIA.	SEQ. NO.
2-3/8	4.6	W3000 28806	1.750	001	W2000 28807	1.562	001
2-7/8	6.4	W3001 26399	2.187	001	W2001 26400	1.875	001
3-1/2	7.7	W3002 29049	2.812	001	W2002 29050	2.437	001
4	9.5	W3003 28966	3.219	001	W2003 28965	2.875	001
4-1/2	9.5	W3004 20663	3.688	001	W2004 20662	3.125	001
	11.6						
	13.6						
4-3/4	15.8		4.250	002			
5	11.5						
	13.0						
	15.0		4.000	004			
	17.7						
	18.0						
21.0	3.688		001				
5-1/2	13.0	W3005 20913	4.662	005	W2005 20912	3.750	001
	14.0						
	15.0						
	15.5		4.609	001			
	17.0						
	20.0						
23.0	4.359		002				
5-3/4	14.0		4.875	003			
	17.0						
	19.5					4.662	
22.5							
6	15.0	5.125	004				
	16.0						
	18.0						
	20.0			4.875	003		
23.0							
6-5/8	17.0	W3006 20923	5.734	005	W2006 20922	5.000	002
	20.0						
	22.0						
	24.0		5.609	002			
	26.0						
	26.0						
	28.0						
	29.0		5.359	003			
32.0							
7	17.0		6.250	004			
	20.0						
	22.0						
	23.0	6.000			001		
	24.0						
	26.0						
	28.0	5.830			006		
	29.0						
	30.0						
	32.0	5.734			005		
	35.0						
	38.0	5.609			002		
40.0							
					5.000	002	

# LOGAN GENERAL CATALOG

OIL TOOLS

CASING DATA		UPPER ROLLER			MIDDLE ROLLER						
SIZE	CASING WEIGHT	PART NO.	OUTSIDE DIA.	SEQ. NO.	PART NO.	OUTSIDE DIA.	SEQ. NO.				
7-5/8	20.0	W5007 20935	6.500	001	W4007 20934	6.875	001				
	24.0					6.676	002				
	26.4					6.562	003				
	29.7					6.686	004				
	33.7					6.468	005				
39.0	6.188					006					
8-5/8	24.0		7.562	003		7.758	007				
	28.0		7.375	004		7.594	008				
	32.0					7.402	009				
	36.0					7.302	010				
	38.0					7.452	011				
	40.0					7.304	012				
	43.0					7.250	013				
	44.5					7.024	014				
49.0											
9	34.0	W5008 20945	8.000	003	W4008 20944	7.676	009				
	38.0		7.718	002		7.768	011				
	40.0		7.343	001		7.676	009				
	45.0					7.812	010				
	55.0					7.375	004				
9-5/8	29.3		8.500	004		8.720	005				
	32.3		8.250	005		8.696	006				
	36.0					8.438	007				
	40.0					8.514	008				
	43.0					8.354	001				
	47.0					8.456	003				
53.5	8.000					003	8.164	002			
10	33.0		8.812	006		9.050	012				
10-3/4	32.7		W5009 20955	9.500		001	W4009 20954	9.728	001		
	40.0	9.444			002						
	40.5	9.254			003			9.148	004		
	45.0							9.294	005		
	45.5							9.162	006		
	48.0	9.114			007						
	51.0	10.896			008						
	54.0	10.754		009							
55.5	10.594	010									
11-3/4	38.0	10.250		003	10.354	011					
	42.0				10.138	012					
	47.0				10.138	012					
	54.0				10.138	012					
	60.0				10.138	012					
12	40.0	10.750	004	10.862	013						
13	40.0	W5010 20965	11.625	002	W4010 20964	11.846	006				
	45.0					11.677	002				
	50.0					11.534	003				
	54.0					11.410	004				
13-3/8	48.0		12.000	001		12.024	005				
	54.5		11.626	002		11.812	001				
	61.0					11.625	007				
	68.0					11.812	001				
	72.0					11.677	002				
	83.0					11.320	009				
	16					55.0	W5011 20975	14.500	001	W4011 20974	14.844
65.0						14.554					002
75.0	14.344		003								
84.0	14.114		004								
18-5/8	78.0	17.000	002	17.304	005						
	87.5	17.000	002	17.104	006						
	96.6			16.904	007						

# LOGAN GENERAL CATALOG

OIL TOOLS

CASING DATA		LOWER ROLLER			NOSE CONE				
SIZE	CASING WEIGHT	PART NO.	OUTSIDE DIA.	SEQ. NO.	PART NO.	OUTSIDE DIA.	SEQ. NO.		
7-5/8	20.0	W3007 20933	6.500	001	W2007 20932	5.375	001		
	24.0								
	26.4		6.188	002		6.500	002		
	29.7								
	33.7		7.562	003		6.000	003		
39.0									
24.0									
28.0									
32.0									
36.0	7.375		004	6.000		003			
38.0									
40.0									
43.0									
44.5									
49.0	7.125	005	6.000	003					
34.0									
38.0									
40.0									
45.0									
9	55.0	W3008 20943	8.000	003	W2008 20942	6.625	001		
	29.3								
	32.3		7.718	002				8.500	004
	36.0								
	40.0		7.343	001				8.250	005
43.0									
47.0	8.000		003	8.000				003	
53.5									
9-5/8	33.0		8.812	006				8.812	006
	10								
10-3/4	32.7	W3009 20953	9.500	001	W2009 20952	8.250	001		
	40.0								
	40.5		9.250	002		10.250	003		
	45.0								
	45.5		10.250	003		10.250	003		
	48.0								
	51.0		10.750	004		10.750	004		
54.0									
55.5	10.750		004	10.750		004			
38.0									
11-3/4	42.0	10.750	004	10.750	004				
	47.0								
	54.0								
	60.0								
	12								
13	40.0	W3010 20963	11.625	002	W2010 20962	10.000	001		
	45.0								
	50.0		12.000	001				11.626	002
	54.0								
13-3/8	48.0		11.626	002				11.626	002
	54.5								
	61.0								
	68.0								
	72.0								
83.0									
85.0	14.500	001	14.500	001					
55.0									
65.0									
75.0									
84.0									
16	78.0	W3011 20973	14.500	001	W2011 20972	14.000	001		
	87.5								
	96.6								
18-5/8	78.0		17.000	002				17.000	002
	87.5								
	96.6								

## TUBING SCRAPERS

### Overview

Obstruction-free tubing is critical for the efficient operation of many downhole tools during drilling, fishing, completion, or wireline jobs. The Logan Tubing Scraper removes rust, scale, cement, mud, bullets, paraffin, perforation burrs, and other obstructions or foreign material from inside the walls of tubing. Logan Tubing Scrapers condition 2-7/8, 3-1/2, and 4-1/2 inch O.D. tubing.

### Construction

The one-piece mandrel design is rugged and easy to maintain. The splined body locks each blade into an integral part of the body to insure absolute safety and security.

Two sets of blades provide maximum cutting surface area whether the tool is run for rotary or vertical operations, or run on drill pipe or wireline. The scraper blades are designed with a long taper for passing through tubing connections with minimal chance of hang up. Each blade is constructed from high quality cast steel for excellent scraping characteristics and long-lasting durability.

### Assembly

The tubing scraper can be quickly and easily assembled and disassembled in the field.

Slide the upper blade into the mandrel, align the holes in the blade with the holes in the mandrel and install the blade retaining screws. Then slide the lower blade onto the mandrel, align the holes in the blade with those in the mandrel and install the blade retaining screws.

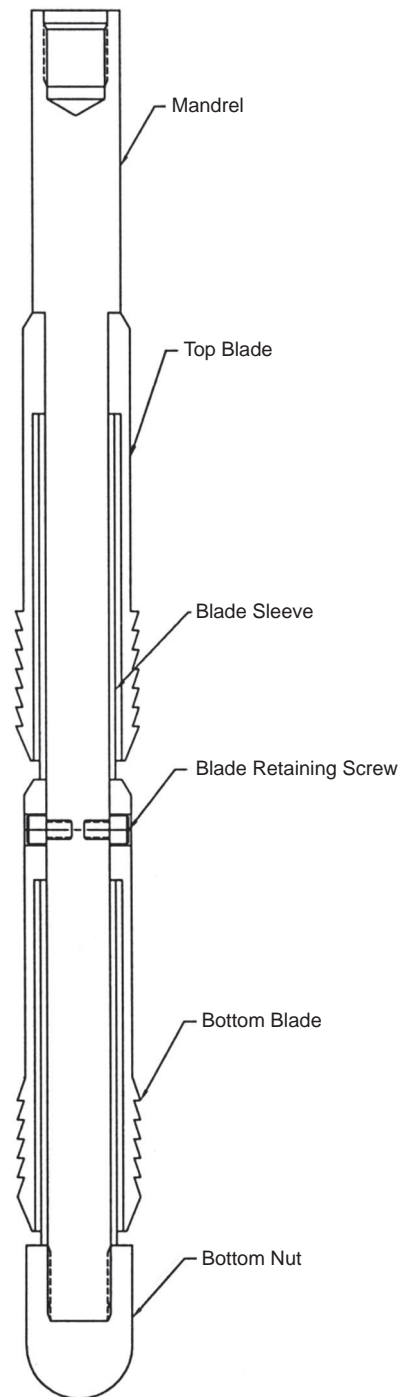
Install the bottom nut to complete the assembly.

### Operation

The Logan Tubing Scraper is normally made up to the work string. Simply run the scraper into the tubing using rotation or spudding to clean the inside of the pipe.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and weight of tubing



## TUBING SCRAPERS

SIZE TO SCRAPE (O.D.)		2-7/8 Tbg	3-1/2 Tbg	4 Tbg				
WEIGHT (LBS)		9.5 to 15.1						
CONNECTION		1-13/16 WFJ	1-1/4 API Reg	1-1/4 API Reg				
TOOL O.D.		2.10	2-1/4	2-1/4				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>508-213</b>	<b>508-225</b>	<b>508-225</b>				
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AX1006</b>	<b>AX1007</b>	<b>AX1007</b>				
<b>TOP BLADE</b>	<b>Logan Part No.</b>	<b>AX2006-A</b>	<b>AX2007-A</b>	<b>AX5007-A</b>				
<b>BOTTOM BLADE</b>	<b>Logan Part No.</b>	<b>AX2006-B</b>	<b>AX2007-B</b>	<b>AX5007-B</b>				
<b>BLADE SLEEVE</b>	<b>Logan Part No.</b>	<b>AX11000</b>	<b>AX11001</b>	<b>AX11001</b>				
	No. Req'd	2	2	2				
<b>BLADE RETAINING SCREW</b>	<b>Logan Part No.</b>	<b>AK4001</b>	<b>AK4001</b>	<b>AK4001</b>				
	No. Req'd	4	4	4				
<b>BULLNOSE NUT</b>	<b>Logan Part No.</b>	<b>AX12000</b>	<b>AX12000</b>	<b>AX12000</b>				

## OPTIONAL COMPONENTS

<b>BOTTOM ADAPTER</b>	<b>Logan Part No.</b>	<b>AX13000</b>	<b>AX13001</b>	<b>AX13001</b>				
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Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and weight of tubing

### Recommended Spare Parts:

- (1) 1 set of Blades for each size tubing

**CASING SCRAPERS**

**Overview**

Obstruction-free casing is critical for the efficient operation of many downhole tools during drilling, fishing, completion, or wireline jobs. The Logan Casing Scraper removes rust, scale, cement, mud, bullets, paraffin, perforation burrs, and other obstructions or foreign material from inside the walls of casing. Logan Casing Scrapers are available to condition pipe ranging from 4-1/2 to 13-3/8 inches O.D.

**Construction**

The one-piece mandrel design is rugged and easy to maintain. The splined body locks each blade into an integral part of the body to insure absolute safety and security.

Two sets of blades provide maximum cutting surface area whether the tool is run for rotary or vertical operations, or run on drill pipe or wireline. The scraper blades are designed with a long taper for passing through casing connections with minimal chance of hang up. Each blade is constructed from high quality cast steel for excellent scraping characteristics and long-lasting durability.

**Assembly**

The Logan Casing Scraper is easily assembled using standard shop tools. No special tools are required. The blades and springs are held in place by the retainer rings and retainer ring nuts. The upper, or pin end connection on the

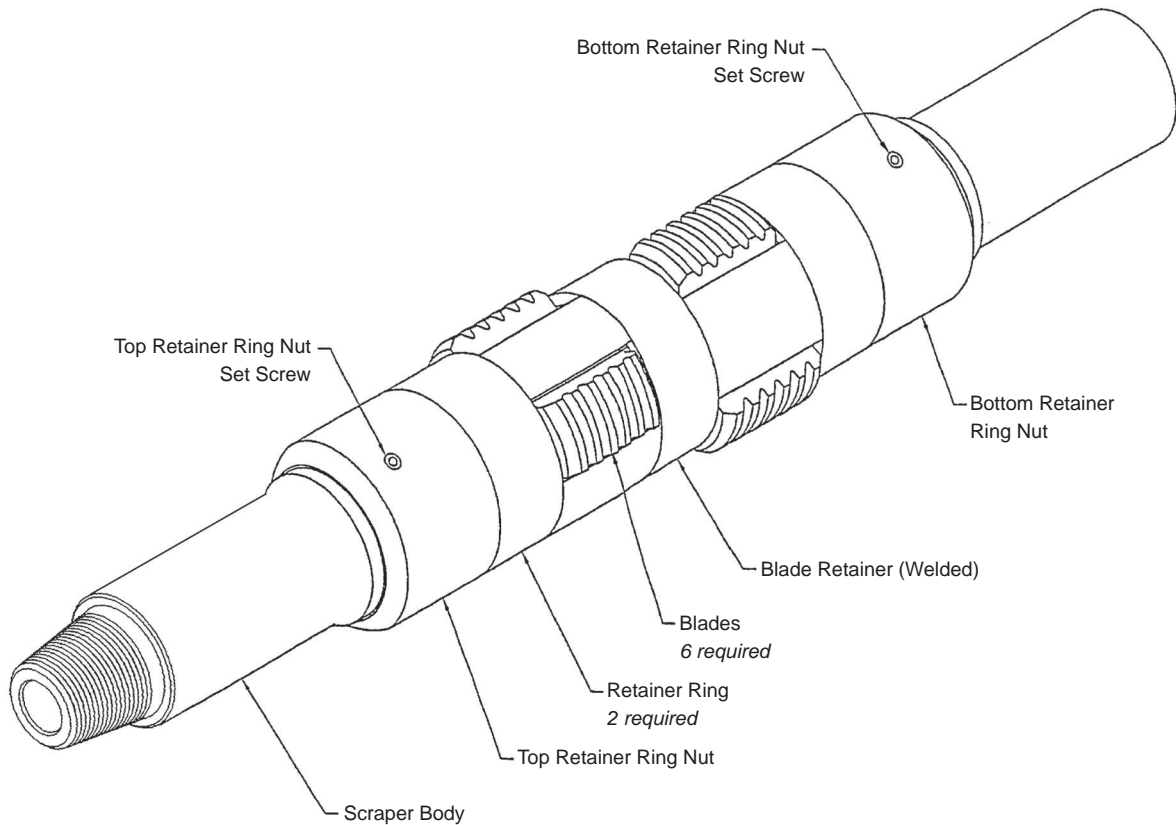
mandrel, and the retainer nut are left-hand to prevent back off downhole during right-hand rotation should the set screws loosen during operation.

**Operation**

The Logan Casing Scraper is normally made up to the work string with a drill bit attached to the bottom connection. Simply run the scraper into the casing or tubing using rotation or spudding to clean the inside of the pipe.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size and weight of casing
- (3) Size and type of connection



## CASING SCRAPERS

<b>SIZE TO SCRAPE (O.D.)</b>		4-1/2	5-1/2	7	9-5/8	10-3/4	13-3/8	
<b>WEIGHT (LBS)</b>		9.5 to 15.1 5 13.0 to 26.7	14.0 to 20.0	17.0 to 38.0	32.2 to 64.9	32.75 to 73.2	48.0 to 98.0	
<b>CONNECTION</b>		2-3/8 API Reg	2-7/8 API Reg	3-1/2 API Reg	4-1/2 API Reg	6-5/8 API Reg	6-5/8 API Reg	
<b>TOOL O.D.</b>		3-5/8	4-1/2	5-3/8	7-1/2	8-3/4	11	
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>508-361</b>	<b>508-450</b>	<b>508-538</b>	<b>508-750</b>	<b>508-875</b>	<b>508-1100</b>	
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AX800</b>	<b>AX10011</b>	<b>AX1002</b>	<b>AX1003</b>	<b>AX1004</b>	<b>AX1005</b>	
<b>BLADE</b>	<b>Logan Part No.</b>	<b>AX2000</b>	<b>AX2001</b>	<b>AX2002</b>	<b>AX2003</b>	<b>AX2004</b>	<b>AX2005</b>	
	No. Req'd	6	6	6	6	8	6	
<b>SPRING</b>	<b>Logan Part No.</b>	<b>AX802</b>	<b>AX40011</b>	<b>AX4000</b>	<b>AX4003</b>	<b>AX40013</b>	<b>AX4005</b>	
	No. Req'd	18	18	30	30	32	30	
<b>TOP RETAINER RING NUT (LEFT-HAND THREAD)</b>	<b>Logan Part No.</b>	<b>AX7000</b>	<b>AX7001</b>	<b>AX7002</b>	<b>AX7003</b>	<b>AX7004</b>	<b>AX7005</b>	
<b>BTM RETAINER RING NUT (RIGHT-HAND THREAD)</b>	<b>Logan Part No.</b>	<b>AX8000</b>	<b>AX8001</b>	<b>AX8002</b>	<b>AX8003</b>	<b>AX8004</b>	<b>AX8005</b>	
<b>RETAINER RING</b>	<b>Logan Part No.</b>	<b>AX9000</b>	<b>AX9001</b>	<b>AX9002</b>	<b>AX9003</b>	<b>AX9004</b>	<b>AX9005</b>	
	No. Req'd	2	2	2	2	2	2	
<b>SET SCREW</b>	<b>Logan Part No.</b>	<b>P12004</b>	<b>AX10001</b>	<b>AX10002</b>	<b>AX10002</b>	<b>AX10002</b>	<b>AX10004</b>	
	No. Req'd	2	2	2	2	2	2	

<b>OPTIONAL DRESS FOR SIZE (O.D.)</b>		5-1/2	5-3/4	7-5/8	...	11-3/4	...	
<b>WEIGHT (LBS)</b>		20.0 to 26.0	14.0 to 24.4	24 to 47.1	...	42 to 87.2	...	
<b>BLADE</b>	<b>Logan Part No.</b>	<b>AX2000-002</b>	<b>AX30012</b>	<b>AX3002</b>	...	<b>AX3004</b>	...	
	No. Req'd	...	6	6	...	8	...	
<b>SPRING</b>	<b>Logan Part No.</b>	<b>AX802</b>	<b>AX40012</b>	<b>AX4000</b>	...	...	...	
	No. Req'd	...	18	30	...	...	...	

<b>OPTIONAL DRESS FOR SIZE (O.D.)</b>		...	6-5/8	...	...	...	...	
<b>WEIGHT (LBS)</b>		...	17 to 24	...	...	...	...	
<b>BLADE</b>	<b>Logan Part No.</b>	...	<b>AX30013</b>	...	...	...	...	
	No. Req'd	...	6	...	...	...	...	
<b>SPRING</b>	<b>Logan Part No.</b>	...	<b>AX40013</b>	...	...	...	...	
	No. Req'd	...	18	...	...	...	...	

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and weight of casing
- (3) Size and type of connection

### Recommended Spare Parts:

- (1) 1 set of Blades for each size casing

Note: Larger sizes are available upon request.



**TYPE A PACKER TYPE TUBING PATCHES**

**Overview**

This Logan Type A Packer Type Tubing Patch is used to repair a section of damaged tubing without having to remove the entire string from the hole to replace it. This external catch tool is designed to engage a previously prepared fish, pack it off, and become a permanent part of the tubing string. Positive engagement and seal-off in either direction provides a permanent, rigid connection that will remain leakproof for years, yet is easily removable if the need arises.

The Logan Type A Packer Type Tubing Patches will not restrict the bore of the tubing and are available in popular tubing sizes from 2-3/8 through 3-1/2 inches O.D.

**Construction**

The simple design of the Logan Type A Packer Type Tubing Patch is composed of five outside parts and four internal parts. The simple design of the Logan Type A Packer Type Tubing Patch matches its simple operation.

**Operation**

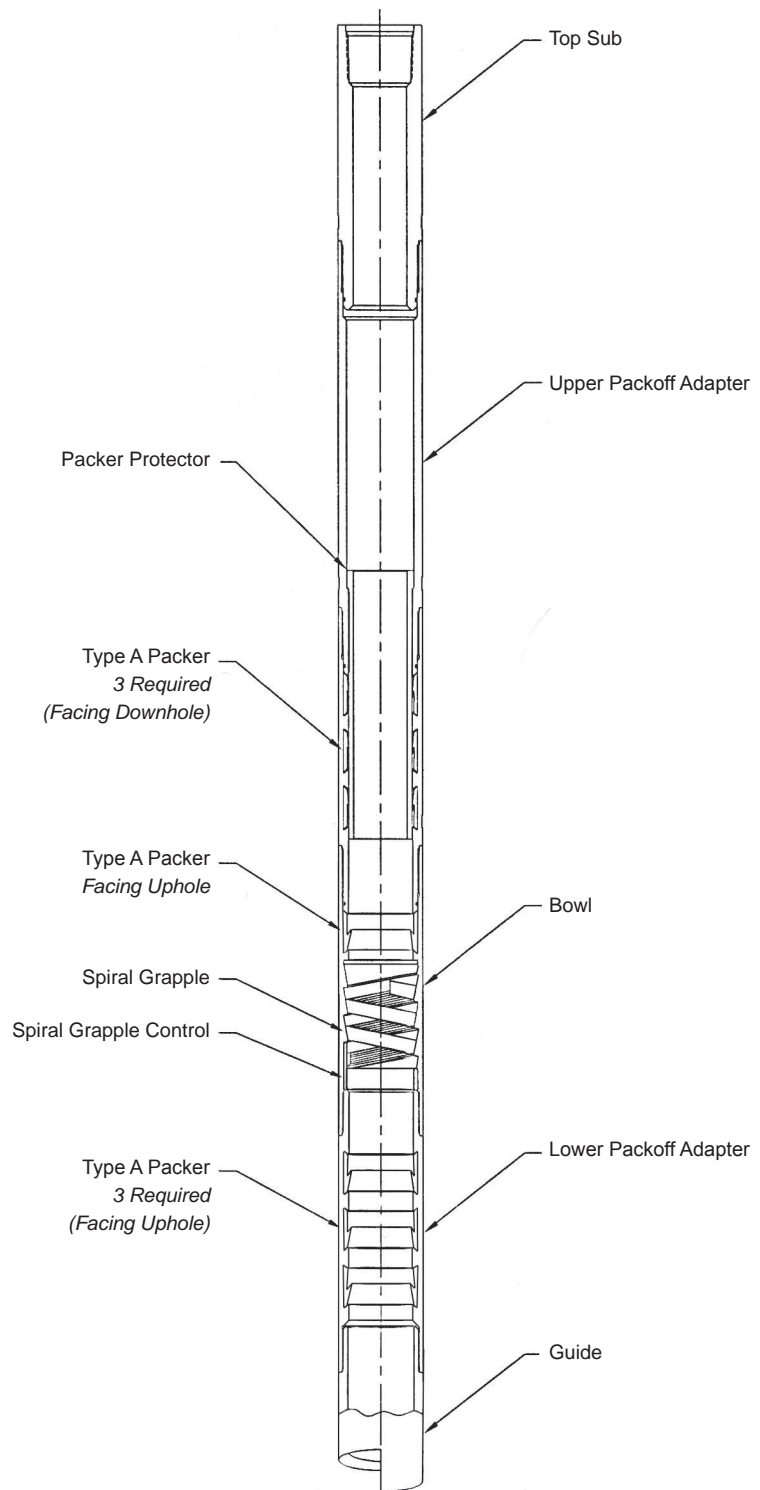
Prepare the upper end of the fish prior to running the Tubing Patch. Lower the tool into the hole until the depth of the fish is reached. Rotate the running string slowly to the right as it is slowly lowered. Combined slow rotation and lowering is important to the proper operation of the tool and should be continued until the fish has entered the tool. Watch the rig weight indicator to determine when the tool has reached the lower end of the top sub. Complete engagement can be assured by allowing the Tubing Patch to support 10,000 to 15,000 lbs. of weight. Pick up the running string to remove the weight from the Tubing Patch while letting the torque slacken from the running string.

If it becomes necessary to remove the tubing patch, bump down to release the grapple and slowly raise the string while rotating to the right. Continue rotation until the patch has cleared the tubing and lift from hole.

Ordinary corrosion does not affect the Tubing Patch and it may be released years after its initial setting. However, if the Tubing Patch has been cemented in place and cement has invaded the internal working parts, the patch may not release. In such cases, the patch can be milled away or by cutting the string below the patch for removal.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Size and weight of tubing



## TYPE A PACKER TYPE TUBING PATCHES

<b>O.D. TUBING</b>		2-3/8	2-7/8	3-1/2			
<b>O.D. PATCH</b>		3-1/8	3-5/8	4-11/16			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>503-002</b>	<b>503-003</b>	<b>503-004</b>			
	Bowen No.	...	...	...			
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>Z1002</b>	<b>Z1003</b>	<b>Z10035</b>			
	Bowen No.	...	36295	...			
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-143</b>	<b>568-233</b>	<b>568241</b>			
	Bowen No.	568143	568233	568241			
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Z2002</b>	<b>Z2003</b>	<b>Z20035</b>			
	Bowen No.	...	36827	...			
<b>BOWL SEAL</b>	<b>Logan Part No.</b>	<b>568-146</b>	<b>568-235</b>	<b>568-241</b>			
	Bowen No.	568146	568235	568241			
	No. Req'd	2	1	1			
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>Z3002</b>	<b>Z3003</b>	<b>Z30035</b>			
	Bowen No.	...	36296	...			
<b>PACKER</b>	<b>Logan Part No.</b>	<b>A4001</b>	<b>A4005</b>	<b>A4019</b>			
	Bowen No.	9309	8550	...			
	No. Req'd	7	7	7			
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>A5001</b>	<b>A5005</b>	<b>A5019</b>			
	Bowen No.	9307	9272	6662			
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>A6001</b>	<b>A6005</b>	<b>A6019</b>			
	Bowen No.	9308	9273	6674			
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>A3001</b>	<b>A3005</b>	<b>A3019</b>			
	Bowen No.	9312	9275	6667			
<b>UPPER PACK-OFF ADAPTER</b>	<b>Logan Part No.</b>	<b>Z9002</b>	<b>Z9003</b>	<b>Z90035</b>			
	Bowen No.	...	36297	...			
<b>LOWER PACK-OFF ADAPTER</b>	<b>Logan Part No.</b>	<b>Z10002</b>	<b>Z10003</b>	<b>Z100035</b>			
	Bowen No.	...	36298	...			
<b>PACK-OFF ADAPTER EXTENSION</b>	<b>Logan Part No.</b>	<b>Z11002</b>	...	<b>Z110035</b>			
	Bowen No.	...	...	...			

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

*Note: H<sub>2</sub>S casing patches available upon request.*

**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Size and type of connection

## TYPE A PACKER TYPE CASING PATCHES

### Overview

This Logan Type A Packer Type Casing Patch is used to repair a section of damaged casing without having to remove the entire string from the hole to replace it. This external catch tool is designed to engage a previously prepared fish, pack it off, and become a permanent part of the casing string. Positive engagement and seal-off in either direction provides a permanent, rigid connection that will remain leakproof for years, yet is easily removable if the need arises.

The Logan Type A Packer Type Casing Patches will not restrict the bore of the casing and are available in popular casing sizes from 4-1/2 to 13-5/8 inches O.D.

### Construction

The simple design of the Logan Type A Packer Type Casing Patch matches its simple operation and is composed of a top sub, bowl, type A packer, packer protector, grapple, grapple control, and a guide.

Logan Type A Packer Type Casing Patches are constructed of the highest quality alloy steels to provide many years of service in harsh well environments. The grapple is manufactured of high quality hardened alloy steel that is able to bite into the casing to provide a secure attachment to the existing casing in the well.

### Assembly

The Logan Type A Packer Type Casing Patch can easily be assembled on the rig site where it will be used. Install the Type A Packer in the bowl slot, making sure it is properly seated in the slot. With counter-clockwise rotation, screw the grapple into the bowl. Continue to screw the grapple into the bowl until it is at least 1/4 inch past the counter bore provided for the grapple control. Align the tang slot in the bowl and grapple. Install the grapple control making sure the tang aligns with the slot in the bowl and grapple. Screw the guide into the bottom of the assembly. Install the packer protector and screw the top sub onto the top of the bowl to complete the assembly. Tighten all connections to the recommended torque before running the Type A Packer Casing Patch in the hole.

### Operation

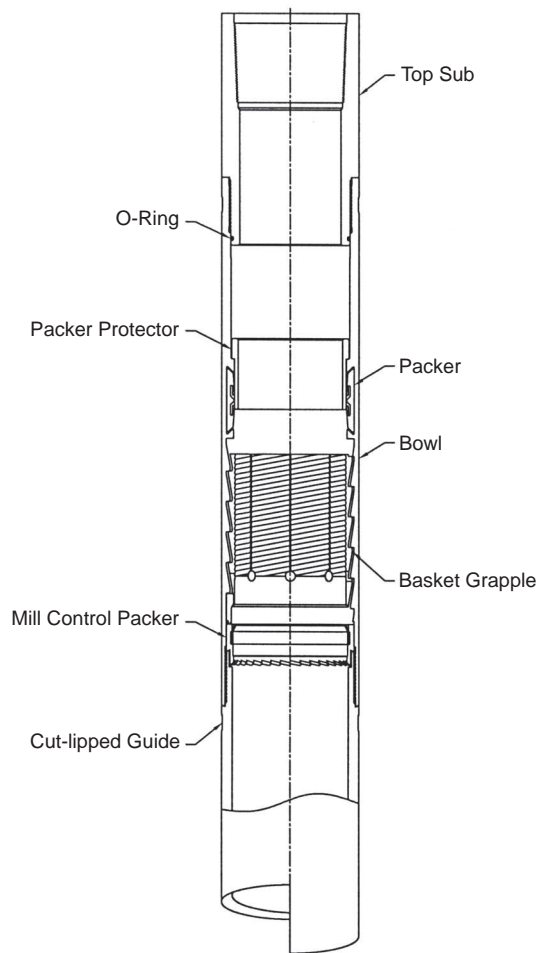
Prepare the upper end of the fish prior to running the Casing Patch. Lower the tool into the hole until the depth of the fish is reached. Rotate the running string slowly to the right as it is slowly lowered. Combined slow rotation and lowering is important to the proper operation of the tool and should be continued until the fish has entered the tool. Watch the rig weight indicator to determine when the tool has reached the lower end of the top sub. Complete engagement can be assured by allowing the Casing Patch to support 15,000 to 20,000 pounds of weight. Pick up the running string to remove the weight from the Casing Patch while letting the torque slacken from the running string.

If it becomes necessary to remove the casing patch, bump down to release the grapple and slowly raise the string while rotating to the right. Continue rotation until the patch has cleared the casing and lift from hole.

