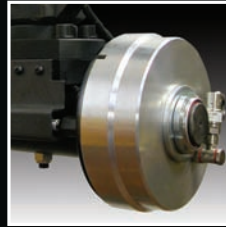
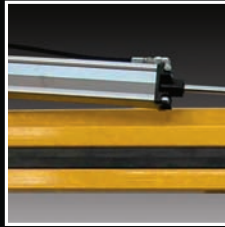
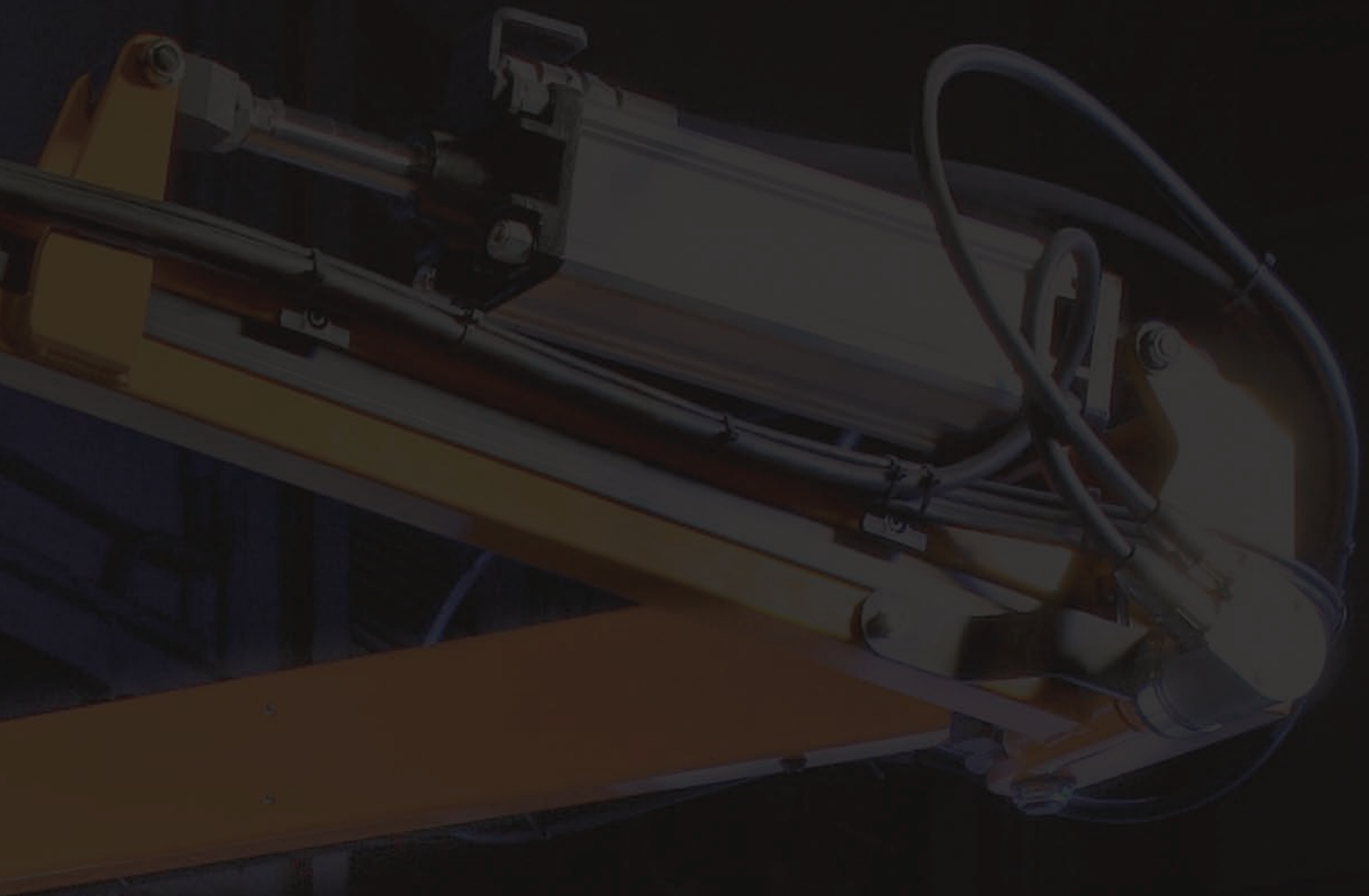


TSA

TECNOLOGIE
SPECIALI
APPLICATE



2009 Arms and Accessories Catalogue



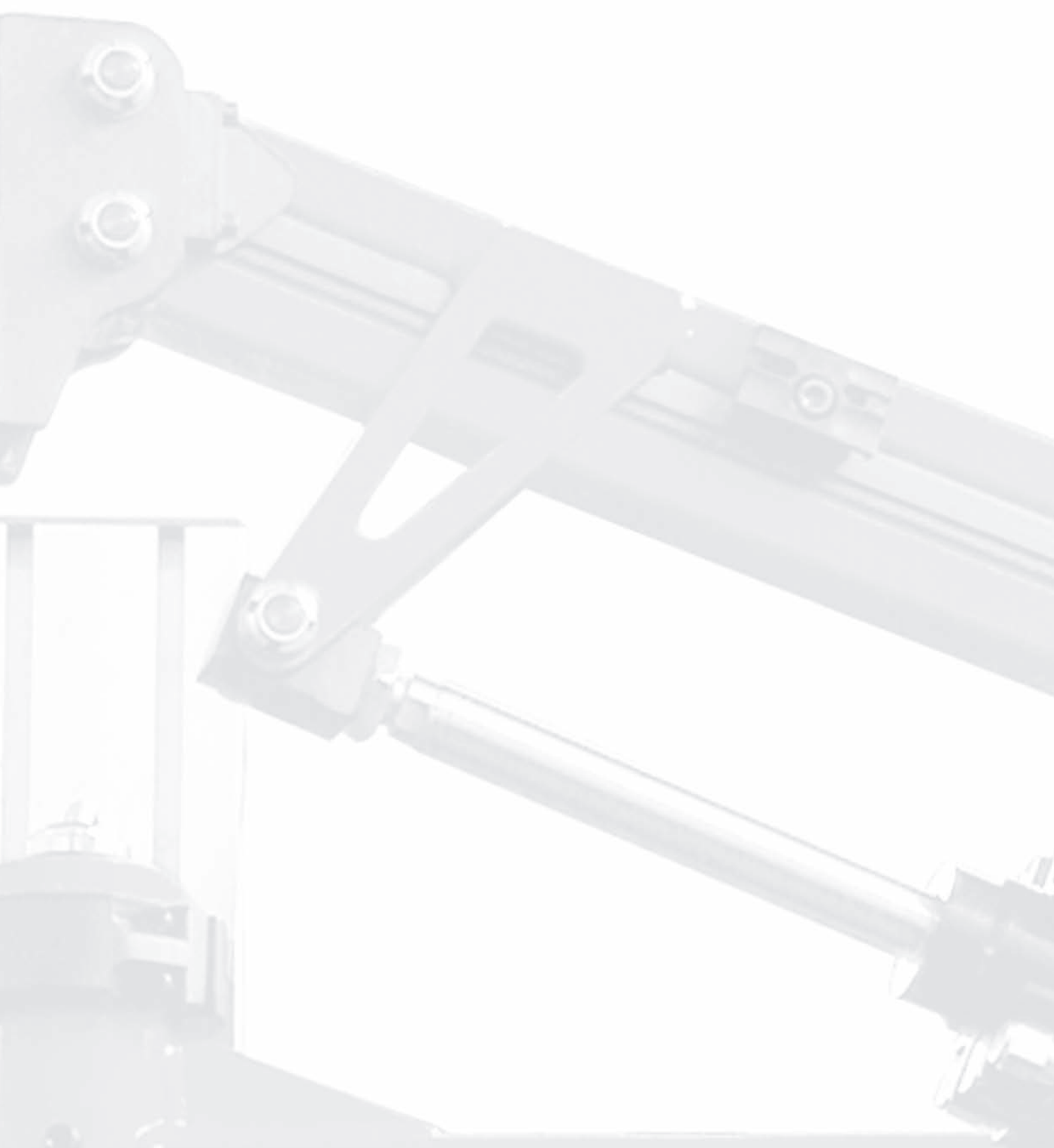
BALANCED ARTICULATED ARMS
VERTICAL TELESCOPIC ARMS

Welcome to



2009 Arms and Accessories Catalogue

Release 0.01



TSA

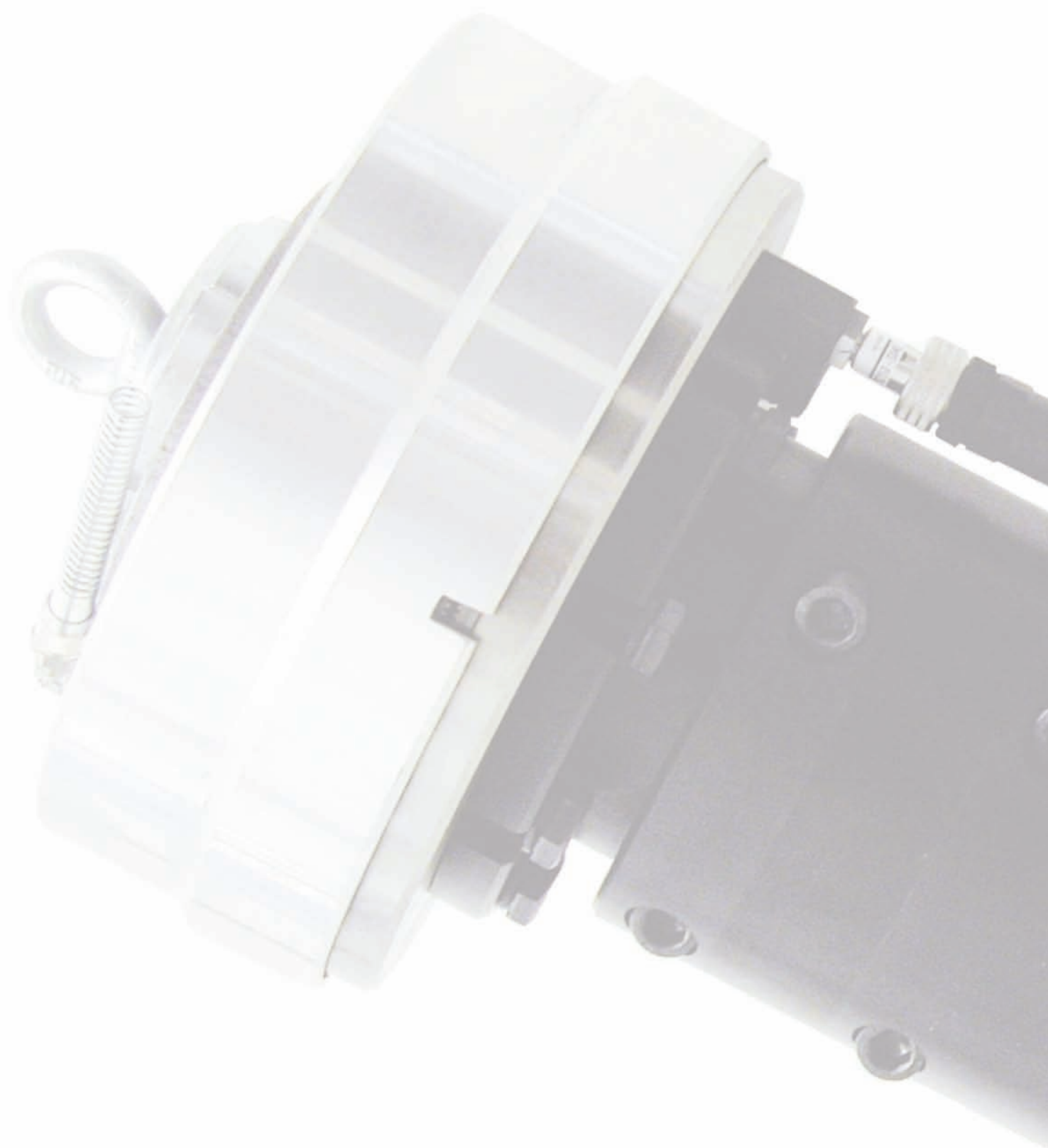
TECNOLOGIE
SPECIALI
APPLICATE

2009 Arms and Accessories Catalogue

TSA TECNOLOGIE
SPECIALI
APPLICATE manufactures a line of technical products with the objective of fulfilling the specific needs of the automotive sector, as well as offering general industrial products. TOOL-MATE identifies a gamma of articulated arms and accessories of **TSA** TECNOLOGIE
SPECIALI
APPLICATE's own production with the intention of offering the clientele a vast gamma of products with an extremely advantageous quality/price ratio.

The present catalogue illustrates models of normal use. Special applications are also available upon specific request.





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ARTICULATED ARMS

General Information

TSA TECNOLOGIE SPECIALI APPLICATE balanced articulated arms have been designed and developed to neutralize the reaction torque generated by tools (screwdrivers, tapping machines, drills, etc.) and annul their weight. All articulated arms can be integrated with different types of wrists that optimize the required lock. They have been developed to guarantee correct tool use and positioning during the screw driving stage.

The basic configuration of the TOOL-MATE articulated arms is composed of three principal element: column, boom, and parallelogram arm. The machine's standard colour is RAL 1007.

- The column is a steel tube with a fastening base and levelling sprigs onto which the arm is assembled at the desired height. The column's standard colour is RAL 9005. Other possibilities, such as wall fasteners or track fasteners, are also available upon request.

COLUMN FASTENER
(Standard)



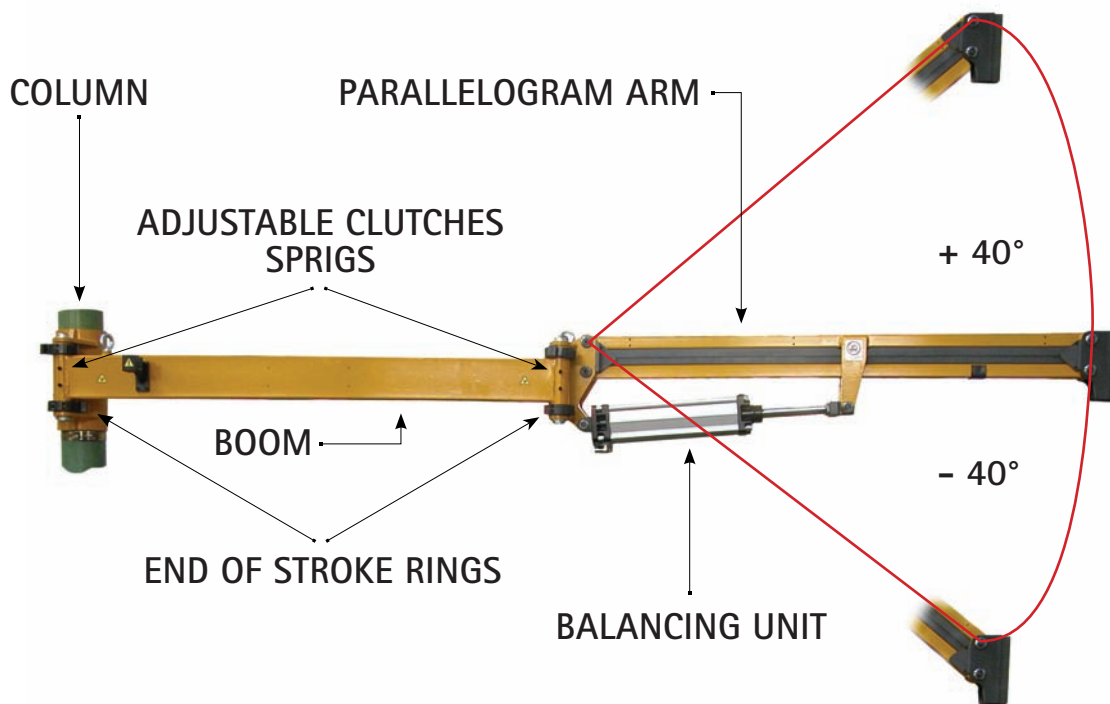
WALL FASTENER
(Upon request)



TRACK FASTENER
(Upon request)



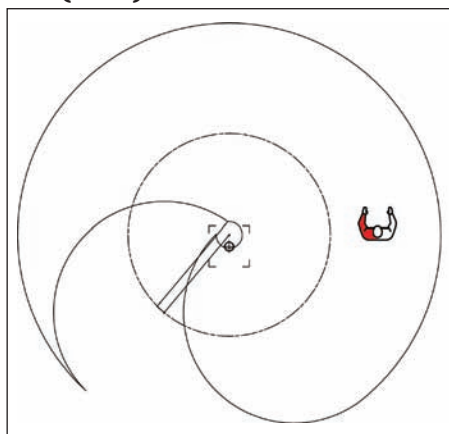
- The boom segment is a jib segment which sustains the arm, and is furnished with end of stroke rings that limit its rotation. It is also supplied with adjustable clutches that hinder accidental movement.
- The arm segment is provided with a parallelogram system which, thanks to the gas or pneumatic balancing unit, exerts an upward push apt to balance the weight of the load, and covers an angle of 80° (40° below and 40° above the horizontal axis).



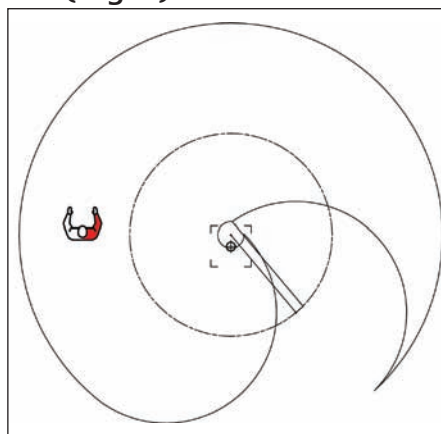
Articulated arms are available in various sizes. Each size has a maximum torque, different balancing capabilities, and different element lengths.

The left or right configuration can be chosen according to the work area that is to be covered and to the user's position.

SX (Left)



DX (Right)



N.B. The choice of the left or right articulated arm is determined on the basis of the following:

- Work area to be covered
- The arm's resting position
- Ergonomic optimization during use

SAFETY MEASURES

Articulated arms, with their relative circuits and pneumatic accessories, are **CE** certified because they meet essential safety requirements foreseen by machine directives.



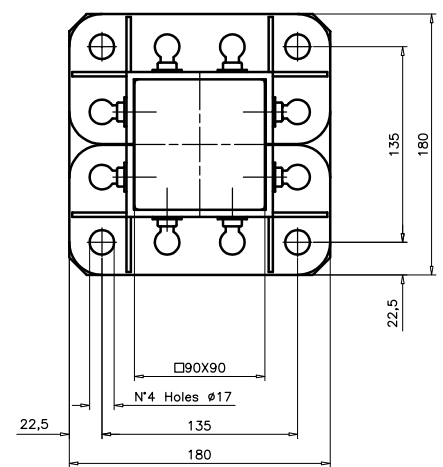
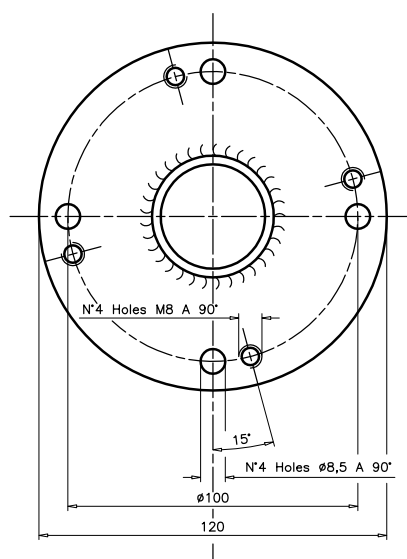
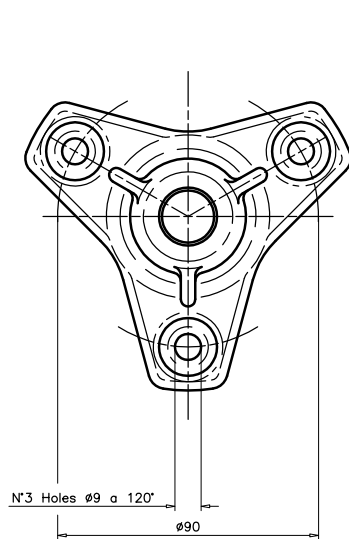
GAS WORKBENCH ARTICULATED ARMS

Gas workbench articulated arms are normally assembled onto a workbench support "COLUMN", and are furnished with a clamp that can lock them at the desired height.

The arm's balancing force can be varied by acting on the regulation knob, located on the inferior part of the "BOOM-ARM" hinge, which moves the balancing unit's application point.

With the use of its articulated arms, **TSA** TECNOLOGIE SPECIALI APPLICATE offers itself to solve assembly linked problems, such as excessive waste due to incorrect positioning, and to limit the user's exertion since the weight of the tool and the torque moment are neutralized by TOOL-MATE.

Please keep in mind that our technical office is available for special applications.



