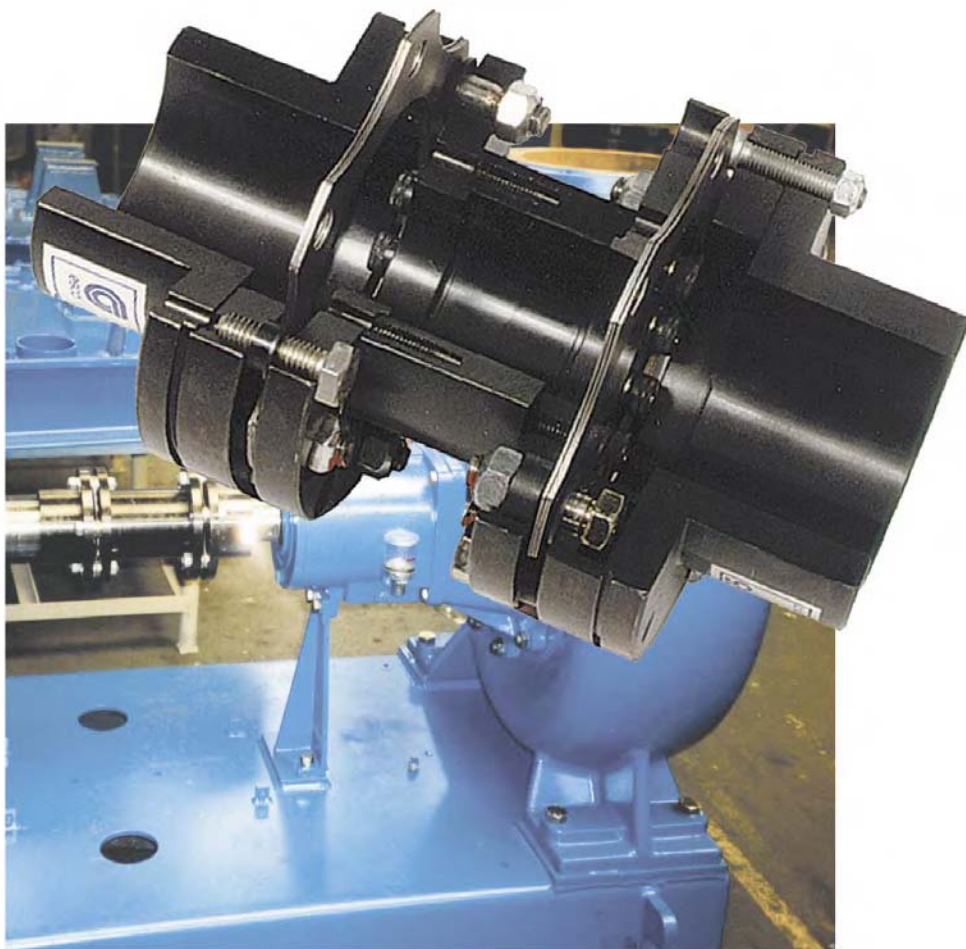





## DLC - DMU - DPU



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In a world where efficiency, extended life, less maintenance and reduced life cycle costs are becoming more and more important, the role of the coupling (the connection between two machines) and its influence cannot be underestimated. This is why designers and manufacturers of rotating machines are asking for larger torques, better misalignment capacities, excellent production quality, lower weights and significantly reduced reaction forces.

Disc type couplings offer the user numerous advantages: they are maintenance free, they have very low reaction forces in case of misalignment, and thanks to their high degree of inherent balance, create no vibrations which might cause damage to components such as mechanical seals, bearings, etc...

The Esco engineers have succeeded in optimising the design of the disc type coupling in order to reduce the reaction forces to an absolute minimum level. Also phenomena such as "fretting corrosion" and buckling, that can significantly limit the life of a disc type coupling, have been eliminated. Escodisc couplings have been developed, tested and manufactured for infinite life, maintenance free use, reduced assembly costs and increased machine efficiency.