Ordinary corrosion does not affect the Casing Patch and it may be released years after its initial setting. However, if the Casing Patch has been cemented in place and cement has invaded the internal working parts, the patch may not release. In such cases, the patch can be milled away or by cutting the string below the patch for removal.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Size and weight of casing
- (3) Size and type of connection



## TYPE A PACKER TYPE CASING PATCHES

O.D. CASING		4-1/2 Csg	5	5-1/2	5-3/4	6	6-5/8	7
O.D. PATCH		5-3/4	6-1/4	6-13/16	7-1/16	7-5/16	7-15/16	8-3/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>503-005</b>	<b>503-006</b>	<b>503-007</b>	<b>503-008</b>	<b>503-009</b>	<b>503-010</b>	<b>503-011</b>
	Bowen No.	11215	11220	11225	...	11230	11235	11240
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>Z1005</b>	<b>Z1006</b>	<b>Z1007</b>	<b>Z1008</b>	<b>Z1009</b>	<b>Z1010</b>	<b>Z1011</b>
	Bowen No.	5186	4866	4886	...	4966	4986	5026
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-247</b>	<b>568-251</b>	<b>568-255</b>	<b>568-257</b>	<b>568-259</b>	<b>568-261</b>	<b>568-262</b>
	Bowen No.	568247	568251	568255	568257	568259	568261	568262
	No. Req'd	1	1	1	1	1	1	1
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Z2005</b>	<b>Z2006</b>	<b>Z2007</b>	<b>Z2008</b>	<b>Z2009</b>	<b>Z2010</b>	<b>Z2011</b>
	Bowen No.	11217	11222	11227	...	11232	11237	11242
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>Z3005</b>	<b>Z3006</b>	<b>Z3007</b>	<b>Z3008</b>	<b>Z3009</b>	<b>Z3010</b>	<b>Z3011</b>
	Bowen No.	5188	4868	4888	...	4968	4988	5028
<b>PACKER</b>	<b>Logan Part No.</b>	<b>Z4005</b>	<b>Z4006</b>	<b>Z4007</b>	<b>Z4008</b>	<b>Z4009</b>	<b>Z4010</b>	<b>Z4011</b>
	Bowen No.	11216	11221	11226	...	11231	11236	11241
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>Z5005</b>	<b>Z5006</b>	<b>Z5007</b>	<b>Z5008</b>	<b>Z5009</b>	<b>Z5010</b>	<b>Z5011</b>
	Bowen No.	11218	11223	11228	...	11233	11238	11243
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6005</b>	<b>Z6006</b>	<b>Z6007</b>	<b>Z6008</b>	<b>Z6009</b>	<b>Z6010</b>	<b>Z6011</b>
	Bowen No.	11459	11461	11463	...	11465	11467	11469
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>Z7005</b>	<b>Z7006</b>	<b>Z7007</b>	<b>Z7008</b>	<b>Z7009</b>	<b>Z7010</b>	<b>Z7011</b>
	Bowen No.	11219	11224	11229	...	11234	11239	11244

O.D. CASING		7-5/8	8-5/8	9-5/8	10-3/4	11-3/4	13-3/8	13-5/8
O.D. PATCH		9	10-1/16	11-1/8	12-5/16	13-3/8	15-1/8	16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>503-012</b>	<b>503-013</b>	<b>503-014</b>	<b>503-015</b>	<b>503-016</b>	<b>503-017</b>	<b>503-018</b>
	Bowen No.	11245	11250	11255	11260	39136		80669
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>Z1012</b>	<b>Z1013</b>	<b>Z1014</b>	<b>Z1015</b>	<b>Z1016</b>	<b>LP1007</b>	<b>Z1018</b>
	Bowen No.	5046	5151	5206	5162	...		...
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-265</b>	<b>568-269</b>	<b>568-273</b>	<b>568-274</b>	...	<b>568-280</b>	...
	Bowen No.	568265	568269	568273	568274	...	Qty1 568-280	...
	No. Req'd	1	1	1	1	...	Qty2	...
<b>BOWL</b>	<b>Logan Part No.</b>	<b>Z2012</b>	<b>Z2013</b>	<b>Z2014</b>	<b>Z2015</b>	<b>Z2016</b>	<b>LP2007</b>	<b>Z2018</b>
	Bowen No.	11247	...	11257	11262	...		...
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>Z3012</b>	<b>Z3013</b>	<b>Z3014</b>	<b>Z3015</b>	<b>Z3016</b>	<b>LP7007</b>	<b>Z3018</b>
	Bowen No.	5048	5153	5208	5164	...		...
<b>PACKER</b>	<b>Logan Part No.</b>	<b>Z4012</b>	<b>Z4013</b>	<b>Z4014</b>	<b>Z4015</b>	<b>Z4016</b>	<b>AT6007</b>	<b>Z4018</b>
	Bowen No.	11246	11251	11256	11261	...		...
<b>BASKET GRAPPLE</b>	<b>Logan Part No.</b>	<b>Z5012</b>	<b>Z5013</b>	<b>Z5014</b>	<b>Z5015</b>	<b>Z5016</b>	<b>AT11007</b>	<b>Z5018</b>
	Bowen No.	11248	11253	11258	11263	39142		...
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6012</b>	<b>Z6013</b>	<b>Z6014</b>	<b>Z6015</b>	<b>Z6016</b>	<b>AT10007</b>	<b>Z6018</b>
	Bowen No.	11471	11473	11475	11477	39141		...
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>Z7012</b>	<b>Z7013</b>	<b>Z7014</b>	<b>Z7015</b>	<b>Z7016</b>	<b>LP3007</b>	<b>Z7018</b>
	Bowen No.	11249	...	11259	11264	39144		...

Logan Oil Tools reserves the right to change or discontinue designs without notice.

Note:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Type C Tungsten Carbide Mill Guides available upon request.

When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection

## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES

### Overview

Logan High Pressure Type L Packer Type Casing Patches are designed to engage and seal off a properly prepared casing string. The Casing Patch design leaves the operator with a casing string that has a full-bore internal diameter. Logan High Pressure Type L Packer Type Casing Patches will not restrict the bore of the casing and are available in popular casing sizes from 4-1/2 to 13-5/8 inches OD. Larger size Casing Patches are available upon request.

The Logan High Pressure Type L Packer Type Casing Patches are available in 7,000, 10,000, and 12,000 psi working pressure ratings. All are designed to seal both internal and external pressure. Logan also manufactures a High Pressure Casing Patch that is rated at 15,000 psi working pressure. Lower and higher pressure Casing Patches of this design are available upon request.

Logan High Pressure Type L Packer Type Casing Patches are available with or without five-foot extension subs.

### Construction

The tool is very similar in design and construction to the Logan Series 150 Overshot. A Top Sub, Bowl, and Guide make up the outer components of the assembly. A Basket Mill Control Packer, Basket Grapple, four Logan Type L Packers, Packer Protector, and Shear Pins are components inside the assembly. 4140 alloy steel is used in the manufacture of the major load bearing components. The Type L Packers are made of a blend of hydrogenated nitrile (HBNR) material that is compatible for service with most drilling and completion fluids, and is resistant to gas invasion and abrasion. They are rated at 275 °F (dry, with no circulation) and at 325 °F (with partial circulation).

### Operation

Proper preparation of the casing to be patched is important to the success of the Logan High Pressure Type L Packer Type Casing Patch. The casing should be washed over to remove scale and splits and the pipe sized for a uniform sealing surface.

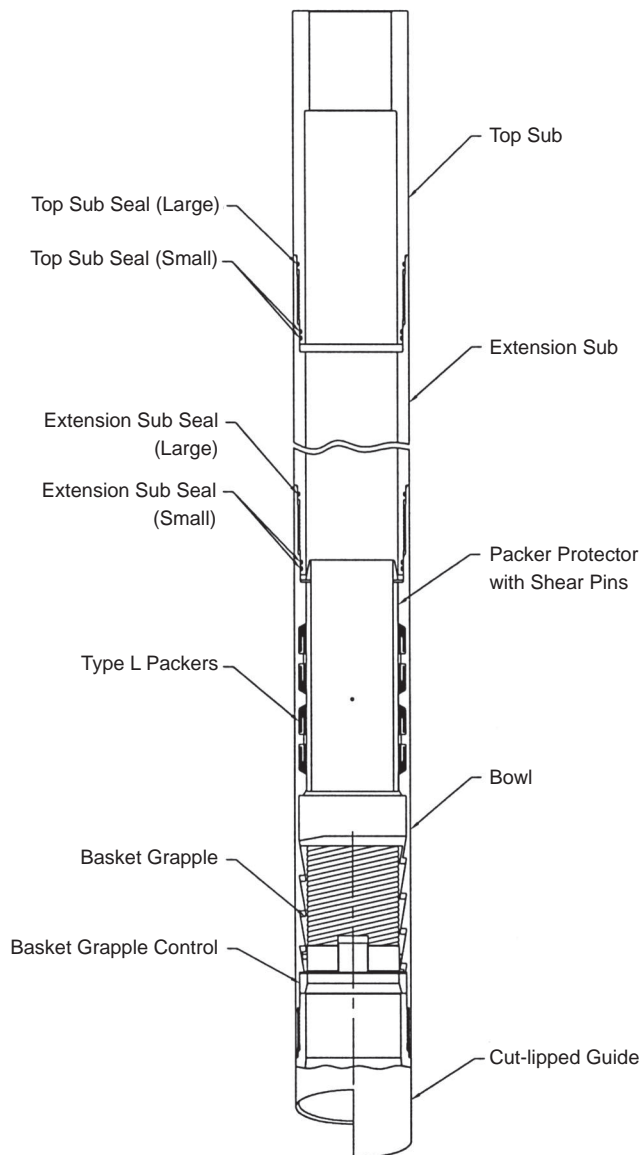
The properly assembled Casing Patch should be lowered to the top of the fish. Slow rotation combined with slow lowering is important to the operation of the assembly. Once the fish has entered the Casing Patch, slowly slack off the rotation until the Packer Protector bottoms

out against the shoulder in the Top Sub and the casing is fully engaged in the patch. Apply a tensile load to the Casing Patch to set the grapple. The slips should then be set on the running string.

To test the patch, slowly engage the mud pumps so as not to slug the packers with excessive pressure. Then bring the pressure up to the desired test pressure.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions



Logan High Pressure Type L Packer Type Casing Patch for 7K, 10K, and 12K Assemblies

## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 7,000 PSI

O.D. CASING		4-1/2	5	5-1/2	5-3/4	6	6-5/8	7
O.D. PATCH		5-3/4	6-1/4	6-13/16	7-1/16	7-5/16	7-15/16	8-3/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>509-709</b>	<b>509-710</b>	<b>509-700</b>	<b>509-701</b>	<b>509-712</b>	<b>509-713</b>	<b>509-711</b>
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>LP1009</b>	<b>LP1010</b>	<b>LP1000</b>	<b>LP1001</b>	<b>LP1012</b>	<b>LP1013</b>	<b>LP1011</b>
<b>TOP SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-248</b>	*	<b>568-257</b>	*	*	*	<b>568-263</b>
	<b>No. Req'd</b>	2	...	2	...	...	...	2
<b>TOP SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-251</b>	*	<b>568-257</b>	*	*	*	<b>568-265</b>
	<b>No. Req'd</b>	1	...	1	...	...	...	1
<b>BOWL</b>	<b>Logan Part No.</b>	<b>LP2009</b>	<b>LP2010</b>	<b>LP2000</b>	<b>LP2001</b>	<b>LP2012</b>	<b>LP2013</b>	<b>LP2011</b>
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>LP3009</b>	<b>LP3010</b>	<b>LP3000</b>	<b>LP3001</b>	<b>LP3012</b>	<b>LP3013</b>	<b>Z7011</b>
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	<b>AC14002</b>	*	<b>AC14002</b>	*	*	*	<b>AC14002</b>
	<b>No. Req'd</b>	2	2	2	2	2	2	2
<b>TYPE L PACKER</b>	<b>Logan Part No.</b>	<b>AT6009</b>	<b>AT6010</b>	<b>AT6000</b>	<b>AT6011</b>	<b>AT6012</b>	<b>AT6013</b>	<b>AT6001</b>
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>AT7009</b>	<b>AT7010</b>	<b>AT7000</b>	<b>AT7001</b>	<b>AT7012</b>	<b>AT7013</b>	<b>ZL3011</b>
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AT10009</b>	<b>AT10010</b>	<b>AT10000</b>	<b>AT10001</b>	<b>AT10012</b>	<b>AT10013</b>	<b>Z6011</b>
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>AT11009</b>	<b>AT11010</b>	<b>AT11000</b>	<b>AT11001</b>	<b>AT11012</b>	<b>AT11013</b>	<b>Z5011</b>

## OPTIONAL

<b>EXTENSION SUB (5 feet long)</b>	<b>Logan Part No.</b>	<b>LPE1009</b>	<b>LPE1010</b>	<b>LPE1000</b>	<b>LPE1001</b>	<b>LPE1012</b>	<b>LPE1013</b>	<b>LPE1011</b>
<b>EXTENSION SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568-248</b>	*	<b>568-257</b>	*	*	*	<b>568-263</b>
	<b>No. Req'd</b>	2	...	2	...	...	...	2
<b>EXTENSION SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568-251</b>	*	<b>568-257</b>	*	*	*	<b>568-265</b>
	<b>No. Req'd</b>	1	...	1	...	...	...	1

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Higher pressure casing patches of this design are available upon request.
- (3) Type C tungsten carbide mill guide available upon request.
- (4) Larger size Casing Patches are available upon request.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions

## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 7,000 PSI

O.D. CASING		7-5/8	8-5/8	9-5/8	9-7/8	10-3/4	11-3/4	11-7/8
O.D. PATCH		9	10-1/16	11-1/4	11-9/16	12-5/16	13-3/8	13-7/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>509-714</b>	<b>509-715</b>	<b>509-702</b>	<b>509-703</b>	<b>509-704</b>	<b>509-705</b>	<b>509-706</b>
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>LP1014</b>	<b>LP1015</b>	<b>LP1002</b>	<b>LP1003</b>	<b>LP1004</b>	<b>LP1005</b>	<b>LP1006</b>
<b>TOP SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	*	*	568-274	568-274	568-275	*	568-278
	<b>No. Req'd</b>	...	...	2	2	2	...	2
<b>TOP SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	*	*	568-274	568-275	568-276	*	568-278
	<b>No. Req'd</b>	...	...	1	1	1	...	1
<b>BOWL</b>	<b>Logan Part No.</b>	<b>LP2014</b>	<b>LP2015</b>	<b>LP2002</b>	<b>LP2003</b>	<b>LP2004</b>	<b>LP2005</b>	<b>LP2006</b>
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>Z7012</b>	<b>LP3015</b>	<b>LP3002</b>	<b>LP3003</b>	<b>LP3004</b>	<b>LP3005</b>	<b>LP3006</b>
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	*	*	AC14002	AC14002	AC14002	*	AC14008
	<b>No. Req'd</b>	...	...	2	2	2	...	2
<b>TYPE L PACKER</b>	<b>Logan Part No.</b>	<b>AT6014</b>	<b>AT6015</b>	<b>AT6002</b>	<b>AT6003</b>	<b>AT6004</b>	<b>AT6005</b>	<b>AT6006</b>
	<b>No. Req'd</b>	4	4	4	4	4	4	4
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>AT7014</b>	<b>AT7015</b>	<b>AT7002</b>	<b>AT7003</b>	<b>AT6004</b>	<b>AT7005</b>	<b>AT7006</b>
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6012</b>	<b>AT10015</b>	<b>AT10002</b>	<b>AT10003</b>	<b>AT9004</b>	<b>AT10005</b>	<b>AT10006</b>
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>AT11014</b>	<b>AT11015</b>	<b>AT11002</b>	<b>AT11003</b>	<b>AT10004</b>	<b>AT11005</b>	<b>AT11006</b>

## OPTIONAL

<b>EXTENSION SUB (5 feet long)</b>	<b>Logan Part No.</b>	<b>LPE1014</b>	<b>LPE1015</b>	<b>LPE1002</b>	<b>LPE1003</b>	<b>LPE1004</b>	<b>LPE1005</b>	<b>LPE1006</b>
<b>EXTENSION SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	*	*	568-274	568-274	568-275	*	568-278
	<b>No. Req'd</b>	...	...	2	2	2	...	2
<b>EXTENSION SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	*	*	568-274	568-275	568-276	*	568-278
	<b>No. Req'd</b>	...	...	1	1	1	...	1

Logan Oil Tools reserves the right to change or discontinue designs without notice.

### Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Higher pressure casing patches of this design are available upon request.
- (3) Type C tungsten carbide mill guide available upon request.
- (4) Larger size Casing Patches are available upon request.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions

## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 7,000 PSI

O.D. CASING		13-3/8	13-5/8				
O.D. PATCH		15-1/2	15-3/4				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>509-707</b>	<b>509-708</b>				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>LP1007</b>	<b>LP1008</b>				
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-279</b>	<b>568-280</b>				
<b>(SMALL)</b>	No. Req'd	2	2				
<b>TOP SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-280</b>	<b>568-280</b>				
<b>(LARGE)</b>	No. Req'd	1	1				
<b>BOWL</b>	<b>Logan Part No.</b>	<b>LP2007</b>	<b>LP2008</b>				
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>LP3007</b>	<b>LP3008</b>				
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	<b>AC14002</b>	<b>AC14008</b>				
	No. Req'd	2	2				
<b>TYPE L PACKER</b>	<b>Logan Part No.</b>	<b>AT6007</b>	<b>AT6008</b>				
	No. Req'd	4	4				
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>AT7007</b>	<b>AT7008</b>				
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AT10007</b>	<b>AT10008</b>				
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>AT11007</b>	<b>AT11008</b>				

## OPTIONAL

<b>EXTENSION SUB</b>	<b>Logan Part No.</b>	<b>LPE1007</b>	<b>LPE1008</b>				
<i>(5 feet long)</i>							
<b>EXTENSION SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-279</b>	<b>568-280</b>				
<b>(SMALL)</b>	No. Req'd	2	2				
<b>EXTENSION SUB SEAL</b>	<b>Logan Part No.</b>	<b>568-280</b>	<b>568-280</b>				
<b>(LARGE)</b>	No. Req'd	1	1				

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### Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Higher pressure casing patches of this design are available upon request.
- (3) Type C tungsten carbide mill guide available upon request.
- (4) Larger size Casing Patches are available upon request.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions



## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 10,000 PSI

O.D. CASING		4-1/2	5-1/2	7	9-5/8	9-7/8	10-3/4	13-3/8
O.D. PATCH		5-7/8	7	8-5/8	11.43	11-3/4	12-3/4	15-5/8
PRESSURE RATING (PSI)		10,000	10,000	10,000	10,000	10,000	10,000	10,000
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>510L-005</b>	<b>510L-007</b>	<b>510L-011</b>	<b>510-963-010</b>	<b>510-1175-010</b>	<b>510-1275-010</b>	<b>510-1338</b>
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>ZL1005-10</b>	<b>ZL1007-10</b>	<b>ZL1011-10</b>	<b>BT1002-010</b>	<b>BT1003-010</b>	<b>BT2004-010</b>	<b>BT2007-010</b>
<b>TOP SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568248-200</b>	<b>568257-200</b>	<b>568263-200</b>	<b>568274-200</b>	<b>568274-400</b>	<b>568275-200</b>	<b>568279-200</b>
	No. Req'd	2	2	2	2	2	2	2
<b>TOP SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568251-200</b>	<b>568257-200</b>	<b>568265-200</b>	<b>568274-200</b>	<b>568275-400</b>	<b>568276-200</b>	<b>568280-200</b>
	No. Req'd	1	1	1	1	1	1	1
<b>BOWL</b>	<b>Logan Part No.</b>	<b>ZL2005-10</b>	<b>ZL2007-10-001</b>	<b>ZL2011-10</b>	<b>BT12002-010</b>	<b>BT2003-010</b>	<b>BT11004-010</b>	<b>BT11007-010</b>
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>Z7005-10</b>	<b>ZL3007-10</b>	<b>Z7011-10</b>	<b>BT13002-010</b>	<b>BT3003-010</b>	<b>BT12004-010</b>	<b>BT12007-010</b>
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	<b>AC14002</b>	<b>AC14002</b>	<b>AC14002</b>	<b>AC14008</b>	<b>AC14002</b>	<b>AC14008</b>	<b>AC14000</b>
	No. Req'd	2	2	2	2	2	2	2
<b>TYPE L PACKER</b>	<b>Logan Part No.</b>	<b>AT6009</b>	<b>AT6000</b>	<b>AT6001</b>	<b>AT6002</b>	<b>AT6003</b>	<b>AT6004</b>	<b>AT6007</b>
	No. Req'd	4	4	4	4	4	4	4
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>ZL3005</b>	<b>ZL3007-10</b>	<b>ZL3011</b>	<b>AT7002</b>	<b>AT7003</b>	<b>AY6004-500</b>	<b>AT7007</b>
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6005 *</b>	<b>ZL6007</b>	<b>Z6011</b>	<b>AT10002</b>	<b>AT10003</b>	<b>AY9004</b>	<b>AT10007</b>
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>Z5005</b>	<b>ZL5007</b>	<b>Z5011</b>	<b>AY11002</b>	<b>AT11003</b>	<b>AY10004</b>	<b>AT11007</b>

## OPTIONAL

<b>EXTENSION SUB (5 feet long)</b>	<b>Logan Part No.</b>	<b>ZLE1005-10</b>	<b>ZLE1007-10</b>	<b>ZLE1011-10</b>	<b>BT3002-010</b>	<b>BTE1003-010</b>	<b>BTE3004-010</b>	<b>BT3007-010</b>
<b>EXTENSION SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568248-200</b>	<b>568257-200</b>	<b>568263-200</b>	<b>568274-200</b>	<b>568274-400</b>	<b>568275-200</b>	<b>568279-200</b>
	No. Req'd	2	2	2	2	2	2	2
<b>EXTENSION SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568251-200</b>	<b>568257-200</b>	<b>568265-200</b>	<b>568274-200</b>	<b>568275-400</b>	<b>568276-200</b>	<b>568280-200</b>
	No. Req'd	1	1	1	1	1	1	1

Logan Oil Tools reserves the right to change or discontinue designs without notice.

\* Mill Control Packer instead of Grapple Control

Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Higher pressure casing patches of this design are available upon request.
- (3) Other sizes of casing patches are available upon request.
- (4) Casing patches can be made from special materials. Prices and delivery information is available upon request.

When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions

## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 12,000 PSI

O.D. CASING		5-1/2	9-5/8	9-7/8	10-3/4	11-3/4	13-3/8	13-5/8
O.D. PATCH		7-1/8	11-5/8	11-7/8	12-7/8	14-3/8	15-3/4	16-1/8
PRESSURE RATING (PSI)		12,000	12,000	12,000	12,000	12,000	12,000	12,000
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>512-550-012</b>	<b>512-963-012</b>	<b>507-1188-12K</b>	<b>512-1288-012</b>	<b>507-1438-12K-500</b>	<b>507-1544-012-500</b>	<b>512-1363</b>
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AT1000-12</b>	<b>AT1002-012</b>	<b>AY2003-12K</b>	*	<b>AY2006-12K-500</b>	<b>AY2007-012</b>	<b>AT1008-012</b>
<b>TOP SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568257-200</b>	<b>568273-200</b>	<b>568274-200</b>	*	<b>568278-200</b>	<b>568279-200</b>	<b>568279-200</b>
	No. Req'd	2	2	2	2	2	2	2
<b>TOP SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568257-200</b>	<b>568273-200</b>	<b>568275-200</b>	*	<b>568278-200</b>	<b>568280-200</b>	<b>568280-200</b>
	No. Req'd	1	1	1	1	1	1	1
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AT12000-12</b>	<b>AT12002-012</b>	<b>AY11003-12K-500</b>	*	<b>AY11006-12K-500</b>	<b>AY11007-012-502</b>	<b>AT12008-012</b>
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>AT13000-12</b>	<b>AT13002-012</b>	<b>AY12003-12K-500</b>	*	<b>AY12006-12K-500</b>	<b>AY12007-012-502</b>	<b>AT13008-012</b>
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	<b>AC14002</b>	<b>AC14002</b>	<b>AC14002</b>	*	<b>AC14002</b>	<b>AC14008</b>	<b>AC14008</b>
	No. Req'd	2	2	2	2	2	2	2
<b>TYPE L PACKER</b>	<b>Logan Part No.</b>	<b>AT6000</b>	<b>AT6002</b>	<b>AT6003</b>	<b>AT6004</b>	<b>AT6006</b>	<b>AT6004</b>	<b>AT6008</b>
	No. Req'd	4	4	4	4	4	4	4
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>ZL3007</b>	<b>AT7002</b>	<b>AY6003-500</b>	*	<b>AY6006-12K-500</b>	<b>AY6007-012-502</b>	<b>AT7008</b>
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6007</b>	<b>AT10002</b>	<b>AY9003-500</b>	*	<b>AY9006-12K-500</b>	<b>AY9007-501</b>	<b>AT10008</b>
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>Z5007</b>	<b>AT11002</b>	<b>AY10003</b>	*	<b>AY10006</b>	<b>AY10007-502</b>	<b>AT11008</b>

## OPTIONAL

<b>EXTENSION SUB (5 feet long)</b>	<b>Logan Part No.</b>	<b>AT3000-12</b>	<b>AT3002-012</b>	<b>AY3003-12K-500</b>	*	<b>AY3006-12K-500</b>	<b>AY3007-012-502</b>	<b>AT3008-012</b>
<b>EXTENSION SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568257-200</b>	<b>568273-200</b>	<b>568274-200</b>	*	<b>568278-200</b>	<b>568279-200</b>	<b>568279-200</b>
	No. Req'd	2	2	2	2	2	2	2
<b>EXTENSION SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568257-200</b>	<b>568273-200</b>	<b>568275-200</b>	*	<b>568278-200</b>	<b>568280-200</b>	<b>568280-200</b>
	No. Req'd	1	1	1	1	1	1	1

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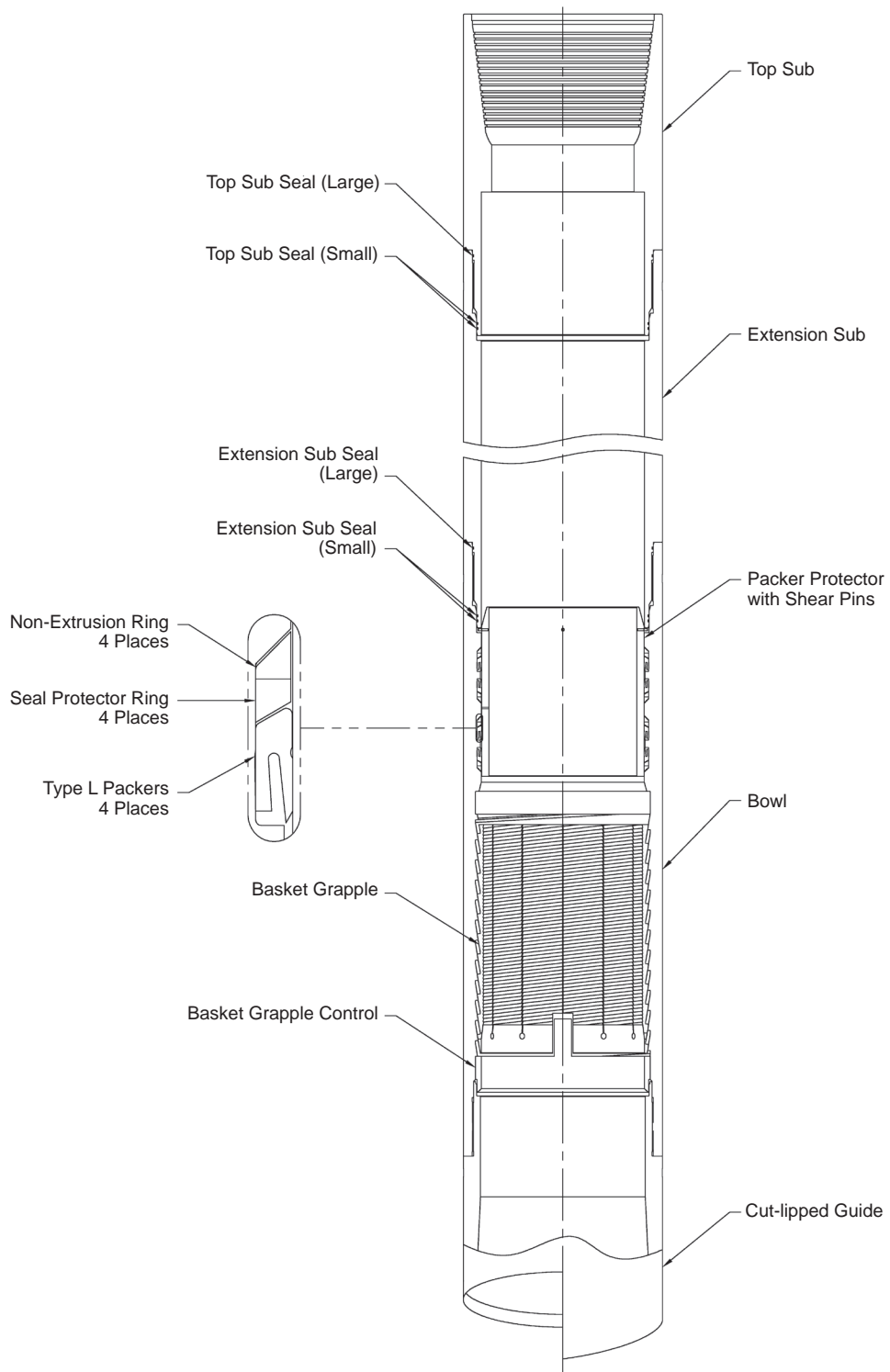
\* Part numbers available upon request

### Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Higher pressure casing patches of this design are available upon request.
- (3) Other sizes of casing patches are available upon request.
- (4) Casing patches can be made from special materials. Prices and delivery information is available upon request.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions



**Logan Type L Packer Type Casing Patch  
15K Assembly**

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## HIGH PRESSURE TYPE L PACKER TYPE CASING PATCHES — 15,000 PSI

O.D. CASING		4-1/2	5-1/2	14				
O.D. PATCH		6-1/4	7-1/8	17-3/8				
PRESSURE RATING (PSI)		15,000	15,000	15,000				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>515-625-15</b>	<b>515-713</b>	<b>515-1738</b>				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>BT10056-15</b>	<b>ZL1007-15</b>	<b>AT1009-15</b>				
<b>TOP SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568248-200</b>	<b>568257-200</b>	<b>568280-200</b>				
	No. Req'd	2	2	2				
<b>TOP SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568251-200</b>	<b>568257-200</b>	<b>568281-200</b>				
	No. Req'd	1	1	1				
<b>BOWL</b>	<b>Logan Part No.</b>	<b>BT2005-15</b>	<b>ZL2007-15</b>	<b>AT12009-15</b>				
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>BT7005-15</b>	<b>ZL7007-15</b>	<b>AT13009-15</b>				
<b>SHEAR PINS</b>	<b>Logan Part No.</b>	<b>AC14002</b>	<b>AC14002</b>	<b>AC14008</b>				
	No. Req'd	2	2	4				
<b>TYPE L SEAL RING SET</b>	<b>Logan Part No.</b>	...	...	<b>AT15009-15-001</b>				
Consisting of: *	No. Req'd.	...	...	1 Set				
<b>TYPE L PACKER *</b>	<b>Logan Part No.</b>	<b>AT6009</b>	<b>AT6000</b>	<b>AT15009-15-002</b>				
	No. Req'd	4	4	4				
<b>SEAL PROTECTOR RING (LEAD) *</b>	<b>Logan Part No.</b>	...	...	<b>AT15009-15-003</b>				
	No. Req'd	...	...	4				
<b>NON-EXTRUSION RING (STEEL) *</b>	<b>Logan Part No.</b>	...	...	<b>AT15009-15-004</b>				
	No. Req'd.	...	...	4				
<b>PACKER PROTECTOR</b>	<b>Logan Part No.</b>	<b>ZL3005-001</b>	<b>ZL3007</b>	<b>AT7009-15</b>				
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>Z6005 *</b>	<b>ZL6007-15</b>	<b>AT10009-15</b>				
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>Z5005</b>	<b>ZL5007-15</b>	<b>AT11009-15</b>				

## OPTIONAL

<b>EXTENSION SUB (5 feet long)</b>	<b>Logan Part No.</b>	<b>BTE1005-15</b>	<b>BTE1007-15</b>	<b>AT3009-15</b>				
<b>EXTENSION SUB SEAL (SMALL)</b>	<b>Logan Part No.</b>	<b>568248-200</b>	<b>568257-200</b>	<b>568280-200</b>				
	No. Req'd	2	2	2				
<b>EXTENSION SUB SEAL (LARGE)</b>	<b>Logan Part No.</b>	<b>568251-200</b>	<b>568257-200</b>	<b>568281-200</b>				
	No. Req'd	1	1	1				

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\* Mill Control Packer instead of Grapple Control

### Notes:

- (1) H<sub>2</sub>S casing patches available upon request.
- (2) Other sizes of casing patches are available upon request.
- (3) Casing patches can be made from special materials. Prices and delivery information is available upon request.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) Size and type of connection
- (3) With or without five-foot extensions

## LEAD SEAL CASING PATCHES

### Overview

Logan Lead Seal Casing Patches repair properly prepared pipe without restricting the bore of the casing or tubing. Lead seal patches are particularly suited for use in wells that contain fluids or gases harmful to rubber or synthetic packers and are as strong as the string being repaired. Patches are available in popular casing sizes ranging from 2-3/8 to 13-3/8 inches. H<sub>2</sub>S service is available upon request.