WORKBENCH FASTENING FLANGE



GAS WORKBENCH ARTICULATED ARMS



Performance and Dimensions

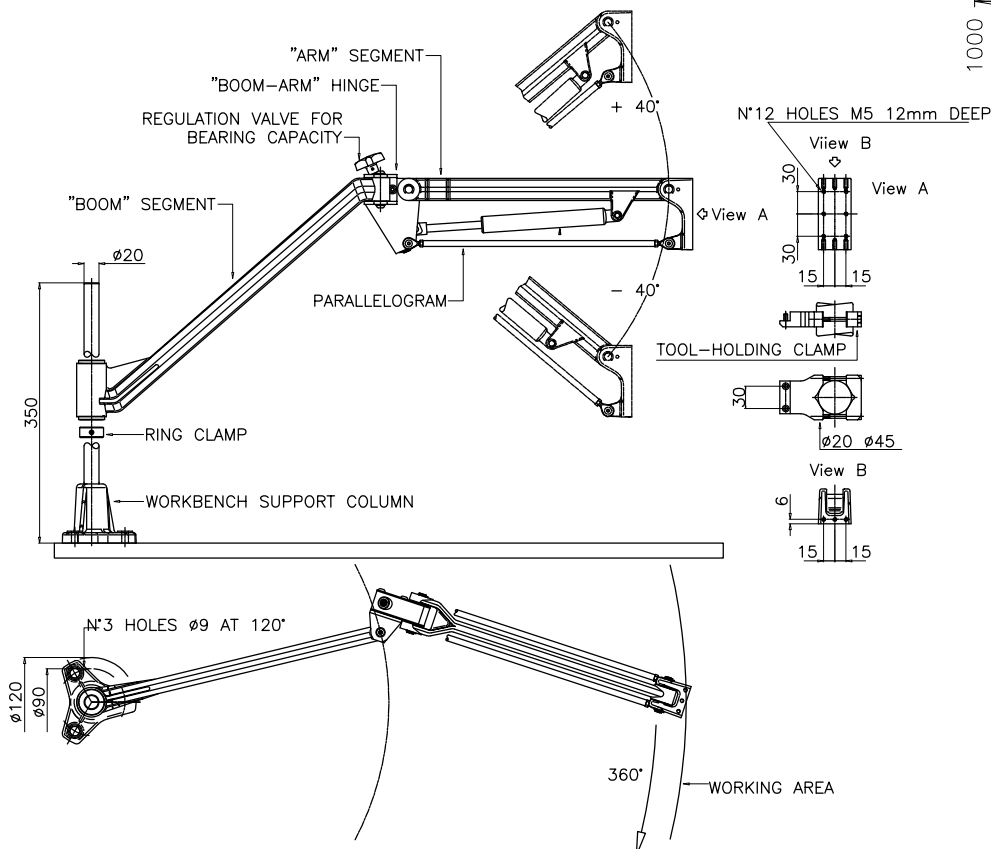
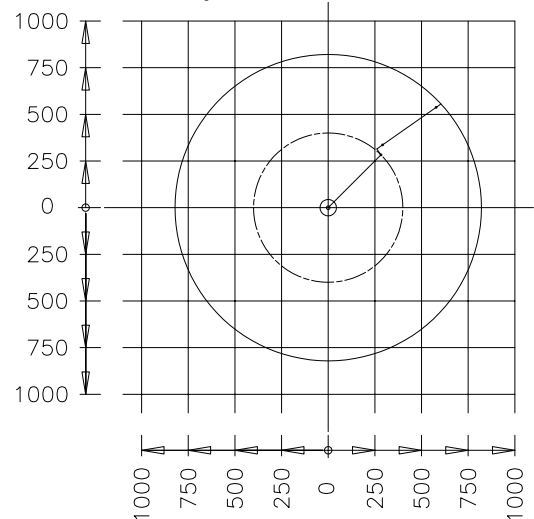
SIZE "0" 25Nm

MODELS	"BOOM" Length mm	"ARM" Length mm	Spring Capacity N	Minimum Weight Kg.	Maximum Weight Kg.	Reaction Torque Limit Nm	Useful Vertical Stroke mm
SOBG110200000	400	350	200	1.2	2.8	25	440
DOBG110200000	400	350	200	1.2	2.8	25	440
SOBG110300000	400	350	300	2.5	5.0	25	440
DOBG110300000	400	350	300	2.5	5.0	25	440
SOBG110400000	400	350	400	3.2	6.4	25	440
DOBG110400000	400	350	400	3.2	6.4	25	440
SOBG110600000	400	350	600	5.0	10.0	25	440
DOBG110600000	400	350	600	5.0	10.0	25	440

Accessories available

Workbench Fastener (standard)	SOBG... DOBG...
Wall Fastener	S0FG... D0FG...
Tool holding clamp is furnished with the arm. Specify diameter of tool when purchasing.	From Ø20 to Ø45

Arm Layout SX-DX (LEFT-RIGHT)





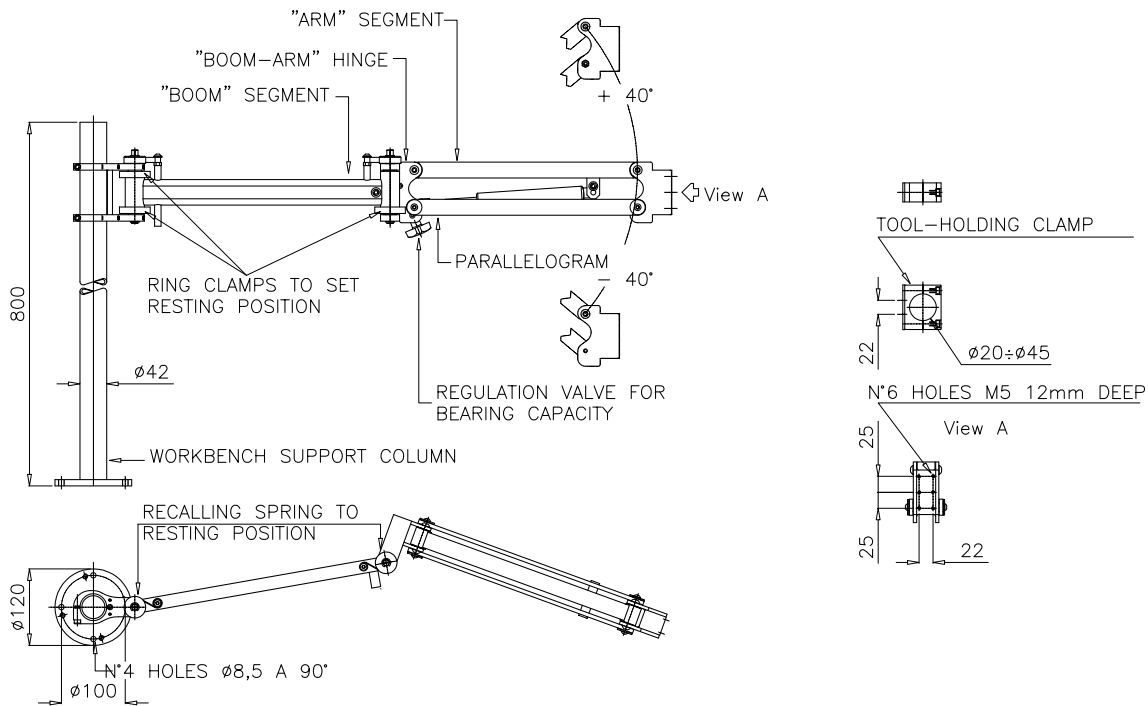
SIZE "1" 80Nm

Performance and Dimensions

MODELS	"BOOM" Length mm	"ARM" Length mm	Spring Capacity N	Minimum Weight Kg.	Maximum Weight Kg.	Reaction Torque Limit Nm	Useful Vertical Stroke mm
S1BG110200000	400	350	200	0.0	2.5	80	440
D1BG110200000	400	350	200	0.0	2.5	80	440
S1BG110400000	400	350	400	2.0	5.5	80	440
D1BG110400000	400	350	400	2.0	5.5	80	440
S1BG110600000	400	350	600	4.0	9.0	80	440
D1BG110600000	400	350	600	4.0	9.0	80	440
S1BG111000000	400	350	1000	8.0	17.0	80	440
D1BG111000000	400	350	1000	8.0	17.0	80	440
S1BG220200000	550	500	200	0.0	1.2	80	640
D1BG220200000	550	500	200	0.0	1.2	80	640
S1BG220400000	550	500	400	1.0	3.0	80	640
D1BG220400000	550	500	400	1.0	3.0	80	640
S1BG220600000	550	500	600	2.0	5.0	80	640
D1BG220600000	550	500	600	2.0	5.0	80	640
S1BG221000000	550	500	1000	4.5	10.5	80	640
D1BG221000000	550	500	1000	4.5	10.5	80	640
S1BG330400000	700	650	400	0.0	2.0	80	830
D1BG330400000	700	650	400	0.0	2.0	80	830
S1BG330600000	700	650	600	1.0	3.0	80	830
D1BG330600000	700	650	600	1.0	3.0	80	830
S1BG331000000	700	650	1000	2.5	7.5	80	830
D1BG331000000	700	650	1000	2.5	7.5	80	830

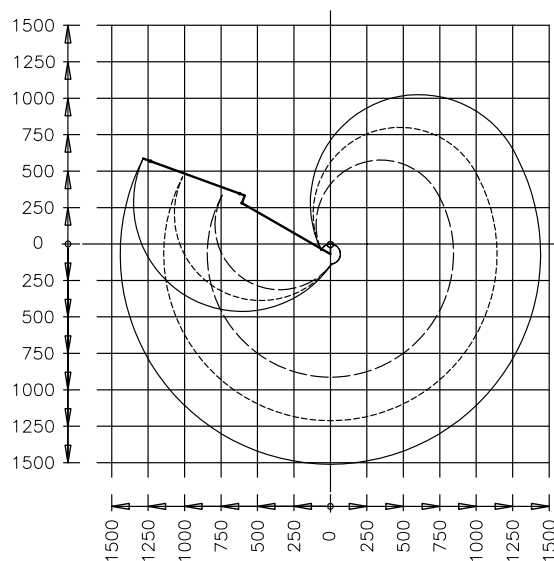
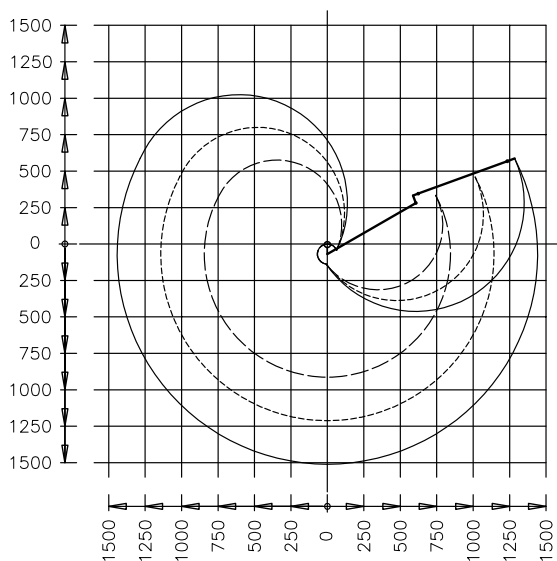
Accessories available

Workbench Fastener (standard)	S1BG... D1BG...
Wall Fastener	S1FG... D1FG...
Tool holding clamp is furnished with the arm. Specify diameter of tool when purchasing.	From Ø20 to Ø45



DX (Right) Arm Layout

SX (Left) Arm Layout



- Boom L-400 Arm L-350
- · - · - · Boom L-550 Arm L-500
- Boom L-700 Arm L-650



SIZE "1" 150Nm

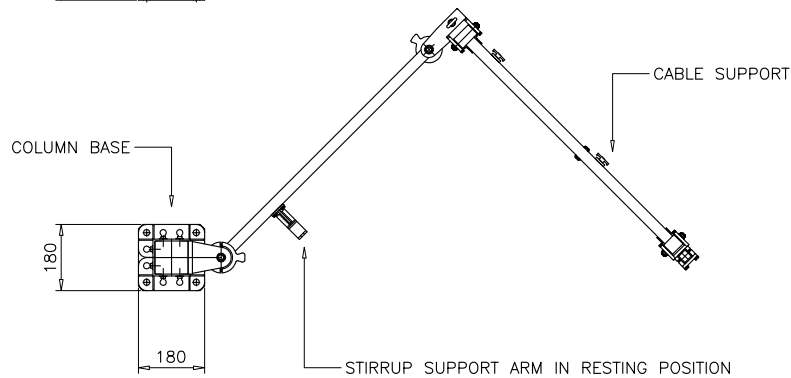
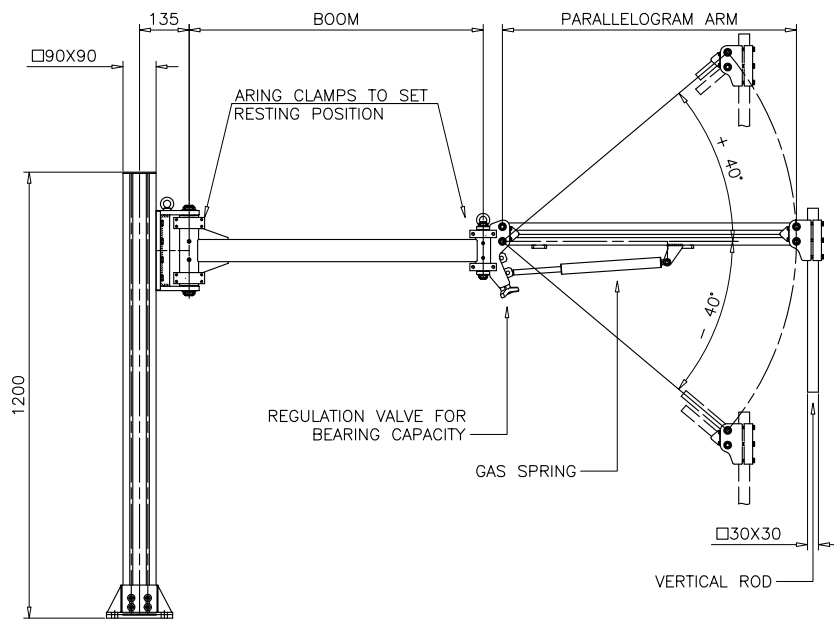
Performance and Dimensions

MODELS	"BOOM" Length mm	"ARM" Length mm	Spring Capacity N	Minimum Weight Kg.	Maximum Weight Kg.	Reaction Torque Limit Nm	Vertical Rod	Useful Vertical Stroke mm
S1BG110713000	600	600	1200	4	14	150	30x30	770
D1BG110713000	600	600	1200	4	14	150	30x30	770
S1BG110813000	600	600	1900	8	25	150	30x30	770
D1BG110813000	600	600	1900	8	25	150	30x30	770
S1BG220713000	800	800	1200	2	10	150	30x30	1030
D1BG220713000	800	800	1200	2	10	150	30x30	1030
S1BG220813000	800	800	1900	7	17	150	30x30	1030
D1BG220813000	800	800	1900	7	17	150	30x30	1030
S1BG220913000	800	800	2500	10	25	150	30x30	1030
D1BG220913000	800	800	2500	10	25	150	30x30	1030
S1BG330713000	1000	1000	1200	1	9	150	30x30	1030
D1BG330713000	1000	1000	1200	1	9	150	30x30	1030
S1BG330813000	1000	1000	1900	6	16	150	30x30	1030
D1BG330813000	1000	1000	1900	6	16	150	30x30	1030
S1BG330913000	1000	1000	2500	9	24	150	30x30	1030
D1BG330913000	1000	1000	2500	9	24	150	30x30	1030

Accessories available

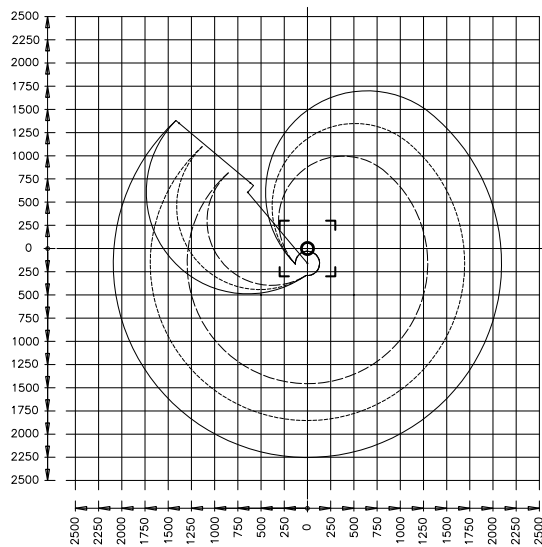
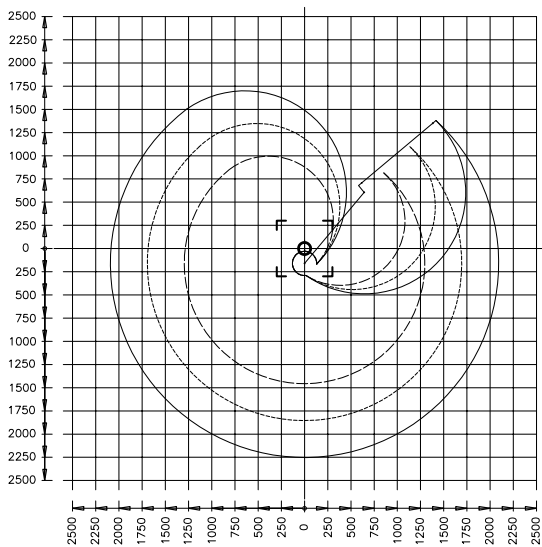
Workbench Fastener (standard)	S1BG... D1BG...
Wall Fastener	S1FG... D1FG...
Floor Fastener	S1PG... D1PG...
Vertical rod furnished with the arm Specify length of tool when purchasing	A13000000
Vertical Axis Pneumatic Brake	F13P09000
Vertical Fixed Wrist	PFV300000 PFV3000003
Vertical Revolving Wrist	PGV300000 PGV3000003
Revolving Tool Body Axis Wrist	PAO310000
Horizontal Revolving Wrist	PGO310000
Tool Support Clamp	MSO310000
Tool Support Stirrup	SSO310000
Horizontal-Vertical Revolving Wrist	PPO310000
Encoder Support Bracket	E11000000 E12000000
Non Encumbrance Sensors	Y10000000

For individual accessory performance please consult specific pages.

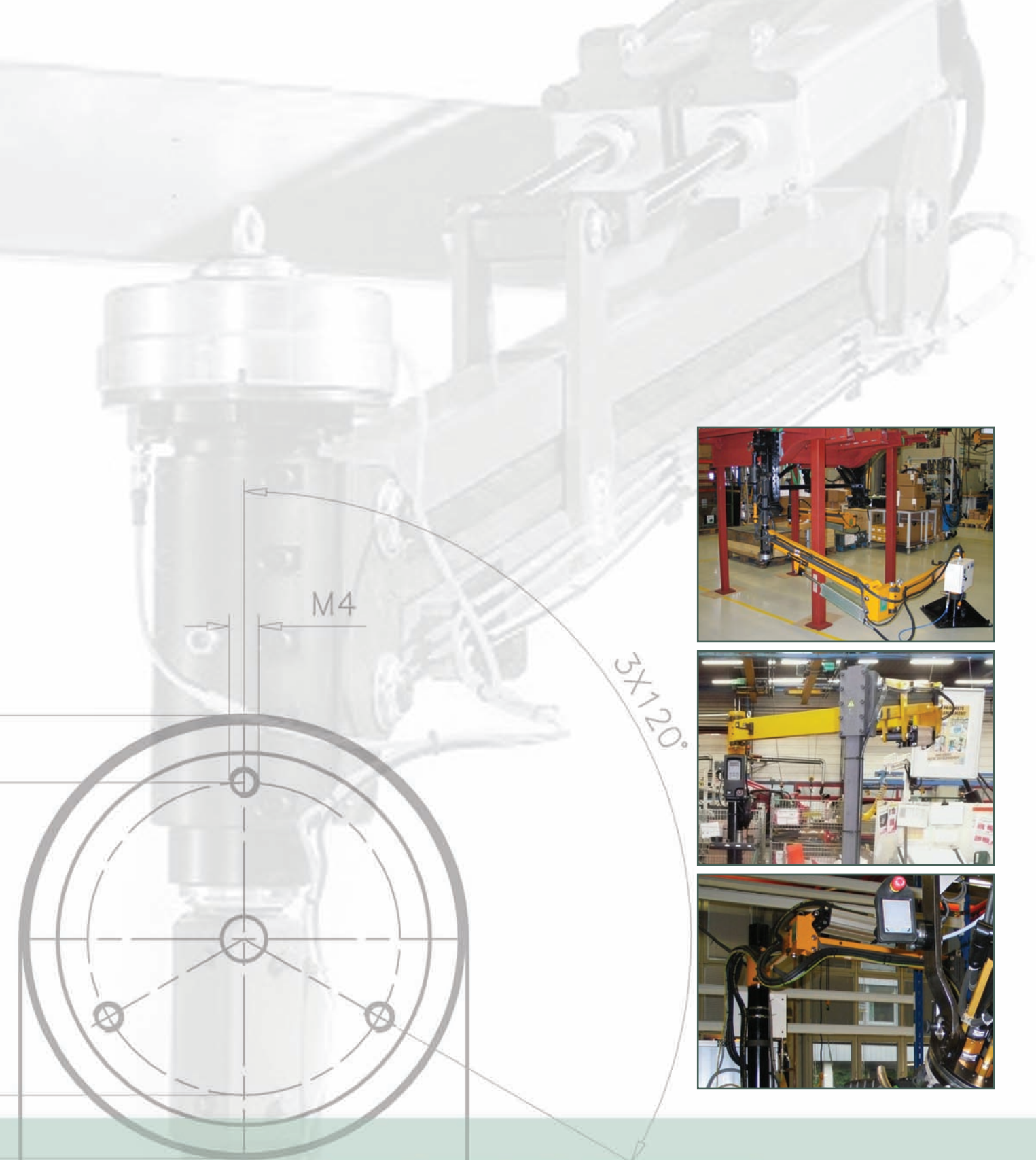


SX (Left) Arm Layout

DX (Right) Arm Layout



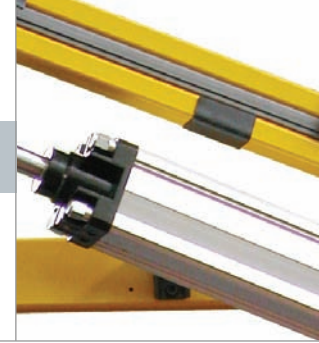
- Boom L-600 Arm L-600
- .-.-.-.- Boom L-800 Arm L-800
- Boom L-1000 Arm L-1000



TSA TECNOLOGIE
SPECIALI
APPLICATE



PNEUMATIC WORKBENCH ARTICULATED ARMS



These arms, quite similar to those with a gas balancing unit, can be run by pneumatic circuits which allow the balancing force to vary during the work cycle.

This may be necessary when an downward push must be applied onto screwdrivers (self threaded screw insertion) or tapping machines.