Series DLC  
Torque: up to 1600 Nm  
Bore: up to 105 mm



Series DMU  
Torque: up to 260000 Nm  
Bore: up to 370 mm



Series DPU  
Torque: up to 23100 Nm  
Bore: up to 220 mm

## Why Escodisc ?

### High Torque and Misalignment capacity

Thanks to the optimised disc shape and thickness (which could be obtained by finite element analysis and laser cutting), the optimised number of bolts and the standard use of 12.9 quality bolts, Escodisc couplings have a high torque and misalignment capacity combined with reduced reaction forces on connected equipment (bearings, mechanical seals...).

### Infinite life

All Escodisc couplings have been calculated, designed and tested for infinite life. This is possible thanks to the use of discs in AISI 301 stainless steel with special surface treatment, the standard use of fillers between the discs to eliminate fretting corrosion and the use of high Safety margin on catalogue values.

### No Buckling

In order to guarantee perfect centring of the spacer under all working condition (very important for long DBSE applications) and well controlled stresses in the disc pack, Escodisc couplings have been calculated and tested to have no buckling up to the peak torque. This results in trouble free operation, maximum efficiency and reduced risk for disc failure.

### Flexible Spacer Design

Thanks to the unique design of the Escodisc spacer (flanges bolted to the intermediate tube section - see catalogue drawings DMU/DPU), its length is easily adaptable to customer requirements. Therefore quick delivery (even for non-standard DBSE) is possible and customer stock can be reduced to a minimum level.

### Suitable for extreme temperatures and corrosive environment

Escodisc couplings can operate at temperatures as high as 270°C and as low as -20°C, (lower or higher temperature level on request). Furthermore, thanks to the use of stainless steel discs, the standard use of Dacromet protection for the hardware and a special surface treatment, Escodisc couplings are ideal for use in a corrosive environment.

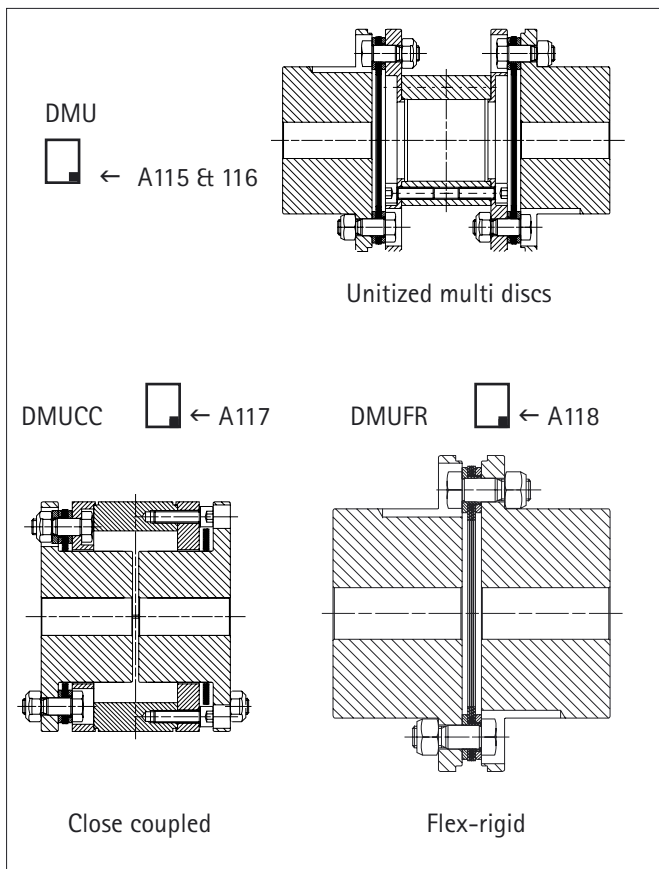
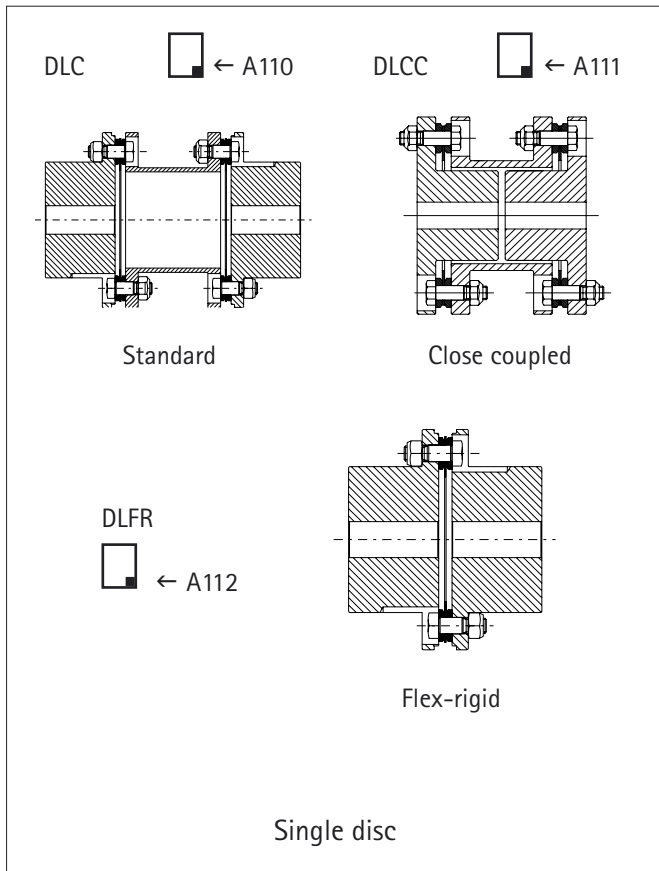
### Easy assembly and disassembly