### Construction

Logan Lead Seal Casing Patches are composed of eleven parts. A guide and bowl make up the O.D. components. A grapple, grapple carrier, control ring, control ring set screws, end seal rings, lead seals, and a center seal ring make up the remainder of the patch.

Each part of the patch is manufactured from material that is specifically suitable for each part. Load bearing components are high

strength, heat-treated alloy steel to maintain string integrity. The seal assembly is manufactured from pure, unalloyed, fully annealed lead.

A box connection on the upper end of the casing patch will be cut according to customer specifications.

### Assembly

The casing patch is made up to the bottom of the new casing string. Use tongs only on the upper end of the bowl near the top connection.

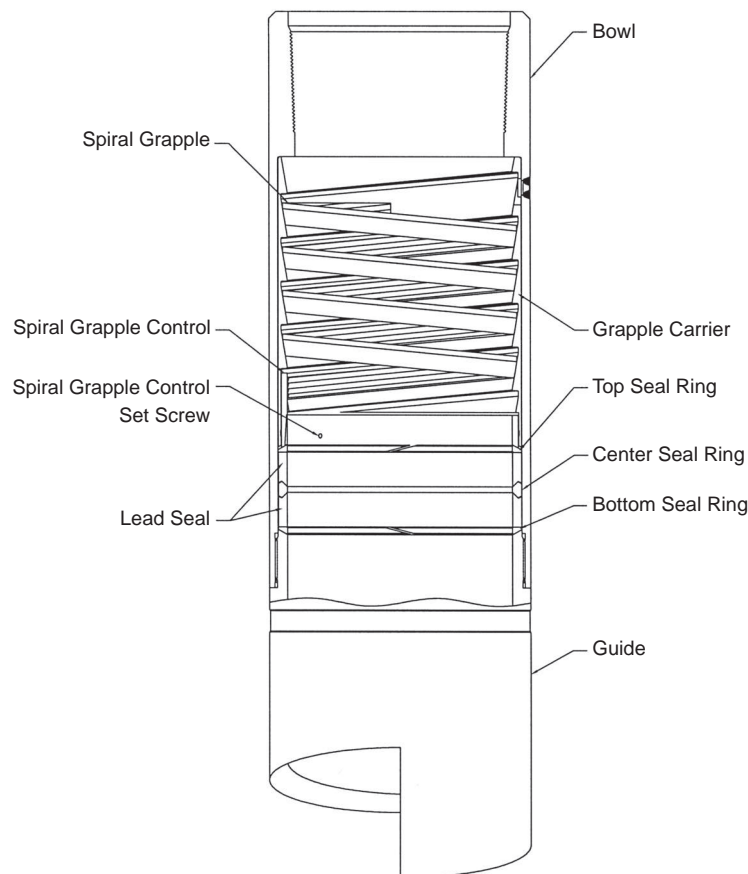
### Operation

Properly cut and remove the damaged portion of casing from the hole. Prepare the top of the downhole casing for engagement and pack-off. Roll the casing if necessary to assure proper diameter and roundness.

Lower the tool into the hole until the top of the fish is reached. Continue lowering the string while slowly rotating the casing patch to the right until the fish has passed through the guide and has bottomed out in the grapple carrier. Stop rotation and slowly pick up the string to remove any weight or torque. (Any backlash from residual weight or torque could cause the patch to disengage.) The lead seal is set into position by raising the string. The grapple, grapple carrier, and control ring remain stationary. Compression between the grapple carrier and guide causes the lead seals to flow around the casing to form a rigid, leak-proof connection.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection



# LOGAN GENERAL CATALOG

OIL TOOLS

## LEAD SEAL CASING PATCHES

<b>O.D. CASING</b>		2-3/8	2-7/8	3-1/2	4	4-1/2	5	5-1/2
<b>O.D. PATCH</b>		3-7/16	4	4-3/4	5-1/4	5-3/4	6-1/4	6-13/16
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>504-343</b>	<b>504-400</b>	<b>504-475</b>	<b>504-525</b>	<b>504-575</b>	<b>504-625</b>	<b>504-681</b>
	Bowen No.	17258	16140	26525	22400	13270	13280	12315
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AA1000</b>	<b>AA1001</b>	<b>AA10015</b>	<b>AA1002</b>	<b>AA1003</b>	<b>AA1004</b>	<b>AA1005</b>
	Bowen No.	17259	16141	26526	22401	13271	13281	12316
<b>GRAPPLE CARRIER</b>	<b>Logan Part No.</b>	<b>AA2000</b>	<b>AA2001</b>	<b>AA20015</b>	<b>AA2002</b>	<b>AA2003</b>	<b>AA2004</b>	<b>AA2005</b>
	Bowen No.	17260	16142	26527	22402	13272	13282	12317
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>AA3000</b>	<b>AA3001</b>	<b>AA30015</b>	<b>AA3002</b>	<b>AA3003</b>	<b>AA3004</b>	<b>AA3005</b>
	Bowen No.	17261	16143	26528	22403	13273	13283	12318
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AA4000</b>	<b>AA4001</b>	<b>AA40015</b>	<b>AA4002</b>	<b>AA4003</b>	<b>AA4004</b>	<b>AA4005</b>
	Bowen No.	17262	16144	26529	22404	13274	13284	12319
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>AA5000</b>	<b>AA5001</b>	<b>AA50015</b>	<b>AA5002</b>	<b>AA5003</b>	<b>AA5004</b>	<b>AA5005</b>
	Bowen No.	17263	16145	26530	22405	13275	13285	12320
<b>LEAD SEAL</b>	<b>Logan Part No.</b>	<b>AA6000</b>	<b>AA6001</b>	<b>AA60015</b>	<b>AA6002</b>	<b>AA6003</b>	<b>AA6004</b>	<b>AA6005</b>
	Bowen No.	17264	16146	26531	22406	13276	13286	12324
	No. Req'd	2	2	2	2	2	2	2
<b>END SEAL RING</b>	<b>Logan Part No.</b>	<b>AA7000</b>	<b>AA7001</b>	<b>AA70015</b>	<b>AA7002</b>	<b>AA7003</b>	<b>AA7004</b>	<b>AA7005</b>
	Bowen No.	17265	16147	26532	22407	13277	13287	12322
	No. Req'd	2	2	2	2	2	2	2
<b>CENTER SEAL RING</b>	<b>Logan Part No.</b>	<b>AA8000</b>	<b>AA8001</b>	<b>AA80015</b>	<b>AA8002</b>	<b>AA8003</b>	<b>AA8004</b>	<b>AA8005</b>
	Bowen No.	17266	16148	26533	22408	13278	13288	12323
<b>CONTROL SET SCREW</b>	<b>Logan Part No.</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>
	Bowen No.	12329	12329	12329	12329	12329	12329	12329
	No. Req'd	2	2	2	2	2	2	2

<b>O.D. CASING</b>		5-3/4	6	6-5/8	7	7-5/8	8-5/8	9-5/8
<b>O.D. PATCH</b>		7-1/16	7-5/16	7-15/16	8-3/8	9	10-1/16	11-1/8
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>504-706</b>	<b>504-731</b>	<b>504-793</b>	<b>504-825</b>	<b>504-900</b>	<b>504-1006</b>	<b>504-1113</b>
	Bowen No.	22410	13290	13300	12500	13070	13310	12475
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AA1006</b>	<b>AA1007</b>	<b>AA1008</b>	<b>AA1009</b>	<b>AA1010</b>	<b>AA1011</b>	<b>AA1012</b>
	Bowen No.	22411	13291	13301	12501	13071	13311	12476
<b>GRAPPLE CARRIER</b>	<b>Logan Part No.</b>	<b>AA2006</b>	<b>AA2007</b>	<b>AA2008</b>	<b>AA2009</b>	<b>AA2010</b>	<b>AA2011</b>	<b>AA2012</b>
	Bowen No.	22412	13292	13302	12502	13072	13312	12477
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>AA3006</b>	<b>AA3007</b>	<b>AA3008</b>	<b>AA3009</b>	<b>AA3010</b>	<b>AA3011</b>	<b>AA3012</b>
	Bowen No.	22413	13293	13303	12503	13073	13313	12478
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AA4006</b>	<b>AA4007</b>	<b>AA4008</b>	<b>AA4009</b>	<b>AA4010</b>	<b>AA4011</b>	<b>AA4012</b>
	Bowen No.	22414	13294	13304	12504	13074	13314	12479
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>AA5006</b>	<b>AA5007</b>	<b>AA5008</b>	<b>AA5009</b>	<b>AA5010</b>	<b>AA5011</b>	<b>AA5012</b>
	Bowen No.	22415	13295	13305	12505	13075	13315	12480
<b>LEAD SEAL</b>	<b>Logan Part No.</b>	<b>AA6006</b>	<b>AA6007</b>	<b>AA6008</b>	<b>AA6009</b>	<b>AA6010</b>	<b>AA6011</b>	<b>AA6012</b>
	Bowen No.	22416	13296	13306	12506	13076	13316	12481
	No. Req'd	2	2	2	2	2	2	2
<b>END SEAL RING</b>	<b>Logan Part No.</b>	<b>AA7006</b>	<b>AA7007</b>	<b>AA7008</b>	<b>AA7009</b>	<b>AA7010</b>	<b>AA7011</b>	<b>AA7012</b>
	Bowen No.	22417	13297	13307	12507	13077	13317	12482
	No. Req'd	2	2	2	2	2	2	2
<b>CENTER SEAL RING</b>	<b>Logan Part No.</b>	<b>AA8006</b>	<b>AA8007</b>	<b>AA8008</b>	<b>AA8009</b>	<b>AA8010</b>	<b>AA8011</b>	<b>AA8012</b>
	Bowen No.	22418	13298	13308	12508	13078	13318	12483
<b>CONTROL SET SCREW</b>	<b>Logan Part No.</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9000</b>	<b>AA9001</b>	<b>P12003</b>
	Bowen No.	12329	12329	12329	12329	12329	12484	12484
	No. Req'd	2	2	2	2	2	2	2

## LEAD SEAL CASING PATCHES

<b>O.D. CASING</b>		10-3/4	11-3/4	13-3/8			
<b>O.D. PATCH</b>		12-5/16	13-1/4	15-1/2			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>504-1231</b>	<b>504-1325</b>	<b>504-1550</b>			
	Bowen No.	13320	20855	18445			
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AA1013</b>	<b>AA1014</b>	<b>AA1015</b>			
	Bowen No.	13321	20856	18446			
<b>GRAPPLE CARRIER</b>	<b>Logan Part No.</b>	<b>AA2013</b>	<b>AA2014</b>	<b>AA2015</b>			
	Bowen No.	13322	20857	18447			
<b>SPIRAL GRAPPLE</b>	<b>Logan Part No.</b>	<b>AA3013</b>	<b>AA3014</b>	<b>AA3015</b>			
	Bowen No.	13323	20858	18448			
<b>SPIRAL GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AA4013</b>	<b>AA4014</b>	<b>AA4015</b>			
	Bowen No.	13324	20859	18449			
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>AA5013</b>	<b>AA5014</b>	<b>AA5015</b>			
	Bowen No.	13325	20860	18450			
<b>LEAD SEAL</b>	<b>Logan Part No.</b>	<b>AA6013</b>	<b>AA6014</b>	<b>AA6015</b>			
	Bowen No.	13326	20861	18451			
	No. Req'd	2	2	2			
<b>END SEAL RING</b>	<b>Logan Part No.</b>	<b>AA7013</b>	<b>AA7014</b>	<b>AA7015</b>			
	Bowen No.	13327	20862	18452			
	No. Req'd	2	2	2			
<b>CENTER SEAL RING</b>	<b>Logan Part No.</b>	<b>AA8013</b>	<b>AA8014</b>	<b>AA8015</b>			
	Bowen No.	13328	20863	18453			
<b>CONTROL SET SCREW</b>	<b>Logan Part No.</b>	<b>AA9001</b>	<b>AA9001</b>	<b>AA9001</b>			
	Bowen No.	12484	12484	12484			
	No. Req'd	2	2	2			

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*Special Notes:*

(1) H<sub>2</sub>S service are available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of top connection

**LEAD SEAL CEMENTING CASING PATCHES**

**Overview**

The Logan Lead Seal Cementing Casing Patch forms a permanent sealed connection between two strings of casing and cements them together in a single operation. In addition to utilizing the field proven, compression-type lead seals of the Logan Lead Seal Tubing and Casing Patch, the Logan Lead Seal Cementing Casing Patch incorporates a valve system that allows the patch and running string to be cemented in place immediately after the lead seals have been compressed.

Lead Seal Cementing Casing Patches are available in popular casing sizes ranging from 2-3/8 to 13-3/8 inches. H<sub>2</sub>S service is available upon request.

**Construction**

The seal assembly is manufactured from pure, unalloyed, fully annealed lead that is particularly suited for use in wells that contain fluids or gases harmful to rubber or synthetic packers.

**Assembly**

After assembly, the lead seal cementing casing patch is made up to the bottom of the running string.

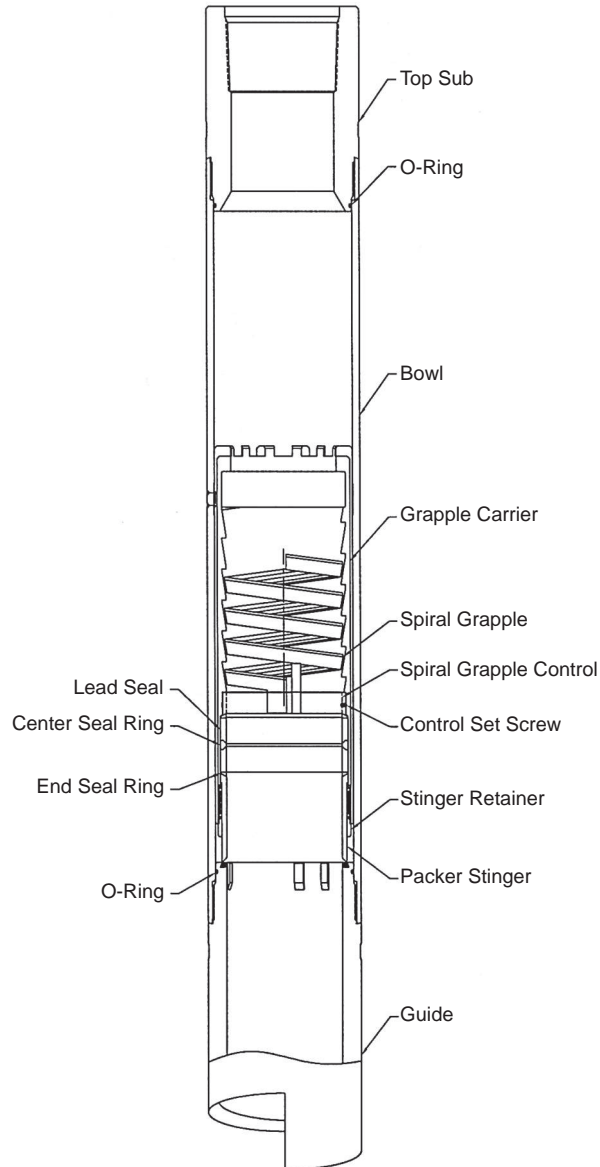
**Operation**

Properly cut and remove the damaged portion of casing from the hole. Prepare the top of the downhole casing for engagement and pack-off. Roll the casing if necessary to assure proper diameter and roundness.

Lower the string to the top of the prepared fish. Slowly rotate over the fish and apply an upward setting load. This will move the grapple and grapple carrier down and compress the lead seals against the guide to form the initial seal. Lower the running string to telescope the grapple carrier and stinger upward in the outer body to open the valve between the integral lead seal and the stinger. Immediately pump cement downhole. Cement will exit through the valve in the patch, placing cement around the outside of the patch and casing. After cement has been pumped, an upward load should be applied and maintained to the running string while the cement hardens.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection





## LEAD SEAL CEMENTING CASING PATCHES

O.D. CASING		2-3/8	2-7/8	3-1/2	4	4-1/2	5	5-1/2
O.D. PATCH		4-1/8	4-5/8	5-1/4	5-3/4	6-1/2	6-3/4	7-7/16
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	505-413	505-463	505-525	505-575	505-650	505-675	505-744
	Bowen No.	40514	41209	41210	40596	40619	40649	38179
<b>TOP SUB</b>	Logan Part No.	AB12000	AB12001	AB12016	AB12002	AB12003	AB12004	AB12005
	Bowen No.	41092	41098	41104	41110	41116	41122	38415
<b>BOWL</b>	Logan Part No.	AB1000	AB1001	AB1016	AB1002	AB1003	AB1004	AB1005
	Bowen No.	41093	41099	41105	41111	41117	41123	38416
<b>GRAPPLE CARRIER</b>	Logan Part No.	AB2000	AB2001	AB2016	AB2002	AB2003	AB2004	AB2005
	Bowen No.	41095	41101	41107	41113	41119	41125	38417
<b>GRAPPLE</b>	Logan Part No.	AA3000	AA3001	AB3016	AA3002	AA3003	AA3004	AA3005
	Bowen No.	17261	16143	26528	22403	13273	13283	12318
<b>GRAPPLE CONTROL</b>	Logan Part No.	AA4000	AA4001	AB4016	AA4002	AA4003	AA4004	AA4005
	Bowen No.	17262	16144	26529	22404	13274	13284	12319
<b>GUIDE</b>	Logan Part No.	AB5000	AB5001	AB5016	AB5002	AB5003	AB5004	AB5005
	Bowen No.	41094	41100	41106	41112	41118	41124	38421
<b>LEAD SEAL</b>	Logan Part No.	AA6000	AA6001	AB6016	AA6002	AA6003	AA6004	AA6005
	Bowen No.	17264	16146	26531	22406	13276	13286	12324
	No. Req'd	2	2	2	2	2	2	2
<b>END SEAL RING</b>	Logan Part No.	AA7000	AA7001	AB7016	AA7002	AA7003	AA7004	AA7005
	Bowen No.	17265	16147	26532	22407	13277	13287	12322
	No. Req'd	2	2	2	2	2	2	2
<b>CENTER SEAL RING</b>	Logan Part No.	AA8000	AA8001	AB8016	AA8002	AA8003	AA8004	AA8005
	Bowen No.	17266	16148	26533	22408	13278	13288	12323
<b>PACKER STINGER</b>	Logan Part No.	AB10000	AB10001	AB10016	AB10002	AB10003	AB10004	AB10005
	Bowen No.	41096	41102	41108	41114	41120	41126	38420
<b>STINGER RETAINER</b>	Logan Part No.	AB11000	AB11001	AB11016	AB11002	AB11003	AB11004	AB11005
	Bowen No.	41097	41103	41109	41115	41121	41127	38419
<b>CONTROL SET SCREW</b>	Logan Part No.	AA9000	AA9000	AA9000	AA9000	AA9000	AA9000	AA9000
	Bowen No.	12329	12329	12329	12329	12329	12329	12329
	No. Req'd	2	2	2	2	2	2	2
<b>BOWL SEAL</b>	Logan Part No.	568-237	568-240	568-246	568-250	568-255	568-258	568-260
	Bowen No.	30-15	30-18	30-24	30-28	30-33	30-36	30-38
	No. Req'd	2	2	2	2	2	2	2

Logan Oil Tools reserves the right to change or discontinue designs without notice.

**Special Notes:**

(1) H<sub>2</sub>S service, available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection

# LOGAN GENERAL CATALOG

OIL TOOLS

## LEAD SEAL CEMENTING CASING PATCHES

O.D. CASING		5-3/4	6	6-5/8	7	7-5/8	8-5/8	9-5/8
O.D. PATCH		7-3/4	8	8-5/8	9-1/8	9-7/8	11-1/8	11-15/16
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	505-775	505-800	505-863	505-913	505-988	505-1113	505-1194
	Bowen No.	41088	40679	40858	40859	40869	41004	41085
<b>TOP SUB</b>	Logan Part No.	AB12006	AB12007	AB12008	AB12009	AB12010	AB12011	AB12012
	Bowen No.	41128	41134	41140	41146	41152	41158	41164
<b>BOWL</b>	Logan Part No.	AB1006	AB1007	AB1008	AB1009	AB1010	AB1011	AB1012
	Bowen No.	41129	41135	41141	41147	41153	41159	41165
<b>GRAPPLE CARRIER</b>	Logan Part No.	AB2006	AB2007	AB2008	AB2009	AB2010	AB2011	AB2012
	Bowen No.	41131	41137	41143	41149	41155	41161	41167
<b>GRAPPLE</b>	Logan Part No.	AA3006	AA3007	AA3008	AA3009	AA3010	AA3011	AA3012
	Bowen No.	22413	13293	13303	12503	13073	13313	12478
<b>GRAPPLE CONTROL</b>	Logan Part No.	AA4006	AA4007	AA4008	AA4009	AA4010	AA4011	AA4012
	Bowen No.	22414	13294	13304	12504	13074	13314	12479
<b>GUIDE</b>	Logan Part No.	AB5006	AB5007	AB5008	AB5009	AB5010	AB5011	AB5012
	Bowen No.	41130	41136	41142	41148	41154	41160	41166
<b>LEAD SEAL</b>	Logan Part No.	AA6006	AA6007	AA6008	AA6009	AA6010	AA6011	AA6012
	Bowen No.	22416	13296	13306	12506	13076	13316	12481
	No. Req'd	2	2	2	2	2	2	2
<b>END SEAL RING</b>	Logan Part No.	AA7006	AA7007	AA7008	AA7009	AA7010	AA7011	AA7012
	Bowen No.	22417	13297	13307	28656	13077	13317	12482
	No. Req'd	2	2	2	2	2	2	2
<b>CENTER SEAL RING</b>	Logan Part No.	AA8006	AA8007	AA8008	AA8009	AA8010	AA8011	AA8012
	Bowen No.	22418	13298	13308	12508	13078	13318	12483
<b>PACKER STINGER</b>	Logan Part No.	AB10006	AB10007	AB10008	AB10009	AB10010	AB10011	AB10012
	Bowen No.	41132	41138	41144	41150	41156	41162	41168
<b>STINGER RETAINER</b>	Logan Part No.	AB11006	AB11007	AB11008	AB11009	AB11010	AB11011	AB11012
	Bowen No.	41133	41139	41145	41151	41157	41163	41169
<b>CONTROL SET SCREW</b>	Logan Part No.	AA9000	AA9000	AA9000	AA9000	AA9000	AA9001	P12003
	Bowen No.	12329	12329	12329	12329	12329	12484	12484
	No. Req'd	2	2	2	2	2	2	2
<b>BOWL SEAL</b>	Logan Part No.	568-262	568-263	568-265	568-267	568-270	568-449	568-450
	Bowen No.	30-40	30-41	30-43	30-45	30-48	27-76	27-77
	No. Req'd	2	2	2	2	2	2	2

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*Special Notes:*

(1) H<sub>2</sub>S service, available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection

## LEAD SEAL CEMENTING CASING PATCHES

<b>O.D. CASING</b>		10-3/4	11-3/4	13-3/8				
<b>O.D. PATCH</b>		13-5/8	14-3/4	16-5/8				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>505-1363</b>	<b>505-1475</b>	<b>505-1663</b>				
	Bowen No.	41086	41089	41087				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AB12013</b>	<b>AB12014</b>	<b>AB12015</b>				
	Bowen No.	41170	41176	41185				
<b>BOWL</b>	<b>Logan Part No.</b>	<b>AB1013</b>	<b>AB1014</b>	<b>AB1015</b>				
	Bowen No.	41171	41177	41182				
<b>GRAPPLE CARRIER</b>	<b>Logan Part No.</b>	<b>AB2013</b>	<b>AB2014</b>	<b>AB2015</b>				
	Bowen No.	41173	41179	41183				
<b>GRAPPLE</b>	<b>Logan Part No.</b>	<b>AA3013</b>	<b>AA3014</b>	<b>AA3015</b>				
	Bowen No.	13323	20858	18448				
<b>GRAPPLE CONTROL</b>	<b>Logan Part No.</b>	<b>AA4013</b>	<b>AA4014</b>	<b>AA4015</b>				
	Bowen No.	13324	20859	18449				
<b>GUIDE</b>	<b>Logan Part No.</b>	<b>AB5013</b>	<b>AB5014</b>	<b>AB5015</b>				
	Bowen No.	41172	41178	41184				
<b>LEAD SEAL</b>	<b>Logan Part No.</b>	<b>AA6013</b>	<b>AA6014</b>	<b>AA6015</b>				
	Bowen No.	13326	20861	18451				
	No. Req'd	2	2	2				
<b>END SEAL RING</b>	<b>Logan Part No.</b>	<b>AA7013</b>	<b>AA7014</b>	<b>AA7015</b>				
	Bowen No.	13327	20862	18452				
	No. Req'd	2	2	2				
<b>CENTER SEAL RING</b>	<b>Logan Part No.</b>	<b>AA8013</b>	<b>AA8014</b>	<b>AA8015</b>				
	Bowen No.	13328	20863	18453				
<b>PACKER STINGER</b>	<b>Logan Part No.</b>	<b>AB10013</b>	<b>AB10014</b>	<b>AB10015</b>				
	Bowen No.	41174	41180	41186				
<b>STINGER RETAINER</b>	<b>Logan Part No.</b>	<b>AB11013</b>	<b>AB11014</b>	<b>AB11015</b>				
	Bowen No.	41175	41181	41187				
<b>CONTROL SET SCREW</b>	<b>Logan Part No.</b>	<b>AA9001</b>	<b>AA9001</b>	<b>AA9001</b>				
	Bowen No.	12484	12484	12484				
	No. Req'd	2	2	2				
<b>BOWL SEAL</b>	<b>Logan Part No.</b>	<b>568-455</b>	<b>568-453</b>	<b>568-459</b>				
	Bowen No.	27-82	27-80	27-86				
	No. Req'd	2	2	2				

*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

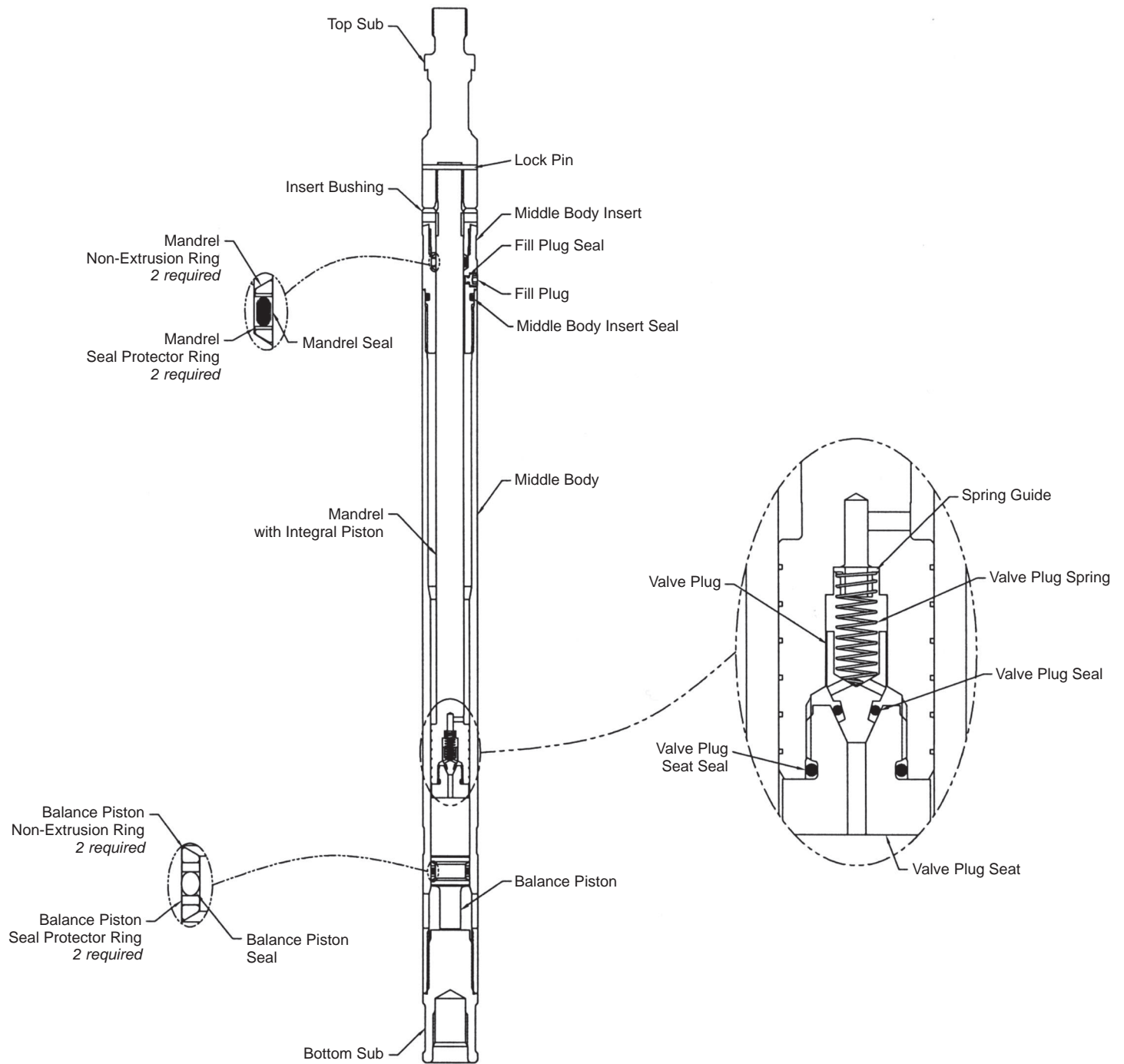
*Special Notes:*

(1) H<sub>2</sub>S service, available upon request.

**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Casing O.D.
- (3) Size and type of connection

**NOTES**



## HYDRAULIC WIRELINE JARS

### Overview

The dependable Hydraulic Wireline Jar utilizes a hydraulic system that permits controlled jarring in measuring line or stranded wireline operations when electrical continuity below the jar is not required. Such operations include permanent well completion services; setting and pulling gas lift valves, chokes, and other retrievable downhole tubing equipment; and cable services such as swabbing, bailing, and fishing.

Its simple hydraulic system permits the operator to control the intensity of the blow within a broad range — from a light blow as needed for measuring line, to one of forceful impact required for stranded wireline. It is particularly valuable in fishing, swabbing, and permanent well completion operations.

### Construction

The Logan Hydraulic Wireline Jar essentially consists of two separate assemblies: a sliding mandrel within a hydraulic chamber. When completely assembled, these two principal as-

semblies are free to move within relationship to each other with their movement controlled by the hydraulic fluid. Seal ring assemblies are installed in the critical areas subject to high internal pressure. An integral piston on the lower end of the mandrel rests in the middle body cylinder when the jar is in closed position. A check valve in the piston allows the free passage of fluid to permit the jar to close freely. Each Hydraulic Wireline Jar top sub has appropriate wrench flats and fishing neck to provide safety against backing off during operation. Supplied with viton seals.

### Assembly

The Hydraulic Wireline Jar is made up in the string just above the tools or equipment to be run. It is recommended that several sinker bars with an outside diameter corresponding to the jar be assembled above the tool. The weight of the sinker bars will determine the intensity of the jarring blow to a large extent. They will also aid in closing the jar with minimum lapse time.

The assembled tool is run into and out the well on measuring line or stranded wireline like any other fishing tool.