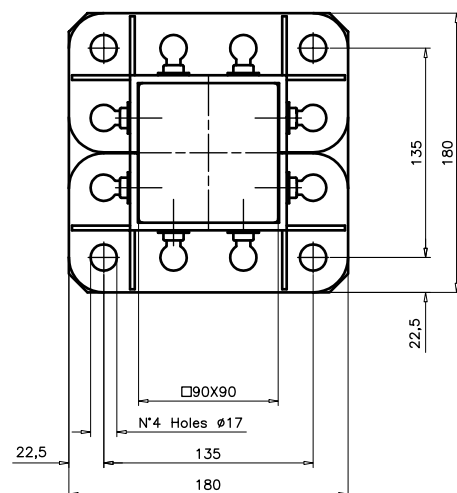
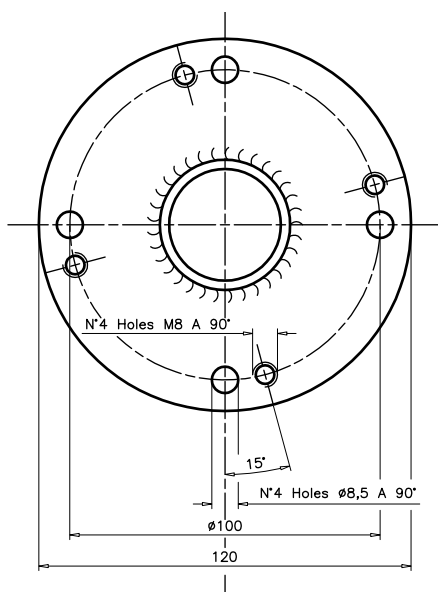
The force of the downward push is adjustable, and the switch from a balancing condition to a drive is subject to a bimanual command for safety reasons. The arms may be equipped with one or two balancing units, complete with a regulation valve that is designed to balance a constant load. The balancing unit is able to maintain a setting with great precision for an indefinite period of time. Please keep in mind that our technical office is available for special applications.



SIZE "1" 80Nm



SIZE "1" 150Nm



WORKBENCH FASTENING FLANGE



SIZE "1" 80Nm

Performance and Dimensions

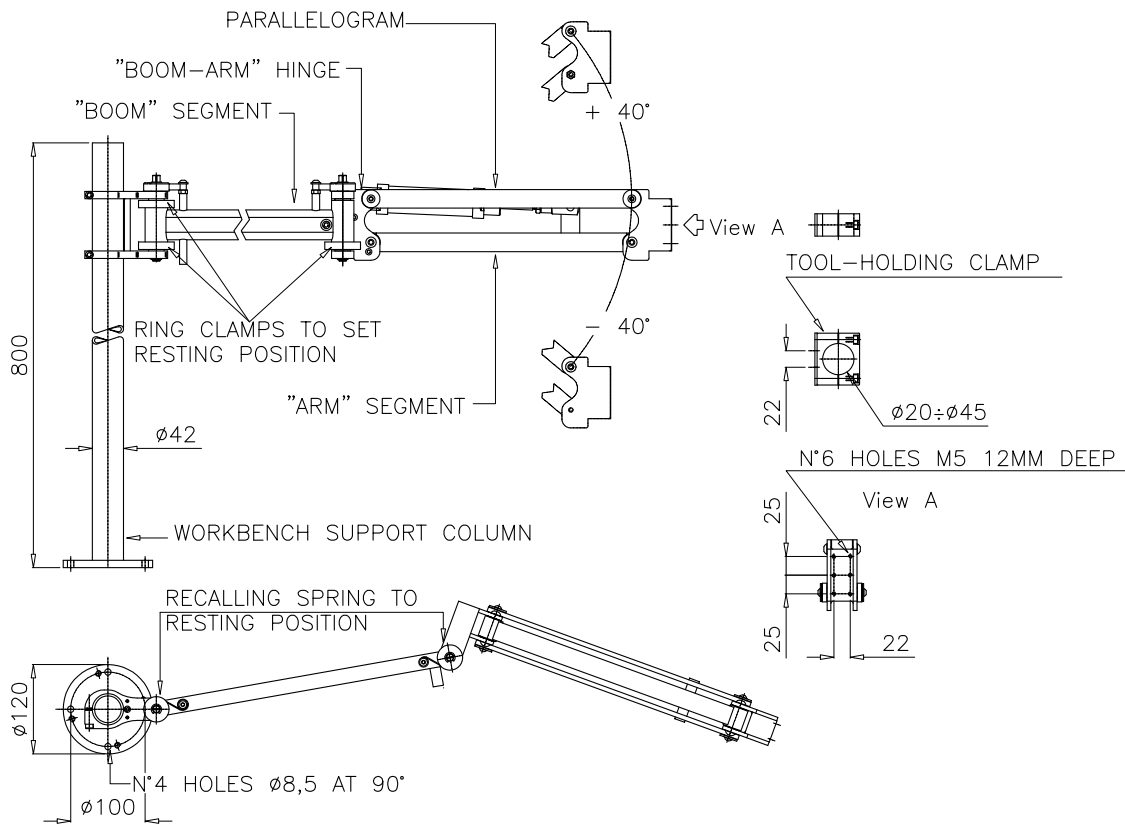
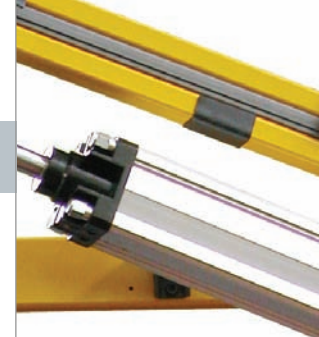
MODELS	"BOOM" Length mm	"ARM" Length mm	Pneumatic Balancing Unit Ø mm	Weight Adjustment Range at a pressure of 6 bar Kg.	Reaction Torque Limit Nm	Useful Vertical Stroke mm
S1BP111110000	400	350	32	0-4	80	440
D1BP111110000	400	350	32	0-4	80	440
S1BP111210000	400	350	50	0-10	80	440
D1BP111210000	400	350	50	0-10	80	440
S1BP221110000	550	500	32	0-3	80	640
D1BP221110000	550	500	32	0-3	80	640
S1BP221210000	550	500	50	0-8	80	640
D1BP221210000	550	500	50	0-8	80	640
S1BP331110000	700	650	32	0-2	80	830
D1BP331110000	700	650	32	0-2	80	830
S1BP331210000	700	650	50	0-6	80	830
D1BP331210000	700	650	50	0-6	80	830

Accessories available

Workbench Fastener (standard)	S1BP... D1BP...
Wall Fastener	S1FP... D1FP...
Tool holding clamp is furnished with the arm. Specify diameter of tool when purchasing.	From Ø20 to Ø45

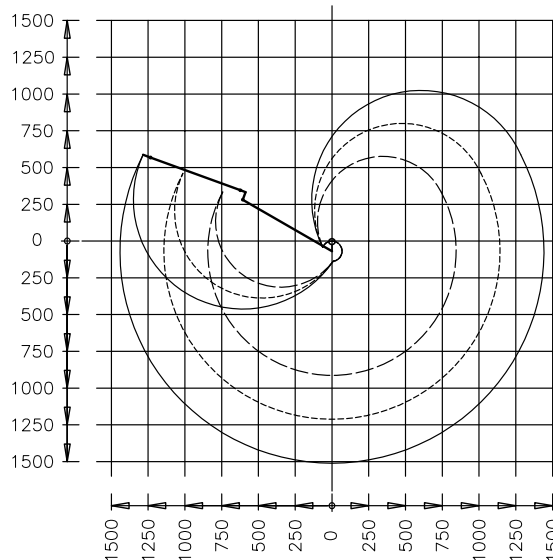
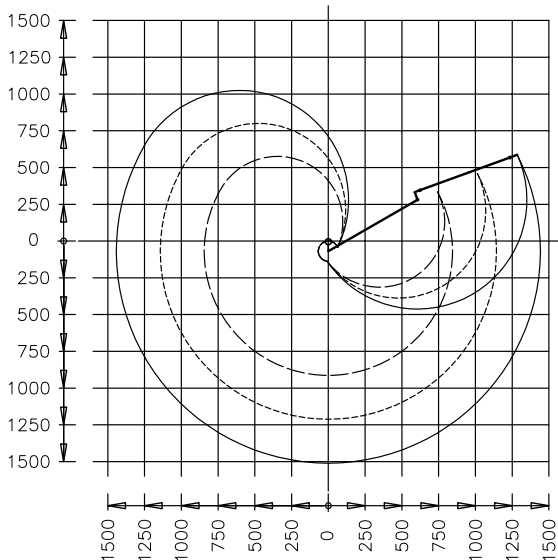


PNEUMATIC WORKBENCH ARTICULATED ARMS



SX (Left) Arm Layout

DX (Right) Arm Layout



- Boom L-400 Arm L-350
- · - · - · Boom L-550 Arm L-500
- Boom L-700 Arm L-650



SIZE "1" 150Nm Mono-cylindrical Performance and Dimensions

MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1BP111313000	7.5 Kg.	15 Kg.	23 Kg.	32 Kg.	38 Kg.	40 Kg.
D1BP111313000						
S1BP221313000	2 Kg.	7 Kg.	12 Kg.	17 Kg.	24 Kg.	29 Kg.
D1BP221313000						
S1BP331313000	/ Kg.	5 Kg.	10 Kg.	15 Kg.	22 Kg.	27 Kg.
D1BP331313000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S1BP111313000	600	600	63	150	30x30	770
D1BP111313000						
S1BP221313000	800	800	63	150	30x30	1030
D1BP221313000						
S1BP331313000	1000	1000	63	150	30x30	1030
D1BP331313000						

Bi-cylindrical Performance e Dimensions

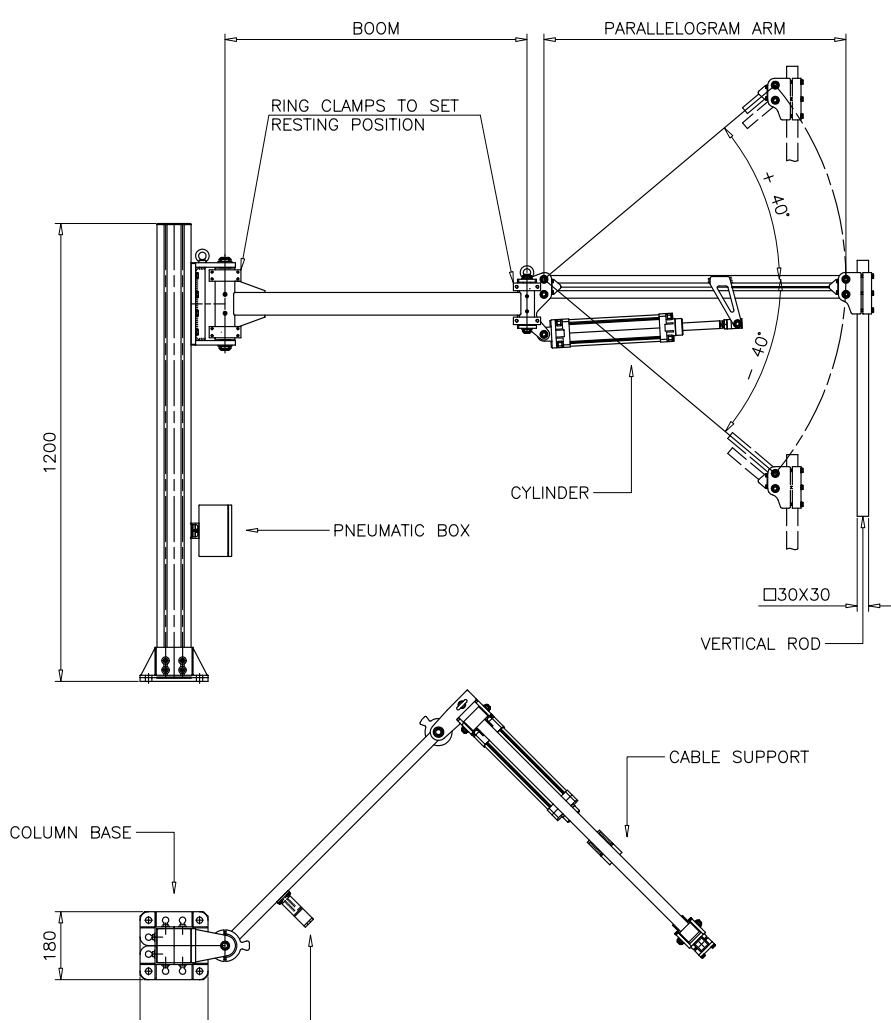
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1BP111323000	14 Kg.	30 Kg.	40 Kg.	40 Kg.	40 Kg.	40 Kg.
D1BP111323000						
S1BP221323000	4 Kg.	14 Kg.	24 Kg.	34 Kg.	40 Kg.	40 Kg.
D1BP221323000						
S1BP331323000	2 Kg.	12 Kg.	22 Kg.	32 Kg.	40 Kg.	40 Kg.
D1BP331323000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S1BP111323000	600	600	63	150	30x30	770
D1BP111323000						
S1BP221323000	800	800	63	150	30x30	1030
D1BP221323000						
S1BP331323000	1000	1000	63	150	30x30	1030
D1BP331323000						

Accessories available

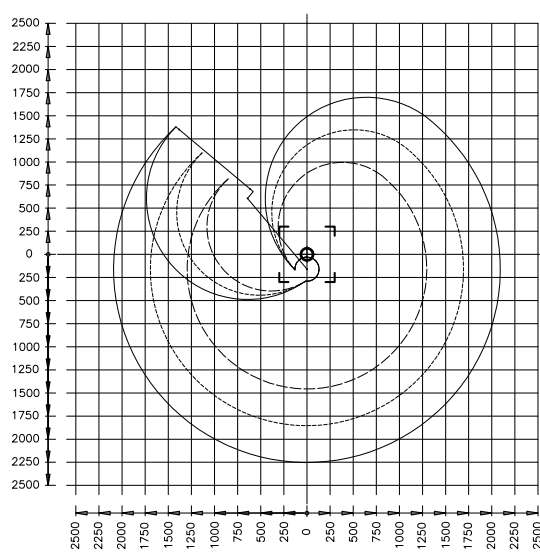
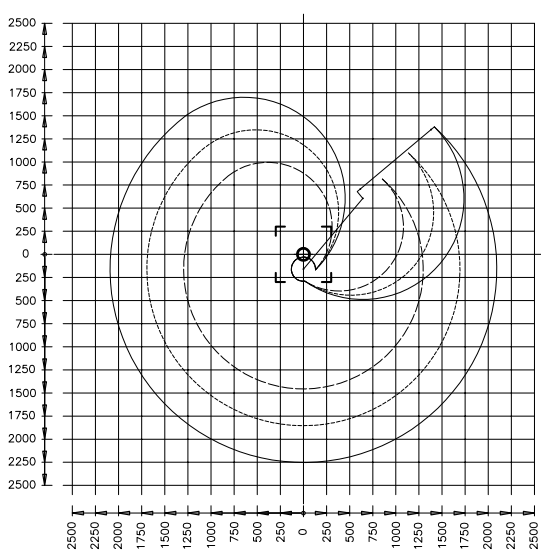
Workbench Fastener (standard)	S1BP... D1BP...	Vertical Fixed Wrist	PFV300000 PFV300003
Wall Fastener	S1FP... D1FP...	Vertical Revolving Wrist	PGV300000 PGV300003
Floor Fastener	S1PP... D1PP...	Horizontal Revolving Wrist	PGO310000
Vertical rod furnished with the arm. Specify length of tool when purchasing	A13000000 A23000000	Revolving Tool Body Axis Wrist	PAO310000
Vertical Axis Pneumatic Brake	F13P09000	Tool Support Clamp	MSO310000
Pneumatic Brake for Arm Rotation	G10P09000	Tool Support Stirrup	SSO310000
		Horizontal-Vertical Revolving Wrist	PPO310000
		Encoder Support Bracket	E11000000 E12000000

For individual accessory performance please consult specific pages.

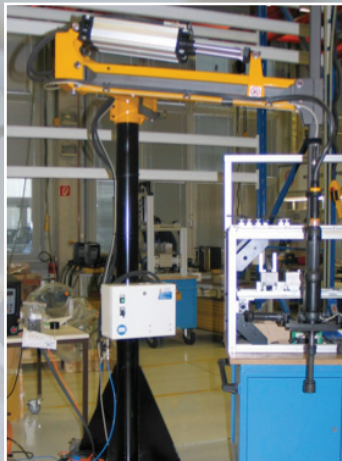


SX (Left) Arm Layout

DX (Right) Arm Layout



- Boom L-600 Arm L-600
- · - · - · Boom L-800 Arm L-800
- Boom L-1000 Arm L-1000



High Technology and Professionalism in the Automotive and Industrial sector

PNEUMATIC FLOOR ARTICULATED ARMS



Pneumatic floor articulated arms differ from previous models for their floor fixed support column and their larger bore cylinders that allow larger weights to be sustained. Furthermore, major conjunctions move on conical roller bearings which allow them to sustain radial-axial loads.

These articulated arms are particularly indicated for heavy applications to neutralize high reaction torques produced by tools.

The arms can be equipped with one or two balancing units, complete with regulation valve to balance a constant load.



SIZE "1" 150Nm



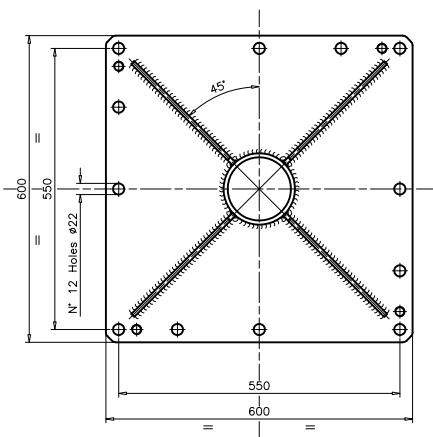
SIZE "2" 250Nm



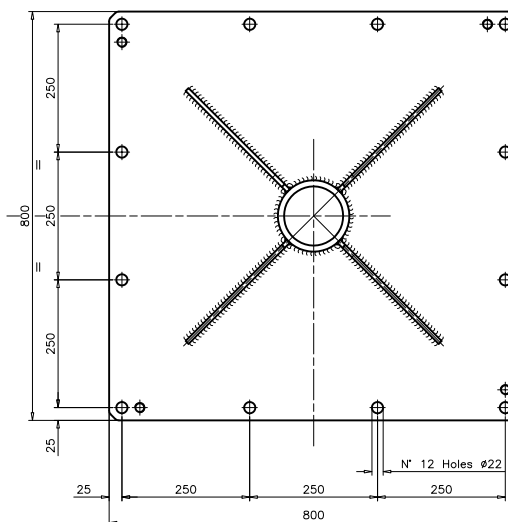
SIZE "3" 1000Nm



SIZE "5" 2000Nm



SIZE 1-2-3



SIZE 5

**FLOOR
FASTENING
FLANGE**



PNEUMATIC FLOOR ARTICULATED ARMS



SIZE "1" 150Nm Mono-cylindrical Performance and Dimensions

MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1PP111313000	7.5 Kg.	15 Kg.	23 Kg.	32 Kg.	38 Kg.	40 Kg.
D1PP111313000						
S1PP221313000	2 Kg.	7 Kg.	12 Kg.	17 Kg.	24 Kg.	29 Kg.
D1PP221313000						
S1PP331313000	/ Kg.	5 Kg.	10 Kg.	15 Kg.	22 Kg.	27 Kg.
D1PP331313000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S1PP111313000	600	600	63	150	30x30	770
D1PP111313000						
S1PP221313000	800	800	63	150	30x30	1030
D1PP221313000						
S1PP331313000	1000	1000	63	150	30x30	1030
D1PP331313000						

Bi-cylindrical Performance e Dimensions

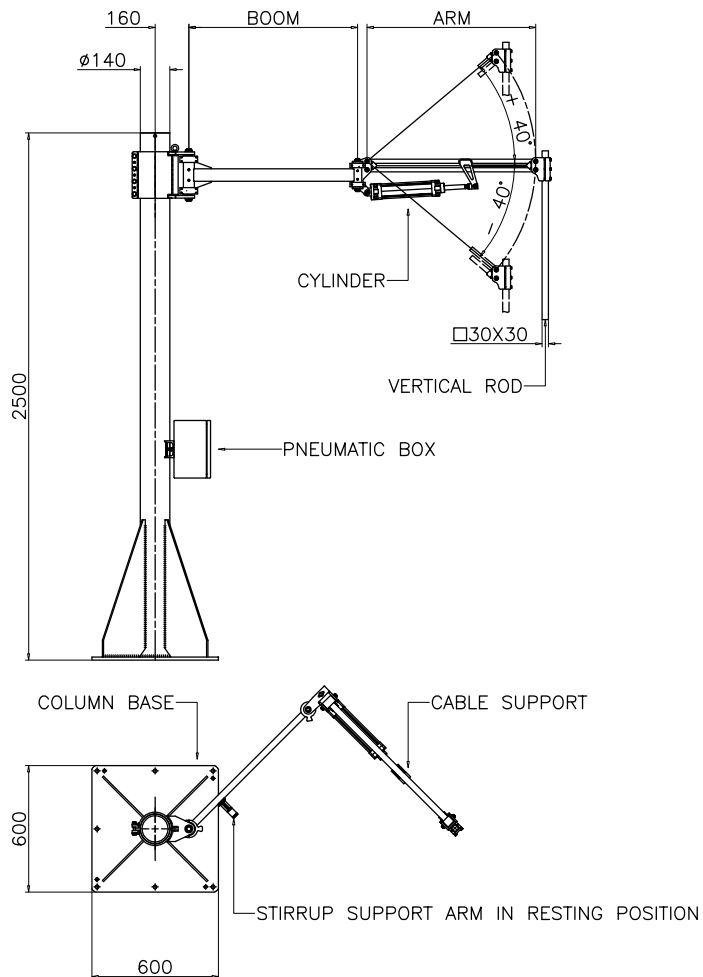
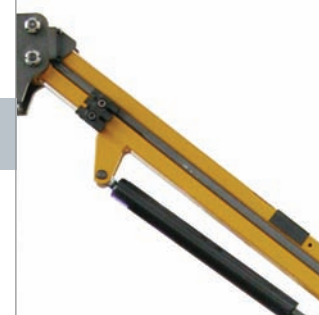
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S1PP111323000	14 Kg.	30 Kg.	40 Kg.	40 Kg.	40 Kg.	40 Kg.
D1PP111323000						
S1PP221323000	4 Kg.	14 Kg.	24 Kg.	34 Kg.	40 Kg.	40 Kg.
D1PP221323000						
S1PP331323000	2 Kg.	12 Kg.	22 Kg.	32 Kg.	40 Kg.	40 Kg.
D1PP331323000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S1PP111323000	600	600	63	150	30x30	770
D1PP111323000						
S1PP221323000	800	800	63	150	30x30	1030
D1PP221323000						
S1PP331323000	1000	1000	63	150	30x30	1030
D1PP331323000						