To save cost at the assembly and the disassembly stages, the design of all Escodisc couplings has been optimised (factory assembled disc pack or transmission unit, shipping screws...).

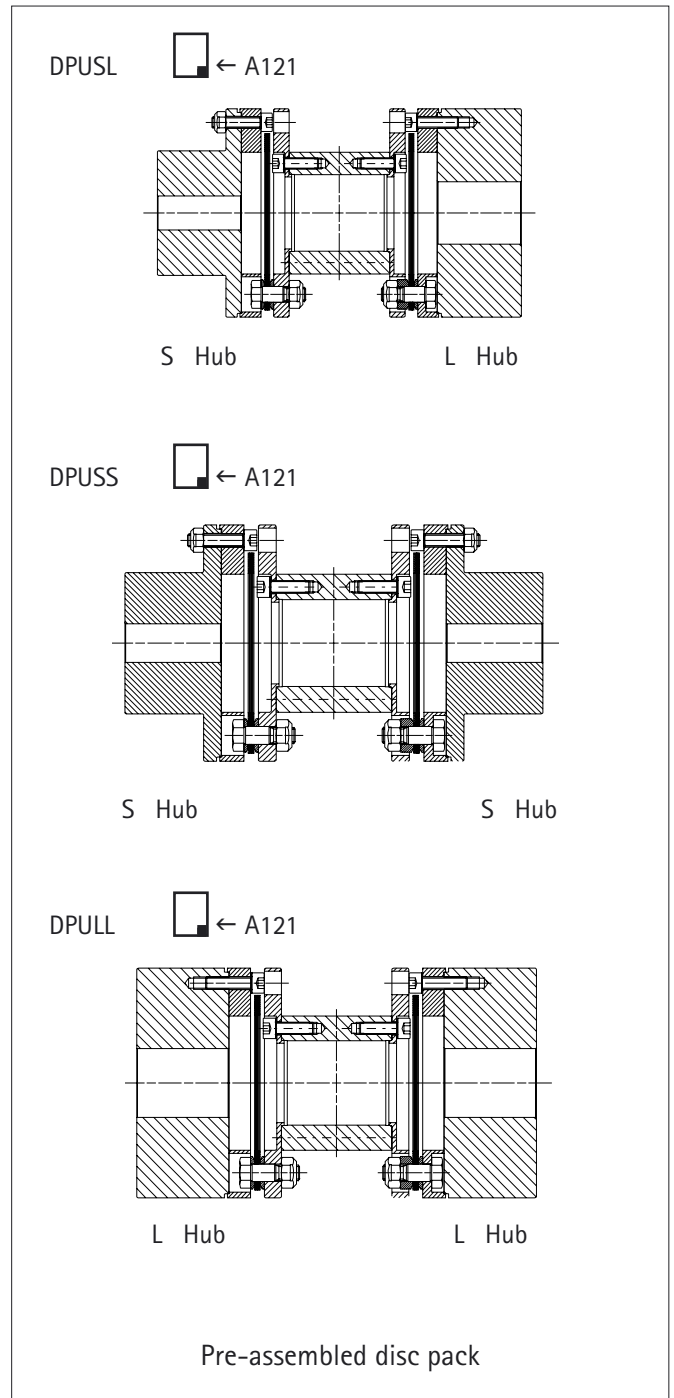
### Torque transmission in case of disc pack failure