### Operation

An upward strain is placed on the string by pulling upward. After setting the string, wait for the jar to strike a blow. After the jar has struck, slacking off the string will allow the jar to close. Repeat the jarring by pulling another strain on the string. The jarring force transmitted by the piston is proportional to the strain taken on the string. To increase the intensity of the blow, take a greater strain on the string. A lighter strain on the string will lessen the intensity of the jarring blow. The frequency of the blows struck can be as rapid as the operator can pick up and slack off the running string.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

<b>OUTSIDE DIAMETER</b>		1-1/8	1-1/4	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4
<b>CONNECTIONS</b>		5/8	15/16	15/16	15/16	15/16	15/16	3/4
<b>PIN UP - BOX DOWN</b>		11 THD	10 THD	10 THD	10 THD	10 THD	10 THD	SR
<b>LENGTH OF STROKE</b>		6-3/4	9-1/4	8-3/4	8-3/4	20	12	10
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>700-000</b>	<b>700-925</b>	<b>700-875</b>	<b>700-002</b>	<b>700-003</b>	<b>700-004</b>	<b>700-1000</b>
	Bowen No.	35097	11740	11180	48383	51227	35518	79297
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AL1000</b>	<b>AL1001</b>	<b>AL1002</b>	<b>AL1002</b>	<b>AL1002</b>	<b>AL1002</b>	<b>AL1003</b>
	Bowen No.	35098	11741	10761	10761	10761	10761	12761
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AL2000</b>	<b>AL2001</b>	<b>AL2002</b>	<b>AL2002</b>	<b>AL2003</b>	<b>AL2004</b>	<b>AL2005</b>
	Bowen No.	35099	11744	11182	11182	51228	35519	12765
<b>MIDDLE BODY INSERT</b>	<b>Logan Part No.</b>	<b>AL3000</b>	<b>AL3001</b>	<b>AL3002</b>	<b>AL3002</b>	<b>AL3002</b>	<b>AL3002</b>	<b>AL3003</b>
	Bowen No.	35100	29486	28652	28652	28652	28652	79298
<b>INSERT BUSHING</b>	<b>Logan Part No.</b>	<b>AL4000</b>	<b>AL4001</b>	<b>AL4002</b>	<b>AL4003</b>	<b>AL4002</b>	<b>AL4003</b>	<b>AL4006</b>
	Bowen No.	35101	33572	33571	35085	33571	35085	79299
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AL5000</b>	<b>AL5001</b>	<b>AL5002</b>	<b>AL5003</b>	<b>AL5004</b>	<b>AL5005</b>	<b>AL5006</b>
	Bowen No.	35102	11742	11184	35086	51229	35520	79300
<b>BOTTOM SUB</b>	<b>Logan Part No.</b>	<b>AL6000</b>	<b>AL6001</b>	<b>AL6002</b>	<b>AL6002</b>	<b>AL6002</b>	<b>AL6002</b>	<b>AL6003</b>
	Bowen No.	35103	11747	11181	11181	11181	11181	12767

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## HYDRAULIC WIRELINE JARS

<b>OUTSIDE DIAMETER</b>		1-1/8	1-1/4	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4
<b>CONNECTIONS</b>		5/8	15/16	15/16	15/16	15/16	15/16	3/4
<b>PIN UP - BOX DOWN</b>		11 THD	10 THD	10 THD	10 THD	10 THD	10 THD	SR
<b>LENGTH OF STROKE</b>		6-3/4	9-1/4	8-3/4	8-3/4	20	12	10
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>700-000</b>	<b>700-925</b>	<b>700-875</b>	<b>700-002</b>	<b>700-003</b>	<b>700-004</b>	<b>700-1000</b>
	Bowen No.	35097	11740	11180	48383	51227	35518	79297
<b>BALANCE PISTON</b>	<b>Logan Part No.</b>	<b>AL7000</b>	<b>AL7001</b>	<b>AL7002</b>	<b>AL7002</b>	<b>AL7002</b>	<b>AL7002</b>	<b>AL7003</b>
	Bowen No.	35104	11746	11185	11185	11185	11185	12766
<b>VALVE PLUG</b>	<b>Logan Part No.</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>
	Bowen No.	11189	11189	11189	11189	11189	11189	11189
<b>VALVE PLUG SPRING</b>	<b>Logan Part No.</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>
	Bowen No.	834	834	834	834	834	834	834
<b>VALVE PLUG SEAT</b>	<b>Logan Part No.</b>	<b>AL10000</b>	<b>AL10000</b>	<b>AL10001</b>	<b>AL10001</b>	<b>AL10001</b>	<b>AL10001</b>	<b>AL10001</b>
	Bowen No.	11745	11745	11186	11186	11186	11186	11186
<b>FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10004</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10000</b>
	Bowen No.	39941	617	617	617	617	617	617
<b>LOCK PIN</b>	<b>Logan Part No.</b>	<b>AL11000</b>	<b>AL11001</b>	<b>AL11002</b>	<b>AL11002</b>	<b>AL11002</b>	<b>AL11002</b>	<b>AL11003</b>
	Bowen No.	15136	16010	13432	13432	13432	13432	18183
<b>SPRING GUIDE</b>	<b>Logan Part No.</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>
	Bowen No.	48307	48307	48307	48307	48307	48307	48307
<b>MANDREL NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-11</b>	<b>L365-11</b>	<b>L365-15</b>	<b>L365-15</b>	<b>L365-15</b>	<b>L365-15</b>	<b>L365-17</b>
	Bowen No.	365-11	365-11	365-15	365-15	365-15	365-15	365-17
	No. Req'd	2	2	2	2	2	2	2
<b>MANDREL SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-11</b>	<b>L375-11</b>	<b>L375-15</b>	<b>L375-15</b>	<b>L375-15</b>	<b>L375-15</b>	<b>L375-17</b>
	Bowen No.	375-11	375-11	375-15	375-15	375-15	375-15	375-17
	No. Req'd	2	2	2	2	2	2	2
<b>BALANCE PISTON NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L366-11</b>	<b>L366-11</b>	<b>L366-16</b>	<b>L366-16</b>	<b>L366-16</b>	<b>L366-16</b>	<b>L366-20</b>
	Bowen No.	366-11	366-11	366-16	366-16	366-16	366-16	366-20
	No. Req'd	2	2	2	2	2	2	2
<b>BALANCE PISTON SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L82-11</b>	<b>L82-11</b>	<b>L82-16</b>	<b>L82-16</b>	<b>L82-16</b>	<b>L82-16</b>	<b>L82-20</b>
	Bowen No.	82-11	82-11	82-16	82-16	82-16	82-16	82-20
	No. Req'd	2	2	2	2	2	2	2

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- (1) Name and number of assembly or part
- (2) Connections, if other than standard

**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

# LOGAN GENERAL CATALOG

OIL TOOLS

## HYDRAULIC WIRELINE JARS

<b>OUTSIDE DIAMETER</b>		1-1/8	1-1/4	1-1/2	1-1/2	1-1/2	1-1/2	1-3/4
<b>CONNECTIONS</b>		5/8	15/16	15/16	15/16	15/16	15/16	3/4
<b>PIN UP - BOX DOWN</b>		11 THD	10 THD	10 THD	10 THD	10 THD	10 THD	SR
<b>LENGTH OF STROKE</b>		6-3/4	9-1/4	8-3/4	8-3/4	20	12	10
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>700-000</b>	<b>700-001</b>	<b>700-875</b>	<b>700-002</b>	<b>700-003</b>	<b>700-004</b>	<b>700-1000</b>
	Bowen No.	35097	11740	11180	48383	51227	35518	79297
<b>VITON O-RING PACKING SET</b>	<b>Logan Part No.</b>	<b>28000-008</b>	<b>28000-009</b>	<b>28000-010</b>	<b>28000-010</b>	<b>28000-010</b>	<b>28000-010</b>	<b>28000-011</b>
<i>Consists of:</i>	Bowen No.	35106	11754	11191	11191	11191	11191	79327
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>568-112</b>	<b>568-112</b>	<b>568-210</b>	<b>568-210</b>	<b>568-210</b>	<b>568-210</b>	<b>568-212</b>
	Bowen No.	568112	568112	568210	568210	568210	568210	568212
<b>BALANCE PISTON SEAL</b>	<b>Logan Part No.</b>	<b>568-113</b>	<b>568-113</b>	<b>568-211</b>	<b>568-211</b>	<b>568-211</b>	<b>568-211</b>	<b>568-215</b>
	Bowen No.	568113	568113	568211	568211	568211	568211	568215
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>568-116</b>	<b>568-116</b>	<b>568-215</b>	<b>568-215</b>	<b>568-215</b>	<b>568-215</b>	<b>568-218</b>
<b>INSERT SEAL (LARGE)</b>	Bowen No.	568116	568116	568215	568215	568215	568215	568218
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	...	...	...	...	...	...	...
<b>INSERT SEAL (SMALL)</b>	Bowen No.	...	...	...	...	...	...	...
<b>VALVE PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>
	Bowen No.	568007	568007	568007	568007	568007	568007	568007
<b>VALVE PLUG</b>	<b>Logan Part No.</b>	<b>568-110</b>	<b>568-110</b>	<b>568-112</b>	<b>568-112</b>	<b>568-112</b>	<b>568-112</b>	<b>568-112</b>
<b>SEAT SEAL</b>	Bowen No.	568110	568110	568112	568112	568112	568112	568112
<b>FILL PLUG SEAL</b>	<b>Logan Part No.</b>	...	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>	<b>568-005</b>
	Bowen No.	...	568005	568005	568005	568005	568005	568005

## ACCESSORIES

<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>28001-013</b>	<b>28001-014</b>	<b>28001-015</b>	<b>28001-015</b>	<b>28001-015</b>	<b>28001-015</b>	<b>28001-016</b>
	Bowen No.	35105	11751	11178	11178	11178	11178	15997
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1000-10</b>	<b>AG1000-11</b>	<b>AG1000-15</b>	<b>AG1000-15</b>	<b>AG1000-15</b>	<b>AG1000-15</b>	<b>AG1000-17</b>
<b>SETTING TOOL</b>	Bowen No.	22709-10	22709-11	22709-15	22709-15	22709-15	22709-15	22709-17
<b>BALANCE PISTON</b>	<b>Logan Part No.</b>	<b>AL13000-11</b>	<b>AL13001</b>	<b>AL13000-16</b>	<b>AL13000-16</b>	<b>AL13000-16</b>	<b>AL13000-16</b>	<b>AL13000-20</b>
<b>SETTING TOOL</b>	Bowen No.	22729-11	11753	22729-16	22729-16	22729-16	22729-16	22729-20
<b>JAR LUBE –</b>	<b>Logan Part No.</b>	<b>49842-A</b>						
<b>1 GALLON</b>	Bowen No.	49842-A						
<b>5 GALLONS</b>	<b>Logan Part No.</b>	<b>49842-B</b>						
	Bowen No.	49842-B						
<b>20 GALLONS</b>	<b>Logan Part No.</b>	<b>49842-C</b>						
	Bowen No.	49842-C						
<b>55 GALLONS</b>	<b>Logan Part No.</b>	<b>49842-D</b>						
	Bowen No.	49842-D						

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- (1) Name and number of assembly or part
- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets



## HYDRAULIC WIRELINE JARS

OUTSIDE DIAMETER	2-1/8	2-3/4				
CONNECTIONS	7/8	1-9/16				
PIN UP - BOX DOWN	SR	10 THD				
LENGTH OF STROKE (INCHES)	11-5/8	20				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 700-1163	<b>700-006</b>				
	Bowen No.	11550	...			
<b>TOP SUB</b>	<b>Logan Part No.</b> AL1004	<b>AL1005</b>				
	Bowen No.	11543	...			
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> AL2006	<b>AL2007</b>				
	Bowen No.	11537	...			
<b>MIDDLE BODY INSERT</b>	<b>Logan Part No.</b> AL3004	<b>AL3005</b>				
	Bowen No.	11538	...			
<b>INSERT BUSHING</b>	<b>Logan Part No.</b> ...	<b>...</b>				
	Bowen No.	...	...			
<b>MANDREL</b>	<b>Logan Part No.</b> AL5007	<b>AL5008</b>				
	Bowen No.	11539	...			
<b>BOTTOM SUB</b>	<b>Logan Part No.</b> AL6004	<b>AL6005</b>				
	Bowen No.	11536	...			
<b>BALANCE PISTON</b>	<b>Logan Part No.</b> AL7004	<b>AL7005</b>				
	Bowen No.	11540	...			
<b>VALVE PLUG</b>	<b>Logan Part No.</b> AL8000	<b>AL8001</b>				
	Bowen No.	11189	...			
<b>VALVE PLUG SPRING</b>	<b>Logan Part No.</b> AL9000	<b>AL9001</b>				
	Bowen No.	834	...			
<b>VALVE PLUG SEAT</b>	<b>Logan Part No.</b> AL10001	<b>AL10002</b>				
	Bowen No.	11186	...			
<b>FILL PLUG</b>	<b>Logan Part No.</b> AG10002	<b>AG10003</b>				
	Bowen No.	329	...			
<b>LOCK PIN</b>	<b>Logan Part No.</b> AL11004	<b>AL11005</b>				
	Bowen No.	42732	...			
<b>SPRING GUIDE</b>	<b>Logan Part No.</b> AL16000	<b>AL16001</b>				
	Bowen No.	48307	...			

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**When ordering, please specify:**

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

**Recommended Spare Parts:**

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## HYDRAULIC WIRELINE JARS

OUTSIDE DIAMETER		2-1/8	2-3/4				
CONNECTIONS		7/8	1-9/16				
PIN UP - BOX DOWN		SR	10 THD				
LENGTH OF STROKE (INCHES)		6-3/4	20				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>700-1163</b>	<b>700-006</b>				
	Bowen No.	11550	...				
<b>MANDREL NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-21</b>	<b>L365-27</b>				
	Bowen No.	365-21	365-27				
	No. Req'd	2	2				
<b>MANDREL SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-21</b>	<b>L375-27</b>				
	Bowen No.	375-21	375-27				
	No. Req'd	2	2				
<b>BALANCE PISTON NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L366-24</b>	<b>L366-28.5</b>				
	Bowen No.	366-24	...				
	No. Req'd	2	2				
<b>BALANCE PISTON SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L82-24</b>	<b>8-235</b>				
	Bowen No.	82-24	...				
	No. Req'd	2	2				

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### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets

## HYDRAULIC WIRELINE JARS

OUTSIDE DIAMETER	2-1/8	2-3/4				
CONNECTIONS	7/8	1-9/16				
PIN UP - BOX DOWN	SR	10 THD				
LENGTH OF STROKE (INCHES)	11-5/8	20				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b> 700-1163	<b>700-006</b>				
	Bowen No.	11550	...			
<b>VITON O-RING PACKING SET</b>	<b>Logan Part No.</b> 28000-012	<b>28000-013</b>				
<i>Consists of:</i>	Bowen No.	11553	...			
<b>MANDREL SEAL</b>	<b>Logan Part No.</b> 568-216	<b>568-222</b>				
	Bowen No.	568216	568222			
<b>BALANCE PISTON SEAL</b>	<b>Logan Part No.</b> 568-219	<b>568-325</b>				
	Bowen No.	568219	568325			
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> 568-223	<b>568-226</b>				
<b>INSERT SEAL (LARGE)</b>	Bowen No.	568223	568226			
<b>MIDDLE BODY</b>	<b>Logan Part No.</b> 568-211	<b>568-224</b>				
<b>INSERT SEAL (SMALL)</b>	Bowen No.	568211	568224			
<b>VALVE PLUG SEAL</b>	<b>Logan Part No.</b> 568-007	<b>568-007</b>				
	Bowen No.	568007	568007			
<b>VALVE PLUG</b>	<b>Logan Part No.</b> 568-112	<b>568-112</b>				
<b>SEAT SEAL</b>	Bowen No.	568112	568112			
<b>FILL PLUG SEAL</b>	<b>Logan Part No.</b> 568-006	<b>568-006</b>				
	Bowen No.	568006	568006			

## ACCESSORIES

<b>SERVICE KIT</b>	<b>Logan Part No.</b> 28001-017					
	Bowen No.	11554				
<b>MANDREL BODY</b>	<b>Logan Part No.</b> AG1000-24					
<b>SETTING TOOL</b>	Bowen No.	22709-21				
<b>BALANCE PISTON</b>	<b>Logan Part No.</b> AL13000-24					
<b>SETTING TOOL</b>	Bowen No.	22729-24				

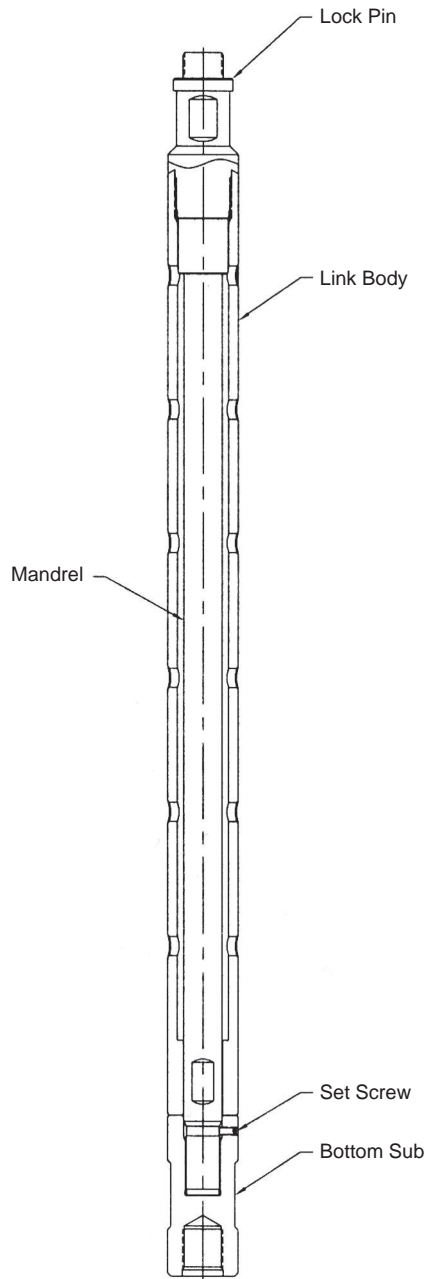
*Logan Oil Tools reserves the right to change or discontinue designs without notice.*

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

### Recommended Spare Parts:

- (1) 1 Balanced Piston
- (2) 2 Valve Plugs
- (3) 4 Valve Plug Springs
- (4) 2 Valve Plug Seats
- (5) 6 Mandrel Non-Extrusion Rings
- (6) 6 Mandrel Seal Protector Rings
- (7) 4 Balance Piston Non-Extrusion Rings
- (8) 4 Balance Piston Seal Protector Rings
- (9) 6 Complete Packing Sets



## TUBULAR WIRELINE JARS

### Overview

The simple and rugged Logan Tubular Wireline Jar is designed for use in combination with the Logan Hydraulic Wireline Jar or by itself as a separate tool. The combination of tools is particularly useful in permanent well completion operations when the ability to jar both ways must be positively assured.

It is a straight-pull actuated jar and has no restricted stroke.

### Construction

The Logan Tubular Wireline Jar is composed of a top sub, link body, mandrel, and a bottom sub. The link body is perforated to eliminate fluid cushioning and mud packing while in service.

### Operation

The Logan Tubular Wireline Jar is actuated either manually or by the use of a reel. The jar is put into position by pulling or reeling. Sudden release or rapid unreeling causes the weight of the jar and sinker bars to close the jar. A sharp downward blow is delivered when the link body bottoms against the bottom sub when it closes on the downstroke. The full stroke will be either 20 or 30 inches.

Upward jarring with the Logan Tubular Wireline Jar is done in the same manner as with the Logan Hydraulic Wireline Jar.

### When ordering, please specify:

- (1) Name and number of assembly or part
- (2) Connections, if other than standard

# LOGAN GENERAL CATALOG

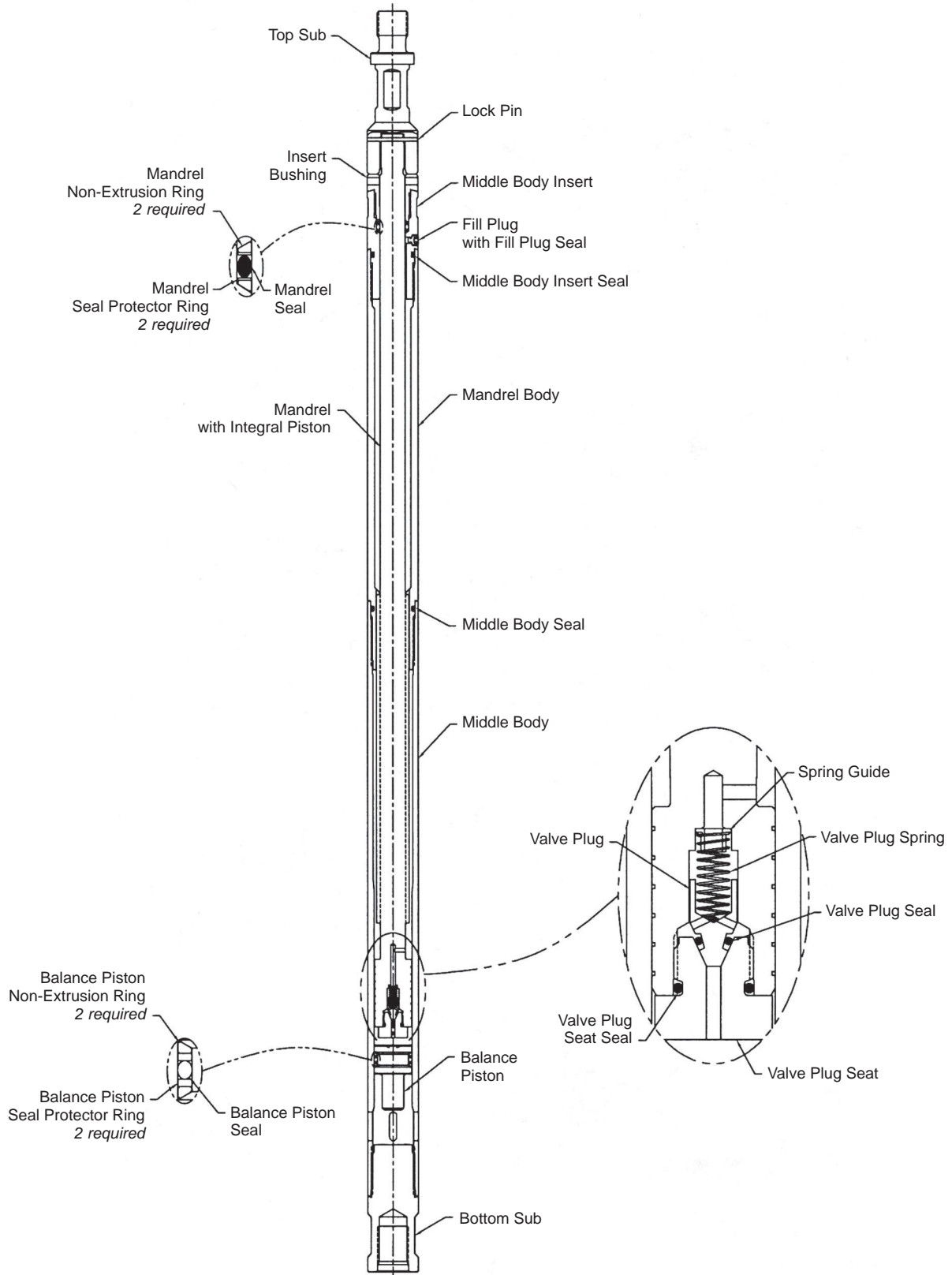
OIL TOOLS

## TUBULAR WIRELINE JARS

<b>OUTSIDE DIAMETER</b>		1-1/8	1-1/4	1-1/4	1-1/2	1-1/2	1-3/4	1-3/4
<b>CONNECTIONS</b>		5/8	15/16	15/16	15/16	15/16	3/4	3/4
<b>PIN UP - BOX DOWN</b>		11 THD	10 THD	10 THD	10 THD	10 THD	SR	SR
<b>LENGTH OF STROKE (INCHES)</b>		18	20	30	20	30	20	30
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>700-000-018</b>	<b>701-001-020</b>	<b>701-001-030</b>	<b>701-002-020</b>	<b>701-002-030</b>	<b>701-003-020</b>	<b>701-003-030</b>
	Bowen No.	19355	12350	12350	10689	10689	14235	14235
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AM1000</b>	<b>AM1001</b>	<b>AM1001</b>	<b>AM1002</b>	<b>AM1002</b>	<b>AM1003</b>	<b>AM1003</b>
	Bowen No.	19356	12351	12351	10677	10677	14236	14236
<b>BODY</b>	<b>Logan Part No.</b>	<b>AM2000</b>	<b>AM2001</b>	<b>AM2001</b>	<b>AM2002</b>	<b>AM2002</b>	<b>AM2003</b>	<b>AM2003</b>
	Bowen No.	19357	12352	12352	10758	10758	14237	14237
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AM3000</b>	<b>AM3001</b>	<b>AM3001</b>	<b>AM3002</b>	<b>AM3002</b>	<b>AM3003</b>	<b>AM3003</b>
	Bowen No.	19358	12368	12368	10924	10924	14232	14232
<b>BOTTOM SUB</b>	<b>Logan Part No.</b>	<b>AM4000</b>	<b>AM4001</b>	<b>AM4001</b>	<b>AM4002</b>	<b>AM4002</b>	<b>AM4003</b>	<b>AM4003</b>
	Bowen No.	19359	12356	12356	10678	10678	14233	14233
<b>SPRING PIN</b>	<b>Logan Part No.</b>	<b>AM5000</b>	<b>AM5001</b>	<b>AM5001</b>	<b>AM5002</b>	<b>AM5002</b>	<b>AM5003</b>	<b>AM5003</b>
	Bowen No.	13431	A-13568	A-13568	15143	15143	27220	27220

<b>OUTSIDE DIAMETER</b>		1-7/8	1-7/8	2-1/8	2-1/8			
<b>CONNECTIONS</b>		3/4	3/4	7/8	7/8			
<b>PIN UP - BOX DOWN</b>		SR	SR	SR	SR			
<b>LENGTH OF STROKE (INCHES)</b>		20	30	20	30			
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>701-004-020</b>	<b>701-004-030</b>	<b>701-005-020</b>	<b>701-005-030</b>			
	Bowen No.	21430	21430	11551	11551			
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AM1004</b>	<b>AM1004</b>	<b>AM1005</b>	<b>AM1005</b>			
	Bowen No.	21431	21431	11547	11547			
<b>BODY</b>	<b>Logan Part No.</b>	<b>AM2004</b>	<b>AM2004</b>	<b>AM2005</b>	<b>AM2005</b>			
	Bowen No.	21432	21432	11544	11544			
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>AM3003</b>	<b>AM3003</b>	<b>AM3004</b>	<b>AM3004</b>			
	Bowen No.	14232	14232	11531	11531			
<b>BOTTOM SUB</b>	<b>Logan Part No.</b>	<b>AM4004</b>	<b>AM4004</b>	<b>AM4005</b>	<b>AM4005</b>			
	Bowen No.	21433	21433	10732	10732			
<b>SPRING PIN</b>	<b>Logan Part No.</b>	<b>AM5004</b>	<b>AM5004</b>	<b>AM5005</b>	<b>AM5005</b>			
	Bowen No.	18183	18183	25499	25499			

Logan Oil Tools reserves the right to change or discontinue designs without notice.



## HYDRAULIC ROD JARS

### Overview

The Hydraulic Rod Jar provides a dependable means for controlled jarring in sucker rod operations when electrical continuity or circulation to the tools or below the jar is not required. Its simple hydraulic system permits the operator to control the intensity of the blow ranging from a light blow to one of terrific force.

### Construction

The Logan Hydraulic Rod Jar essentially consists of a sliding mandrel within a hydraulic chamber. An integral piston on the lower end of the mandrel rests in the middle body cylinder when the jar is in closed position. Each Hydraulic Rod Jar is provided with a fishing neck on the top sub and is supplied with viton seals.

### Assembly

The Hydraulic Rod Jar is made up in the string just above the tools or equipment to be run. The assembled tools are run into and out the well on the sucker rod like any other rod tool.

### Operation

An upward strain is placed on the string by pulling upward. After setting the string, wait for the jar to strike a blow. After the jar has struck, slacking off the string will allow the jar to close. Repeat the jarring by pulling another strain on the string. The jarring force transmitted by the piston is proportional to the strain taken on the string. To increase the intensity of the blow, take a greater strain on the string. A lighter

strain on the string will lessen the intensity of the jarring blow. The frequency of the blows struck can be as rapid as the operator can pick up and slack off the running string.

### When ordering, please specify:

- (1) Complete assembly or part number
- (2) O.D. of assembly
- (3) Size and type of connection

<b>OUTSIDE DIAMETER</b>		1-1/2	1-3/4	2-1/8				
<b>CONNECTIONS</b>		15/16	3/4	7/8				
<b>PIN UP - BOX DOWN</b>		10 THD	SR	SR				
<b>LENGTH OF STROKE (INCHES)</b>		9-3/16	10	11-5/16				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>703-001</b>	<b>703-003</b>	<b>703-005</b>				
	Bowen No.	28591	79316	13570				
<b>TOP SUB</b>	<b>Logan Part No.</b>	<b>AL1002</b>	<b>AL1003</b>	<b>AL1004</b>				
	Bowen No.	10761	12761	11543				
<b>MANDREL BODY INSERT</b>	<b>Logan Part No.</b>	<b>BA2000</b>	<b>BA2001</b>	<b>BA2002</b>				
	Bowen No.	28594	79317	10723				
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>BA3000</b>	<b>BA3001</b>	<b>BA3002</b>				
	Bowen No.	28593	12763	13572				
<b>MANDREL</b>	<b>Logan Part No.</b>	<b>BA4000</b>	<b>BA4001</b>	<b>BA4002</b>				
	Bowen No.	28592	79318	13571				
<b>MIDDLE BODY</b>	<b>Logan Part No.</b>	<b>AL2002</b>	<b>AL2005</b>	<b>AL2006</b>				
	Bowen No.	11182	12765	11537				
<b>BALANCE PISTON</b>	<b>Logan Part No.</b>	<b>AL7002</b>	<b>AL7003</b>	<b>AL7004</b>				
	Bowen No.	11185	12766	11540				
<b>BOTTOM SUB</b>	<b>Logan Part No.</b>	<b>AL6002</b>	<b>AL6003</b>	<b>AL6004</b>				
	Bowen No.	11181	12767	11536				
<b>VALVE PLUG</b>	<b>Logan Part No.</b>	<b>AL8000</b>	<b>AL8000</b>	<b>AL8000</b>				
	Bowen No.	11189	11189	11189				
<b>VALVE PLUG SPRING</b>	<b>Logan Part No.</b>	<b>AL9000</b>	<b>AL9000</b>	<b>AL9000</b>				
	Bowen No.	834	834	834				
<b>VALVE PLUG SEAT</b>	<b>Logan Part No.</b>	<b>AL10001</b>	<b>AL10001</b>	<b>AL10001</b>				
	Bowen No.	11186	11186	11186				
<b>MANDREL NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L365-15</b>	<b>L365-17</b>	<b>L365-21</b>				
	Bowen No.	365-15	365-17	365-21				
<b>MANDREL SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L375-15</b>	<b>L375-17</b>	<b>L375-21</b>				
	Bowen No.	375-15	375-17	375-21				
<b>BALANCE PISTON NON-EXTRUSION RING</b>	<b>Logan Part No.</b>	<b>L366-16</b>	<b>L366-20</b>	<b>L366-24</b>				
	Bowen No.	366-16	366-20	366-24				
<b>BALANCE PISTON SEAL PROTECTOR RING</b>	<b>Logan Part No.</b>	<b>L82-16</b>	<b>L82-20</b>	<b>L82-24</b>				
	Bowen No.	9382-16	9382-20	9382-24				

Logan Oil Tools reserves the right to change or discontinue designs without notice.