Accessories available

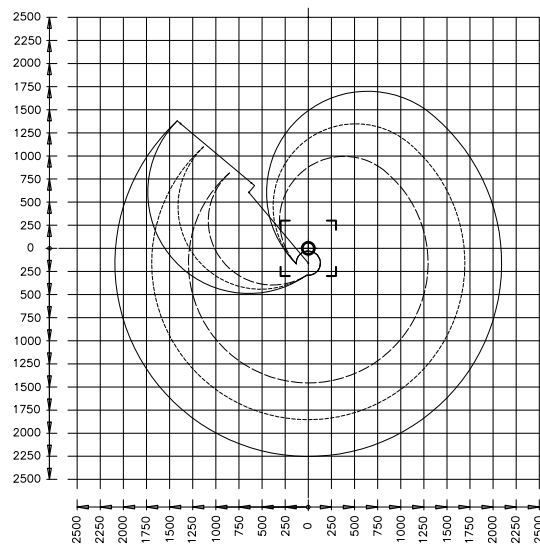
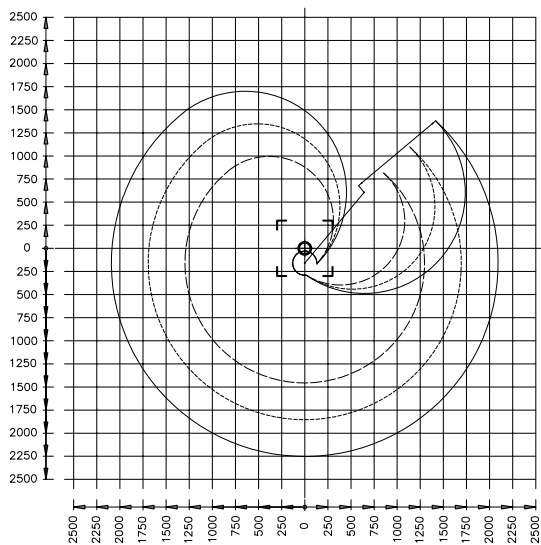
Floor Fastener (standard)	S1PP... D1PP...	Vertical Revolving Wrist	PGV300000 PGV300003
Wall Fastener	S1FP... D1FP...	Horizontal Revolving Wrist	PGO310000
Track Fastener	S1VP... D1VP...	Revolving Tool Body Axis Wrist	PAO310000
Vertical rod furnished with the arm Specify length when purchasing	A1300000 A23000000	Tool Support Clamp	MSO310000
Pneumatic Vertical Axis Brake	F13P09000	Tool Support Stirrup	SSO310000
Pneumatic Arm Rotation Axis Brake	G10P09000	Horizontal-Vertical Revolving Wrist	PPO310000
Vertical Fixed Wrist	PFV300000 PFV300003	Encoder Support Bracket	E11000000 E12000000
		Instrumentation Support	S00000000

For individual accessory performance please consult specific pages.



SX (Left) Arm Layout

DX (Right) Arm Layout



- Boom L-600 Arm L-600
- · - · - · Boom L-800 Arm L-800
- Boom L-1000 Arm L-1000



PNEUMATIC FLOOR ARTICULATED ARMS



SIZE "2" 250Nm

Mono-cylinder Performance e Dimensions

MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S2PP111414000	/ Kg.	7 Kg.	27 Kg.	38 Kg.	49 Kg.	60 Kg.
D2PP111414000						
S2PP221414000	/ Kg.	4 Kg.	21 Kg.	29.5 Kg.	37 Kg.	46 Kg.
D2PP221414000						
S2PP331414000	/ Kg.	2 Kg.	9.5 Kg.	16.5 Kg.	24.5 Kg.	32.5 Kg.
D2PP331414000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S2PP111414000	800	800	80	250	40x40	1030
D2PP111414000						
S2PP221414000	1000	1000	80	250	40x40	1285
D2PP221414000						
S2PP331414000	1200	1200	80	250	40x40	1540
D2PP331414000						

Bi-cylindrical Performance e Dimensions

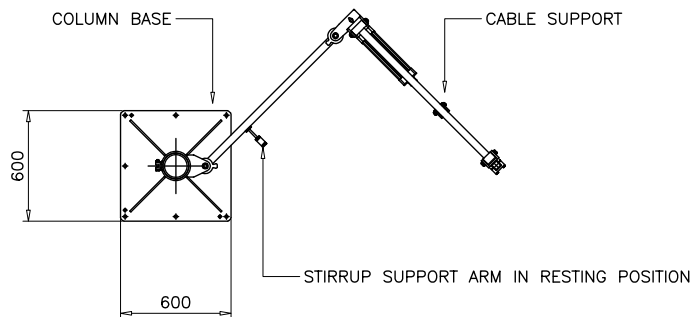
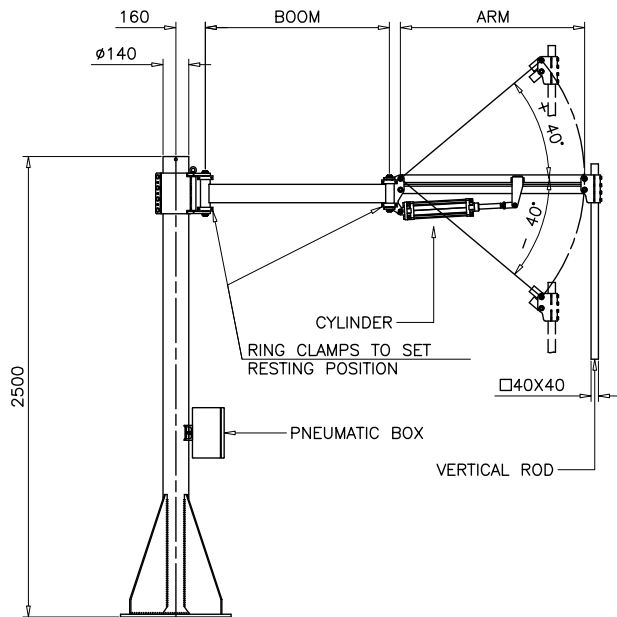
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S2PP111424000	/ Kg.	14 Kg.	52 Kg.	60 Kg.	60 Kg.	60 Kg.
D2PP111424000						
S2PP221424000	/ Kg.	8 Kg.	42.5 Kg.	59 Kg.	60 Kg.	60 Kg.
D2PP221424000						
S2PP331424000	/ Kg.	4 Kg.	19 Kg.	33 Kg.	49 Kg.	60 Kg.
D2PP331424000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S2PP111424000	800	800	80	250	40x40	1030
D2PP111424000						
S2PP221424000	1000	1000	80	250	40x40	1285
D2PP221424000						
S2PP331424000	1200	1200	80	250	40x40	1540
D2PP331424000						

Accessori disponibili

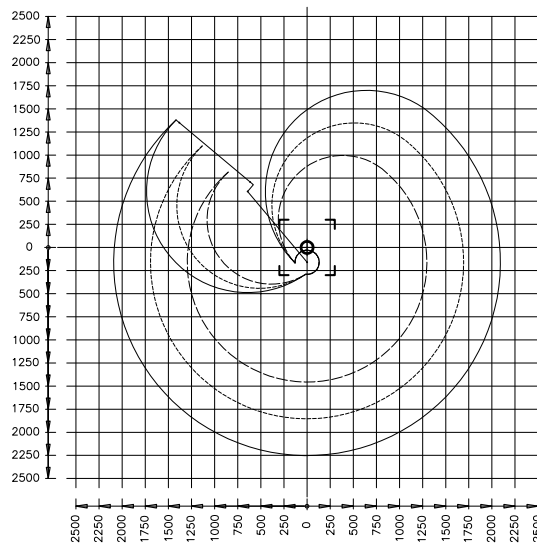
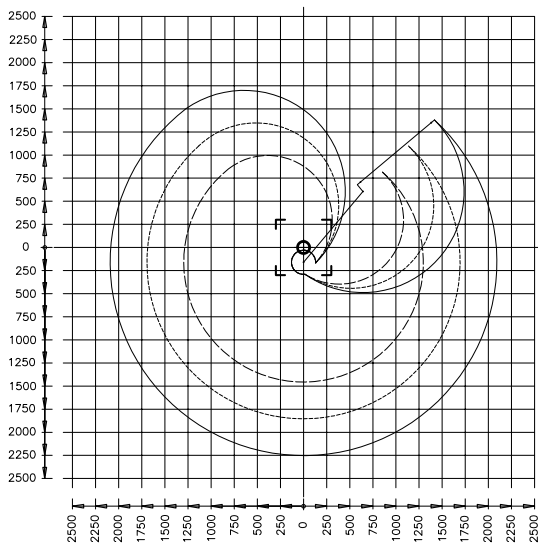
Floor Fastener (standard)	S2PP... D2PP...	Horizontal Revolving Wrist	PGO410000
Wall Fastener	S2FP... D2FP...	24 Lock Pneumatic Horizontal Revolving Wrist	PLO420000 PLO421000
Track Fastener	S2VP... D2VP...	24 Lock Manual Horizontal Revolving Wrist	PLO410000 PLO411000
Vertical rod furnished with the arm Specify length when purchasing	A14000000 A24000000	Revolving Tool Body Axis Wrist	PAO410000
Pneumatic Vertical Axis Brake	F24P11400	Tool Support Clamp	MSO410000
Pneumatic Brake for Arm Rotation	G20P11400	Tool Support Stirrup	SSO410000
Pneumatic Horizontal Axis Brake	P34P11400	Horizontal-Vertical Revolving Wrist	PPO410000
Vertical Fixed Wrist	PFV400000 PFV400003	24 Lock Revolving Wrist	PBV400000
Vertical Revolving Wrist	PGV400000 PGV400003	Encoder Support Bracket	E21000000 E22000000
		Instrumentation Support	S00000000

For individual accessory performance please consult specific pages.



SX (Left) Arm Layout

DX (Right) Arm Layout



- Boom L-800 Arm L-800
- · - · - · Boom L-1000 Arm L-1000
- Boom L-1200 Arm L-1200



PNEUMATIC FLOOR ARTICULATED ARMS



SIZE "3" 1000Nm

Mono-cylinder Performance and Dimensions

MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S3PP111515000	6.5 Kg.	26 Kg.	39 Kg.	57 Kg.	75 Kg.	80 Kg.
D3PP111515000						
S3PP221515000	3.5 Kg.	19.5 Kg.	32 Kg.	48 Kg.	64 Kg.	80 Kg.
D3PP221515000						
S3PP331515000	1 Kg.	14 Kg.	21 Kg.	34 Kg.	47 Kg.	80 Kg.
D3PP331515000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S3PP111515000	1000	1000	100	1000	40x40 50x50	1285
D3PP111515000						
S3PP221515000	1250	1250	100	1000	40x40 50x50	1600
D3PP221515000						
S3PP331515000	1500	1500	100	1000	40x40 50x50	1930
D3PP331515000						

Bi-cylindrical Performance e Dimensions

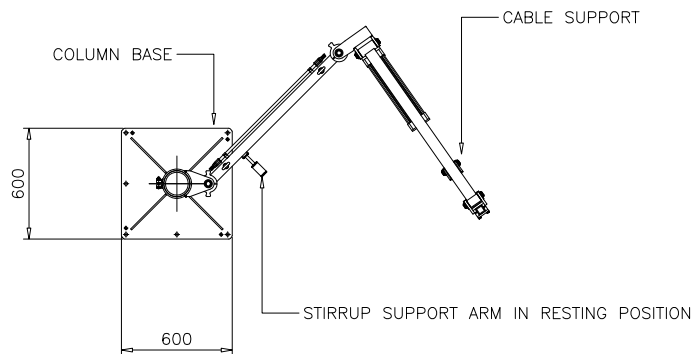
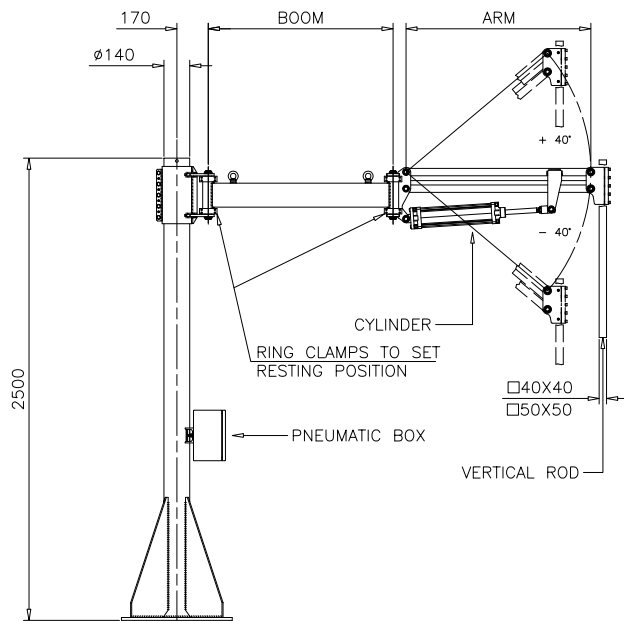
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S3PP111525000	13 Kg.	52 Kg.	78 Kg.	80 Kg.	80 Kg.	80 Kg.
D3PP111525000						
S3PP221525000	7 Kg.	39 Kg.	64 Kg.	80 Kg.	80 Kg.	80 Kg.
D3PP221525000						
S3PP331525000	2 Kg.	28 Kg.	42 Kg.	68 Kg.	80 Kg.	80 Kg.
D3PP331525000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S3PP111525000	1000	1000	100	1000	40x40 50x50	1285
D3PP111525000						
S3PP221525000	1250	1250	100	1000	40x40 50x50	1600
D3PP221525000						
S3PP331525000	1500	1500	100	1000	40x40 50x50	1930
D3PP331525000						

Accessories available

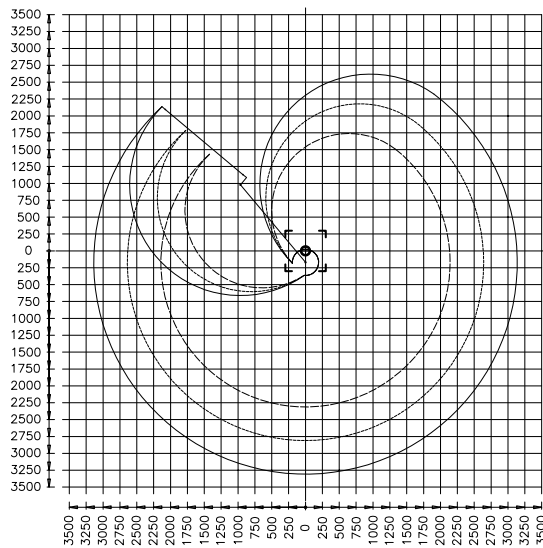
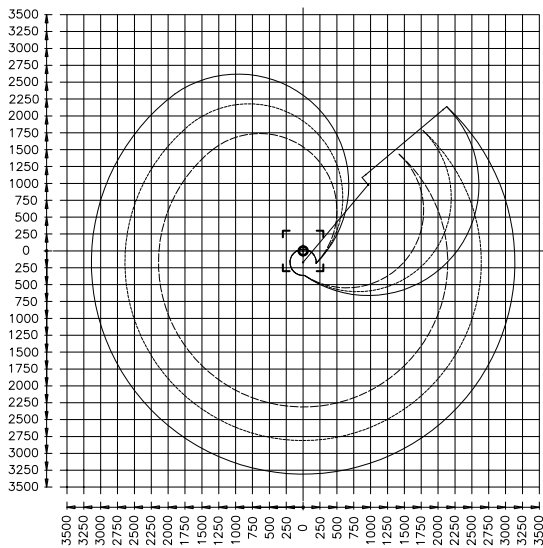
Floor Fastener (standard)	S3PP... D3PP...	Horizontal Revolving Wrist	PGO41000 PGO51000
Wall Fastener	S3FP... D3FP...	24 Lock Pneumatic Horizontal Revolving Wrist	PLO420000 PLO421000
Track Fastener	S3VP... D3VP...	24 Lock Manual Horizontal Revolving Wrist	PLO410000 PLO411000
Vertical rod is furnished with the arm Specify length when purchasing	A14000000 A15000000 A24000000 A25000000	Revolving Tool Body Axis Wrist	PAO410000 PAO510000
Pneumatic Vertical Axis Brake	F34P14000 F35P16600	Tool Support Clamp	MSO410000 MSO510000
Pneumatic Brake for Arm Rotation	G30P14000 G30P16600	Tool Support Stirrup	SSO410000 SSO510000
Pneumatic Horizontal Axis Brake	P35P14000	Horizontal-Vertical Revolving Wrist	PPO410000 PPO510000
Vertical Fixed Wrist	PFV400000 PFV500000 PFV400003 PFV500003	24 Lock Revolving Wrist	PBV400000
Vertical Revolving Wrist	PGV400000 PGV500000 PGV400003 PGV500003	Encoder Support Bracket	E31000000 E32000000
		Non Encumbrance Sensors	Y30000000
		Instrumentation Support	S00000000

For individual accessory performance please consult specific pages.



SX (Left) Arm Layout

DX (Right) Arm Layout



- Boom L-1000 Arm L-1000
- · - · - · Boom L-1250 Arm L-1250
- Boom L-1500 Arm L-1500



PNEUMATIC FLOOR ARTICULATED ARMS



SIZE "5" 2000Nm

Mono-cylinder Performance e Dimensions

MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S5PP111515000	/ Kg.	5 Kg.	20 Kg.	36 Kg.	52 Kg.	68 Kg.
D5PP111515000						
S5PP221515000	/ Kg.	/ Kg.	6.5 Kg.	18.5 Kg.	30.5 Kg.	42.5 Kg.
D5PP221515000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S5PP111515000	1500	1500	100	2000	50x50 60x60	1930
D5PP111515000						
S5PP221515000	2000	2000	100	2000	50x50 60x60	2570
D5PP221515000						

Bi-cylindrical Performance e Dimensions

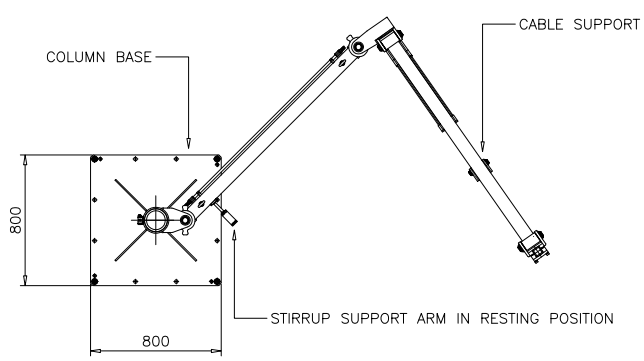
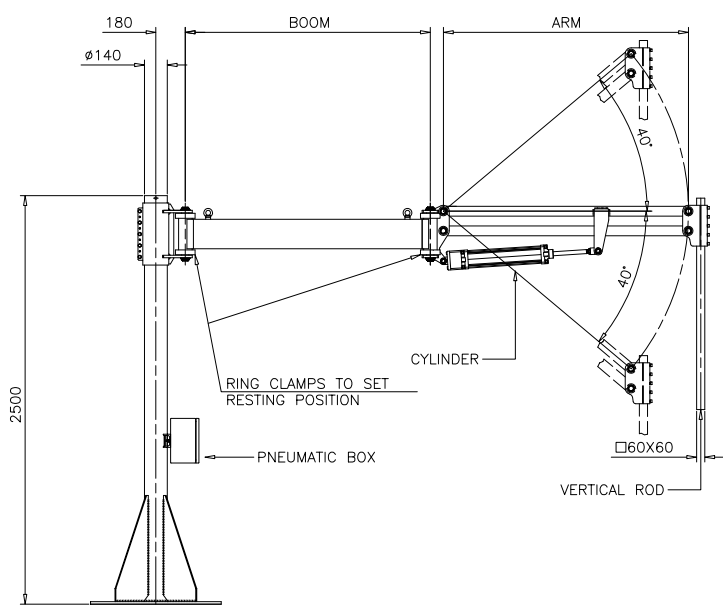
MODELS	BALANCING CAPACITY					
	2 Bar	3 Bar	4 Bar	5 Bar	6 Bar	7 Bar
S5PP111525000	8 Kg.	38 Kg.	72 Kg.	90 Kg.	90 Kg.	90 Kg.
D5PP111525000						
S5PP221525000	/ Kg.	20 Kg.	45.5 Kg.	68 Kg.	90 Kg.	90 Kg.
D5PP221525000						

MODELS	"BOOM" Length mm	"ARM" Length mm	BALANCING UNIT Ø	TORQUE LIMIT Nm	VERTICAL ROD	USEFUL VERTICAL STROKE
S5PP111525000	1500	1500	100	2000	50x50 60x60	1930
D5PP111525000						
S5PP221525000	2000	2000	100	2000	50x50 60x60	2570
D5PP221525000						

Accessories available

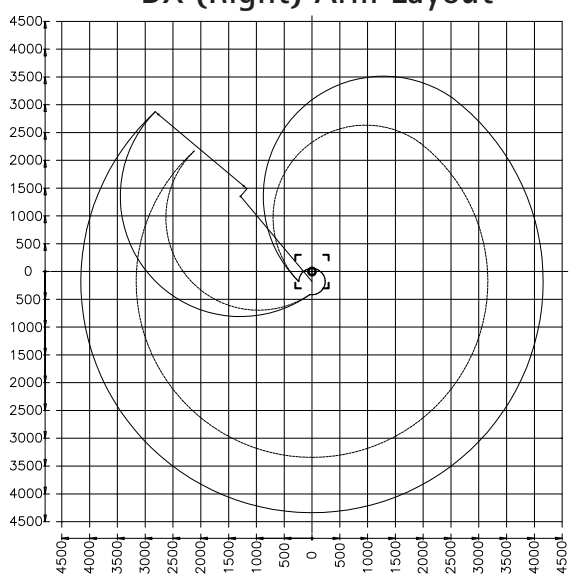
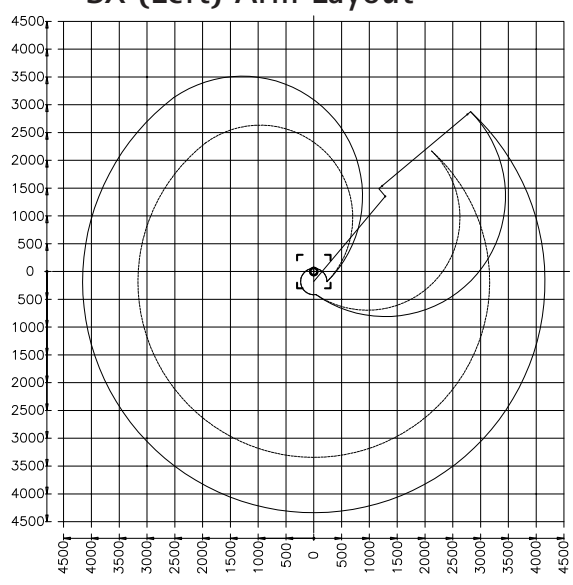
Floor Fastener (standard)	S5PP... D5PP...	Revolving Tool Body Axis Wrist	PGV600000 PGV600003
Wall Fastener	S5FP... D5FP...	Tool Support Clamp	PAO610000
Track Fastener	S5VP... D5VP...	Tool Support Stirrup	MSO610000
Vertical rod furnished with the arm Specify length when purchasing	A16000000 A26000000	Horizontal-Vertical Revolving Wrist	SSO610000
Pneumatic Vertical Axis Brake	F56P21000	24 Lock Revolving Wrist	PPO610000
Pneumatic Brake for Arm Rotation	G50P21000	Encoder Support Bracket	E51000000 E52000000
Pneumatic Horizontal Axis Brake	P56P16600	Non Encumbrance Sensors	Y50000000
Vertical Fixed Wrist	PFV600000 PFV600003	Instrumentation Support	S00000000

For individual accessory performance please consult specific pages.