In the unlikely event of a disc pack failure, the Escodisc couplings have been designed in such a way that torque transmissions remains guaranteed for a limited time (through the bolts). This system furthermore keeps the spacer well centred and works as an anti-fly system through which optimum user safety can be assured.

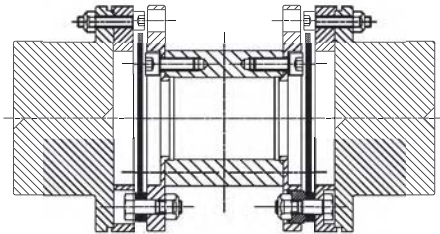




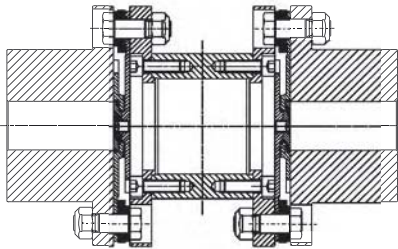
## ← ← ← AVAILABILITIES ↓ ↓ ↓



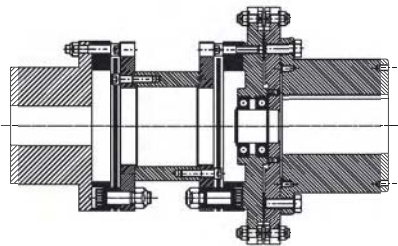
## Special Execution Available (on request)



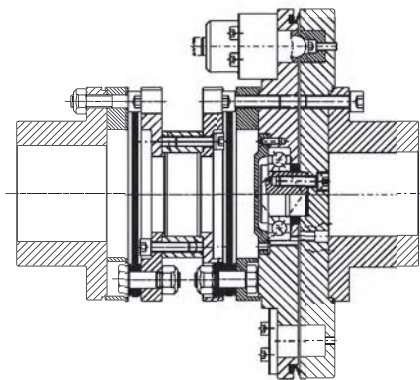
DPUSSNS - Non Sparking Execution



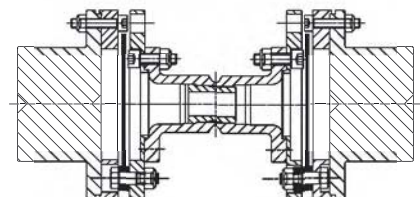
DMULE - Limited End Float



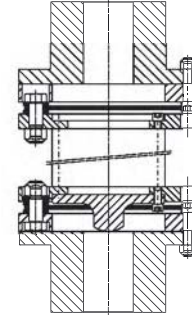
DPUSSSP - Shear Pin Overload Protection



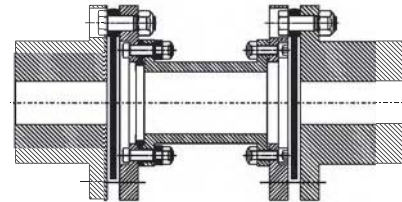
DPSSET - Esco Torque Overload Protection (adjustable)