# LOGAN GENERAL CATALOG

OIL TOOLS

## HYDRAULIC ROD JARS

<b>OUTSIDE DIAMETER</b>		1-1/2	1-3/4	2-1/8				
<b>CONNECTIONS</b>		15/16	3/4	7/8				
<b>PIN UP - BOX DOWN</b>		10 THD	SR	SR				
<b>LENGTH OF STROKE (INCHES)</b>		9-3/16	10	11-5/16				
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>703-001</b>	<b>703-003</b>	<b>703-005</b>				
	Bowen No.	28591	79316	13570				
<b>FILL PLUG</b>	<b>Logan Part No.</b>	<b>AG10000</b>	<b>AG10000</b>	<b>AG10002</b>				
	Bowen No.	617	617	329				
<b>LOCK PINS</b>	<b>Logan Part No.</b>	<b>AL11002</b>	<b>AL11003</b>	<b>AL11004</b>				
	Bowen No.	13432	18183	42732				
<b>SPRING GUIDE</b>	<b>Logan Part No.</b>	<b>AL16000</b>	<b>AL16000</b>	<b>AL16000</b>				
	Bowen No.	48307	48307	48307				
<b>VITON O-RING PACKING SET</b>	<b>Logan Part No.</b>	<b>703-002</b>	<b>703-004</b>	<b>703-006</b>				
<i>Consists of:</i>	Bowen No.	32679	79328	13573				
<b>MANDREL SEAL</b>	<b>Logan Part No.</b>	<b>568-210</b>	<b>568-212</b>	<b>568-216</b>				
	Bowen No.	27-15	27-17	27-21				
	No. Req'd	2	2	2				
<b>BALANCE PISTON SEAL</b>	<b>Logan Part No.</b>	<b>568-211</b>	<b>568-215</b>	<b>568-219</b>				
	Bowen No.	27-16	27-20	27-24				
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>...</b>	<b>...</b>	<b>568-221</b>				
<b>INSERT – SMALL SEAL</b>	Bowen No.	...	...	27-26				
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>568-215</b>	<b>568-218</b>	<b>568-223</b>				
<b>INSERT – LARGE SEAL</b>	Bowen No.	27-20	27-23	30-1				
<b>MIDDLE BODY SEAL</b>	<b>Logan Part No.</b>	<b>568-215</b>	<b>568-218</b>	<b>568-223</b>				
	Bowen No.	27-20	27-23	30-1				
<b>VALVE PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-007</b>	<b>568-007</b>	<b>568-007</b>				
	Bowen No.	27-2	27-2	27-2				
<b>FILL PLUG SEAL</b>	<b>Logan Part No.</b>	<b>568-005</b>	<b>568-005</b>	<b>568-006</b>				
	Bowen No.	568005	568005	27-1				
<b>VALVE PLUG</b>	<b>Logan Part No.</b>	<b>568-112</b>	<b>568-112</b>	<b>568-112</b>				
<b>SEAT SEAL</b>	Bowen No.	27-10	27-10	27-10				

## ACCESSORIES

<b>SERVICE KIT</b>	<b>Logan Part No.</b>	<b>28001-015</b>	<b>28001-016</b>	<b>28001-017</b>				
	Bowen No.	11178	15997	11554				
<b>MANDREL BODY</b>	<b>Logan Part No.</b>	<b>AG1000-15</b>	<b>AG1000-17</b>	<b>AG1000-21</b>				
<b>SETTING TOOL</b>	Bowen No.	22709-15	22709-17	22709-21				
<b>BALANCE PISTON</b>	<b>Logan Part No.</b>	<b>AL13000-16</b>	<b>AL13000-20</b>	<b>AL13000-24</b>				
<b>SETTING TOOL</b>	Bowen No.	22729-16	22729-20	22729-24				

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**SPANG LINK JARS**

**Overview**

Spang Link Jars are used in any wireline operation where jarring action is desirable. They are particularly suited to use as auxiliary equipment, for shearing pins, actuating plungers, and other similar uses. They are simple, lightweight, rugged, and easy to maintain.

**SPANG LINK JARS**

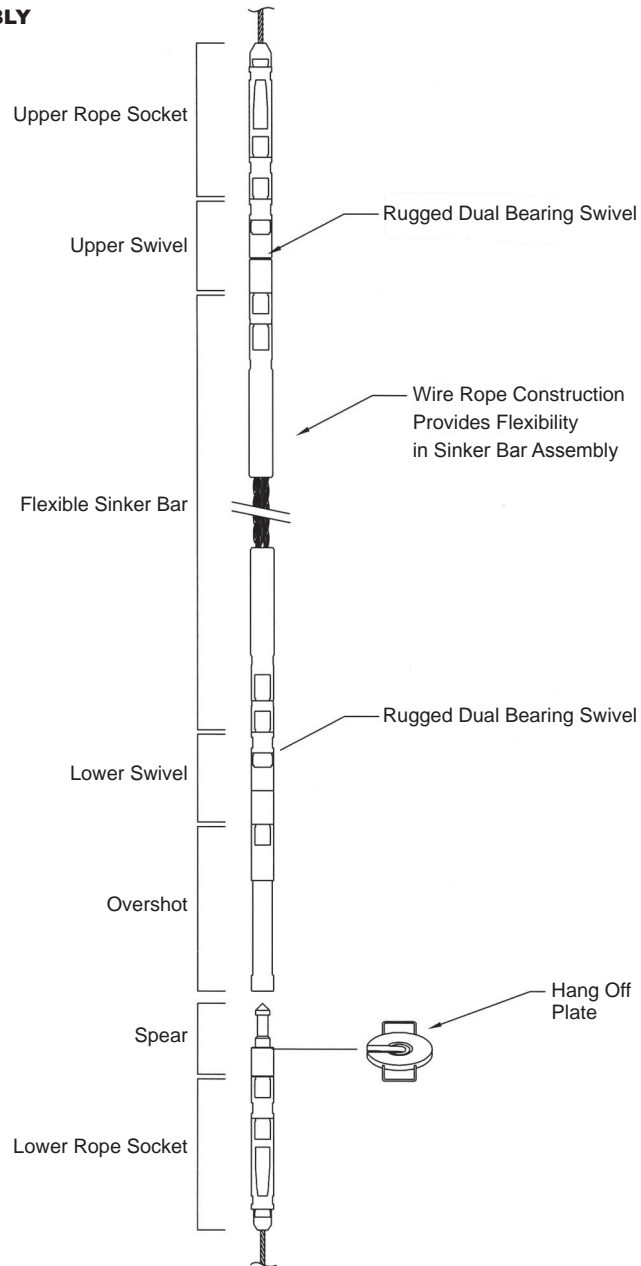
<b>OUTSIDE DIAMETER</b>	1	1-1/4	1-1/2	1-3/4	1-7/8		
<b>TOP CONNECTIONS</b>	5/8	15/16	15/16	3/4	3/4		
<b>PIN BOTTOM - BOX</b>	11 THD	10 THD	10 THD	SR	SR		
<b>LENGTH OF STROKE (INCHES)</b>	24	24	24 – 30	24 – 30	24 – 30		
<b>COMPLETE ASSEMBLY</b>	<b>Logan Part No.</b>	<b>L18611</b>	<b>L186184</b>	<b>L18660</b>	<b>L18709</b>	<b>L21665</b>	

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**When ordering, please specify:**

- (1) Complete assembly or part number
- (2) Stroke length
- (3) Size and type of connection

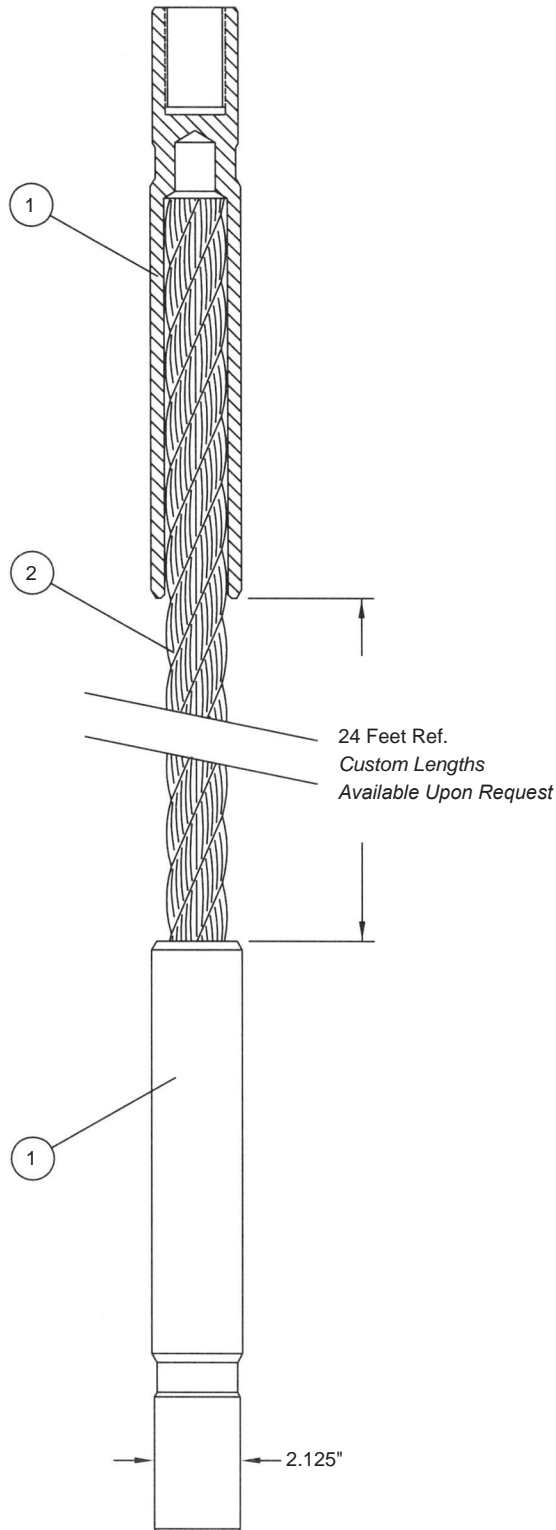
**COOPER/LOGAN CABLE GUIDED FISHING ASSEMBLY WITH FLEXIBLE SINKER BAR**



OUTSIDE DIAMETER (INCHES)		1-3/8	1-11/16	2-1/8 Knuckle
<b>COMPLETE ASSEMBLY</b>	Logan Part No.	...	...	...
<b>SWIVEL</b>	Logan Part No.	LCM47-100	LCM98-100	LCM71-100
<b>FLEXIBLE SINKER BAR</b>	Logan Part No.	LCM45-100	LCM97-100	LCM42-100
<b>ROPE SOCKET – UPPER</b>	Logan Part No.	LCM49-100	LCM12-102	LCM72-100
<b>ROPE SOCKET – LOWER</b>	Logan Part No.	LCM49-100	LCM12-102	LCM72-100
<b>KNUCKLE JOINT</b>	Logan Part No.	LCM92-100	LCM93-102	LCM94-100

**ACCESSORIES**

<b>T-BAR CLAMP ASSEMBLY</b>	Logan Part No.	LCM01-104	LCM01-104	LCM01-104
<b>SPEAR HEAD OVERSHOT</b>	Logan Part No.	LCM48-100	LCM76-100	LCM65-100



**COOPER/LOGAN FLEXIBLE SINKER BAR ASSEMBLY**

**Overview**

The Flexible Sinker Bar Assembly is designed for use during wireline stripping operations on drilling rigs that utilize top drive systems. The wire rope construction provides flexibility in the wire rope sinker bar assembly and alleviates the problems encountered when forcing a rigid type sinker bar assembly around the top drive housing. The slim-line rope socket provides clearance for running inside the drill pipe and is configured for large diameter wire rope to provide increased sinker bar weight.

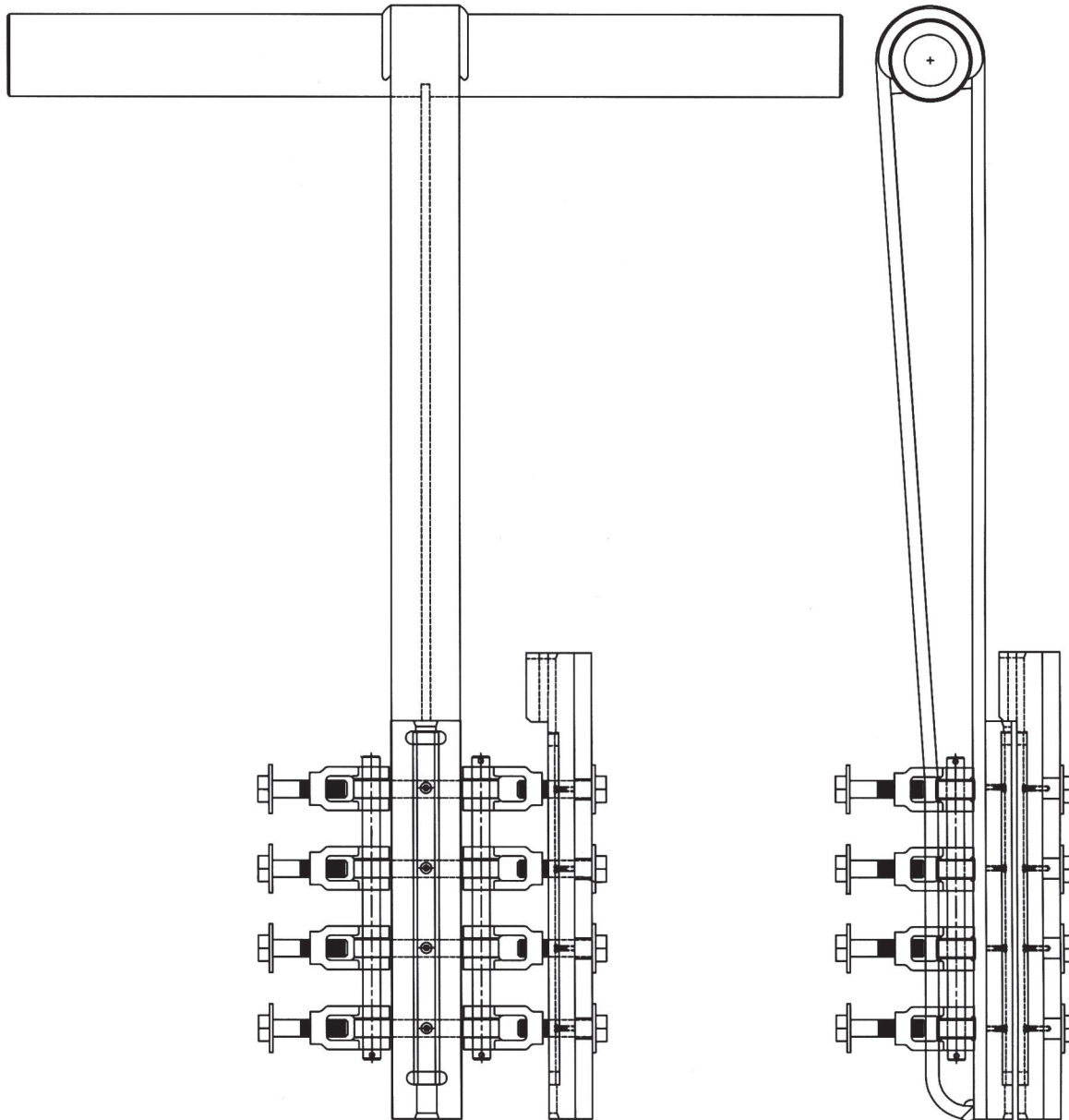
**Notes:**

1. 1.5" diameter wire rope – 6 x 41 IWRC (alternate 6 x 37), right regular lay EIPS (extra improved plow steel)
2. Maximum allowable working load: 25,000 lbs.
3. Proof load Wireline Sinker Bar Assembly to 50,000 lbs. prior to service.
4. Estimated total weight: 124.8 lbs.

**When ordering, please specify:**

(1) Complete assembly number:

- 1-3/8" **LCM45-100**
- 1-11/16" **LCM97-100**
- 2-1/8" **LCM42-100**



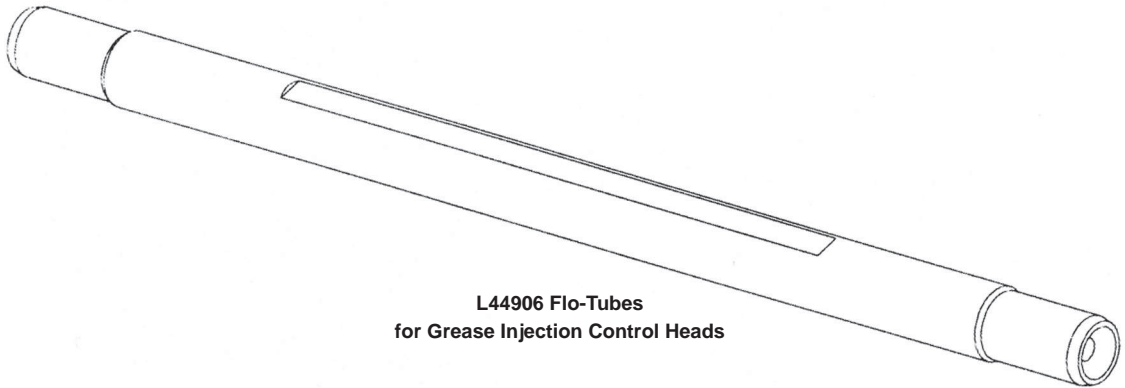
**COOPER/LOGAN T-BAR WIRELINE CLAMPING TOOL**

**Overview**

The T-Bar Wireline Clamping Tool is designed for wireline diameters up to  $17/32$ " and wireline breaking strength of 24,500 pounds. Improved design features such as anti-shear on the upper clamp segment, increased support for wireline inserts, and increased T-bar body flange thickness, enhance the tool's safety during use in the field while maintaining the tool's proven existing capabilities.

**When ordering, please specify:**

(1) Complete assembly number: **LCM01-104**



**L44906 Flo-Tubes  
for Grease Injection Control Heads**

## FLO-TUBES

Part Number	Description	Actual Bore*
L44906-112	.107 – .109	0.112
L44906-135	.130 – .132	0.135
L44906-176	.171 – .173	0.176
L44906-177	.172 – .174	0.177
L44906-179	.174 – .176	0.179
L44906-183	.177 – .180	0.183
L44906-186	.181 – .183	0.186
L44906-189	.184 – .186	0.189
L44906-192	.187 – .189	0.192
L44906-194	.188 – .191	0.194
L44906-196	.192 – .193	0.196
L44906-199	.194 – .196	0.199
L44906-201	.195 – .198	0.201
L44906-208	.201 – .205	0.208
L44906-211	.206 – .208	0.211
L44906-213	.208 – .210	0.213
L44906-216	.211 – .213	0.216
L44906-219	.214 – .216	0.219
L44906-222	.216 – .219	0.222
L44906-223	.218 – .220	0.223
L44906-224	.219 – .221	0.224
L44906-226	.221 – .223	0.226
L44906-228	.222 – .225	0.228
L44906-231	.224 – .228	0.231
L44906-232	.227 – .229	0.232
L44906-234	.229 – .231	0.234
L44906-236	.231 – .233	0.236
L44906-238	.233 – .235	0.238
L44906-239	.234 – .236	0.239
L44906-240	.235 – .237	0.240
L44906-242	.237 – .239	0.242
L44906-245	.240 – .242	0.245

\* +.002/- .000

Part Number	Description	Actual Bore*
L44906-248	.242 – .245	0.248
L44906-249	.244 – .246	0.249
L44906-254	.248 – .251	0.254
L44906-256	.251 – .253	0.256
L44906-258	.253 – .255	0.258
L44906-260	.255 – .257	0.260
L44906-261	.256 – .258	0.261
L44906-267	.262 – .264	0.267
L44906-268	.263 – .265	0.268
L44906-275	.269 – .272	0.275
L44906-286	.281 – .283	0.286
L44906-288	.283 – .285	0.288
L44906-291	.285 – .288	0.291
L44906-293	.288 – .290	0.293
L44906-295	.290 – .292	0.295
L44906-298	.292 – .295	0.298
L44906-306	.300 – .303	0.306
L44906-312	.307 – .309	0.312
L44906-315	.310 – .312	0.315
L44906-316	.311 – .313	0.316
L44906-318	.312 – .315	0.318
L44906-321	.315 – .318	0.321
L44906-322	.317 – .319	0.322
L44906-325	.319 – .322	0.325
L44906-326	.321 – .323	0.326
L44906-328	.323 – .325	0.328
L44906-332	.327 – .329	0.332
L44906-334	.329 – .331	0.334
L44906-337	.332 – .334	0.337
L44906-339	.334 – .336	0.339
L44906-341	.336 – .338	0.341
L44906-343	.338 – .340	0.343

## FLO-TUBES

### Overview

Logan Oil Tools manufactures and supplies L44906 Flo-Tubes for grease injection control heads. After analyzing the industry's supply and demand of Flo-Tubes, a true need for a reliable and responsive source for this product was revealed — a source that could address the demand, and quickly dispatch the sizes and quantities needed in the field.

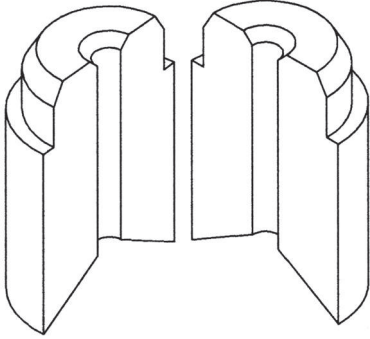
### Comprehensive Inventory

Logan Oil Tools maintains a comprehensive inventory of all commonly requested sizes in its Houston warehouse as well as in all seven of its branch locations. Should your operations require sizes which you have found to be difficult to obtain, please discuss this with us. We will make arrangements to manufacture and stock those sizes in the quantities anticipated for future needs. Since Logan Oil Tools has its own gun drilling facility, we can respond quickly, maintain the quality you expect from Logan Oil Tools, and continue to meet your delivery demands.

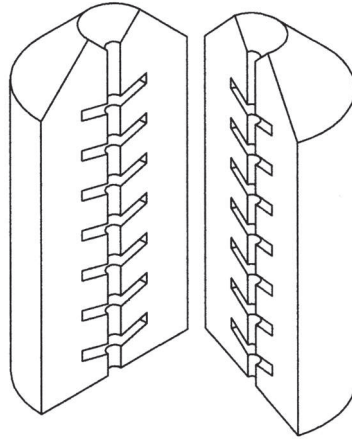
### When ordering, please specify:

- (1) Calipered size,
- (2) Actual bore size, or
- (3) Range of tubes needed

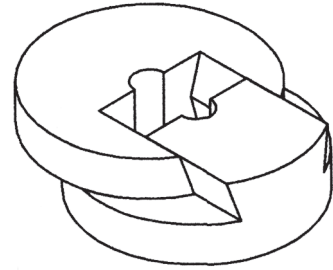
## WIRELINE SPARE PARTS



Line Bushing



Line Rubber



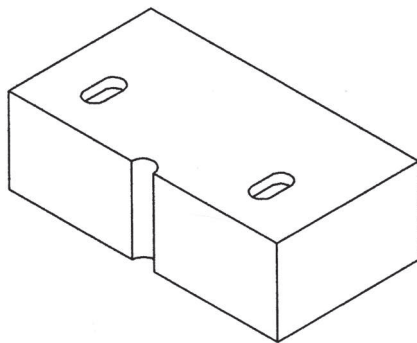
Interlocking Seats

## REPLACEMENT PARTS FOR HYDRAULIC AND MANUAL LINE WIPERS AND CONTROL HEADS

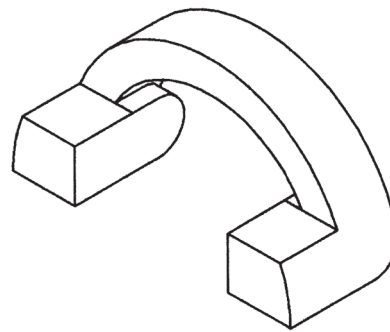
LINE BUSHINGS	Logan Part No.	L262	L10402	L74545				
LINE RUBBERS	Logan Part No.	L10975	L267	L10203				
INTERLOCKING SEATS	Logan Part No.	L10974	L6482	L10204				

## REPLACEMENT PARTS FOR MEASURING LINE STUFFING BOXES

STUFFING BOX PACKING	Logan Part No.	LSBBT-6GR	LSBBT-BLACK	LSBBT-CROWN	LSBBT-RED			
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Inner Seal



Outer Seal

## REPLACEMENT PARTS FOR WIRELINE BLOWOUT PREVENTERS

WIRELINE BOP INNER SEALS	Logan Part No.	L42211	L44155	L44098				
WIRELINE BOP OUTER SEALS	Logan Part No.	L42213	L44156	L44099				

## 85-TON POWER SWIVELS

### Overview

The hydraulic motor-driven, Logan 85-Ton Power Swivel provides smooth, shock-free torque. It is rated to support tensile pipe loads of 85 tons at zero rpm and 45 tons of dynamic load at 100 rpm. The compact, swivel-head design weighs only 1,163 lbs and fits into most drilling or workover masts.

The design incorporates a reliable, custom drive train with hardened steel gears. For most applications, the Logan 85-Ton Power Swivel eliminates the use of dangerous spinning chains, tongs, and kelly spinners. The Power Swivel facilitates drilling with longer drill string lengths before the rig must be shut down to add pipe. Stops and start-ups are thereby reduced — improving rig efficiency and reducing wear on the pump, drawworks, and other rig equipment.

The Logan 85-Ton Power swivel uses a closed loop hydraulic system with a variable displacement, bi-directional pump, and air or electric remote controls. Speed control is continuously variable over the entire operating range. Pressure compensating-type torque control overrides the speed control to maintain maximum torque. The power unit's torque limits can be set, thereby eliminating the potential danger of twist-offs or swollen boxes in the drill string. An integral rotary swivel bearing, floating washpipe assembly, and gooseneck connection eliminates the need for a separate rotary swivel.

A 2-1/2" bore gooseneck and washpipe assembly allows circulation through the 2" I.D. stem while rotating or in static mode. An access plug allows wireline to be run through the unit.

Features include:

- Smooth, shock-free torque reduces drill string damage
- Fits most drilling and work over masts
- Allows use of longer drill string lengths
- Power unit torque limits can be set
- Separate rotary swivel is unnecessary
- Choice of diesel engines
- Increased environmental safety features on skids and trailers
- Easy to service

Extra cost options include:

- Air- or hydro-start engine
- Special hydraulic motor
- Lifting frame
- Electric or hydraulic loading winch
- Motor brake
- Control can be operated remotely or from the power unit
- Cold weather package



Gooseneck Trailer-Mounted Unit, Side View

The complete Logan 85-Ton Power Swivel package includes an elevator-type bail or hook-link adapters; a unitized washpipe packing box assembly; a fixed displacement, piston-type, hydraulic motor rated at 5,000 psi; a torque rein assembly; safety cable; and 1-inch quick disconnects. The components are available either trailer- or skid-mounted with powered hose reels to form a rugged unit. A swivel carrying stand is standard.

**CAUTION: Refer to the installation procedure outlined on page 4 of the instruction manual before installing the Logan 85-Ton Power Swivel on a rig. Failure to properly install the Power Swivel can result in injury to the operator and/or rig floor personnel.**

### Uses

The Logan 85-Ton Power Swivel is ideally suited for use in fishing and workover operations — such as the internal or external cutting of casing, tubing, or drill pipe; drilling out plugs, packers, or cement; milling operations; or scraping casing — whenever shock-free, controlled torque is essential to eliminating the potential danger of twist-offs or damage to cutting tools.

The compact, lightweight swivel-head design also makes it extremely effective for light to medium drilling applications including water wells, pillings for piers and foundations, in addition to oil and gas wells. Suspending the swivel from a boom or crane eliminates a great deal of set-up time or shifts to additional locations.

The Logan 85-Ton Power Swivel is also ideal for coring operations. Any length of core may be taken. Accurate and smooth torque ensures against damage to core tools or strings.

### Construction

#### Power Swivel Assembly

The Logan 85-Ton Power Swivel is powered by a fixed displacement, piston-type, hydraulic motor rated at 5,000 psi. The motor is mounted

on the underside of the swivel and is protected by a steel frame.

Two high pressure hydraulic hoses and the motor drain hose exit from the bottom of the assembly. The high pressure hydraulic hoses connect to the motor with quick disconnects. The motor drain hose is fitted with a self-sealing quick disconnect coupling.

The one-piece gooseneck is constructed of cast steel. A 2-inch I.D. NPT access plug located in the top allows passage of wireline and small tools through the swivel for downhole operations. The gooseneck and swivel packing are hydrostatically tested and rated at 5,000 psi circulating pressure.

The floating washpipe assembly and packing are self-aligning. Friction bearing surfaces of the washpipe (areas that contact the packing) are hard-surfaced for wear-resistance.

The elevator bail is machined from forged, heat-treated alloy steel for maximum strength. The bail, bail pins, and body are manufactured to API guidelines. The design incorporates a reliable, custom drive train with hardened steel gears consisting of: a motor drive gear, reduction drive gear, an intermediate gear, and the main drive gear. Roller bearings keep the gears in close alignment.

A magnetic drain plug is located on the lower cover plate of the swivel assembly. A tell-tale hole in the lower plate indicates hydraulic oil leakage past the motor shaft seal or lubricating gear oil past the input pinion shaft. A filler/relief plug is located on the upper cover plate. The gear housing is equipped with an oil level sight glass so the operator may check oil level with a quick glance.

To protect the main stem oil seal from dirt, an excluder seal is installed below the packing nut.

## Control Units

Air controls consist of an air compressor and tank, an air filter/regulator/lubricator unit, and a pedestal mounted control panel with extra lines fitted with quick disconnect couplers. A lever-operated air valve controls the engine speed. Another single-lever air valve controls the direction and speed of the Power Swivel. A torque gauge, calibrated in ft-lbs, indicates torque.

Control assemblies for the Logan 85-Ton Power Swivel are either air or electric. They can be operated remotely (extra cost option) for operator convenience and safety, or from the power unit. Remote control assemblies are pedestal mounted. The control assembly is lightweight and the pedestal base is removable for easy storage on the trailer or skid. A new wireless remote with an operating range of 150 feet is also available.

The electric control panel consists of a rotary switch for controlling swivel direction and speed, an engine rpm control switch, a digital torque gauge, and an engine kill switch. An emergency kill switch is available for hazardous locations.

Torque limits can be easily and accurately set on both air and electric control units. A torque control unit mounted on the fuel tank can be preset to the desired torque limit with the turn of a knob. Torque will be indicated on the control panel in ft-lbs.

## Basic Power System

The Logan 85-Ton Power Swivel is equipped with a diesel engine to provide power. The engine is sized to provide sufficient horsepower to operate the swivel to full torque and rpm limits. Control systems may be either air or electric.

On units equipped with air control systems, an air compressor, a three-gallon receiver tank, and an air filter-lubricator are also provided.

## Hydraulic System

The hydraulic system includes a direct driven, variable displacement hydraulic pump that is mounted directly on the engine flywheel housing. All piping, valves, fittings, reservoirs, and other components required to complete the system are included. The hydraulic system is designed and rated at 5,000 psi working pressure.

The hydraulic reservoir is designed to dissipate heat and is adequately sized to disperse foam that may be generated during operation. A suction strainer and high pressure filters provide continuous filtration of the hydraulic fluid. Visual registers on the tank return filter and high pressure filters indicate when these elements need to be replaced.

Hydraulic hoses are reel-mounted on the power unit. They are connected to the power swivel hydraulic motor with swivel joints and quick disconnects.

A swivel carrying rack allows the swivel to be loaded and unloaded without breaking the hose connections.

## Power Unit

The compact, easily transportable Power Swivel units may be mounted on a trailer, skid, or containerized. All units consist of an engine with a hydraulic pump, hydraulic piping, a hydraulic fluid reservoir, a hose reel assembly and hoses necessary for supplying hydraulic power to the power swivel motor. Brackets to hold and transport the swivel and the control panel are included.

## Trailer-Mounted Unit

The compact, tandem axle trailer units meet all ICC regulations and are equipped with heavy-duty springs and electric brakes. The trailer can be supplied as a gooseneck or bumper pull trailer. Diamond-patterned deck plate provides solid, skid resistant flooring over the all welded, steel frame.

## Skid-Mounted Unit

Skid units are rugged and made of heavy-duty structural tubing with welded construction. Both ends are rounded for easy skidding. Ends are fitted with an integral pipe that may be used to attach boom lines or hoist slings. Main runners, running the length of the skid, are strengthened by cross-members for additional rigidity. The entire frame is covered with diamond-patterned deck plate to provide a solid, skid resistant floor.

To meet environmental regulations, both trailer- and skid-mounted units are equipped with an integral containment lip to contain fluid spills.

## Containerized Unit

Containerized units are built into a 20-foot ocean container. The containers are equipped with two bi-fold doors on one side, and double doors in the rear, to allow complete access. A louvered vent, which has an adjustable cover that can be sealed off for storage or transport, is installed on the front. The floor is diamond tread steel plate.