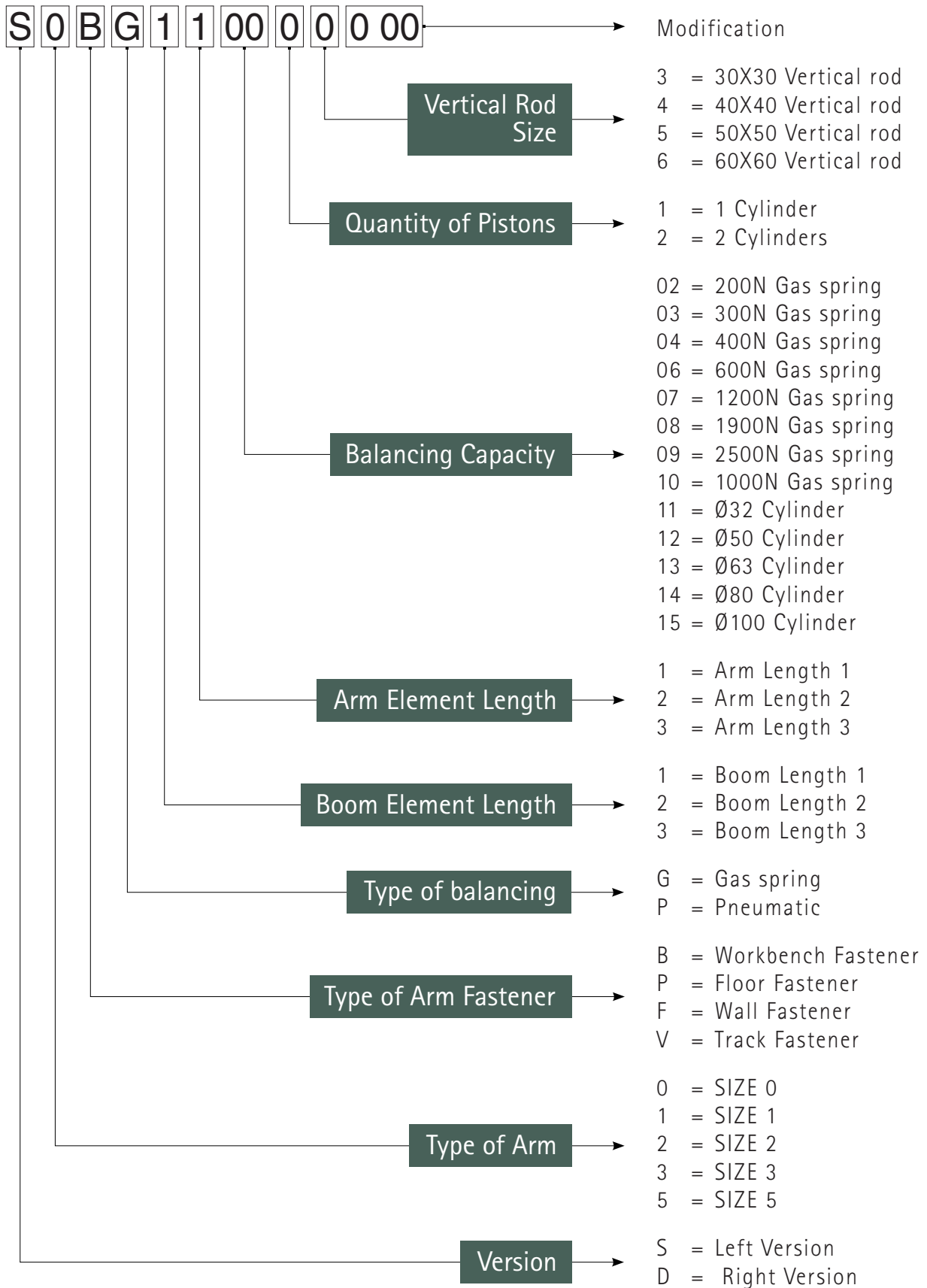
SX (Left) Arm Layout

DX (Right) Arm Layout



- - - - - Boom L-1500 Arm L-1500
 ————— Boom L-2000 Arm L-2000

HOW TO ORDER AN ARTICULATED ARM



ARTICULATED ARM WRISTS

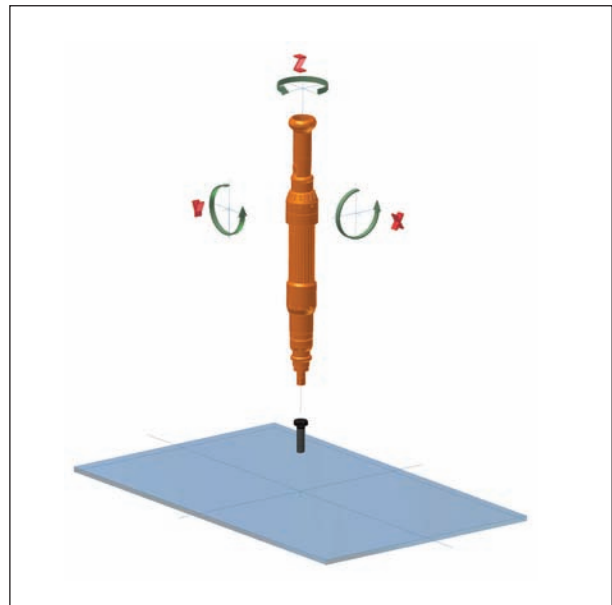
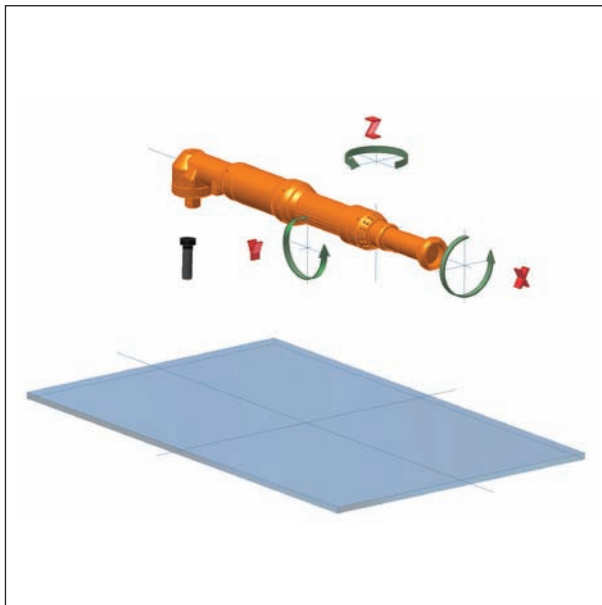
GENERAL INFORMATION

TSA TECHNOLOGIES articulated arms can be supplemented with a number of different accessories in order to satisfy the majority of needs in the assembly field.

The accessories we offer have been designed and created in line with principal safety regulations and adhere to **CE** standards 89/392.

There is an increasing need to diversify the way in which a tool must carry out screw driving on different axes, and this requires different types of release mechanisms (see drawing) that are subdivided in:

- Release on the "Z" axis
- Release on the "X" axis
- Release on the "Y" axis



N.B. For the reaction torque, the work axis or parallel axis must always be secured.

In order to choose the correct accessory for the proper need, the following must be carefully evaluated:

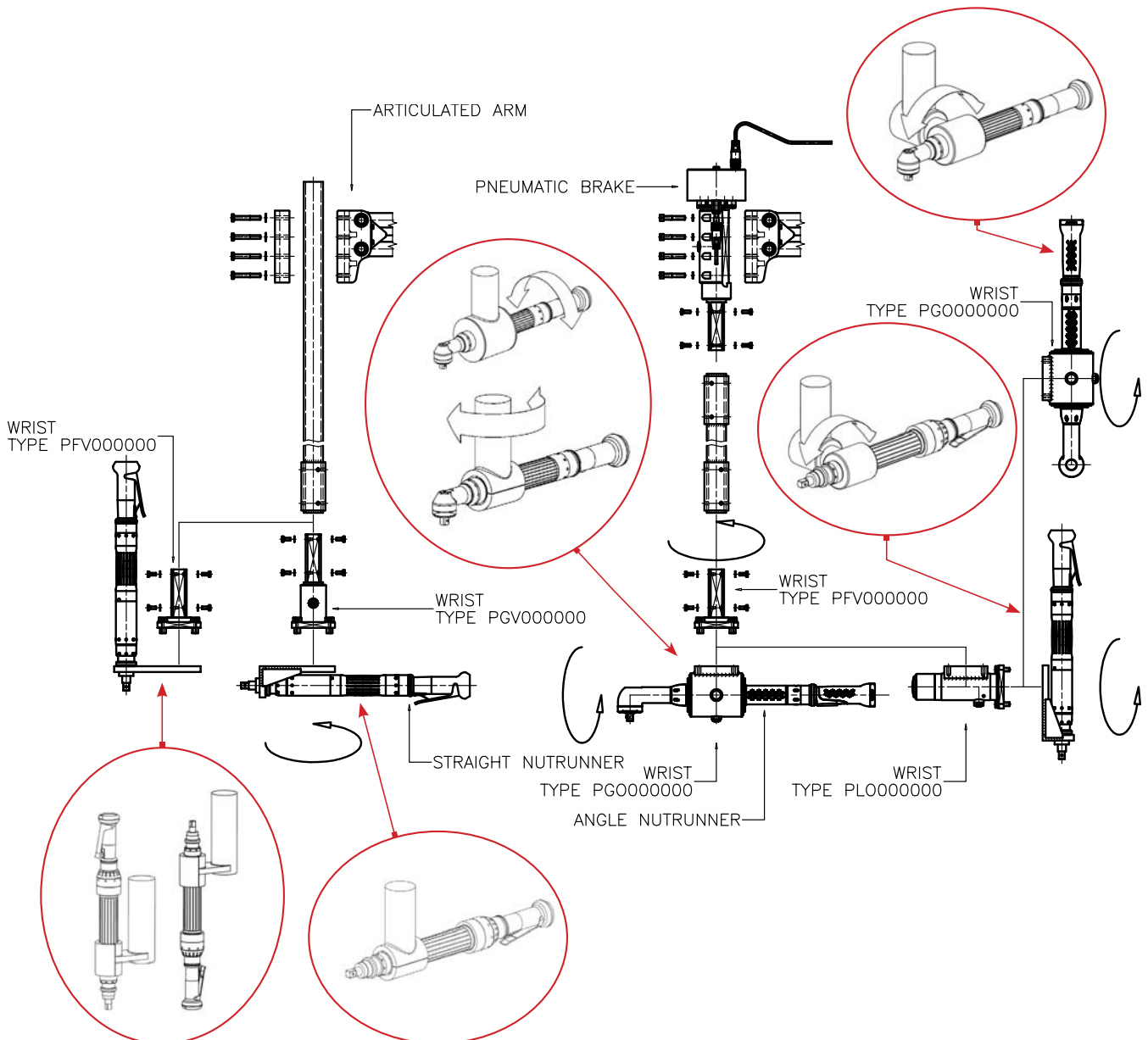
- Tool's maximum torque
- Locking torque
- Type of electric or pneumatic tool; straight or angled
- Locking precision %
- Direction of screw driving axis; Horizontal, Vertical, or both
- Any encumbrance

DIFFERENT WRIST COMBINATIONS

GENERAL INFORMATION

The graphic representation below illustrates an example of a combination of different types of wrists. According to the orientation of the axis of drive (Horizontal, Vertical, or both), it is necessary to use the correct type of wrist.

N.B. For the reaction torque, the work axis or parallel axis must always be secured.



The wrists represented above are available in different dimensions in order to satisfy various needs according to the articulated arm to be used and to the torque produced by the tool.

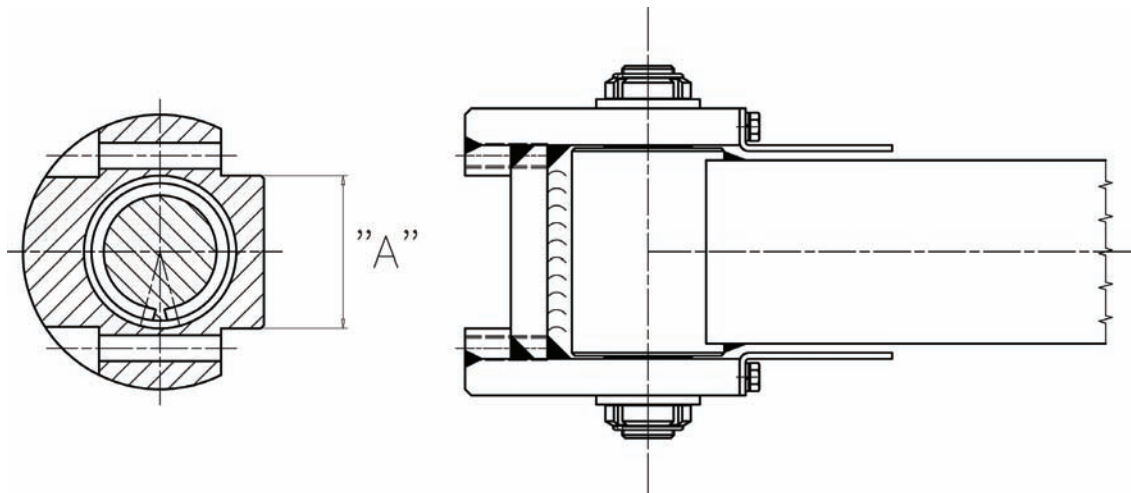


PNEUMATIC BRAKES

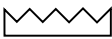
VERTICAL AXIS



TSA TECHNOLOGY
ESPECIAL
APPLICATE uses this type of brake in order to restrain the vertical "Z" axis (normally free), and thus blocking the rotation before screw driving. It has an electric safety sensor that, when correctly interfaced with the tool's control system, inhibits the tool's start up should clutching not occur. This accessory is assembled directly onto the articulated arm's vertical rod hinge (with the use of screws), thus maintaining vertical rod rotation below. Its location facilitates cabling and limits encumbrance. Furthermore, the clutch is furnished with protection carters and vertical axis rotation inhibitors at 330°(to avoid cable twisting). This type of accessory is particularly indicated for electrical tools with torque control.



Performance

CLUTCH MODEL	MAX. TORQUE	MINIMUM WORK PRESSURE	ARM ACCESSORY AVAILABLE	"A" LENGTH	NUMBER OF CLUTCH TEETH	VERTICAL ROD	WEIGHT
	Nm	BAR	Size	mm			Kg.
F13P09000	150	4	1	30	240	30X30	3
F24P11400	250	4	2	40	264	40X40	5
F34P14000 *	500	4	3	50	280	40X40	11
F35P16600	1000	4	3	50	300	50X50	14
F56P21000	2000	4	5	60	360	60X60	32

* N.B. The clutch model identified with (*) requires a 50X50 vertical rod hinge in order to be able to be interfaced with an articulated arm.

TECHNICAL SENSOR DATA	NOMINAL TENSION 24V DC	WORKING CURRENT <100 mA	NOMINAL DISTANCE 1,5	MAXIMUM CURRENT 150 mA
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ARM ROTATION AXIS



The brake, assembled onto the arm's rotation axis, is used when the "COLUMN" assembled onto overhead tracks must not slide during the screw driving stage. In this case, a blocking mechanism on the "elbow" articulation is crucial for the reaction torque.

Performance

MODELS	MAX. TORQUE	MINIMUM WORK PRESSURE	ARM ACCESSORY AVAILABLE	NUMBER OF CLUCH TEETH
	Nm	BAR	Size	
G10P09000	150	4	1	240
G20P11400	250	4	2	264
G30P14000	500	4	3	280
G30P16600	1000	4	3	300
G50P21000	2000	4	5	360

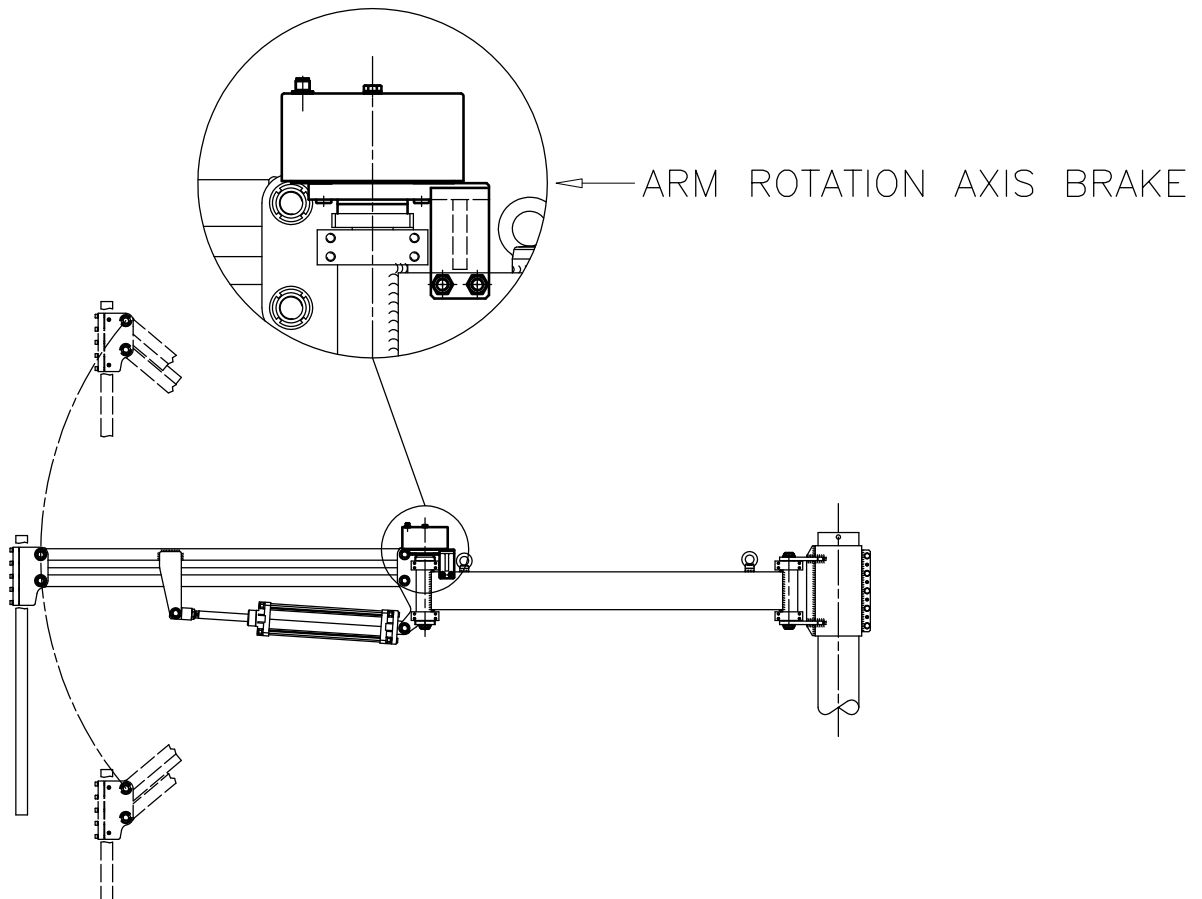
TECHNICAL SENSOR DATA

NOMINAL TENSION
24V DC

WORKING CURRENT
<100 mA

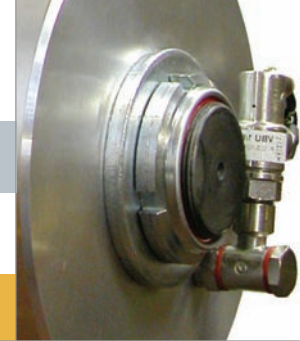
NOMINAL DISTANCE
1,5

MAXIMUM CURRENT
150 mA





PNEUMATIC BRAKES



Performance and Dimensions

HORIZONTAL AXIS

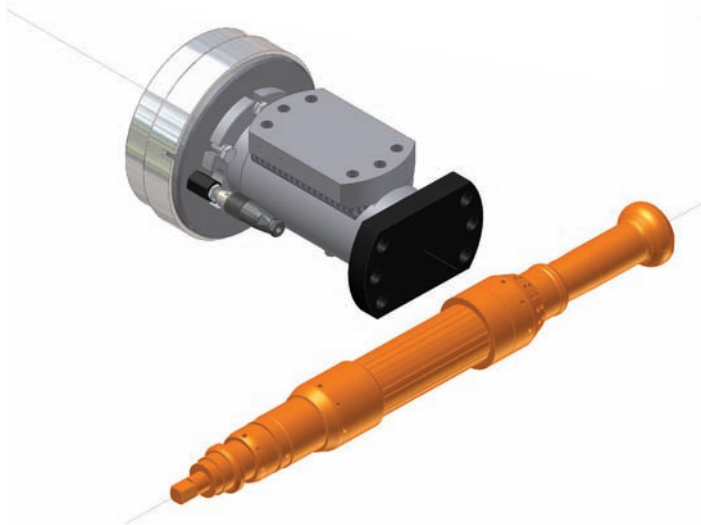


TSA uses this type of brake in order to restrain the vertical "X" axis (normally engaged). The brake is deactivated (disengaged) by the user who presses the button located on the pneumatic handle. Once the brake button is released, the brake is once again activated (engaged). It is equipped with an electric safety sensor that, when correctly interfaced with the tool's control system, inhibits the tool's start up should clutching not occur. This accessory is assembled (with the use of screws) onto the bottom part of the articulated arm's vertical rod.