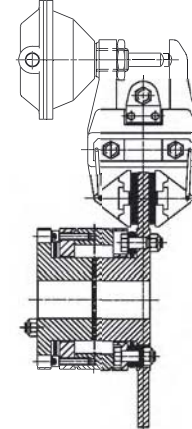
DPUSSOS - Overload Spacer



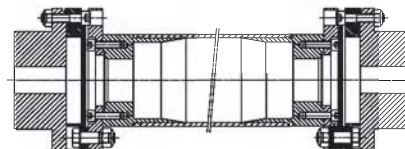
DPUSSV - Vertical Execution



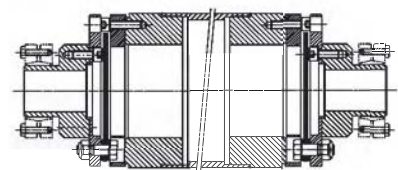
DMUIN - Electrically Insulated



DMUCCBD - With Integrated Brake Disc



DPUSSCP - With Composite Spacer



DPUEDSS - Extended Diameter

## HOW TO SELECT THE RIGHT COUPLING SIZE

### 1. BASED ON APPLICATION DATA

Depending on torque, speed, distance between shaft ends and the shaft sizes of the two machines to be connected, a first selection can be made. DLC couplings are limited in torque and bore capacity so for medium to high torque application DMU or DPU series have to be used. For torques > 23100 Nm, DMU is preferred. High Speed applications are, thanks to its concept, best covered by the DPU series. For short DBSE application, DLCC or DMUCC can be selected while for long DBSE application (DBSE > 1000 mm) requiring balancing, escodisc DMU or DPU have to be used. In the below table an overview of the coupling characteristics are given for quick selection.

### 2. BASED ON SPECIFIC APPLICATION REQUIREMENTS

Specific application requirements can also determine the escodisc type to be used. These requirements might be balancing, conformity to API specifications, non-sparking execution, special materials, assembly, available space etc... In the below table, an overview of the conformity of the DLC/DMU/DPU to specific application requirements can be found.

### 3. BASED ON COMMERCIAL REQUIREMENTS

### 4. BASED ON CUSTOMER STANDARDISATION/PREFERENCE

	DLC	DLCC	DMU	DMUCC	DPU
Torque Capacity (1)	1600	1600	260000	19800	23100
Bore Capacity	105	85	370	170	220
Balancing (2)			Q 2,5		Q 2,5
Short DBSE (<50 mm)		Yes		Yes	
Long DBSE (>1000 mm)			Yes		Yes
Large Hub					Yes
Non Sparking				Optional	Optional
High Speed Applications (>3000 rpm)					Optional
API 610			Yes		Yes
API 671					Optional
Electrical Insulation	Optional		Optional		Optional
Limited End Float			Optional		Optional
Shear Pin Overload Protection					Optional
Esco Torque Overload Protection					Optional
Overload Spacer			Optional		Optional
Vertical Execution					Optional

Remarks: (1) Indicated Torque capacity is for standard range. Larger sizes are available on request.

(2) Indicated balance degree gives the maximum advisable balance degree. Standard couplings are not balanced.

# HOW TO SELECT THE RIGHT COUPLING SIZE

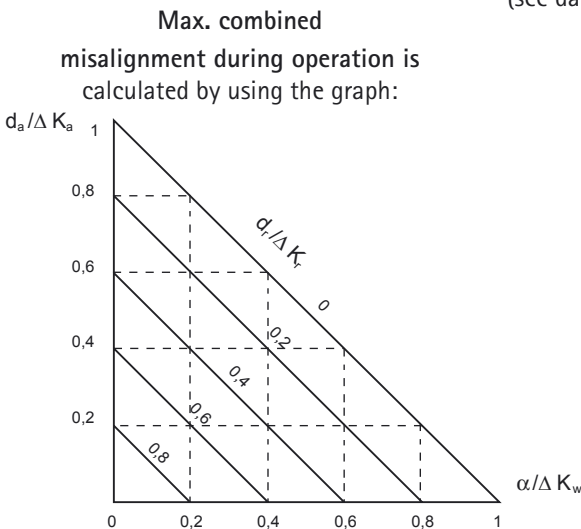
## 1. MISALIGNMENT CAPACITY

ESCODISC COUPLING CAN ACCOMMODATE 3 TYPES OF MISALIGNMENT:

**Axial displacement:**  
 $d_a$  mm per coupling  
 $\Delta K_a$  = max. axial displacement  
 (see data sheet)

**Angular misalignment:**  
 $\alpha$  degree per half coupling:  
 $\alpha$  = max. ( $\alpha_1, \alpha_2$ )  
 $\Delta K_w$  = max. angular misalignment  
 (see data sheet)

**Offset misalignment:**  
 $d_r$  mm per coupling  
 $\Delta K_r$  = max. offset misalignment  
 (see data sheet) ( $\Delta K_r = S \text{ tg } \Delta K_w$ )



or the formula: 
$$\frac{d_a}{\Delta K_a} + \frac{\alpha}{\Delta K_w} + \frac{d_r}{\Delta K_r} \leq 1$$

**Example:**  
 For ESCODISC DMU 65 - 75, max. values given in data sheet are:  
 $\Delta K_a = 2,6 \text{ mm}$ ;  $\Delta K_w = 0,5^\circ$ ;  $\Delta K_r = 0,8 \text{ mm}$ .

Check if actual misalignment values are permissible:  
 $d_a = 0,8 \text{ mm}$ ;  $\alpha = 0,15^\circ$  and  $d_r = 0,2 \text{ mm}$

$$\frac{d_a}{\Delta K_a} + \frac{\alpha}{\Delta K_w} + \frac{d_r}{\Delta K_r} = \frac{0,8}{2,6} + \frac{0,15}{0,5} + \frac{0,2}{0,8} = 0,85 \leq 1: \text{OK}$$

In case of use in potentially explosive atmospheres  $\text{Ex}$ , European Directive 94/9/EC, the combination of misalignment may not exceed 0,8.

$$\frac{d_a}{\Delta K_a} + \frac{\alpha}{\Delta K_w} + \frac{d_r}{\Delta K_r} \leq 0,8$$

At assembly, we however recommend not to exceed 20% of the complete misalignment capacity of the coupling. See installation and maintenance instructions (IM).

## 2. TORQUE CAPACITY AND SELECTION

2.1 Tabulated torques are independent from misalignment and speed conditions as far as combined misalignment is within the specified values (see above) and speed does not exceed tabulated values.

### 2.2 How to select?

- A. First select the size of ESCODISC coupling that will accommodate the largest shaft diameter.
- B. Make sure this coupling has the required nominal torque capacity according to the formula: Torque in Nm =  $\frac{9550 \times P \times F_u \times F_{\text{Ex}}}{n}$

Where  $P$  = Power in kW,  $n$  = speed in  $\text{min}^{-1}$ .

$F_u$  = Service factor depending on the connected machine (see below).

$F_{\text{Ex}} = 1,5$  in case of use in potentially explosive atmospheres  $\text{Ex}$ . In normal atmospheres,  $F_{\text{Ex}} = 1$ .

The coupling selected per A must have an equal or greater nominal torque capacity  $T_n$  (see planographs A104 to A121) than the result of the formula B. If not, select a larger size coupling.

- C. Check that the selected coupling has the required peak torque capacity according to the following formula :  
 Calculated peak torque = Peak torque of the application  $\times F_{\text{Ex}}$ ;  $F_{\text{Ex}}$ , see above (Point B)  
 For application with direct starting of an AC motor, the transmitted peak torque has to be calculated with the following formula :

where  $T_{nm}$  = nominal torque of motor (Nm)  
 $J_1$  = inertia of motor ( $\text{kgm}^2$ )  
 $J_2$  = inertia of the driven machine ( $\text{kgm}^2$ )  
 $F_{\text{Ex}}$  = see above (point B).

$$\text{Calculated Peak Torque} = 7 \times T_{nm} \times \frac{J_2}{(J_1 + J_2)} \times F_{\text{Ex}}$$

For application using a brake, calculated peak torque = brake torque  $\times 1,5 \times F_{\text{Ex}}$ .

Peak torque capacity  $T_p$  of the coupling (see planographs A105 to A121) must be higher than the calculated peak torque. If not, select a larger coupling.