## Operation

### General Rules

Logan Oil Tools recommends the following rules be observed when operating the Power Swivel. These operational rules apply to all power swivel units, whether they are equipped with air or electric controls.

1. The pump displacement control should always be used to change the speed of the swivel. Setting the engine at the rated rpm will prolong engine and pump life, burn less oil, and result in increased fuel economy.
2. Set the speed control at neutral and allow the swivel to completely stop rotation before switching directions.
3. Filters should be checked on a daily basis.
4. The hydraulic fluid level should be checked daily. If the level is below the sight gauge, add hydraulic fluid.
5. Do not permit the hydraulic oil temperature to exceed 190°F for extended periods.

### Air Controls

The air control system utilizes a lever-type control valve that is mounted on the remote control panel. These controls provide variable air pressure from 0 to 100 psi to the actuator/positioner to control both engine rpm and the speed/direction of swivel rotation.

When the swivel control lever is in the center position, the pump is in neutral and the Power Swivel is not rotating.

### Electric Controls

Diesel engine rpm is controlled by the switch labeled "ENGINE" on the control panel.

Swivel rotation is controlled by the knob labeled "SWIVEL RPM." It utilizes a forward/neutral/reverse switch to control rotation direction. Moving the switch to the "FORWARD" position will cause the Power Swivel to move in a right-hand (clockwise) direction.

Turn the "ENGINE" switch to "RUN" to increase engine rpm.

Pressure compensating-type torque control overrides the speed control to automatically maintain the maximum pre-established torque limit. This is accomplished by destroking the pump while maintaining engine speed.



**85-TON POWER SWIVEL SPECIFICATIONS**



**POWER SWIVEL SPECIFICATIONS**

MODEL NO.	PS85
NOMINAL LOAD RATING (tons)	85
DYNAMIC LOAD RATING @ 100 RPM (tons)	45
MAXIMUM TORQUE (ft-lbs)	3,950
MAXIMUM SPEED (rpm)	155
MAXIMUM CIRCULATING PRESSURE	5,000
STANDARD STEM CONNECTION	2-7/8 IF
GOOSENECK CONNECTION	2-1/2 NPT
SWIVEL HEAD ASSEMBLY WEIGHT (lbs)	1,163

**POWER UNIT & CONTROL SPECIFICATIONS**

MODEL NO.	PS85
DIESEL ENGINE *	QSB4.5 or C4.4
ENGINE CONT HP @ 2000 RPM	83
HYDRAULIC OUTPUT (max gpm/max psi)	43/5,000

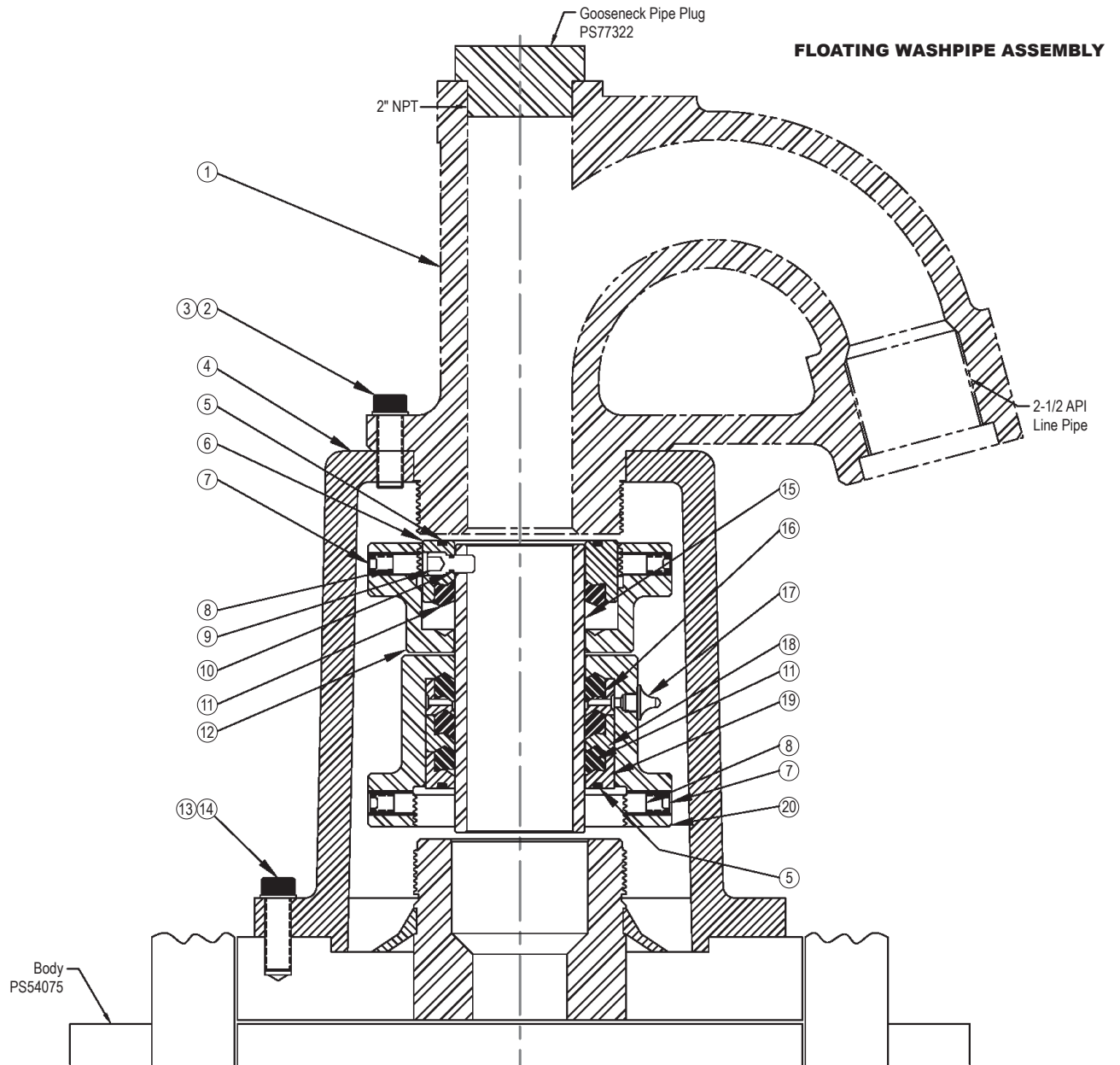
\* Choice of Cummins, Caterpillar/Perkins, or John Deere

**CAUTION:** Before installing a Logan 85-Ton Power Swivel on a rig, refer to the installation procedure on page 5 of the instruction manual. Failure to properly install the Power Swivel can result in injury to the operator and rig floor personnel.

## PS85 POWER UNIT PARTS LIST

LOGAN PART NO.	QTY	DESCRIPTION
<b>HYDRAULIC PUMP</b>		
PS311412-001	1	Hydraulic Pump for Air Controls, Closed Loop
PS311412-002	1	Hydraulic Pump for Electric Controls
PS02196	1	Pump Stroke Positioner
PS02196-002	1	Pump Stroke Positioner Repair Kit
PS339412	1	Pump Stroke Positioner Bracket
PS73426	1	1/4" Check Valve
PS255002	1	Pump Motor Adapter
PS99376-002	1	Auxiliary Pump (Hose Reel Hydraulic Winch)
PS529412	1	Air Shuttle Valve (Pump Stroke)
<b>HYDRAULIC RESERVOIR</b>		
PS89046-001	1	40 gal Hydraulic Tank Reservoir
<i>Consisting of:</i>		
PS780412	1	Hydraulic Suction Strainer
PS754T08N	1	Hydraulic Suction 2" Ball Valve
PS099612	1	Hydraulic Return Filter Assembly
PS099612-001	1	Hydraulic Return Filter Element Only
PS02311	1	Filler Breather Cap
PS30795-002	1	Oil Level Gauge with Temperature
PS89046	1	Hydraulic Reservoir Only
PS233612	1	Relief Back Pressure Orifice
PS529412	1	Air Shuttle Valve
<b>FUEL TANK</b>		
PS96892-001	1	60 gal Fuel Tank Assembly
<i>Consisting of:</i>		
PS96892	1	Fuel Tank Only
PS96892-2	2	Fuel Sight Tube
PS94626	1	1-1/4" High Pressure Ball Valve
PS61648	2	High Pressure Filter Assemblies
PS02311	1	Filler Breather Cap
PS811412	1	Fuel Suction Tube
PS811412-A	1	Fuel Return Tube
<b>MISCELLANEOUS</b>		
PS57196	1	Heat Exchanger
PS57196-002	1	Heat Exchanger Guard
PSMM9000	1	Electric Winch
PS558612-001	1	Hydraulic Winch
PS44046	1	Battery Box
PS64044-003	1	Tool Box
PS211412	1	Power Swivel Stand
PS02196-002	1	Pump Stroke Positioner Repair Kit
PS921412-002	1	High Pressure Filter Housing
PS921412-003	1	High Pressure Filter Head
PS473912	1	Three-Port Coupler Repair Kit
<b>HOSE REEL</b>		
PS670712	1	Hose Reel Assembly
PS670712-HW	1	Hose Reel Assembly with Hydraulic Winch
PS06595	1	100 ft, High Pressure Hose Assembly
PS67595	1	100 ft, 3/4" Case Drain Hose
PS195412	1	Hydraulic Valve for Reel
PS195412-001	1	Hydraulic Valve for Reel with Hydraulic Winch
PS52250-1	1	Valve Handle Replacement Only
PS220712	1	Hydraulic Motor Hose Reel
PS89638-002	1	Flow Control Hose Reel
PS490412	1	Three-Port Coupling Hub
PS120712	1	Torque Hub
PS990412	1	Flanged Bearing

LOGAN PART NO.	QTY	DESCRIPTION
<b>AIR TORQUE SET PANEL</b>		
PS223612	1	Torque Set Panel Assembly
PS22236	1	0 – 3,950 ft/lbs Torque Gauge
PS98126	1	Torque Set Relief Valve
PS220512	1	Torque Set Air Override Valve
<b>AIR CONTROL PANEL</b>		
PS09966-003	1	Pump Control Valve
PS29966	1	Engine Throttle Control Valve
PS22236	1	0 – 3,950 ft/lbs Torque Gauge
PS220512	1	Engine Kill Valve
PS80345-003	5	1/4" Quick Disconnect, Air Male x Male Pipe
PS70345	1	1/4" Quick Disconnect, Hydraulic Male x Male Pipe
PS217752	1	Control Umbilical Bundle
PS70345-001	5	1/4" Quick Disconnect, Air Female
PS80345	1	1/4" Quick Disconnect, Hydraulic Female
<b>AIR PREPARATION PACKAGE</b>		
PS81455-002	1	Air Preparation Package
PS81455	1	3 Gallon Air Receiver
PS24695	1	Gauge
PS73585	1	Safety Pop-Off Valve
PS93646-001	1	Filter Regulator/Lubricator
PS81455-003	1	Tank Guard
<b>ELECTRIC CONTROL BOX</b>		
PSEC1009	1	Digital Torque Display
PSEC1008	1	Electric Pump Stroke Control
PSEC1041	1	Electric Control Cable Assembly
PS58628-010	2	Control Cable Connector Plug
PS58628-011	1	Panel Mount Connector Receptacle
PSEC1006	1	Two-position Switch/Engine Throttle
PSEC1007	1	Three-Position Switch/Direction Selector
<b>HYDRAULIC FILTERS</b>		
PS915512	1	Charge Pump Filter
PS780412-001	1	Suction Strainer
PS099612-001	1	Return Filter Element
PS921512-001	1	High Pressure Filter Element



## FLOATING WASHPIPE ASSEMBLY (PS49028-001) REPLACEMENT PARTS

ITEM	LOGAN PART NO.	QTY	DESCRIPTION
1	PS09028	1	Gooseneck
2	ACSA8-500-13-150	4	1/2" - 13 x 1-1/2" Socket Head Cap Screw
3	LKWA-500	4	1/2" Lock Washer
4	PS19028	1	Bonnet
5	568236-100	2	O-Ring
6	PS79028	1	Upper Packing Nut Ring
7	PS50732-003	8	1/2" - 13 NC x 3/4 Socket Set Screw
8	PS20128	8	Washpipe Packing Nut Screw Retainer
9	PS99028-001	3	Washpipe Locking Pin with O-Ring
10	568010-100	3	O-Ring

ITEM	LOGAN PART NO.	QTY	DESCRIPTION
11	PS72327	1	Packing Set
12	PS39028	1	Upper Packing Nut
13	ACSA8-625-13-150	4	5/8" - 13 x 1-1/2" Socket Head Cap Screw
14	LKWA-625	4	5/8" Lock Washer
15	PS49028	1	Washpipe
16	PS69028	1	Spacer and Lantern Ring
17	PS63672	1	Packing Nut Grease Fitting
18	PS62327	1	Plain Spacer Ring
19	PS42327	1	Packing Bottom Ring
20	PS29028	1	Lower Packing Nut

## SWIVEL HEAD PART LIST

Item numbers refer to drawing callouts on pages 301 – 311

ITEM	PART NO.	QTY.	DESCRIPTION
1	PS09028	1	Gooseneck
2	ACSA8-500-13-150	14	1/2" - 13 x 1-1/2" Long Socket Head Cap Screw
3	LKWA-500	18	1/2" Lockwasher
4	PS19028	1	Bonnet
5	568236	2	O-Ring
6	PS79028	1	Upper Packing Nut Ring
7	PS50732-003	8	1/2" - 13 NC x 3/4" Long Socket Set Screw with Brass Point
8	PS20128	8	Washpipe Packing Nut Screw Retainer
9	PS99028	3	Washpipe Locking Pin with 568010 O-Ring
10	568010	3	O-Ring
11	PS72327	1 Set	Packing
12	PS39028	1	Upper Packing Nut
13	ACSA8-625-13-150	8	5/8" - 11 x 1-1/2" Long Socket Head Cap Screw
14	LKWA-625	23	5/8" Lockwasher
15	PS49028	1	Washpipe
16	PS69028	1	Spacer and Lantern Ring
17	PS63672	1	Packing Nut Grease Fitting
18	PS62327	1	Plain Spacer Ring
19	PS42327	1	Packing Bottom Ring
20	PS29028	1	Lower Packing Nut
21	HCSA8-625-13-150	9	5/8" - 11 x 1-1/2" Long Hex Head Cap Screw
22	PS44322	4	Dowel Pin
23	AHSS-625-11-625	4	5/8" - 11 x 5/8" Long Allen Head Set Screw
24	PS77122	1	Filler Plug Relief Fitting
25	PS98352	1	Oil Filler Plug
26	PS72602	1	Magnetic Drain Plug
27	PS72516	1	7/8" - 14 NPT x 3/4" Adapter
28	PS26274	1	3/4" x 90, 150# Street Ell
29	PS86753	1	3/4" Close Nipple
30	PS79052-001	1	3/4" Wing Nut Quick Disconnect
31	PS90152-002	1	3/4" Metal Dust Cap
32	PS90152-003	1	3/4" Metal Dust Plug
33	PS55164	1	Lower Bearing Retainer Gasket
34	HCSA8-625-11-175	6	5/8" - 11 x 1-3/4" Long Hex Head Cap Screw
35	PS50602	1	Saver Sub
36	HCSA8-500-13-150	4	1/2" - 13 x 1-1/2" Long Hex Head Cap Screw
38	PS53506	2	1" Swivel Joint
39	PS55115-003	1	Shackle
40	PS55115-002	1	Torque Rein Assembly (Long)
41	PS697702	1	Torque Rein Eye
42	PS21415	1	Torque Rein Pull Pin
43	PS91875	1	Upper Gear Cover Shim
44	PS91826-003	1	Hydraulic Motor
45	PS65895	2	1" - 4" Bolt Elbow Flange
46	568219-200	2	Flange O-Ring
47	ACSA8-375-13-275	8	3/8" - 16 x 2-3/4" Long Socket Head Cap Screw

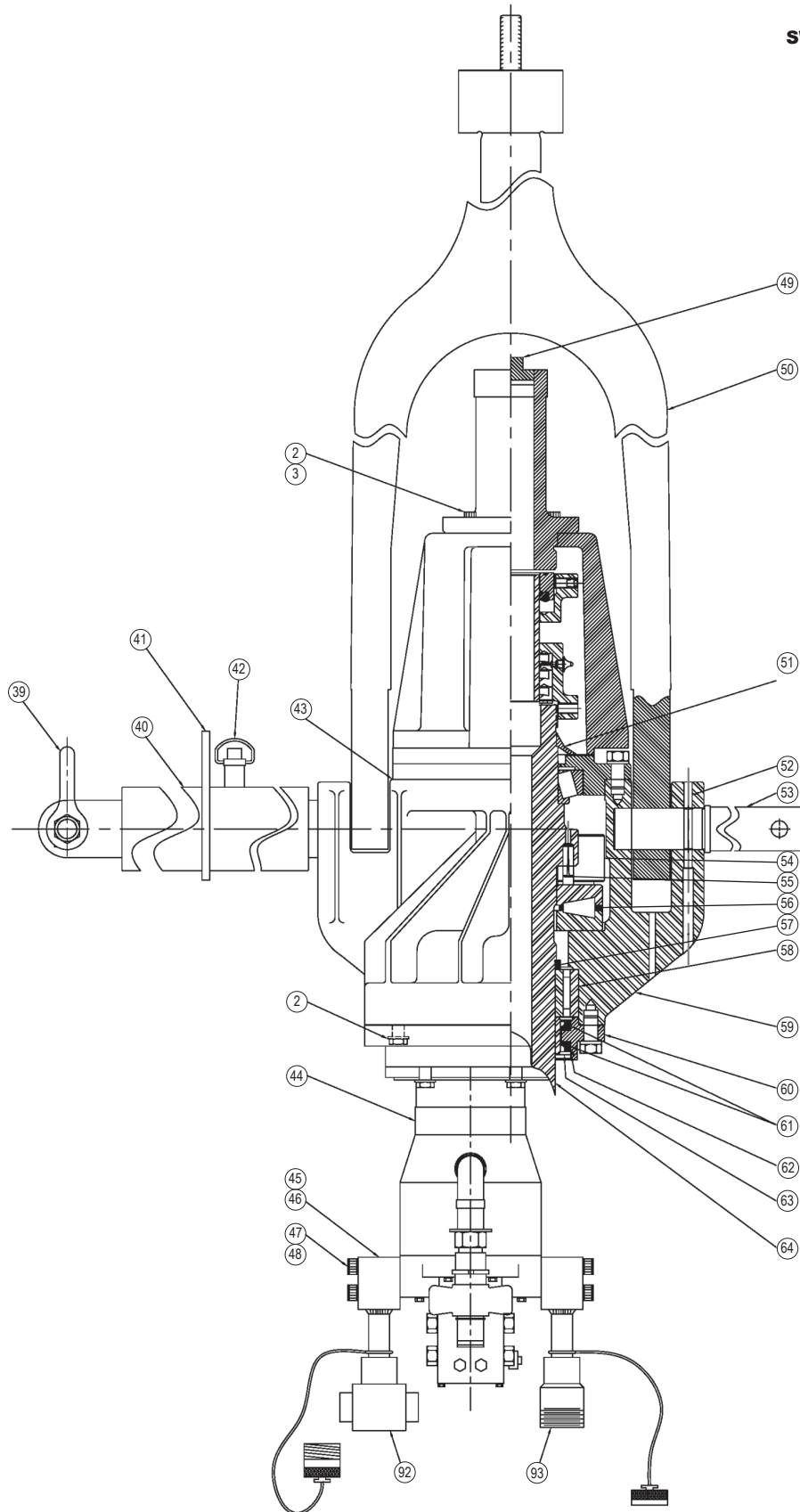
ITEM	PART NO.	QTY.	DESCRIPTION
48	LKWA-375	8	3/8" Lockwasher
49	PS77322	1	Gooseneck Pipe Plug
50	PS20213-001	1	Elevator Bail (Cast)
51	PS28444	1	Seal Protector
52	PS34813-001	2	Bolt and Nut for Bail Pin
53	PS65115	2	Bail Pin
54	PS12965	1	Final Reduction Gear
55	PS64702	6	Ring Gear Groove Pin
56	PS98402	1	Main Thrust Bearing
57	PS04685	1	Lower Stem Bearing Spacer
58	PS70602	1	Lower Stem Bearing
59	PS54075	1	Body
60	PS14685	1	Lower Stem Bearing Retainer
61	PS22602	2	Lower Oil Seal
62	PS16303	1	Seal Retainer Snap Ring
63	PS51602	1	Lower Seal Wear Ring
64	PS18444-001	1	Stem
65	PS64165	1	Second Reduction Pinion
66	PS05775	1	Second Reduction Gear Key
67	PS15165	1	First Reduction Pinion Upper Bearing
68	PS37965	1	First Reduction Pinion Upper Gear
69	PS05165	1	First Reduction Pinion Lower Bearing
70	PS44685	1	First Reduction Pinion Bearing Spacer
71	PS12685	1	Lower Gear Cover Gasket
72	PS25165	1	First Reduction Pinion Oil Seal
73	PS62516	1	Hydraulic Motor Adapter
74	PS08327	1	Retainer Ring
75	PS97327	1	Motor Adapter Sleeve
76	PS45165	1	Retainer Ring
77	PS85152	1	Second Reduction Shaft Lower Bearing
78	PS65165	2	Reduction Gear Key
79	PS95675	1	Lower Gear Cover Plate
80	PS27965	1	First Reduction Gear
81	PS84165	3	Roller Bearing
82	PS55935	1	Oil Seal Grease Fitting
83	PS90137	1	Oil Level Indicator Plug
84	PS88402	1	Upper Stem Bearing
85	PS02685	1	Upper Oil Seal
86	PS12165	1	Second Reduction Gear
87	PS53775	1	Upper Gear Cover Plate
88	PS03165	1	Final Reduction Pinion
89	PS95516-001	1	Motor Guard
90	PSWB3	3	Hose Safety Cable
91	G14085-BULK		HD-85W-140 Gear Lube, 2.5 Gal
92	PS65152	1	1" Quick Disconnect Coupler
93	PS01152	1	1" Quick Disconnect Nipple
	PS71107-001		Hydraulic Motor Shaft Seal Kit

## TORQUE REINS AND COMPONENTS

PART NO.	DESCRIPTION	LENGTH/STROKE
PS55115-002	PS85 Long Torque Rein (standard with head or unit)	Retracted 31.25"/Extended 48.5" Long
PS55115-001	PS85 Short Torque Rein	Retracted 20"/Extended 26.5" Long
PS55115-006	PS85 Extra Short Torque Rein	Retracted 12"/Extended 19" Long
PS55116-001	PS85 Torque Rein Roller Assembly (includes insert to minimize movement to Torque Rein)	

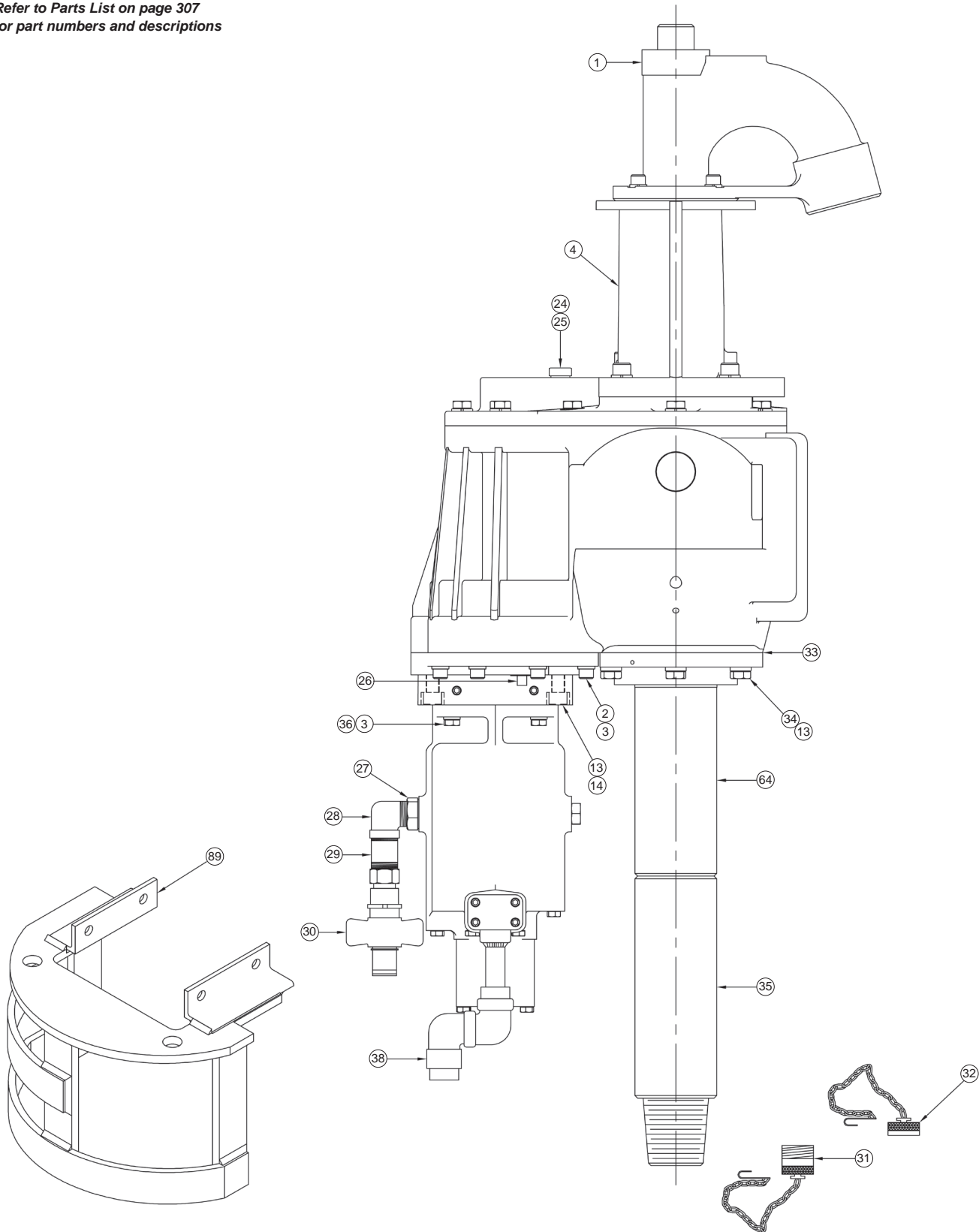
**SWIVEL HEAD - FRONT VIEW**

*Refer to Parts List on page 307  
for part numbers and descriptions*



## SWIVEL HEAD - SIDE VIEW

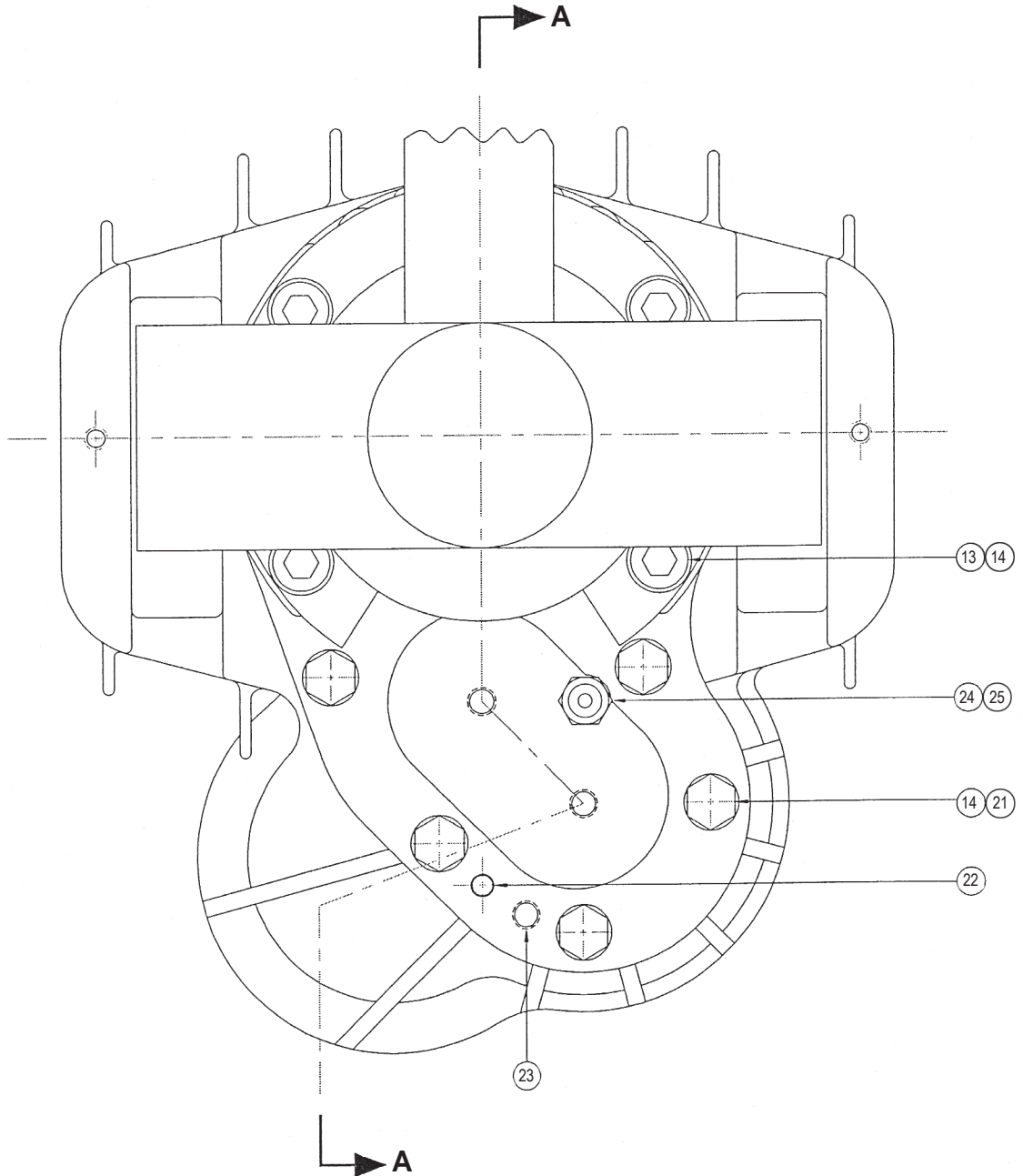
Refer to Parts List on page 307  
for part numbers and descriptions



**SWIVEL HEAD – TOP VIEW**

Refer to Parts List on page 307  
for part numbers and descriptions

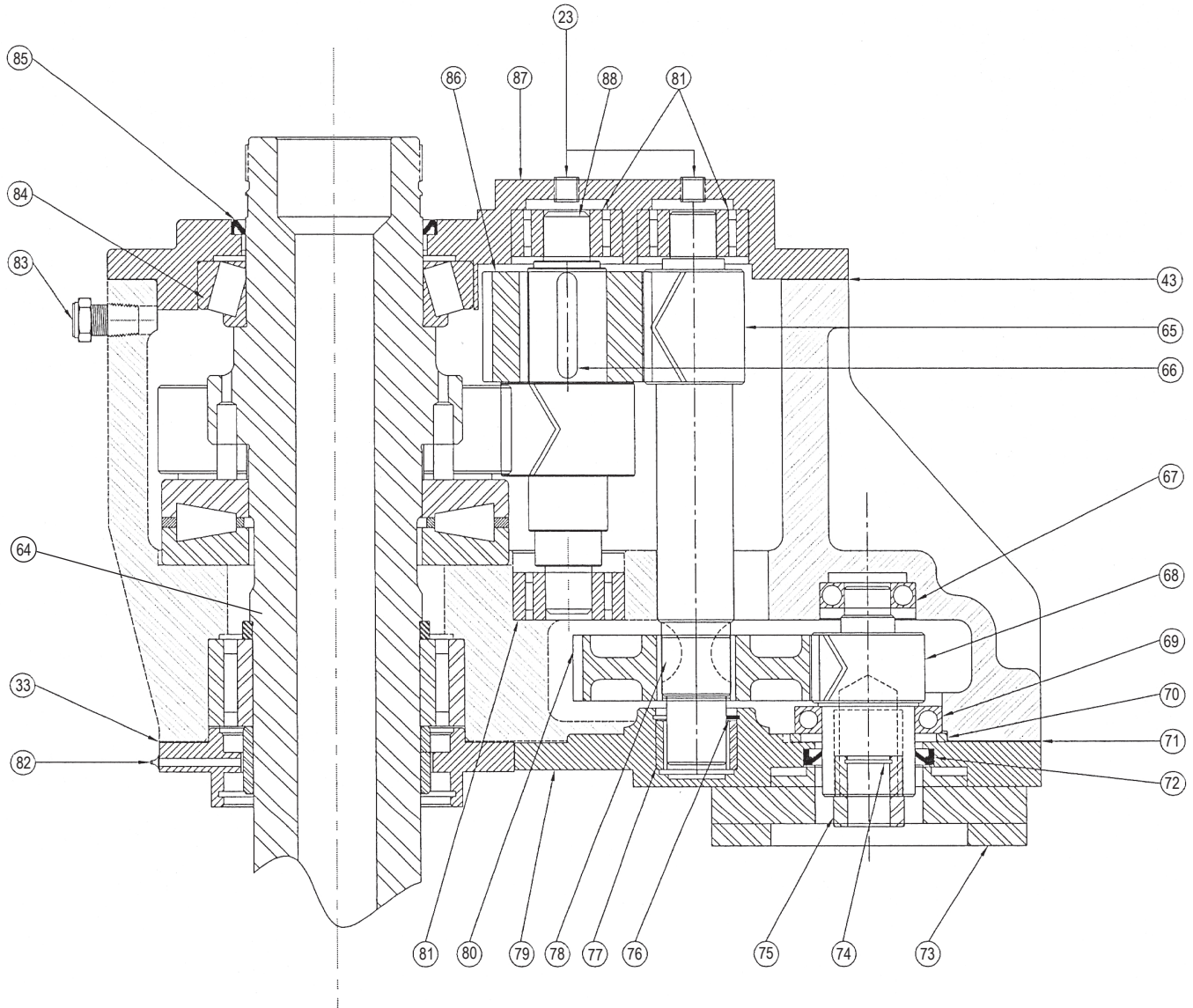
(See page 304 for Section A-A)



(See page 304 for Section A-A)

**SECTION A-A - THROUGH GEAR TRAIN**

Refer to Parts List on page 307 for part numbers and descriptions





## 120-TON POWER SWIVELS

### Overview

The hydraulic motor-driven, Logan 120-Ton Power Swivel provides smooth, shock-free torque. It is rated to support tensile pipe loads of 120 tons at zero rpm and 65 tons of dynamic load at 100 rpm. The compact, swivel-head design weighs only 2,000 lbs and fits into most drilling or workover masts. Maximum torque is rated at 8,100 ft/lbs at 150 rpm maximum.