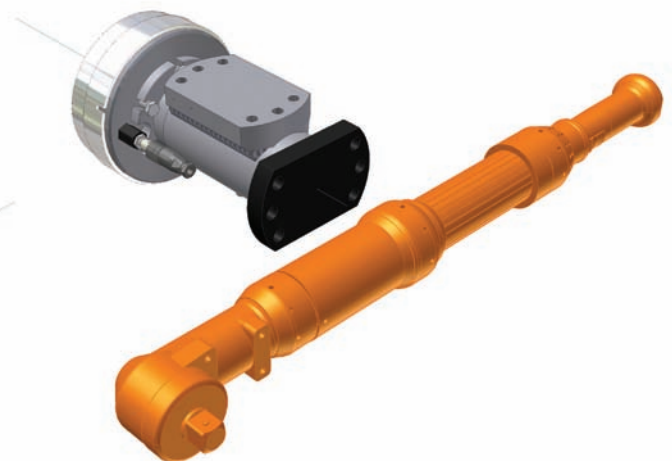
Furthermore, the brake is furnished with protection carters and a horizontal axis rotation inhibitor at 330° (to avoid cable twisting). This type of accessory is particularly indicated for electrical tools with torque control.

The torque, that the horizontal axis brakes are able to support, vary with the screw driving axis, i.e. whether it is orthogonal (90°) or parallel to the brake's rotation axis.

Torque on orthogonal axis (90°)



Torque on parallel axis



Performance

CLUTCH MODEL	MAX. ORTHOGONAL AXIS TORQUE	MAX. PARALLEL AXIS TORQUE	MINIMUM WORK PRESSURE	ARM ACCESSORY AVAILABLE	NUMBER OF CLUCH TEETH	VERTICAL ROD	WEIGHT
	Nm	Nm	BAR	Size			Kg.
P34P11400	500	250	4	2-3	264	40X40	5
P35P14000	1000	500	4	3	280	50X50	11
P56P16600	2000	1000	4	5	300	60X60	16

TECHNICAL SENSOR DATA	NOMINAL TENSION 24V DC	WORKING CURRENT <100 mA	NOMINAL DISTANCE 1,5	MAXIMUM CURRENT 150 mA
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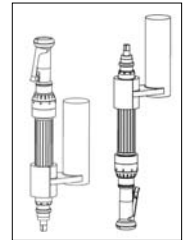
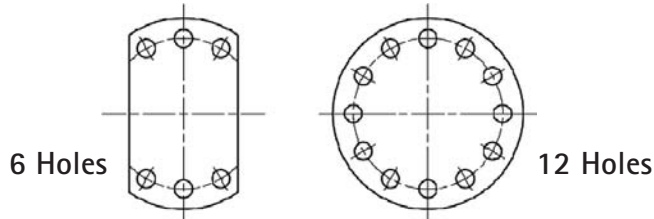
ACCESSORIES

WRISTS



VERTICAL FIXED

These flanges are used as a junction among the various types of wrists, brakes and vertical rods. Moreover, they are used to create a restraint able to react to the torque produced by the tool. There are four wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



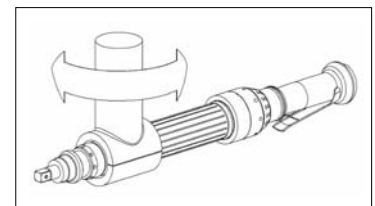
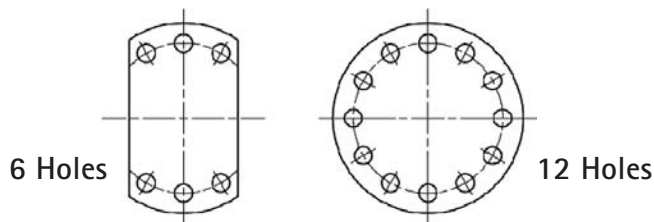
Performance

WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	NUMBER OF FLANGE HOLES	VERTICAL ROD	WEIGHT
	Nm	Size			
PFV300000	150	1	6	30x30	0.5
PFV300003	150	1	12	30x30	0.5
PFV400000	500	2 - 3	6	40x40	1.3
PFV400003	500	2 - 3	12	40x40	1.3
PFV500000	1000	3 - 5	6	50x50	3
PFV500003	1000	3 - 5	12	50x50	3
PFV600000	2000	5	6	60x60	4.5
PFV600003	2000	5	12	60x60	4.5



VERTICAL REVOLVING

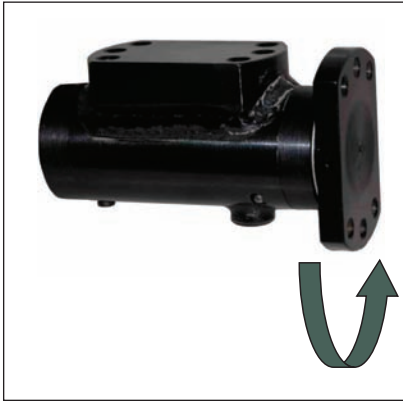
This type of wrist is used to free the vertical "Z" axis which allows a 360° rotation, thanks to a couple of radial-axial bearings. It is also equipped with a 360° rotation inhibitor. There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



Performance

WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	NUMERO FORI FLANGIA	VERTICAL ROD	WEIGHT
	Nm	Size			
PGV300000	150	1	6	30x30	1.5
PGV300003	150	1	12	30x30	1.5
PGV400000	500	2 - 3	6	40x40	2.3
PGV400003	500	2 - 3	12	40x40	2.3
PGV500000	1000	3 - 5	6	50x50	4
PGV500003	1000	3 - 5	12	50x50	4
PGV600000	2000	5	6	60x60	5
PGV600003	2000	5	12	60x60	5

WRISTS

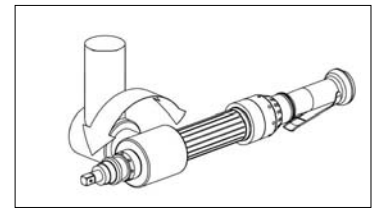


HORIZONTAL REVOLVING

This type of wrist allows the axis perpendicular to the tool body to be freed and carries out rotations.

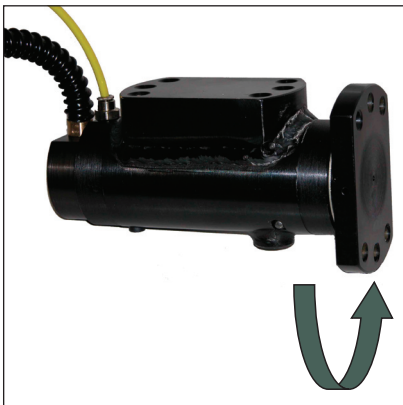
Every version has a rotation inhibitor at 330° or a desired angle inhibitor that must be specified when purchasing.

There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 o 60X60.



Performance

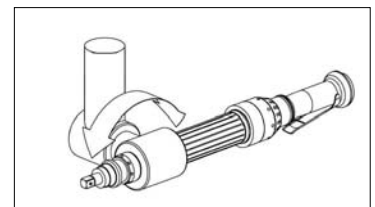
WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm	Size		Kg.
PG0310000	150	1	30X30	3
PG0410000	500	2 - 3	40X40	5
PG0510000	1000	3 - 5	50X50	7.5
PG0610000	2000	5	60X60	10



24 LOCK PNEUMATIC HORIZONTAL REVOLVING

This type of wrist, normally refrained, allows the axis (perpendicular to the tool body) to be freed by use of a pneumatic command (a switch valve or button situated near the tool) which allows a 360° rotation with a clutch degree of 15°.

N.B. When the screw driving axis is parallel to wrist's rotation axis, an electrical inductive safety sensor inhibits the tool's start up should clutching not occur.

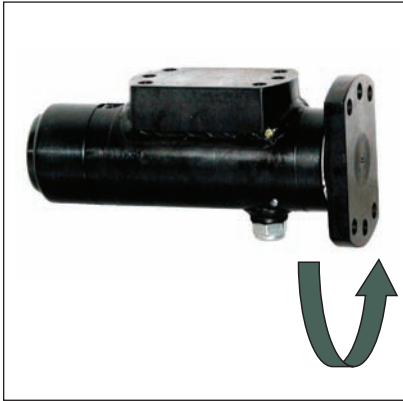


Performance

WRIST MODEL	TORQUE LIMIT	INDUCTIVE SENSOR	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm		Size		Kg.
PLO420000	500	NO	2-3	40X40	5
PLO421000	500	YES	2-3	40X40	5
PLO520000	1000	NO	3-5	50x50	8,5
PLO521000	1000	YES	3-5	50x50	8,5

ACCESSORIES

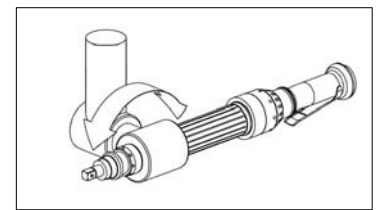
WRISTS



24 LOCK MANUAL HORIZONTAL REVOLVING

This type of wrist, normally refrained, allows the axis (perpendicular to the tool body) to be freed by use of a manual command (situated on the back of the handle) which allows a 360° rotation with a clutch degree of 15°.

N.B. When the screw driving axis is parallel to wrist's rotation axis, an electric inductive safety sensor inhibits the tool's start up should clutching not occur.



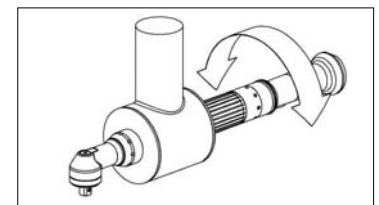
Performance

WRIST MODEL	TORQUE LIMIT	INDUCTIVE SENSOR	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm		Size		
PLO410000	500	NO	2-3	40x40	5
PLO411000	500	YES	2-3	40x40	5
PLO510000	1000	NO	3	50x50	8.5
PLO511000	1000	YES	3	50x50	8.5



REVOLVING TOOL BODY AXIS

This type of wrist is used exclusively for angled tools in order to free the tool body axis which allows the tool to rotate with the desired angle. This angle must be specified at the time of purchase. There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



Performance

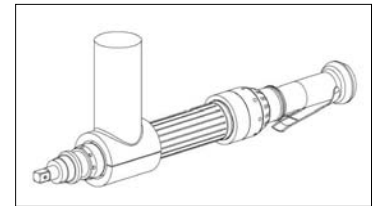
WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm	Size		Kg.
PAO310000	150	1	30x30	*
PAO410000	500	2 - 3	40x40	*
PAO510000	1000	3 - 5	50x50	*
PAO610000	2000	5	60x60	*

* The weight varies according to the size of the tool used.



TOOL SUPPORT CLAMP

This type of wrist is normally used for angled tools, it rigidly fastens the tool to the clamp. There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



Performance

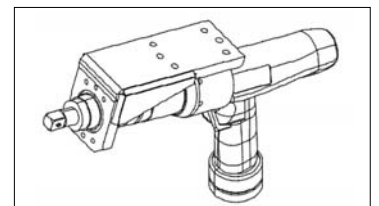
WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm	Size		Kg.
MSO310000	150	1	30x30	*
MSO410000	500	2 - 3	40x40	*
MSO510000	1000	3 - 5	50x50	*
MSO610000	2000	5	60x60	*

* The weight varies according to the size of the tool used.



TOOL SUPPORT STIRRUP

This type of wrist is used to carry out horizontal locking with the use of straight or pistol shaped tools. There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



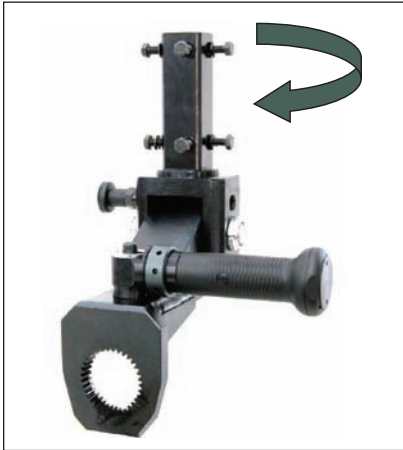
Performance

WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm	Size		Kg.
SSO310000	150	1	30x30	*
SSO410000	500	2 - 3	40x40	*
SSO510000	1000	3 - 5	50x50	*
SSO610000	2000	5	60x60	*

* The weight varies according to the size of the tool used.

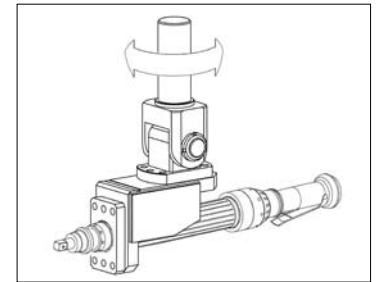
ACCESSORIES

WRISTS



HORIZONTAL - VERTICAL REVOLVING

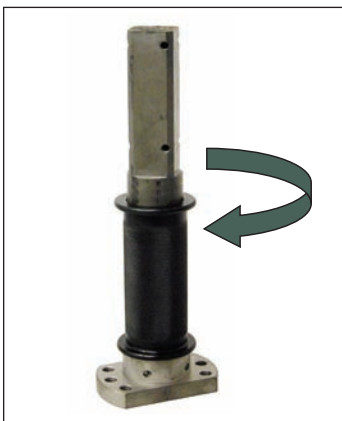
This type of wrist is used to carry out horizontal and vertical locking. A bracket allows the tool to rotate from 0 to -90° on the horizontal axis and can be locked in different positions with a manual stop. There are four types of wrist sizes available according to the vertical rod used: 30X30, 40X40, 50X50 or 60X60.



Performance

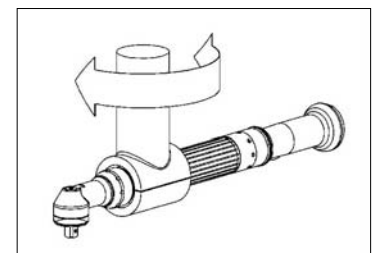
WRIST MODEL	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm	Size		Kg.
PPO310000	150	1	30X30	*
PPO410000	500	2 - 3	40X40	*
PPO510000	1000	3 - 5	50X50	*
PPO610000	2000	5	60X60	*

* The weight varies according to the size of the tool used.



24 LOCK VERTICAL REVOLVING

This type of wrist, normally restrained, allows the vertical axis to be freed by the use of a grip located on the body of the wrist. It rotates 360° with a clutch degree of 15°.



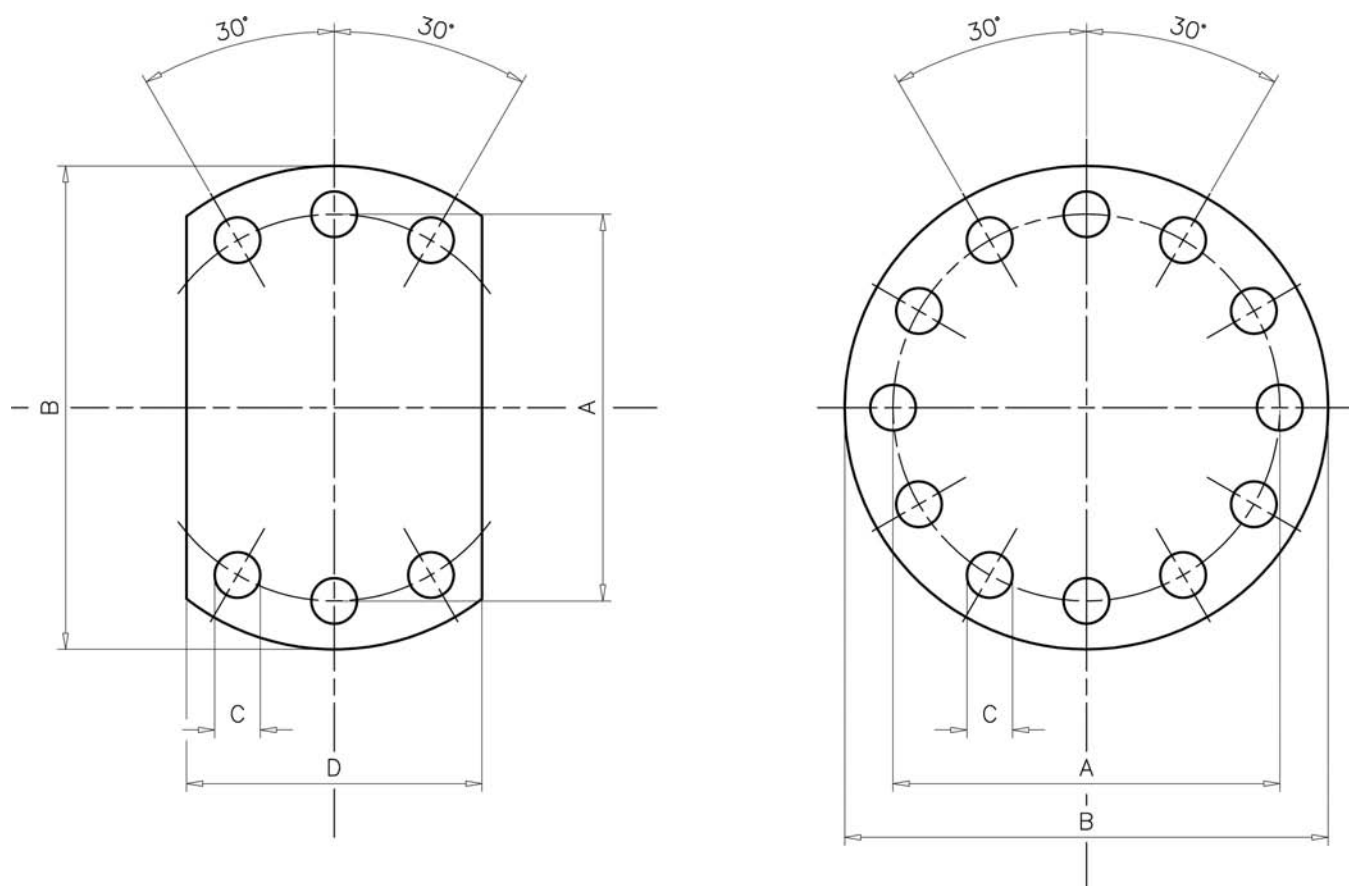
Performance

WRIST MODEL	TORQUE LIMIT	INDUCTIVE SENSOR	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT
	Nm		Size		Kg.
PBV400000	250	NO	2-3	40x40	3

FLANGE FASTENING HOLES

DIMENSIONS

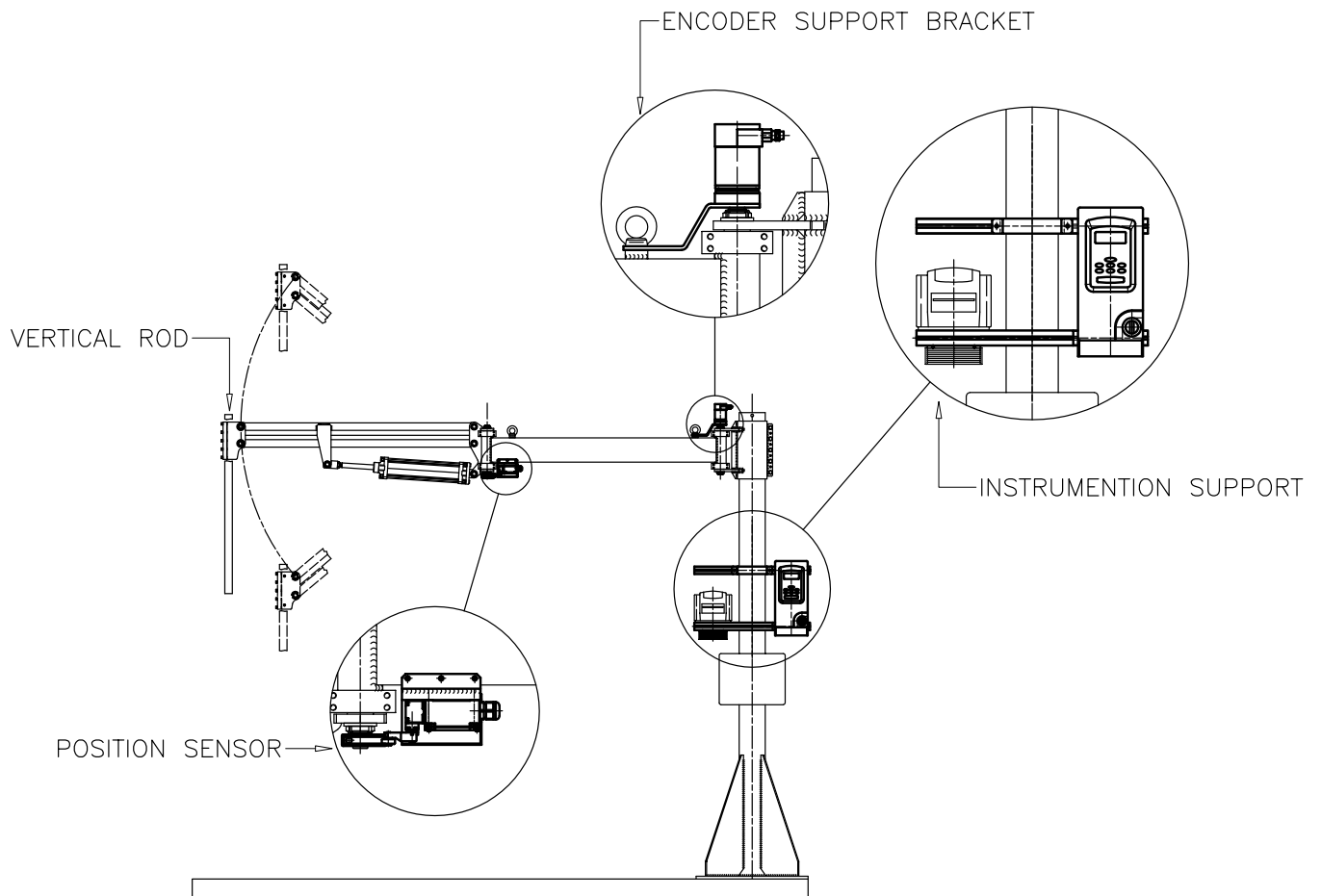
The drawings below indicate the main length necessary to interface the various sizes of wrists.