The design incorporates a reliable, custom drive train with hardened steel gears. For most applications, the Logan 120-Ton Power Swivel eliminates the use of dangerous spinning chains, tongs, and Kelly spinners. The Power Swivel facilitates drilling with longer drill string lengths before the rig must be shut down to add pipe. Stops and start-ups are thereby reduced — improving rig efficiency and reducing wear on the pump, drawworks, and other rig equipment.

The Logan 120-Ton Power swivel uses a closed loop hydraulic system with variable displacement, bi-directional pump, and air, electric, or electric wireless remote controls. The variable volume pump and hydraulic system allow torque and speed to be infinitely adjusted within stated ranges, without shifting gears or stopping and restarting the unit. Speed control is continuously variable over the entire operating range. Pressure compensating-type torque control overrides the speed control to maintain maximum torque. The power unit's torque limits can be set, thereby eliminating the potential danger of twist-offs or swollen boxes in the drill string. An integral rotary swivel bearing, floating washpipe assembly, and gooseneck connection eliminates the need for a separate rotary swivel.

A 2-3/4" bore gooseneck and washpipe assembly allows circulation through the 2-11/16" I.D. stem while rotating or in static mode. An access plug allows wireline to be run through the unit.

Features include:

- Smooth, shock-free torque reduces drill string damage
- Fits many drilling and workover masts
- Allows use of longer drill string lengths
- Power unit torque limits can be set
- Separate rotary swivel is unnecessary
- Choice of diesel engines
- Increased environmental safety features on skids and trailers
- Easy to service
- Electric or hydraulic loading winch



120-Ton Power Swivel Head

Extra cost options include:

- Lifting frame
- Electric or hydraulic loading winch
- Cold weather package
- Hydraulic motor brakes

The complete Logan 120-Ton Power Swivel package includes an elevator-type bail; a unitized washpipe packing box assembly; a fixed displacement, piston-type, hydraulic motor rated at 5,000 psi; a torque rein assembly; safety cable; and 1-1/4" swivel joints. The components are available either trailer-mounted (gooseneck) or skid-mounted with powered hose reels to form a rugged unit. A swivel carrying stand is standard.

**CAUTION: Refer to the installation procedure outlined on page 5 of the instruction manual before installing the Logan 120-Ton Power Swivel on a rig. Failure to install the Power Swivel properly can result in injury to the operator and/or rig floor personnel.**

### Uses

The Logan 120-Ton Power Swivel is ideally suited for use in fishing and workover operations — such as the internal or external cutting of tubing, casing, or drill pipe; drilling out plugs, packers, or cement; milling operations; or scraping casing — whenever shock-free, controlled torque is essential to eliminating the potential danger of twist-offs or damage to cutting tools.

The compact, lightweight swivel-head design also makes it extremely effective for light to medium drilling applications including water wells, pilings for piers and foundations, in addition to oil and gas wells. Suspending the swivel from a boom or crane eliminates a great deal of set-up time or shifts to additional locations.

The Logan 120-Ton Power Swivel is also ideal for coring operations. Any length of core may be taken. Accurate and smooth torque ensures against damage to core tools or strings.

### Construction

#### Power Swivel Assembly

The Logan 120-Ton Power Swivel is powered by two fixed displacement, piston-type, hydraulic motors rated at 5,000 psi. The motors are mounted on the underside of the swivel and is protected by a steel guard.

Two high pressure hydraulic hoses and the motor drain hose exit from the bottom of the assembly. The high pressure hydraulic hoses connect to the motor with quick disconnects with quick disconnect couplers. The motor drain hose is also fitted with a self-sealing quick disconnect coupling.

The one-piece gooseneck is constructed of cast steel. A 2-7/8" EUE access plug located in the top allows passage of wireline and small tools through the swivel for downhole operations. The access plug may be removed to permit passage of tools with diameters smaller than 2-1/4". The gooseneck and swivel packing are hydrostatically tested and rated at 5,000 psi maximum circulating pressure.

The floating washpipe assembly and packing are self-aligning. Friction bearing surfaces of the washpipe (areas that contact the packing) are hard-surfaced for wear-resistance.

The elevator bail is machined from forged, heat-treated alloy steel for maximum strength. The bail, bail pins, and body are manufactured to API guidelines.

The design incorporates a reliable, custom drive train with hardened steel gears consisting of: a motor drive gear, reduction drive gear, an intermediate gear, and the main drive gear. Roller bearings hold the gears in close alignment.

A magnetic drain plug is located on the lower cover plate of the swivel assembly. A tell-tale hole in the lower plate indicates hydraulic oil leakage past the motor shaft seal or lubricating gear oil past the input pinion shaft. A filler/relief plug is located on the upper cover plate. The gear housing is equipped with an oil level sight glass so the operator may check oil level with a quick glance.

To protect the main stem oil seal from dirt, an excluder seal is installed below the packing nut.

#### Control Units

Air controls consist of an air compressor and tank, an air filter/regulator/lubricator unit, and a pedestal mounted control panel with extra lines fitted with quick disconnect couplers. A lever-operated air valve controls the engine speed. Another single-lever air valve controls the direction and speed of the Power Swivel. A torque gauge, calibrated in ft-lbs, indicates torque.

Control assemblies for the Logan 85-Ton Power Swivel are either air or electric. They can be operated remotely (extra cost option) for operator convenience and safety, or from the power unit. Remote control assemblies are pedestal mounted. The control assembly is lightweight and the pedestal base is removable for easy storage on the trailer or skid. A new wireless remote with an operating range of 150 feet is also available.

The electric control panel consists of a rotary switch for controlling swivel direction and speed, an engine rpm control switch, a digital torque gauge, and an engine kill switch. An emergency kill switch is available for hazardous locations.

Torque limits can be easily and accurately set on both air and electric control units. A torque control unit mounted on the fuel tank can be preset to the desired torque limit with the turn of a knob. Torque will be indicated on the control panel in ft-lbs.

#### Basic Power System

The Logan 120-Ton Power Swivel is equipped with a diesel engine to provide power. The engine is sized to provide sufficient horsepower to operate the swivel to full torque and rpm limits. Engines are equipped with heavy-duty radiators, rain caps, and optional side panels. The engines may be air-, electric-, or hydro-start.

Control systems may be either air or electric. On units equipped with air control systems, an air compressor, a three-gallon receiver tank, and an air filter-lubricator are also provided. Power for electric control systems is provided by the engine's generator and battery.

Pressure compensating type torque control overrides the speed control to maintain maximum torque. The power unit's torque limits can be set, thereby eliminating the potential danger of twist-offs or swollen boxes in the string. The torque gauge, calibrated in ft-lbs, is located on the remote control panel.

#### Hydraulic System

The hydraulic system includes a direct driven, variable displacement hydraulic pump and gear box that are mounted directly on the engine flywheel housing. All piping, valves, fittings, reservoirs, and other components required to complete the system are included. The hydraulic system is designed and rated at 5,000 psi working pressure.

The hydraulic reservoir is designed to dissipate heat and is adequately sized to disperse foam that may be generated during operation. A suction strainer, high pressure filters, and a tank return filter provide continuous filtration of the hydraulic fluid. Visual registers on the tank return filter and high pressure loop filters indicate when these elements need to be replaced.

The pump's displacement setting controls flow and eliminates the necessity of relief valves. This closed loop system reduces the required hydraulic reservoir capacity by 50% of that needed for fixed displacement, relief valve type systems.

All hydraulic hoses are reel-mounted on the power unit. They are connected to the power swivel hydraulic motor with swivel joints and quick disconnects.

A swivel carrying rack allows the swivel to be loaded and unloaded without breaking the hose connections.

#### Power Unit

The compact, easily transportable Power Swivel units may be mounted on a trailer or skid, or containerized. All units consist of an engine with a hydraulic pump, hydraulic plumbing, a hydraulic fluid reservoir, a hose reel assembly and hoses necessary for supplying hydraulic power to the power swivel motor. Brackets to hold and transport the swivel and the control panel are included.

#### Trailer-Mounted Unit

The compact, tandem axle trailer units meet all ICC regulations and are equipped with heavy-duty springs and electric brakes. Tongue weight is designed to ensure on-road stability and eliminate fishtailing. Diamond-patterned deck plate provides solid, skid resistant flooring over the all welded, steel frame.

#### Skid-Mounted Unit

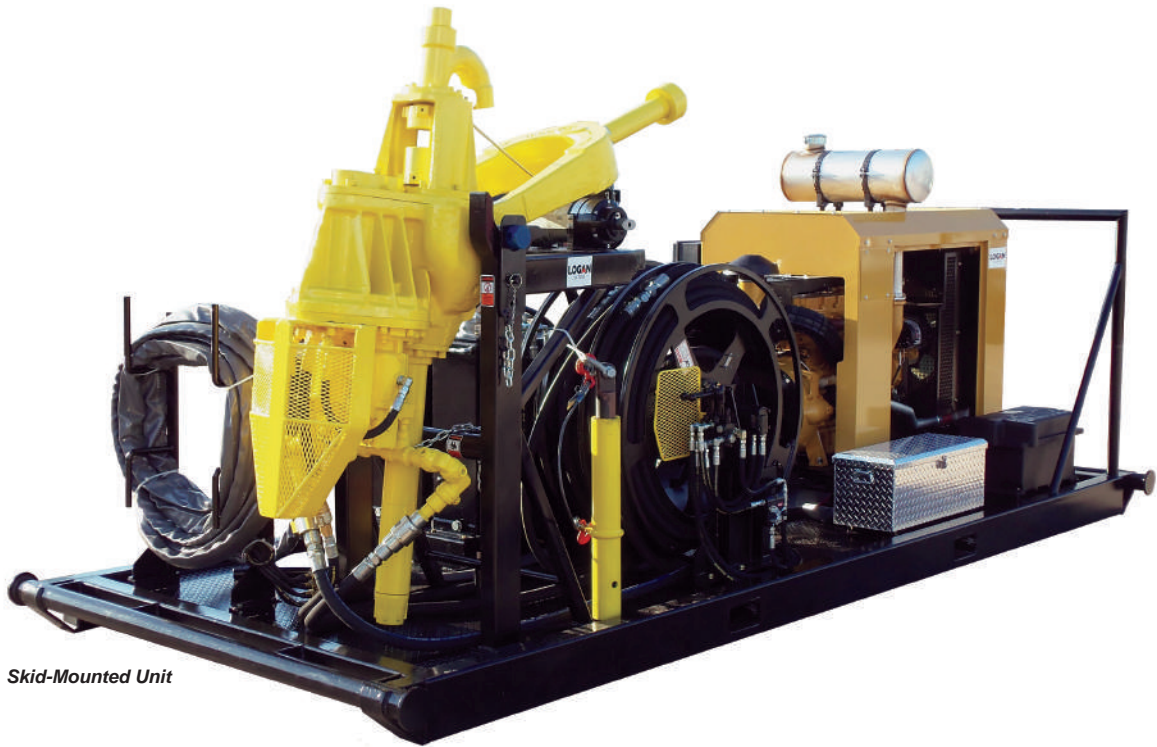
Skid-mounted units are rugged and made of heavy-duty structural tubing with welded construction. Both ends are rounded for easy skidding. Ends are fitted with an integral pipe that may be used to attach boom lines or hoist slings. Main runners, running the length of the skid, are strengthened by cross-members for additional rigidity. To meet environmental regulations, both trailer- and skid-mounted units are equipped with skirts to contain fluid spills.

#### Containerized Unit

Containerized units are built into a 20-foot ocean container. The containers are equipped with two bi-fold doors on one side, and double doors in the rear, to allow complete access. A louvered vent, which has an adjustable cover that can be sealed off for storage or transport, is installed on the front. The floor is diamond tread steel plate.

The entire frame is covered with diamond-patterned deck plate to provide a solid, skid resistant floor.

**120-TON POWER SWIVELS**

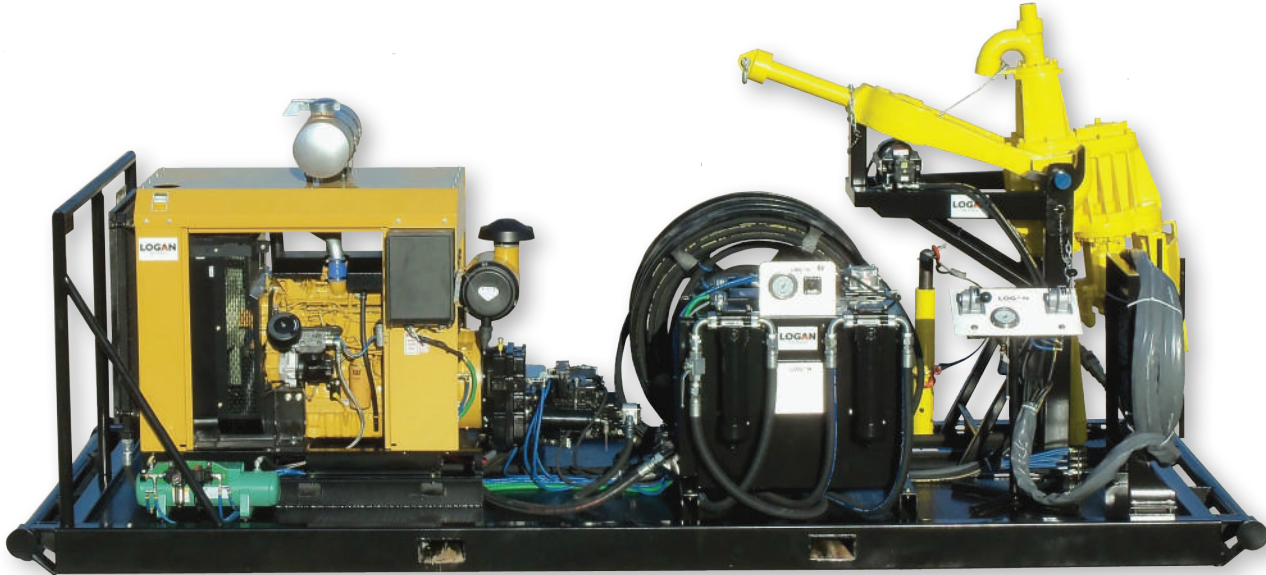


*Skid-Mounted Unit*



*Containerized Unit*

## 120-TON POWER SWIVEL SPECIFICATIONS



### POWER SWIVEL SPECIFICATIONS

MODEL NO.	PS120
NOMINAL LOAD RATING (tons)	120
DYNAMIC LOAD RATING @ 100 RPM (tons)	65
MAXIMUM TORQUE (ft-lbs)	8,100
MAXIMUM SPEED (rpm)	150
MAXIMUM CIRCULATING PRESSURE	5,000
STANDARD STEM CONNECTION	3-1/2 IF
GOOSENECK CONNECTION	3" LP
SWIVEL HEAD ASSEMBLY WEIGHT (lbs)	2,000

### POWER UNIT & CONTROL SPECIFICATIONS

MODEL NO.	PS120
DIESEL ENGINE *	QSB6.7 or C6.6
ENGINE CONT HP @ 2000 RPM	225/173
HYDRAULIC OUTPUT (max gpm/max psi)	89/5,000

\* Choice of Cummins or Caterpillar/Perkins

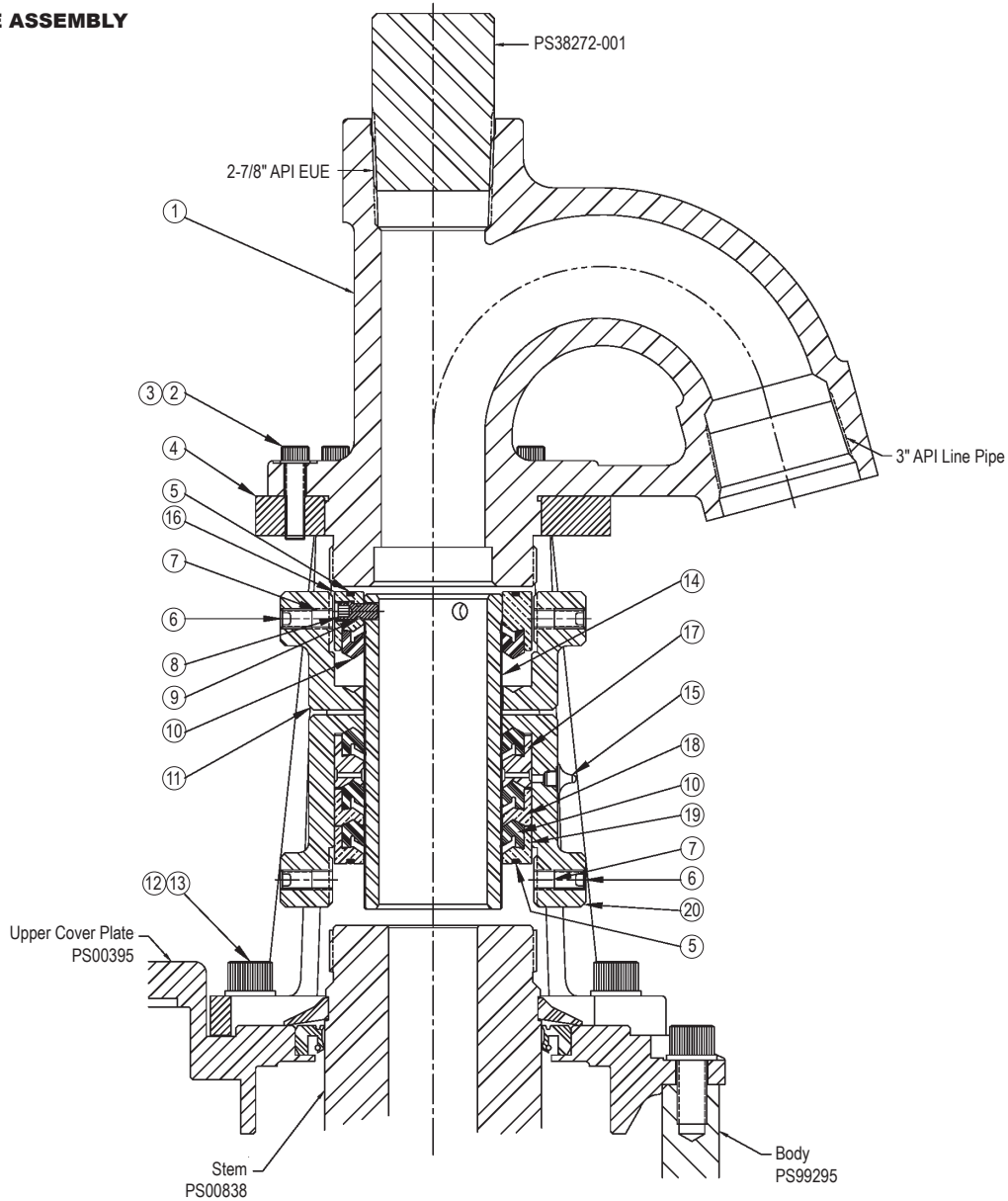
**CAUTION:** Before installing a Logan 120-Ton Power Swivel on a rig, refer to the installation procedure on page 6 of the instruction manual. Failure to properly install the Power Swivel can result in injury to the operator and rig floor personnel.

## PS120 POWER UNIT PARTS LIST

LOGAN PART NO.	QTY	DESCRIPTION
<b>HYDRAULIC PUMP</b>		
PS511512	1	Hydraulic Pump for Air Controls
PS511512-001	1	Hydraulic Pump for Electric Controls
PS02196	1	Pump Stroke Positioner
PS02196-002	1	Pump Stroke Positioner Repair Kit
PS73426	1	1/4" Check Valve
PS711512-001	1	Pump Drive
PS260412	1	Auxiliary Pump (Hose Reel and Hydraulic Winch)
<b>HYDRAULIC RESERVOIR</b>		
PS34196-001	1	40 gal Hydraulic Tank Reservoir
<i>Consisting of:</i>		
PS780412	1	Hydraulic Suction Strainer
PS754T08N	1	Hydraulic Suction 2" Ball Valve
PS099612	1	Hydraulic Return Filter Assembly
PS099612-001	1	Hydraulic Return Filter Element Only
PS80602	1	Hydraulic Vacuum Gauge
PS02311	1	Filler Breather Cap
PS30795-002	1	Oil Level Gauge with Temperature
PS89046	1	Hydraulic Reservoir Only
PS233612	1	Relief Back Pressure Orifice
<b>FUEL TANK</b>		
PS16892-001	1	60 gal Fuel Tank Assembly
<i>Consisting of:</i>		
PS96892	1	Fuel Tank Only
PS96892-2	2	Fuel Sight Tube
PS94626	1	1-1/4" High Pressure Ball Valve
PS61648	2	High Pressure Filter Assemblies
<i>Consisting of:</i>		
PS921512-001	2	High Pressure Filter Element Lng
PS921412-002	2	High Pressure Filter Housing
PS921412-003	2	High Pressure Filter Head
PS02311	1	Filler Breather Cap
PS811412	1	Fuel Suction Tube
PS811412-A	1	Fuel Return Tube
<b>MISCELLANEOUS</b>		
PS990712	1	Umbilical Stand
PS28674	1	Control Stand
PS57196	1	Heat Exchanger
PS57196-002	1	Heat Exchanger Guard
PSMM9000	1	Electric Winch
PS558612-001	1	Hydraulic Winch
PS44046	1	Battery Box
PS64044-003	1	Tool Box
PS87472	1	Power Swivel Stand

LOGAN PART NO.	QTY	DESCRIPTION
<b>HOSE REEL</b>		
PS94376	1	Hose Reel Assembly
PS94376-HW	1	Hose Reel Assembly with Hydraulic Winch
PS97556	1	100 ft High Pressure Hose Assembly
PS24376	1	100 ft, 3/4" Case Drain Hose
PS195412	1	Hydraulic Valve for Reel
PS195412-001	1	Hydraulic Valve for Reel with Hydraulic Winch
PS52250-1	1	Valve Handle Replacement Only
PS220712-002	1	Hydraulic Motor Hose Reel
PS89638-002	1	Flow Control Hose Reel
PS490412	1	Three-Port Coupling Hub
PS473912	1	Three-Port Coupling Seal Kit
PS120712	1	Torque Hub
<b>AIR TORQUE SET PANEL</b>		
PS223612	1	Torque Set Panel Assembly
PS17196	1	0 – 8,100 ft/lbs Torque Gauge
PS98126	1	Torque Set Relief Valve
PS220512	1	Torque Set Air Override Valve
<b>AIR CONTROL PANEL</b>		
PS09966-003	1	Pump Control Valve
PS29966	1	Engine Throttle Control Valve
PS17196	1	0 – 8,100 ft/lbs Torque Gauge
PS220512	1	Engine Kill Valve
PS80345-003	5	1/4" Quick Disconnect, Air Male x Male Pipe
PS70345	1	1/4" Quick Disconnect, Hydraulic Male x Male Pipe
PS217752	1	Control Umbilical Bundle
PS70345-001	5	1/4" Quick Disconnect, Air Female
PS80345	1	1/4" Quick Disconnect, Hydraulic Female
<b>AIR PREPARATION PACKAGE</b>		
PS81455-002	1	Air Preparation Package
PS81455	1	3 gal Air Receiver
PS24695	1	Gauge
PS73585	1	Safety Pop-Off Valve
PS93646-001	1	Filter Regulator/Lubricator
PS81455-003	1	Tank Guard
<b>ELECTRIC CONTROL BOX</b>		
PSEC1009	1	Digital Torque Display
PSEC1008	2	Electric Pump Stroke Control
PSEC1041	1	Electric Control Cable Assembly
PS58628-010	1	Control Cable Connector Plug
PS58628-011	1	Panel Mount Connector Receptacle
PSEC1006	1	Two-Position Switch/Engine Throttle
PSEC1007	1	Three-Position Switch/Direction Selector
<b>HYDRAULIC FILTERS</b>		
PS915512	1	Charge Pump Filter
PS780412-001	1	Suction Strainer
PS099612-001	1	Return Filter Element
PS921512-001	1	High Pressure Filter Element

## FLOATING WASHPIPE ASSEMBLY



### PS120 FLOATING WASHPIPE ASSEMBLY (PART NO. PS19738-001) REPLACEMENT PARTS

ITEM	LOGAN PART NO.	QTY	DESCRIPTION
1	PS58738	1	Gooseneck
2	ACSA8-500-13-200	7	1/2" - 13 x 2" Socket Head Cap Screw
3	LKWA-500	7	1/2" Lock Washer
4	PS68738	1	Bonnet
5	568243-100	2	O-Ring
6	PS50732-003	8	1/2" - 13 NC x 3/4 Socket Set Screw
7	PS20128	8	Washpipe Packing Nut Screw Retainer
8	PS99028-001	3	Washpipe Lock Pin without Ring
9	568-010	3	O-Ring
10	PS55327	1	Packing Set

ITEM	LOGAN PART NO.	QTY	DESCRIPTION
11	PS88738	1	Upper Packing Nut
12	ACSA8-750-10-325	6	3/4" - 10 x 3-1/4" Socket Head Cap Screw
13	LKWA-750	6	3/4" Lock Washer
14	PS19738	1	Washpipe
15	PS63672	1	Packing Nut Grease Fitting
16	PS78738	1	Upper Packing Nut Ring
17	PS75327	1	Packing Lantern Ring
18	PS85327	1	Combination Ring
19	PS09738	1	Packing Bottom Ring
20	PS98738-001	1	Lower Packing Nut

## SWIVEL HEAD PARTS LIST

*Item numbers refer to drawing callouts on pages 319 – 322*

ITEM	PART NO.	QTY.	DESCRIPTION
1	PS38272-001	1	2-7/8" EUE Gooseneck Plug
2	PS58738	1	Gooseneck
3	HCLWA-500	15	1/2" Lock Washer
4	ACSA8-500-13-200	7	1/2 - 13 x 2" Socket Head Cap Screw
5	PS48303-001	1	Torque Rein Assembly (Long) Standard
6	PS31415	1	Torque Rein Pull Pin
7	PS90137	1	Oil Level Indicator Plug
8	PS99295	1	Body
9	PS67272	1	Lower Gear Cover Gasket
10	PS13595	1	Lower Gear Cover Plate
11	ACSA8-750-10-2000	15	3/4 - 10 x 2" Socket Head Cap Screw
12	HCLWA-750	32	3/4" Lock Washer
13	PS82272	1	Lower Stem Bearing Retainer
14	ACSA8-750-10-1500	6	3/4 - 10 x 1-1/2" Socket Head Cap Screw
15	PS84548	2	Hydraulic Motor
16	PS135002	2	Manifold Assembly Right/Left
17	PS93456	2	1-1/4" Pipe Swivel Joint
18	PS22196	2	1-1/4" Quick Disconnect
19	PS75886	2	1-1/4" Dust Cap
20	PS65886	2	1-1/4" Dust Plug
21	PS79127	1	Saver Sub
22	PS00838-001	1	Stem
23	PS87272	2	Lower Stem Bearing - Inner/Wear Ring
24	PS61472	1	Lower Oil Seal
25	PS10002	1	Snap Ring
26	PS68272	1	Lower Oil Seal - Inner
27	PS62472	1	Lower Stem Bearing - Outer
28	PS97272	1	Main Thrust Bearing
29	PS83272	6	Ring Gear Groove Pin
30	PS80272	1	Main Drive Gear
31	PS28413	2	Bail Pin
32	PS44813	2	Retainer (Bolt & Nut)
33	PS56144	1	Seal Protector Ring
34	PS19738-001	1	Floating Washpipe Assembly