FLANGE SIZE	VERTICAL ROD	HOLE SIZE			
		A	B	C	D
30	30x30	Ø 55	Ø 70	N°6 Holes Ø 6.5 N°12 Holes Ø 6.5	40
40	40x40	Ø 72	Ø 90	N°6 Holes Ø 8.5 N°12 Holes Ø 8.5	55
50	50x50	Ø 94	Ø 115	N°6 Holes Ø 10.5 N°12 Holes Ø 10.5	75
60	60x60	Ø 110	Ø 135	N°6 Holes Ø 12.5 N°12 Holes Ø 12.5	85

ARTICULATED ARM ACCESSORIES

GENERAL INFORMATION



The accessories illustrated above are available in different sizes in order to satisfy diverse needs depending on the articulated arm that is to be used and to the torque produced by the tool.

VERTICAL RODS FOR ARM SIZES 2-3-5

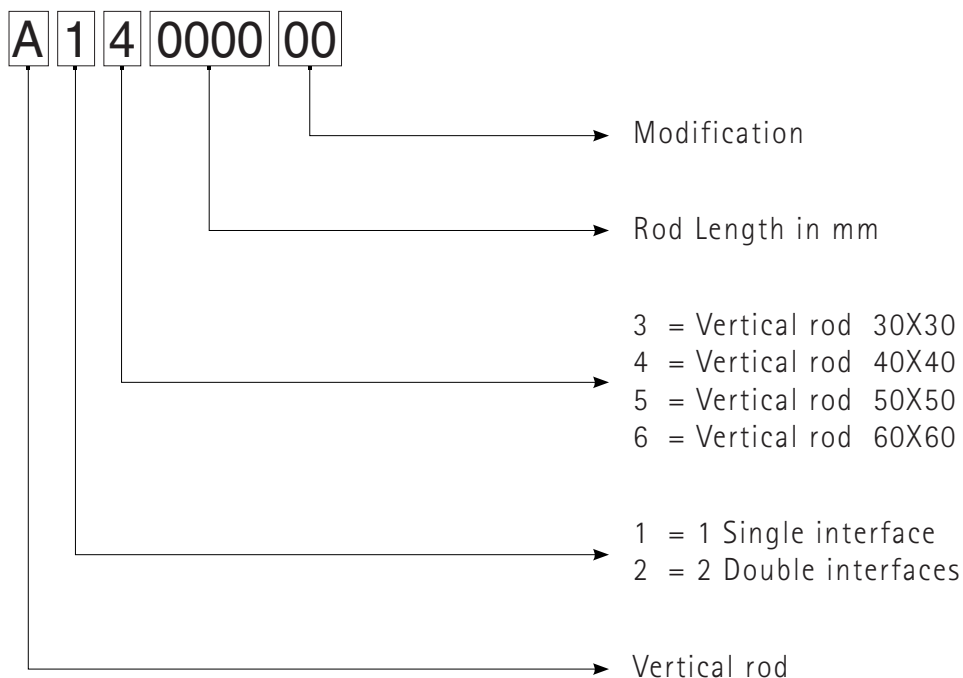


Vertical rods differ amongst themselves for their size according to the torque they must react to, and according to the type of arm fastener.

Performance

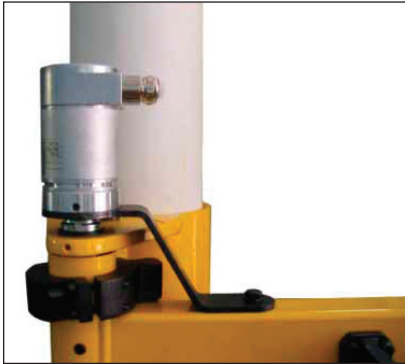
MODELS	TORQUE LIMIT	ARM ACCESSORY AVAILABLE	VERTICAL ROD	WEIGHT KG BY METER	STANDARD LENGTH	N° OF MATCHED INTERFACES
	Nm	Size				
A13000000	150	1	30x30	2.50	1500 mm	1
A14000000	500	2 - 3	40x40	4.00	1500 mm	1
A15000000	1000	3 - 5	50x50	6.40	1500 mm	1
A16000000	2000	5	60x60	8.00	1500 mm	1
A23000000	150	1	30x30	2.50	1200 mm	2
A24000000	500	2 - 3	40x40	4.00	1200 mm	2
A25000000	1000	3 - 5	50x50	6.40	1200 mm	2
A26000000	2000	5	60x60	8.00	1200 mm	2

HOW TO ORDER A VERTICAL ROD



ACCESSORIES

ENCODER SUPPORT BRACKET



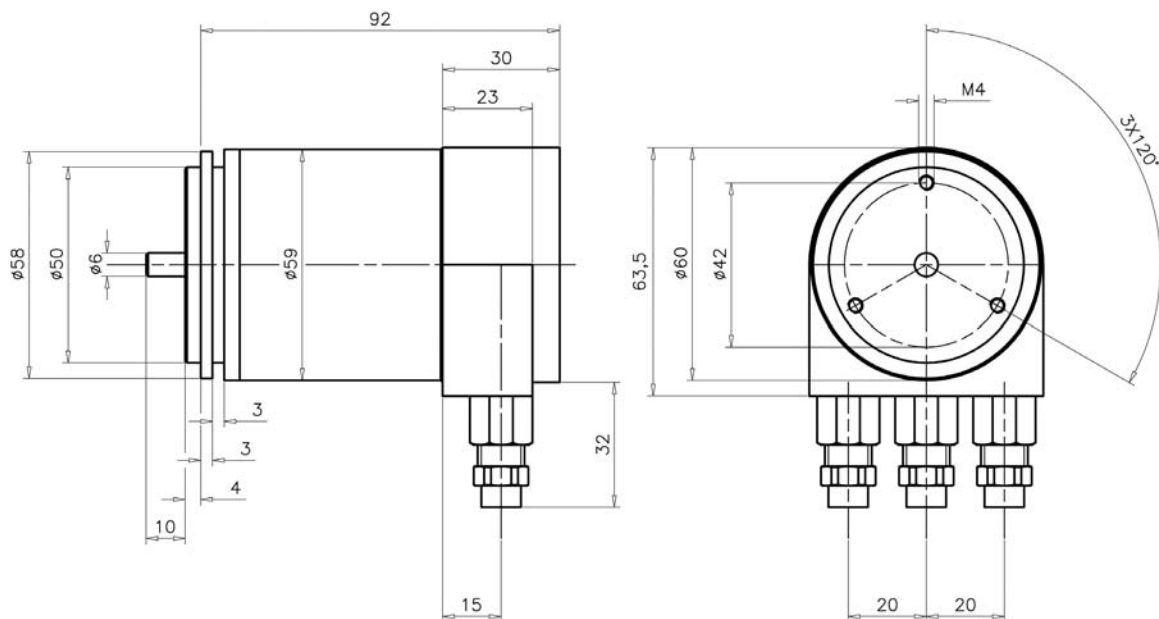
The encoder support brackets have been designed to sustain an absolute encoder with a front screw fastening CANopen interface (see Fig.1). This type of solution is adapted when it is necessary to index the movement of the articulated arm's mobile elements. The axes that have been drawn up for assembly are:

- 2 (two) vertical rotation axes
- 1 (one) horizontal rotation axis
- 1 (one) vertical rotation axis brake

Performance

MODELS	ARM ACCESSORY AVAILABLE	PRESET AXIS ROTATION
	Size	
E11000000 *	1	Vertical
E12000000	1	Horizontal
E13000000	Brake	Vertical
E21000000 *	2	Vertical
E22000000	2	Horizontal
E23000000	Brake	Vertical
E31000000 *	3	Vertical
E32000000	3	Horizontal
E33000000	Brake	Vertical
E51000000 *	5	Vertical
E52000000	5	Horizontal
E53000000	Brake	Vertical

* This model includes a Kit with two rods for the two vertical rotation axes.



N.B.: Encoder not supplied.

NON ENCUMBRANCE SENSORS



The non encumbrance sensors are composed of an OMRON turret-head block with trundle arm (see Performance below), and a cam which, when correctly set, will detect the arm's position. All is enclosed in a safety carter. The preset axes for assembly are:

- 2 (two) vertical rotation axes.

These sensors are used to indicate the articulated arm's encumbrance space in order to avoid obstruction, collision of the assembly line, or collision of other parts in movement.

Performance

MODELS	ARM ACCESSORY AVAILABLE	PRESET AXIS ROTATION
	Size	
Y10000000	1	Vertical
Y20000000	2	Vertical
Y30000000	3	Vertical
Y50000000	5	Vertical



OMRON SAFETY LIMIT SWITCH PERFORMANCE

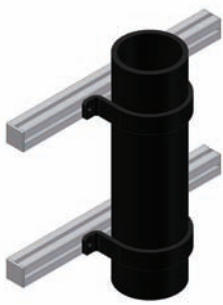


Version with incremented protection (IP 67), metallic case, greater impact resistance, conform to CENELEC EN50041 standard.

- Rapid snap contact or slow activation for precise commutation with positive opening contact safety device.
- Two series of contacts: one for the safety circuit(NC), and the other to block the alarm circuit (NA).
- Degree of protection: IP67 (IEC529) UL/CSA NEMA 3, 4, 4X, 6Pe13.
- Functions in a wide range of temperatures: -40... +80 °C (standard type).
- 4 position turret-head.
- Conform to standards: EN50041, VDE 0110/P1 (IEC664, IEC664A)/P2 0660, P200, P206 and IEC947-5-1 (IEC337-1), 204-1, 529.
- Version with 3 core hitches.
- UL, CSA, and TÜV approved.
- TÜV approved positive opening functioning.
- The slow activation models are BIA (D) and SUVA (CH) certified (safety application standards).




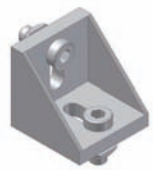
ACCESSORIES

INSTRUMENTATION SUPPORT

The instrumentation support sustains any tool accessory (gearbox, printers, etc.) and keeps them close together in order to facilitate cabling and operator use. In the standard configuration, the instrumentation support is composed of two 45x45 aluminum section irons, 800mm long, and two Ø140 steel collars per column. The configuration of this support varies according to different needs, hence the graphic representations below are only a few examples of the possible combinations.

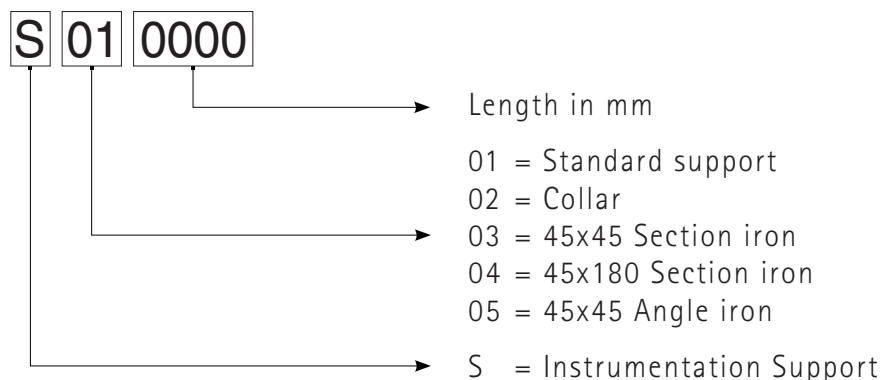
Performance	STANDARD MODEL	ARM ACCESSORY AVAILABLE
	S010000	Size 1-2-3-5
		
		

Constructive components useful to create a support:

<p>Collar Ø 140</p>  <p>S020000</p>	<p>45x45 Section iron</p>  <p>S030000</p>	<p>45x180 Section iron</p>  <p>S040000</p>	<p>45x45 Angle iron</p>  <p>S050000</p>
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Specify length of section bar at time of purchase.

HOW TO ORDER INSTRUMENTATION SUPPORT



VERTICAL TELESCOPIC ARMS

GENERAL INFORMATION

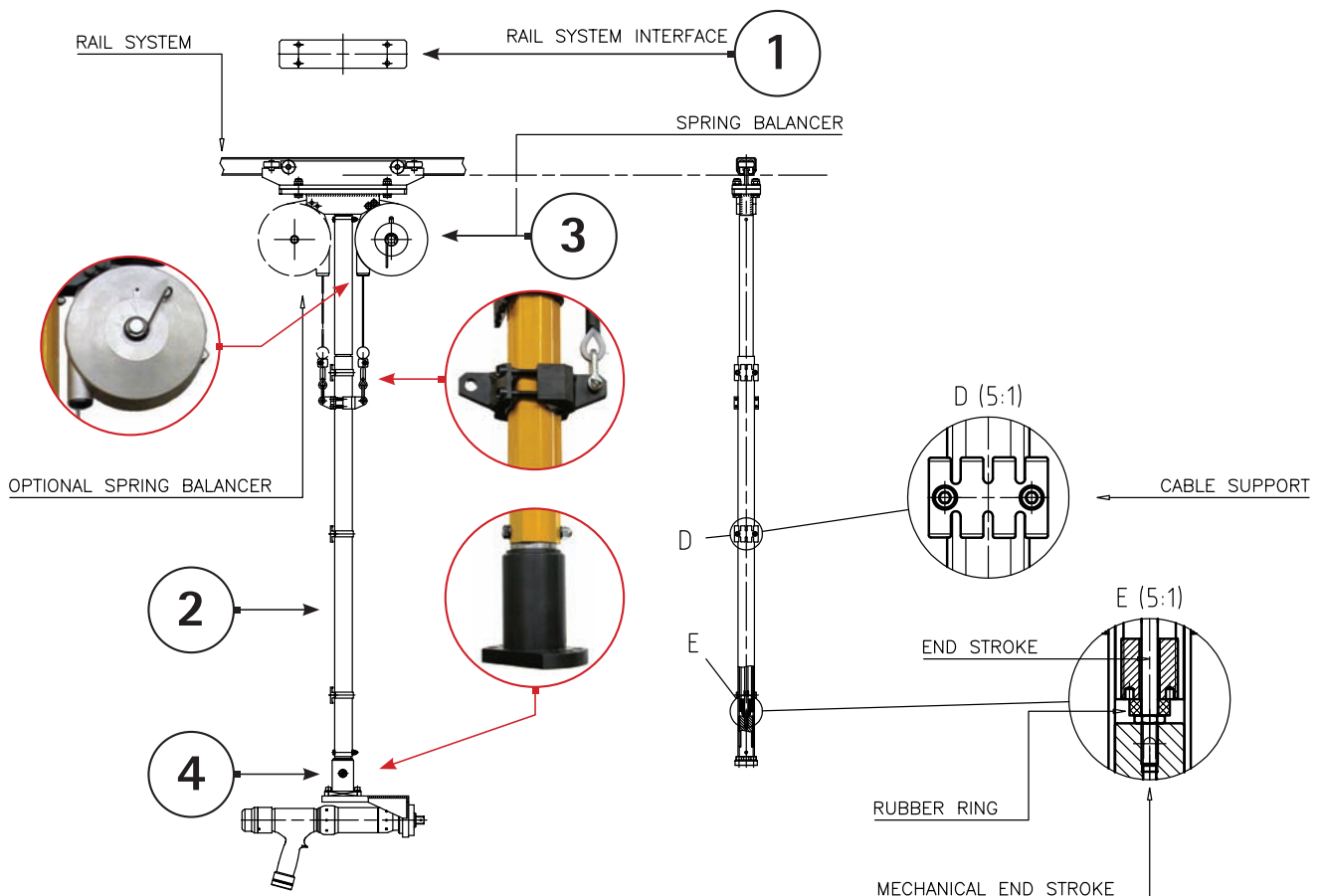
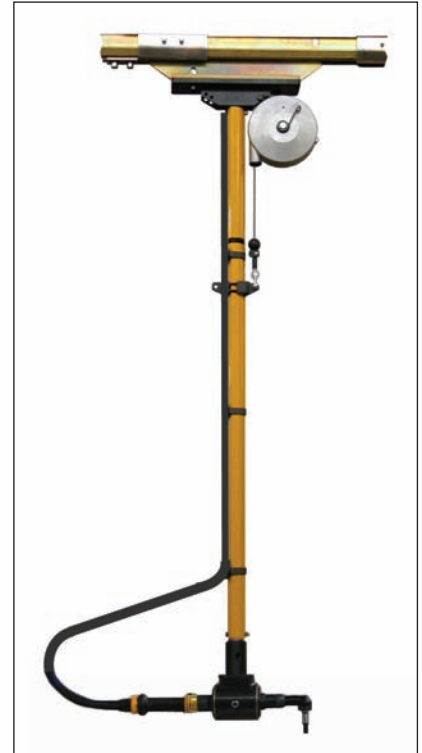
The telescopic arms have been designed and constructed to be installed on overhead tracks, to move within a work area, to neutralize the effects generated by reaction torques (up to a 1000 Nm) of electric and pneumatic tools etc. and to counterbalance the weight of the tool.

All the arms can be integrated with different types of wrists which optimize the required locking.

This support system is made up of four main units:

1. An trolley interface for tracks;
2. A telescopic unit made up of two steel trilobate tubes;
3. A balancing unit;
4. A tool holding wrist.

The telescopic support is available in different lengths and can be equipped with different types of balancers in order to sustain the desired loading capacity. The machine's standard colour is RAL 1007 yellow, and its parts are brownish black. The machine, along with its fluidic circuits and its components, comply to essential safety standards foreseen by machine directive, and thus bear the **CE** trademark.



GENERAL CHARACTERISTICS

BUYER'S GUIDE

1. Choose correct type of trolley interface (must interface with trolley chosen).
2. Choose the size of elements by considering the locking torque that must be carried out.
3. Choose the length of elements by considering the height of the overhead track from the ground, and the height of the working point.
4. Calculate the weight that must be balanced (include the weight of the wrist and of the tool) and then choose the type of balancing.
5. Specify the quantity of balancing units required.
6. Choose the type of wrist.

TROLLEY INTERFACE

TSA TECNOLOGIE SPECIALI APPLICATE Slide trolleys and overhead tracks are not included and must be of an adequate form and size in order to support the weight and the torque.

Standard types

Type of trolley interface	Max. load Kg. *	Torque Nm
HELM		
400	200 Kg.	250
500	500 Kg.	500
600	1000 Kg.	1000
DEMAG		
KBK I	300 Kg.	250
KBKII	600 Kg.	500
KBKII Ergo	600 Kg.	1000



* Data supplied by trolley manufacturers.

ELEMENT DIMENSIONS

The telescopic unit has different sized elements able to react to torques that range from 250Nm to 1000Nm.

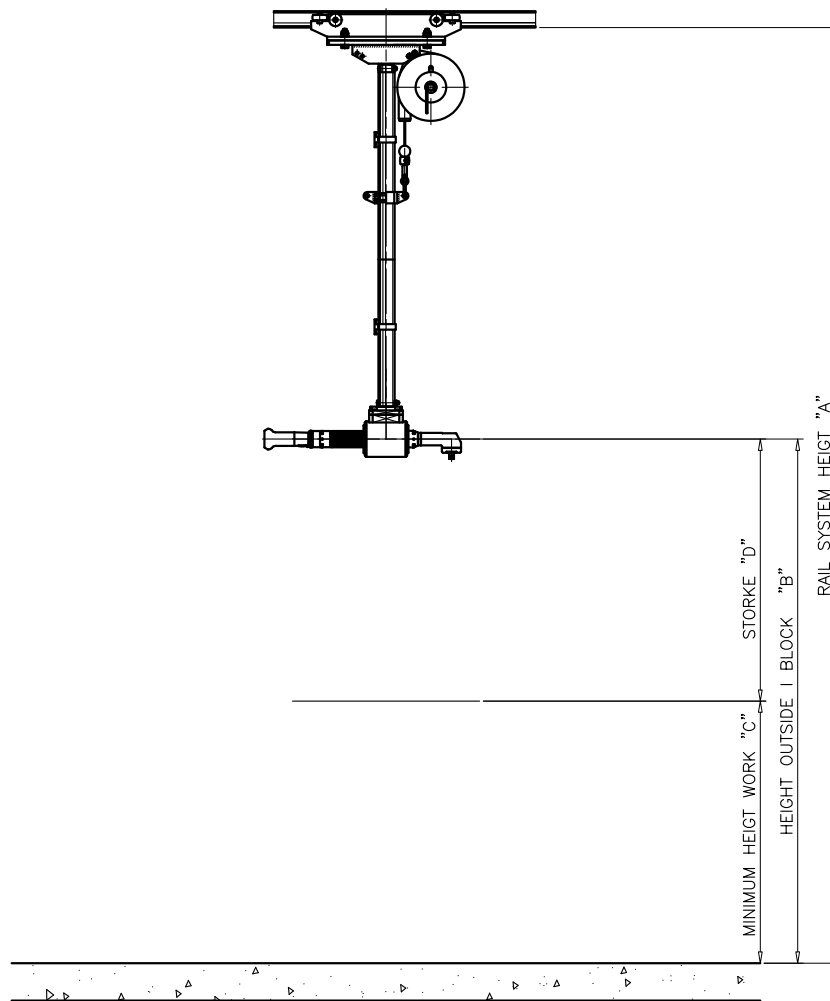
Tube sizes	Torque Nm
N°4	250
N°9	1000



GENERAL CHARACTERISTICS

ELEMENT LENGTHS

The telescopic unit possesses elements of different lengths, all of which are able to operate on an overhead track system with a height of 2.5m, 3m, 3.5m, 4m, and 4.5m from the ground. They have a standard stroke that ranges from 500mm to 1000mm. Please contact our technical office should the measurements below not satisfy Your needs.



Tube Sizes	Track Height "A"	Non Encumbrance Height "B"	Minimum Work Height "C"	Stroke "D"	Torque Nm
N°4	2.5 m	1400 mm	900 mm	500 mm	250
N°4	3.0 m	1400 mm	900 mm	500 mm	250
N°4	3.5 m	1400 mm	900 mm	500 mm	250
Tube Sizes	Track Height "A"	Non Encumbrance Height "B"	Minimum Work Height "C"	Stroke "D"	Torque Nm
N°9	3.5 m	1400 mm	900 mm	500 mm	1000
N°9	4.0 m	1400 mm	900 mm	500 mm	1000
N°9	4.5 m	1400 mm	900 mm	500 mm	1000

GENERAL CHARACTERISTICS

MECHANICAL SPRING BALANCING

The vertical telescopic arms use spring balancers to maintain the equipment assembled onto it in a balanced state.

The telescopic unit is able to take on up to two balancers if it is necessary.



SAFETY MEASUREMENTS

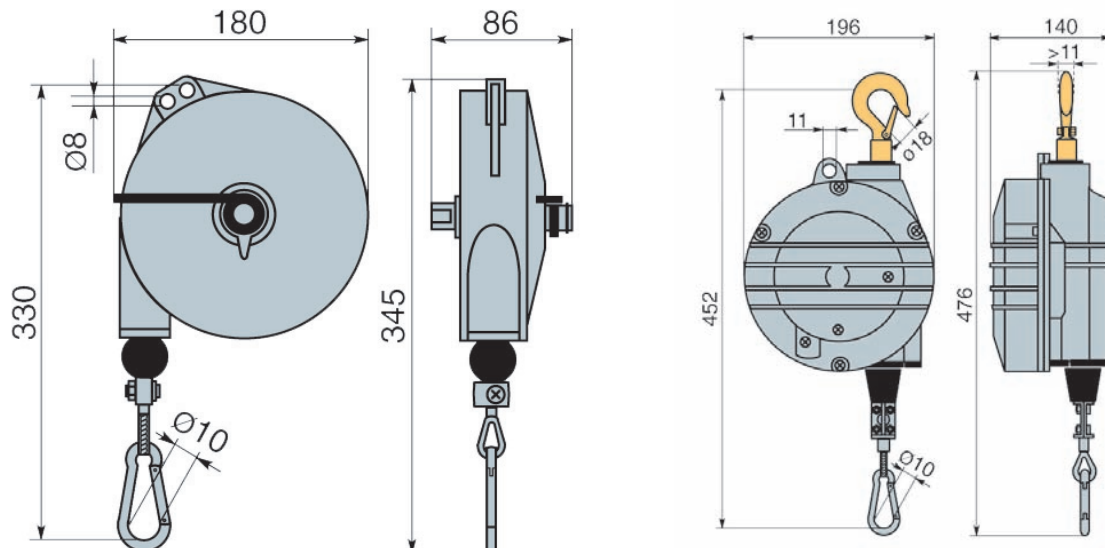
All models comply to the most severe international standards in act.

Blocking mechanism:	avoids the fall of loads if spring breaks.
Auxiliary suspension:	secures the balancer to a safety rope or chain.
Thimble:	in insulating material to avoid circulation of any electrical current.
Stroke regulation Limiter:	allows precise control of load movement.

MODELS

All models comply to the most severe international standards in act.

MODELS	Capacity Kg.		Weight Kg.	Accessory for tube size
	Min.	Max		
9333 (Fig.1)	6	8	3.5	N°4
9334 (Fig.1)	8	10	3.7	N°4
9335 (Fig.1)	10	14	4.0	N°4
9357 (Fig.2)	14	18	6.5	N°9
9358 (Fig.2)	18	22	6.0	N°9
9359 (Fig.2)	22	25	6.6	N°9



PNEUMATIC BALANCING

The telescopic unit uses a pneumatic cylinder in case the balancing capacity of two balancers is not sufficient to support the equipment.

This pneumatic cylinder is constructed according to ISO standard 15552, and is adapted to VDMA 24562 and CNOMO/AFNOR 49003 standards that guarantee cylinder interchangeableness even without fasteners assembled.

The case is solid drawn in order to guarantee precision and a low level of friction.

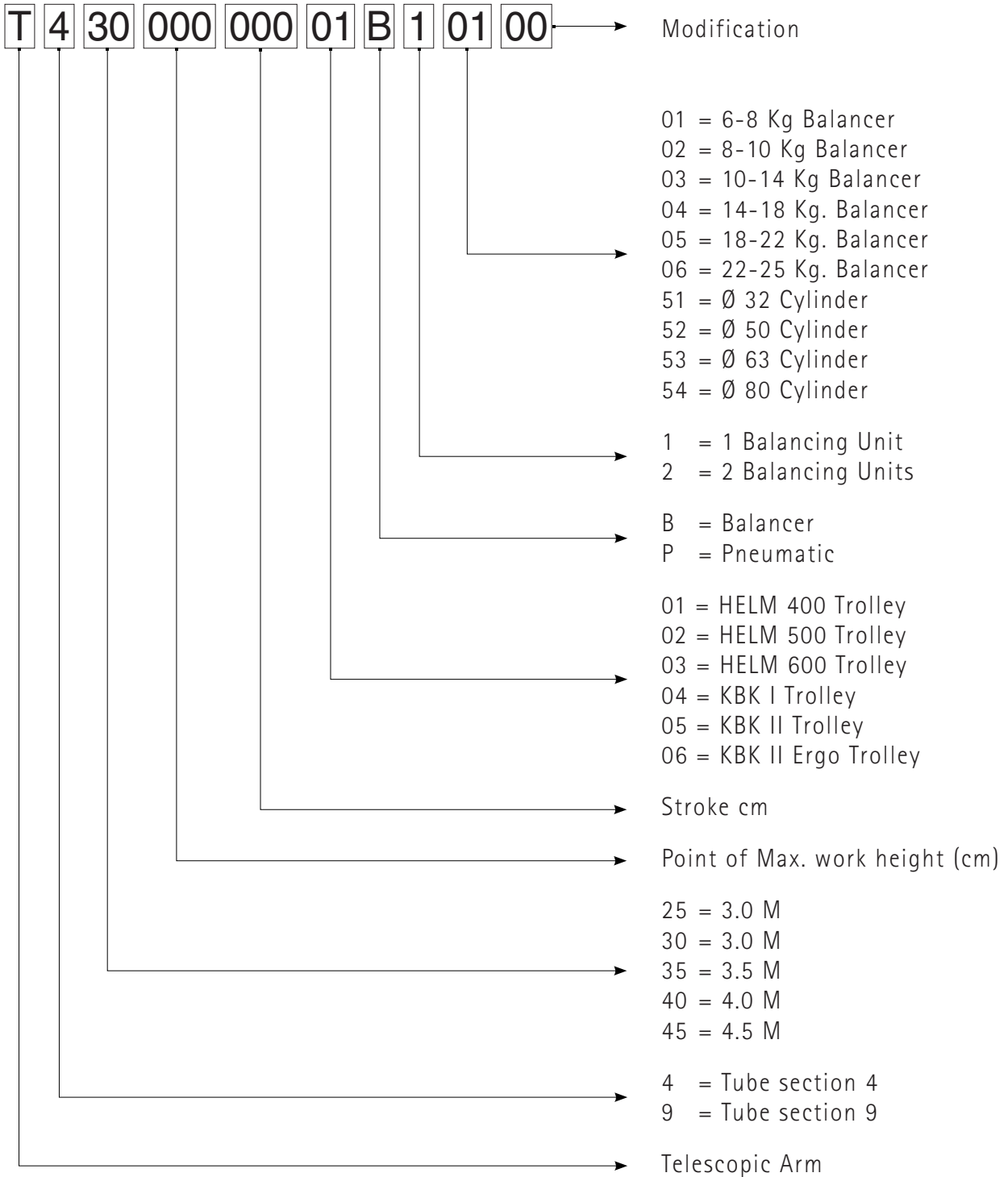
The machine, along with the fluidic circuits and its components, comply with essential safety requirements foreseen by machine directive and thus bears the **CE** trademark.



MODELS

MODELS	Load regulation range at a pressure of 7 Bar.		Accessory for tube size
	Min.	Max	
Cylinder Ø 32	0	55 Kg.	N°4
Cylinder Ø 50	0	140 Kg.	N°9
Cylinder Ø 63	0	200 Kg.	N°9

HOW TO ORDER A TELESCOPIC ARM

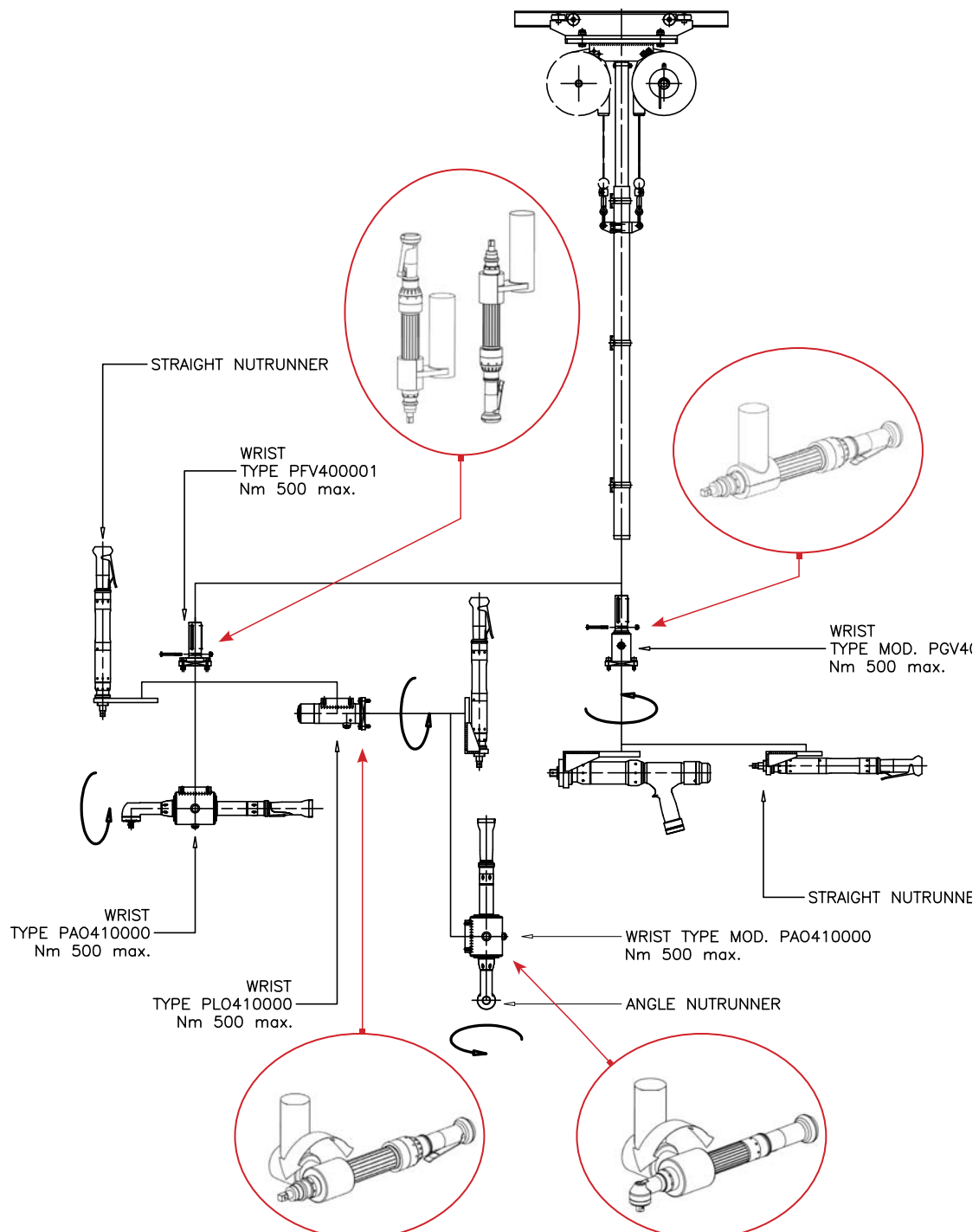


DIFFERENT WRIST COMBINAZIONI FOR TELESCOPIC ARMS

GENERAL INFORMATION

The vertical telescopic arm can be equipped with different types of wrists which rotate on three different axes. The graphic representation below illustrates an example of a combination of different types of wrists. Therefore, according to the direction of the screw driving axis (horizontal, vertical, or both) it is necessary to use the correct type of wrist.

N.B. The torque requires the work axis, or parallel axis, to always be refrained.



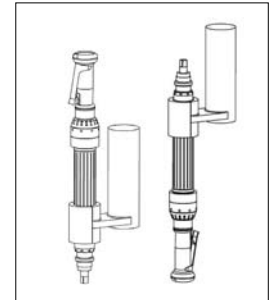
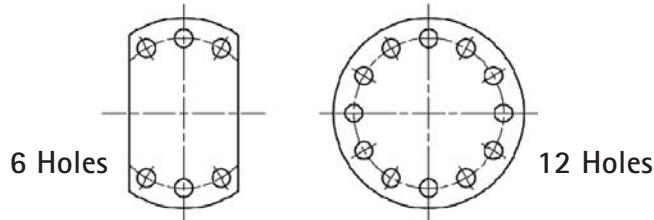
ACCESSORIES

WRISTS



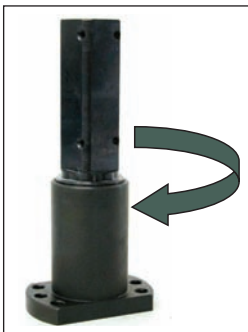
VERTICAL FIXED

These flanges are used to create a restraint capable of reacting to the torque produced by the tool on the vertical axis.



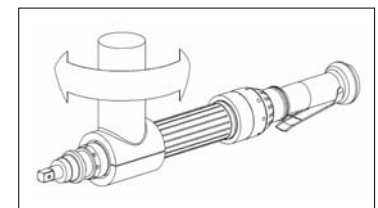
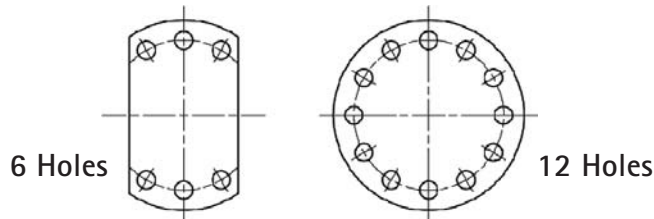
Performance

WRIST MODEL	TORQUE LIMIT	NUMBER OF FLANGE HOLES	WEIGHT
	Nm		Kg.
PFV300001	150	6	0.5
PFV300004	150	12	0.5
PFV400001	250	6	1.3
PFV400004	250	12	1.3
PFV500001	1000	6	3
PFV500004	1000	12	3



VERTICAL REVOLVING

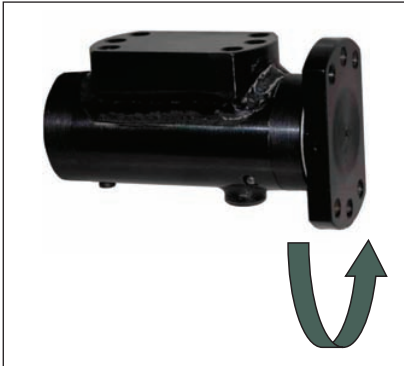
This type of wrist is used to free the vertical "Z" axis which allows a 360° rotation thanks to a couple of radial-axial bearings. It also has a 360° rotation inhibitor.



Performance

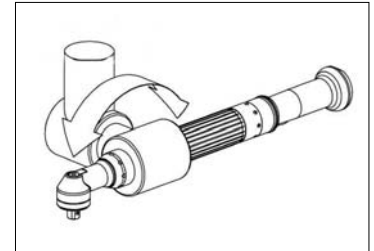
WRIST MODEL	TORQUE LIMIT	NUMBER OF FLANGE HOLES	WEIGHT
	Nm		Kg.
PGV300001	150	6	1.5
PGV300004	150	12	1.5
PGV400001	250	6	2.3
PGV400004	250	12	2.3
PGV500001	1000	6	4
PGV500004	1000	12	4

WRISTS



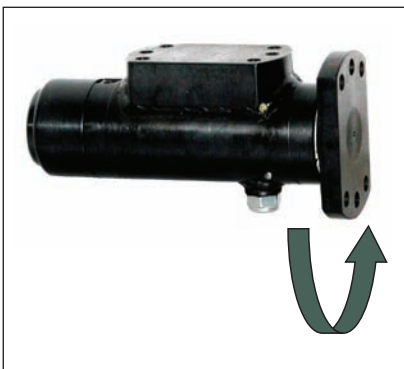
HORIZONTAL REVOLVING

This type of wrist permits the axis, perpendicular to the tool body, to be freed and carries out rotations. All versions have a 330° rotation inhibitor or a specific angle inhibitor that should be specified at the time of purchase.



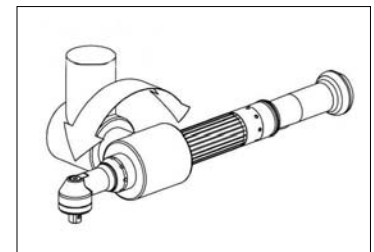
Performance

WRIST MODEL	TORQUE LIMIT	WEIGHT
	Nm	Kg.
PG0310000	150	3
PG0410000	500	5
PG0510000	1000	7.5



24 LOCK MANUAL HORIZONTAL REVOLVING

This type of wrist, usually refrained, permits the axis, perpendicular to the tool body, to be freed by a manual command situated on the back of the wrist. It allows a 360° rotation with a clutch of 15°.



Performance

WRIST MODEL	TORQUE LIMIT	INDUCTIVE SENSOR	WEIGHT
	Nm		Kg.
PLO410000	500	NO	5
PLO411000	500	YES	5
PLO510000	1000	NO	8.5
PLO511000	1000	YES	8.5

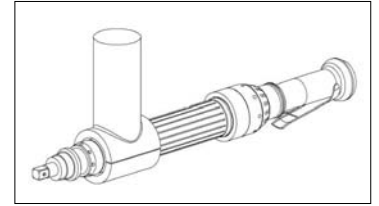
ACCESSORIES

WRISTS



TOOL SUPPORT CLAMP

This type of wrist is usually used for angled tools, and allows the tool to be firmly fastened to the clamp. The wrist is available in three sizes according to the torque it must react to.



Performance

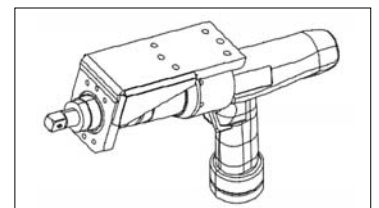
WRIST MODEL	TORQUE LIMIT	WEIGHT
	Nm	Kg.
MSO310000	150	*
MSO410000	250	*
MSO510000	1000	*

* The weight varies according to the size of the tool used.



TOOL SUPPORT STIRRUP

This type of wrist is used to carry out horizontal locking with the use of straight or pistol shaped tools. The wrist is available in three sizes according to the torque it must react to.



Performance

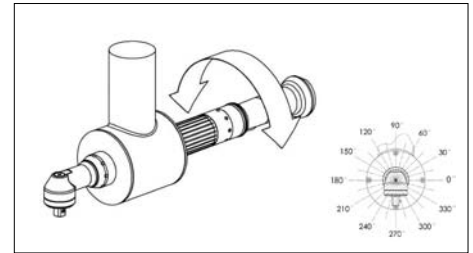
WRIST MODEL	TORQUE LIMIT	WEIGHT
	Nm	Kg.
SSO310000	150	*
SSO410000	500	*
SSO510000	1000	*

* The weight varies according to the size of the tool used.



REVOLVING TOOL BODY AXIS

This type of wrist is used exclusively for angled tools in order to free the tool body axis allowing it to rotate with the desired angle. This angle must be specified at the time of purchase.



Performance

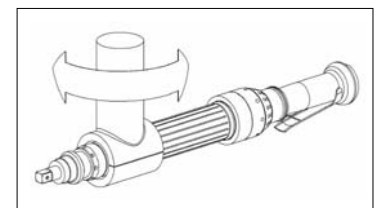
WRIST MODEL	TORQUE LIMIT	WEIGHT
	Nm	Kg.
PA0310000	150	*
PA0410000	500	*
PA0510000	1000	*

* The weight varies according to the size of the tool used.



24 LOCK REVOLVING

This type of wrist, usually refrained, permits the vertical axis to be freed by the grip on the wrist's body. It allows a 360° rotation with a clutch of 15°.



Performance

WRIST MODEL	TORQUE LIMIT	WEIGHT
	Nm	Kg.
PBV400001	250	3



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