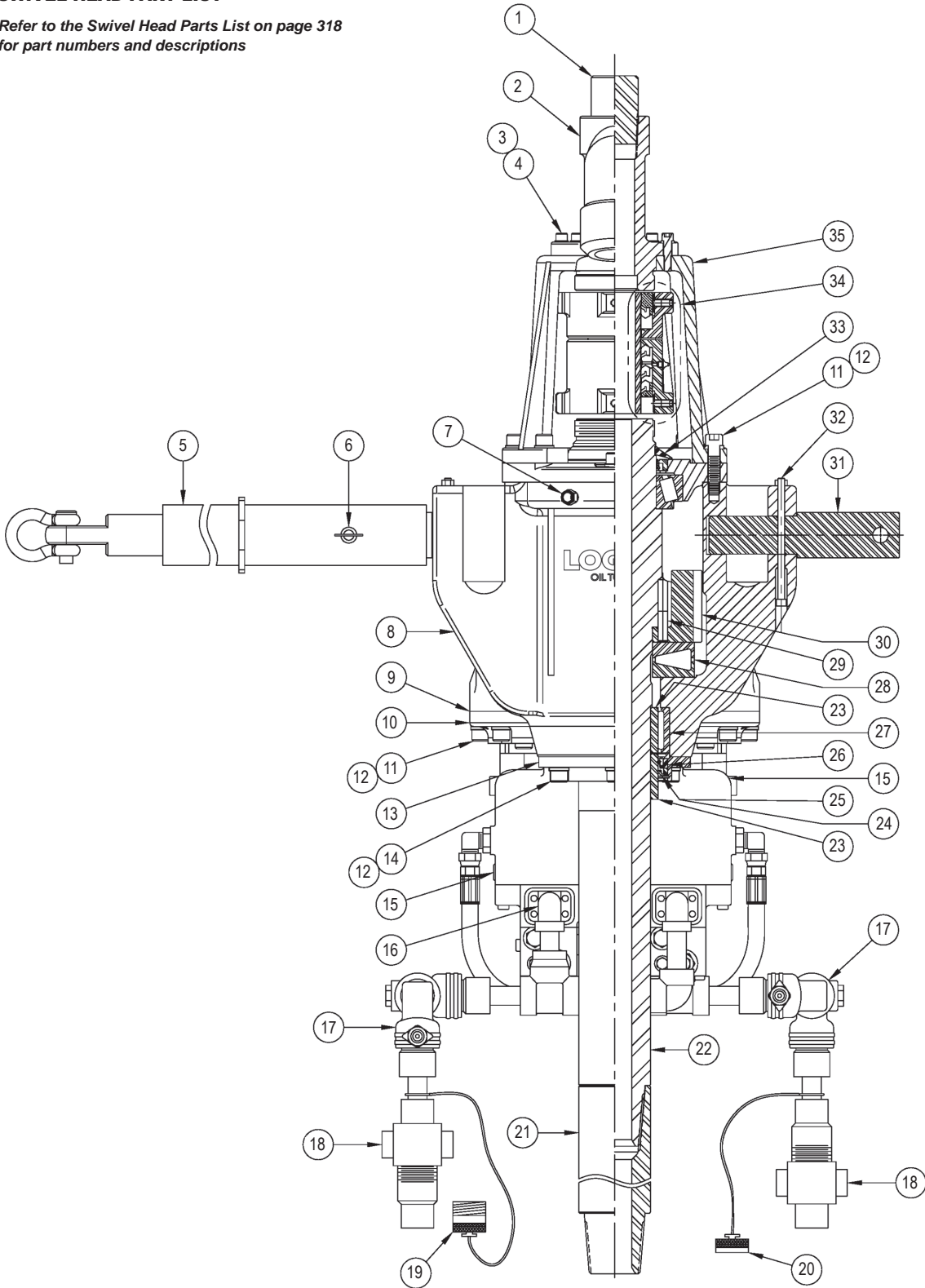
ITEM	PART NO.	QTY.	DESCRIPTION
35	PS68738	1	Bonnet
36	PS00395	1	Upper Cover Plate
37	PS78272	1	Upper Gear Cover Shim
38	PS57272	1	Upper Gear Cover Gasket
39	PS72602	1	Magnetic Drain Plug
40	PS78103	1	Male Quick Disconnect Nut
41	PS93272	1	Lower Stem Bearing Retainer Gasket
42	PS37557	1	Motor Guard
43	ACSA8-750-10-3250	6	3/4 - 10 x 3-1/4" Socket Head Cap Screw
44	ACSA8-750-10-1750	5	3/4 - 10 x 1-3/4" Socket Head Cap Screw
45	PS98272	2	Cover Dowel Pin
46	PS98352	1	Oil Filler Plug
47	PS77122	1	Filler Plug Relief Fitting
48	PS09664	1	Elevator Bail
49	PS58272	1	Upper Oil Seal
50	PS77272	1	Upper Stem Bearing
51	PS29595	1	Third Stage Shift & Gear
52	PS18295	3	Shaft & Gear Bearing
53	PS64395	1	First Reduction Gear
54	PS03595	1	Second Stage Shaft Bearing
55	PS59795	1	First Reduction Gear Spacer
56	PS74395	1	Second Stage Shaft Key
57	HCSA8-500-13-150	8	1/2 - 13 x 1-1/2" Hex Head Cap Screw
58	PS26303	2	Seal Retainer Ring
59	PS916502	2	Motor Drive Gear Bearing - Lower
60	PS18795	2	Pinion Oil Seal
61	PS49295	2	First Reduction Pinion
62	PS08295	2	Upper Bearing - Input Pinion
63	PS39295	1	Second Stage Shaft & Pinion
64	PS13732	2	Retainer Screw
	G14085-BULK		85W-140 Gear Oil
	PS71107-001		Hydraulic Motor Shaft Seal Kit
	PS293512		Hydraulic Motor Brake
	SWEDGE-002		3" L.P. x 2" L.P. x 4 SWEDGE

### TORQUE REINS AND COMPONENTS

PART NO.	DESCRIPTION	LENGTH/STROKE
PS48303-001	PS120 Long Torque Rein (standard with head or unit)	Retracted 32.5"/Extended 51.75" Long
PS48303	PS120 Short Torque Rein	Retracted 22.5"/Extended 36" Long
PS48303-014	PS120 Extra Short Torque Rein	Retracted 12"/Extended 22" Long
PS55116	PS120 Torque Rein Roller Assembly	

## SWIVEL HEAD PART LIST

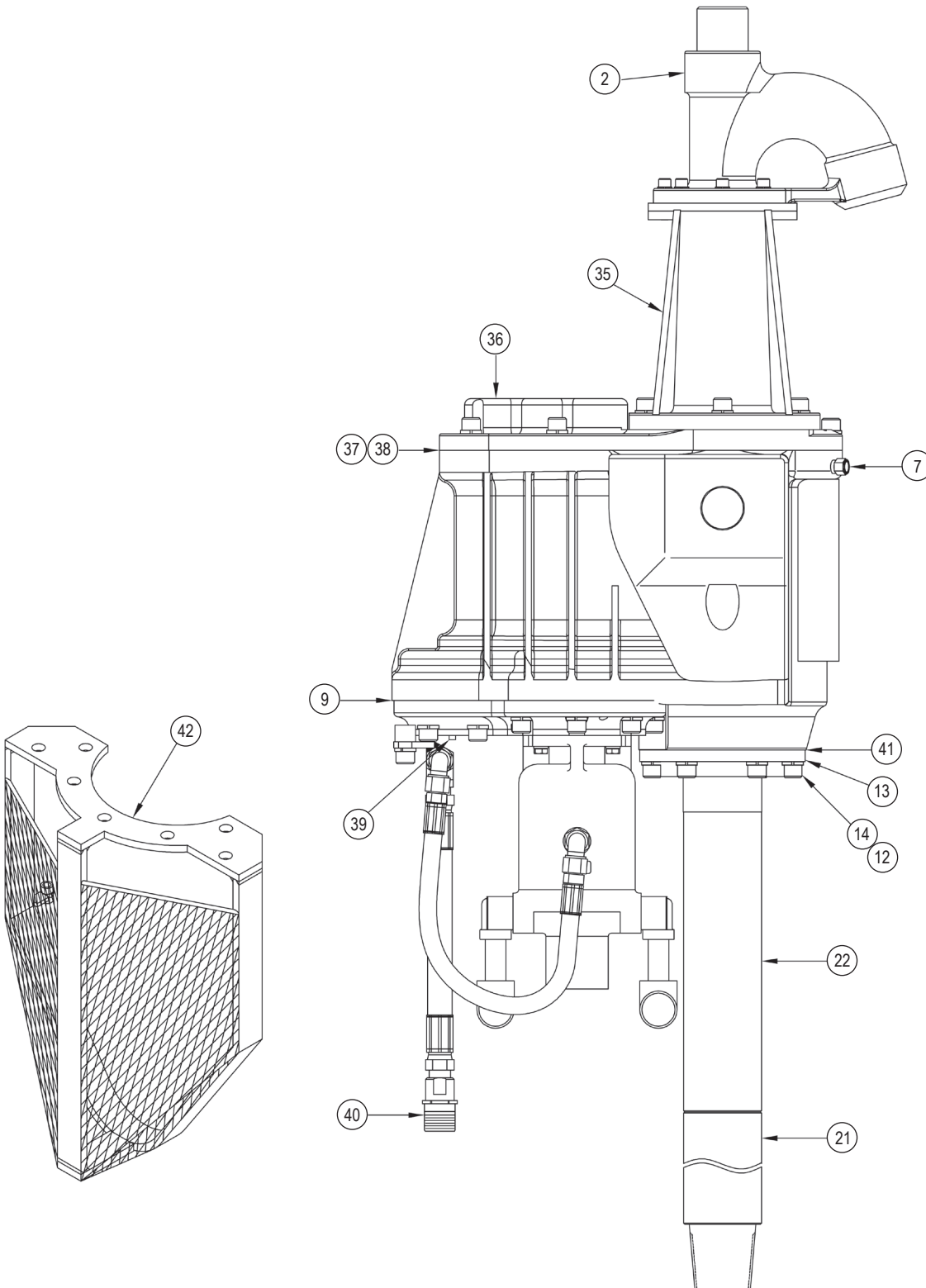
Refer to the Swivel Head Parts List on page 318 for part numbers and descriptions





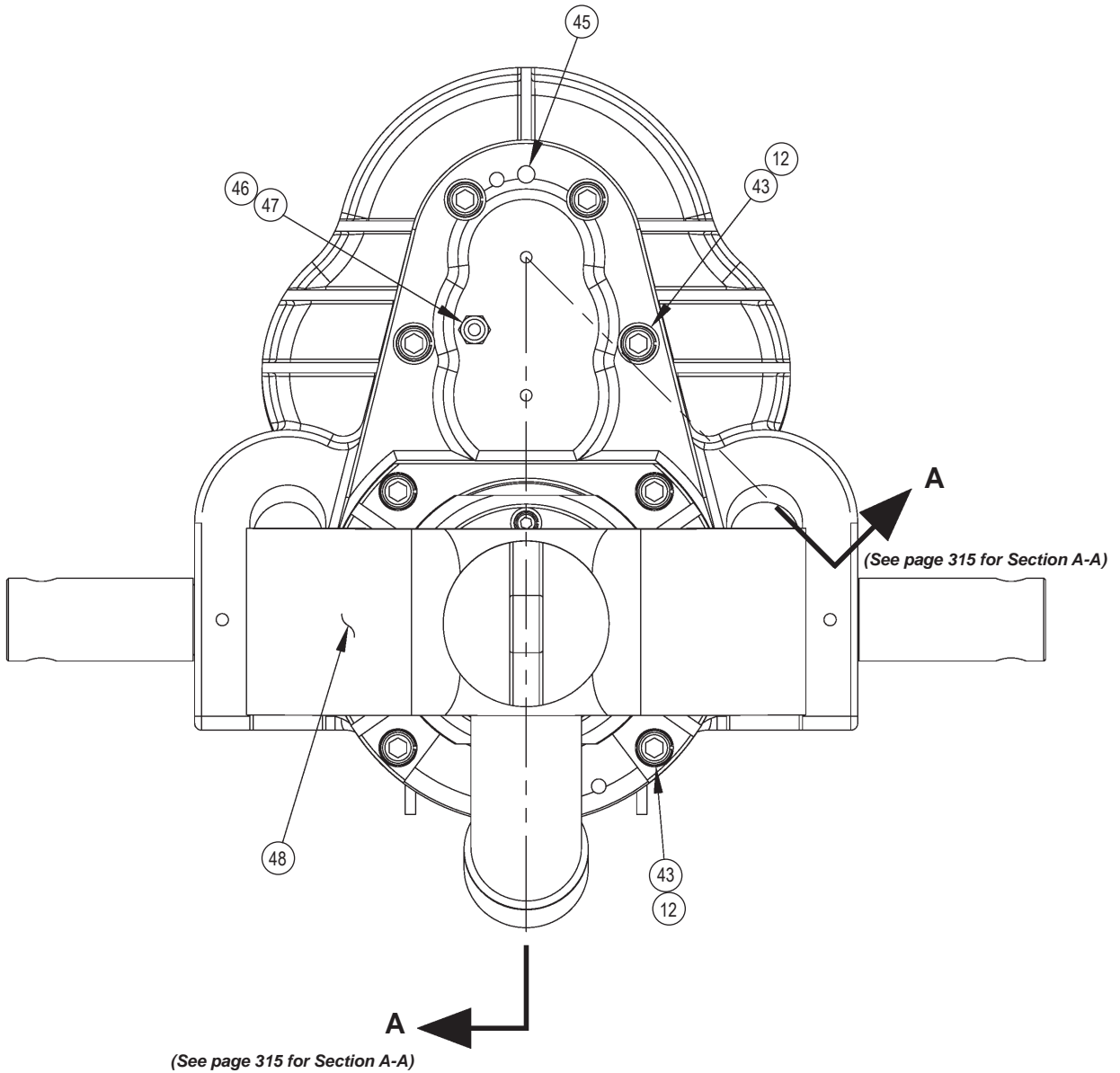
**SWIVEL HEAD - SIDE VIEW**

Refer to the Swivel Head Parts List on page 318  
for part numbers and descriptions



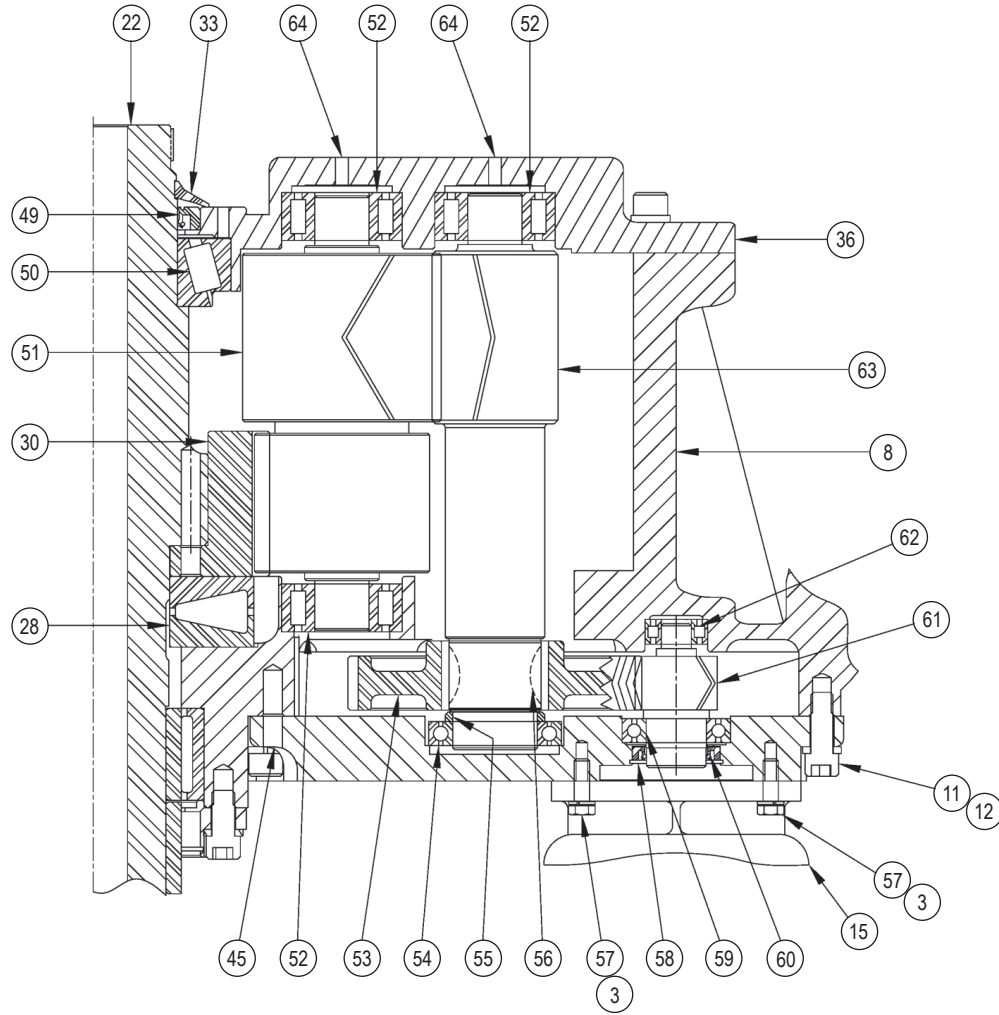
**SWIVEL HEAD – TOP VIEW**

Refer to the Swivel Head Parts List on page 318  
for part numbers and descriptions



**SECTION A-A - THROUGH GEAR TRAIN**

*Refer to the Swivel Head Parts List on page 318 for part numbers and descriptions*



## CONVERSION TABLES

### INCHES AND FEET TO DECIMALS, CENTIMETERS, MILLIMETERS, AND METERS

Inch	Decimal	mm
1/32	0.03125	0.794
1/16	0.0625	1.588
1/8	0.1250	3.175
3/16	0.1875	4.763
1/4	0.2500	6.350
5/16	0.3125	7.938
3/8	0.3750	9.525
7/16	0.4375	11.113
1/2	0.5000	12.700
9/16	0.5625	14.288
5/8	0.6250	15.875
11/16	0.6875	17.463
3/4	0.7500	19.050
13/16	0.8125	20.638
7/8	0.8750	22.225
15/16	0.9375	23.813
1	1.0000	25.400
1-1/32	1.03125	26.194
1-1/16	1.0625	26.988
1-1/8	1.1250	28.575
1-3/16	1.1875	30.163
1-1/4	1.2500	31.750
1-5/16	1.3125	33.338
1-3/8	1.3750	34.925
1-7/16	1.4375	36.513
1-1/2	1.5000	38.100
1-9/16	1.5625	39.688
1-5/8	1.6250	41.275
1-11/16	1.6875	42.863
1-3/4	1.7500	44.450
1-13/16	1.8125	46.038
1-7/8	1.8750	47.625
1-15/16	1.9375	49.213
2	2.0000	50.800
2-1/32	2.03125	51.594
2-1/16	2.0625	52.388
2-1/8	2.1250	53.975
2-3/16	2.1875	55.563
2-1/4	2.2500	57.150
2-5/16	2.3125	58.738
2-3/8	2.3750	60.325
2-7/16	2.4375	61.913
2-1/2	2.5000	63.500
2-9/16	2.5625	65.088
2-5/8	2.6250	66.675
2-11/16	2.6875	68.263
2-8/4	2.7500	69.850
2-13/16	2.8125	71.438

Inch	Decimal	mm
2-7/8	2.8750	73.025
2-15/16	2.9375	74.613
3	3.0000	76.200
3-1/32	3.03125	76.994
3-1/16	3.0625	77.778
3-1/8	3.1250	79.375
3-3/16	3.1875	80.963
3-1/4	3.2500	82.550
3-5/16	3.3125	84.138
3-3/8	3.3750	85.725
3-7/16	3.4375	87.313
3-1/2	3.5000	88.900
3-9/16	3.5625	90.488
3-5/8	3.6250	92.075
3-11/16	3.6875	93.663
3-3/4	3.7500	95.250
3-13/64	3.8125	96.838
3-7/8	3.8750	98.425
3-15/16	3.9375	100.013
4	4.0000	101.600
4-1/32	4.03125	102.394
4-1/16	4.0625	103.188
4-1/8	4.1250	104.775
4-3/16	4.1875	106.363
4-1/4	4.2500	107.950
4-5/16	4.3125	109.538
4-3/8	4.3750	111.125
4-7/16	4.4375	112.713
4-1/2	4.5000	114.300
4-9/16	4.5625	115.888
4-5/8	4.6250	117.475
4-11/16	4.6875	119.063
4-3/4	4.7500	120.650
4-13/16	4.8125	122.238
4-7/8	4.8750	123.825
4-15/16	4.9375	125.413
5	5.0000	127.000
5-1/32	5.03125	127.794
5-1/16	5.0625	128.588
5-1/8	5.1250	130.175
5-3/16	5.1875	131.763
5-1/4	5.2500	133.350
5-5/16	5.3125	134.938
5-3/8	5.3750	136.525
5-7/16	5.4375	138.113
5-1/2	5.5000	139.700
5-9/16	5.5625	141.288
5-5/8	5.6250	142.875

By moving the decimal point one digit to left, the millimeter column will read in centimeters.

By moving the decimal point three digits to the left, and with the addition of zeros when necessary, the same column will read in meters.

## CONVERSION TABLES

### INCHES AND FEET TO DECIMALS AND MILLIMETERS

Inch	Decimal	mm
5-11/16	5.6875	144.463
5-8/4	5.7500	146.050
5-13/16	5.8125	147.638
5-7/8	5.8750	149.225
5-15/16	5.9375	150.813
6	6.0000	152.400
6-1/32	6.03125	153.194
6-1/16	6.0625	153.988
6-1/8	6.1250	155.575
6-3/16	6.1875	157.163
6-1/4	6.2500	158.750
6-5/16	6.3125	160.338
6-3/8	6.3750	161.925
6-7/16	6.4375	163.513
6-1/2	6.5000	165.100
6-9/16	6.5625	166.688
6-5/8	6.6250	168.275
6-11/16	6.6875	169.863
6-3/4	6.7500	171.450
6-13/16	6.8125	173.038
6-7/8	6.8750	174.625
6-15/16	6.9375	176.213
7	7.0000	177.800
7-1/32	7.03125	178.594
7-1/16	7.0625	179.388
7-1/8	7.1250	180.975
7-3/16	7.1875	182.563
7-1/4	7.2500	184.150
7-5/16	7.3125	185.738
7-3/8	7.3750	187.325
7-7/16	7.4375	188.913
7-1/2	7.5000	190.500
7-9/16	7.5625	192.088
7-5/8	7.6250	193.675
7-11/16	7.6875	195.263
7-3/4	7.7500	196.850
7-13/16	7.8125	198.438
7-7/8	7.8750	200.025
7-15/16	7.9375	201.613
8	8.0000	203.200
8-1/32	8.03125	203.994
8-1/16	8.0625	204.788
8-1/8	8.1250	206.375
8-3/16	8.1875	207.963
8-1/4	8.2500	209.550
8-5/16	8.3125	211.138
8-3/8	8.3750	212.725
8-7/16	8.4375	214.313

Inch	Decimal	mm
8-1/2	8.5000	215.900
8-9/16	8.5625	217.488
8-5/8	8.6250	219.075
8-11/16	8.6875	220.663
8-8/4	8.7500	222.250
8-13/16	8.8125	223.838
8-7/8	8.8750	225.425
8-15/16	8.9375	227.013
9	9.0000	228.600
9-1/32	9.03125	229.394
9-1/16	9.0625	230.185
9-1/8	9.1250	231.778
9-3/16	9.1875	233.363
9-1/4	9.2500	234.950
9-5/16	9.3125	236.538
9-3/8	9.3750	238.125
9-7/16	9.4375	239.713
9-1/2	9.5000	241.300
9-9/16	9.5625	242.888
9-5/8	9.6250	244.475
9-11/16	9.6875	246.063
9-3/4	9.7500	247.650
9-13/16	9.8125	249.238
9-7/8	9.8750	250.825
9-15/16	9.9375	252.413
10	10.0000	254.000
10-1/32	10.03125	254.794
10-1/16	10.0625	255.588
10-1/8	10.1250	257.175
10-3/16	10.1875	258.763
10-1/4	10.2500	260.350
10-5/16	10.3125	261.938
10-3/8	10.3750	263.525
10-7/16	10.4375	265.113
10-1/2	10.5000	266.700
10-9/16	10.5625	268.288
10-5/8	10.6250	269.875
10-11/16	10.6875	271.463
10-3/4	10.7500	273.050
10-13/16	10.8125	274.638
10-7/8	10.8750	276.225
10-15/16	10.9375	277.813
11	11.0000	279.400
11-1/32	11.03125	280.194
11-1/16	11.0625	280.988
11-1/8	11.1250	282.575
11-3/16	11.1875	284.163
11-1/4	11.2500	285.750

By moving the decimal point one digit to left, the millimeter column will read in centimeters.

By moving the decimal point three digits to the left, and with the addition of zeros when necessary, the same column will read in meters.

## CONVERSION TABLES

### INCHES AND FEET TO DECIMALS AND MILLIMETERS

Inch	Decimal	mm
11-5/16	11.3125	287.338
11-3/8	11.3750	288.925
11-7/16	11.4375	290.513
11-1/2	11.5000	292.100
11-9/16	11.5625	293.688
11-5/8	11.6250	295.275
11-11/16	11.6875	296.863
11-8/4	11.7500	298.450
11-13/16	11.8125	300.038
11-7/8	11.8750	301.625
11-15/16	11.9375	303.213
12	12.0000	304.800
12-1/32	12.03125	305.594
12-1/16	12.0625	306.388
12-1/8	12.1250	307.975
12-3/16	12.1875	309.563
12-1/4	12.2500	311.150
12-5/16	12.3125	312.738
12-3/8	12.3750	314.325
12-7/16	12.4375	315.913
12-1/2	12.5000	317.500
12-9/16	12.5625	319.088
12-5/8	12.6250	320.675
12-11/16	12.6875	322.263
12-3/4	12.7500	323.850
12-13/16	12.8125	325.438
12-7/8	12.8750	327.025
12-15/16	12.9375	328.613
13	13.0000	330.200
13-1/32	13.03125	330.994
13-1/16	13.0625	331.788
13-1/8	13.1250	333.375
13-3/16	13.1875	334.963
13-1/4	13.2500	336.550
13-5/16	13.3125	338.138
13-3/8	13.3750	339.725
13-7/16	13.4375	341.313
13-1/2	13.5000	342.900
13-9/16	13.5625	344.488
13-5/8	13.6250	346.075
13-11/16	13.6875	347.663
13-3/4	13.7500	349.250
13-13/16	13.8125	350.838
13-7/8	13.8750	352.425
13-15/16	13.9375	354.013
14	14.0000	355.600
14-1/32	14.03125	356.394
14-1/16	14.0625	357.188

Inch	Decimal	mm
14-1/8	14.1250	358.775
14-3/16	14.1875	360.363
14-1/4	14.2500	361.950
14-5/16	14.3125	363.538
14-3/8	14.3750	365.125
14-7/16	14.4375	366.713
14-1/2	14.5000	368.300
14-9/16	14.5625	369.888
14-5/8	14.6250	371.475
14-11/16	14.6875	373.063
14-8/4	14.7500	374.650
14-13/16	14.8125	376.238
14-7/8	14.8750	377.825
14-15/16	14.9375	379.413
15	15.0000	381.000
15-1/32	15.03125	381.794
15-1/16	15.0625	382.588
15-1/8	15.1250	384.175
15-3/16	15.1875	385.763
15-1/4	15.2500	387.350
15-5/16	15.3125	388.938
15-3/8	15.3750	390.525
15-7/16	15.4375	392.113
15-1/2	15.5000	393.700
15-9/16	15.5625	395.288
15-5/8	15.6250	396.875
15-11/16	15.6875	398.463
15-3/4	15.7500	400.050
15-13/64	15.8125	401.638
15-7/8	15.8750	403.225
15-15/16	15.9375	404.813
16	16.0000	406.400
16-1/32	16.03125	407.194
16-1/16	16.0625	407.988
16-1/8	16.1250	409.575
16-3/16	16.1875	411.163
16-1/4	16.2500	412.750
16-5/16	16.3125	414.338
16-3/8	16.3750	415.925
16-7/16	16.4375	417.513
16-1/2	16.5000	419.100
16-9/16	16.5625	420.688
16-5/8	16.6250	422.275
16-11/16	16.6875	423.863
16-3/4	16.7500	425.450
16-13/16	16.8125	427.038
16-7/8	16.8750	428.625
16-15/16	16.9375	430.213

By moving the decimal point one digit to left, the millimeter column will read in centimeters.

By moving the decimal point three digits to the left, and with the addition of zeros when necessary, the same column will read in meters.

## CONVERSION TABLES

### INCHES AND FEET TO DECIMALS AND MILLIMETERS

Inch	Decimal	mm
17	17.0000	431.800
17-1/32	17.03125	432.594
17-1/16	17.0625	433.388
17-1/8	17.1250	434.975
17-3/16	17.1875	436.563
17-1/4	17.2500	438.150
17-5/16	17.3125	439.738
17-3/8	17.3750	441.325
17-7/16	17.4375	442.913
17-1/2	17.5000	444.500
17-9/16	17.5625	446.088
17-5/8	17.6250	447.675
17-11/16	17.6875	449.263
17-8/4	17.7500	450.850
17-13/16	17.8125	452.438
17-7/8	17.8750	454.025
17-15/16	17.9375	455.613
18	18.0000	457.200
18-1/32	18.03125	457.994
18-1/16	18.0625	458.788
18-1/8	18.1250	460.375
18-3/16	18.1875	461.963
18-1/4	18.2500	463.550
18-5/16	18.3125	465.138
18-3/8	18.3750	466.725
18-7/16	18.4375	468.313

Inch	Decimal	mm
18-1/2	18.5000	469.900
18-9/16	18.5625	471.488
18-5/8	18.6250	473.075
18-11/16	18.6875	474.663
18-3/4	18.7500	476.250
18-13/16	18.8125	477.838
18-7/8	18.8750	479.425
18-15/16	18.9375	481.013
19	19.0000	482.600
19-1/32	19.03125	484.188
19-1/16	19.0625	485.775
19-1/8	19.1250	487.363
19-3/16	19.1875	488.950
19-1/4	19.2500	490.538
19-5/16	19.3125	492.125
19-3/8	19.3750	493.713
19-7/16	19.4375	495.300
19-1/2	19.5000	496.888
19-9/16	19.5625	498.475
19-5/8	19.6250	500.063
19-11/16	19.6875	501.650
19-3/4	19.7500	503.238
19-13/16	19.8125	504.825
19-7/8	19.8750	506.413
19-15/16	19.9375	508.000
20	20.0000	509.588

By moving the decimal point one digit to left, the millimeter column will read in centimeters.

By moving the decimal point three digits to the left, and with the addition of zeros when necessary, the same column will read in meters.

## CONVERSION TABLES

### INCHES AND FEET TO CENTIMETERS AND METERS

Move decimal point two digits to left to determine meters.

Feet-Inches	Inches	Centimeters
...	1	2.540
...	2	5.080
...	3	7.620
...	4	10.160
...	5	12.700
...	6	15.240
...	7	17.780
...	8	20.320
...	9	22.860
...	10	25.400
...	11	27.940
1	12	30.480
1-1	13	33.020
1-2	14	35.560
1-3	15	38.100
1-4	16	40.640
1-5	17	43.180
1-6	18	45.720
1-7	19	48.260
1-8	20	50.800
1-9	21	53.340
1-10	22	55.880
1-11	23	58.420
2	24	60.960
2-1	25	63.500
2-2	26	66.040
2-3	27	68.580
2-4	28	71.120
2-5	29	73.660
2-6	30	76.200
2-7	31	78.740
2-8	32	81.280
2-9	33	83.820
2-10	34	86.360
2-11	35	88.900
3	36	91.440
3-1	37	93.980
3-2	38	96.520
3-3	39	99.060
3-4	40	101.600
3-5	41	104.140
3-6	42	106.680
3-7	43	109.220
3-8	44	111.760
3-9	45	114.300
3-10	46	116.840
3-11	47	119.380
4	48	121.920

Feet-Inches	Inches	Centimeters
4-1	49	124.460
4-2	50	127.000
4-3	51	129.540
4-4	52	132.080
4-5	53	134.620
4-6	54	137.160
4-7	55	139.700
4-8	56	142.240
4-9	57	144.780
4-10	58	147.320
4-11	59	149.860
5	60	152.400
5-1	61	154.940
5-2	62	157.480
5-3	63	160.020
5-4	64	163.560
5-5	65	165.100
5-6	66	167.640
5-7	67	170.180
5-8	68	172.720
5-9	69	175.260
5-10	70	177.800
5-11	71	180.340
6	72	182.880
6-1	73	185.420
6-2	74	187.960
6-3	75	190.500
6-4	76	193.040
6-5	77	195.580
6-6	78	198.120
6-7	79	200.660
6-8	80	203.200
6-9	81	205.740
6-10	82	208.280
6-11	83	210.820
7	84	213.360
7-1	85	215.900
7-2	86	218.440
7-3	87	220.980
7-4	88	223.520
7-5	89	226.060
7-6	90	228.600
7-7	91	231.140
7-8	92	233.680
7-9	93	236.220
7-10	94	238.760
7-11	95	241.300
8	96	243.840

Feet-Inches	Inches	Centimeters
8-1	97	246.380
8-2	98	248.920
8-3	99	251.460
8-4	100	254.000
8-5	101	256.540
8-6	102	259.080
8-7	103	261.620
8-8	104	264.160
8-9	105	266.700
8-10	106	269.240
8-11	107	271.780
9	108	274.320
9-1	109	276.860
9-2	110	279.400
9-3	111	281.940
9-4	112	284.480
9-5	113	287.020
9-6	114	289.560
9-7	115	292.100
9-8	116	294.640
9-9	117	297.180
9-10	118	299.720
9-11	119	302.260
10	120	304.800
10-1	121	307.340
10-2	122	309.880
10-3	123	312.420
10-4	124	314.960
10-5	125	317.500
10-6	126	320.040
10-7	127	322.580
10-8	128	325.120
10-9	129	327.660
10-10	130	330.200
10-11	131	332.740
11	132	335.280
11-1	133	337.820
11-2	134	340.360
11-3	135	342.900
11-4	136	345.440
11-5	137	347.980
11-6	138	350.520
11-7	139	353.060
11-8	140	355.600
11-9	141	358.140
11-10	142	360.680
11-11	143	363.220
12	144	365.760







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