- D. Check if shaft/hub assembly will transmit the torque. (If in doubt, please consult Escos).
- E. Read carefully assembly and maintenance instructions (IM).

## 2.3 Service factor $F_u$

Service factor depends on coupled machines (driver and driven =  $F_M$ ) and on the working condition ( $F_W$ ).  $F_u = F_M \cdot F_W$

	DRIVER MACHINE	DRIVEN MACHINE
$F_M = F_N$	Electric and hydraulic motors, Turbines	See tabulation
$F_M = F_N + 0,4$	Piston engine with 4 cylinders and more	
$F_M = F_N + 0,9$	Piston engine with 1 to 3 cylinders	below for $F_N$

$F_W = 1$  for non reversing applications —  $F_W = 1,25$  for reversing applications — for more than 2 starts per min.

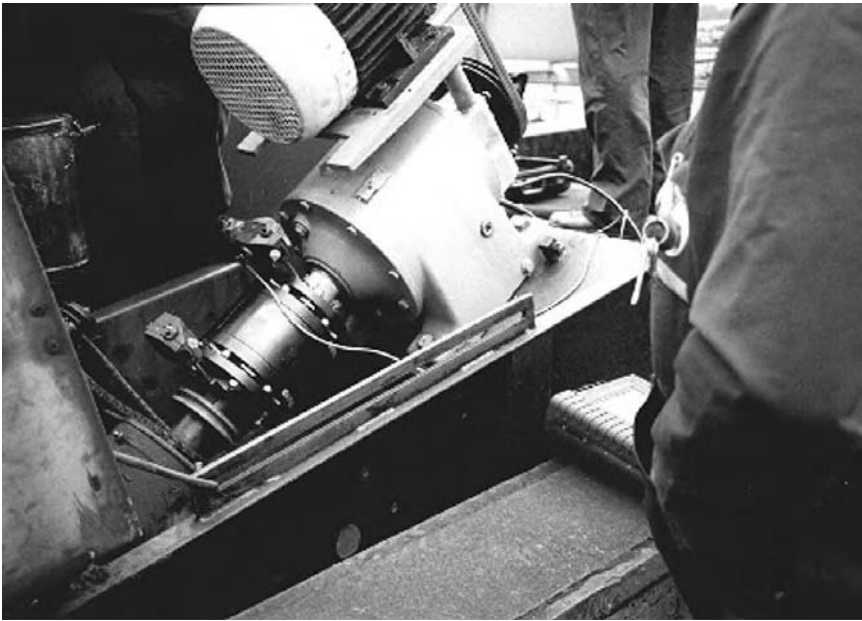
DRIVEN MACHINE	$F_N$	DRIVEN MACHINE	$F_N$
<b>Agitators</b>		<b>Handling equipment</b>	
- High inertia * and/or heavy liquids	1,75	- Conveyor	1,75
- Low inertia and light liquids	1	- Crane	2
<b>Compressors</b>		- Elevator	1,5
- Centrifugal	1,5	- Hoist	1,75
- Reciprocating	2,5	<b>Machines – Various</b>	
<b>Generators</b>		- laundry washer	1,75
- Continuous duty	1	- packing and bottling	1,5
- Welding	1,75	- paper and textile	2
<b>Machine tool</b>		- rubber mill	2
- Auxiliary drives	1	- wood and plastic	1,5
- Main drives	1,75	<b>Metallurgy</b>	
<b>Pumps</b>		- Continuous casting	2,5
- Reciprocating	2,5	- Convertor	2,5
- Gears	1,5	- Shear, Stripmill	2,25
- Centrifugal		<b>Mining, cement, briquetting</b>	
- High inertia * and/or heavy liquids	1,75	- Crusher	3
- Low inertia and light liquids	1	- Mixer (concrete)	1,75
- Propeller	1,25	- Rotating oven	2
- Waterjet pump	1,25	<b>Wire drawing</b>	2
<b>Ventilators, axial or radial blowing</b>			
- Great capacity *, cooling tower	2		
- Low inertia	1		

\* If  $J_1 < 2 J_2$  with  $J_1$  = inertia of electric motor and  $J_2$  = inertia of the driven machine.

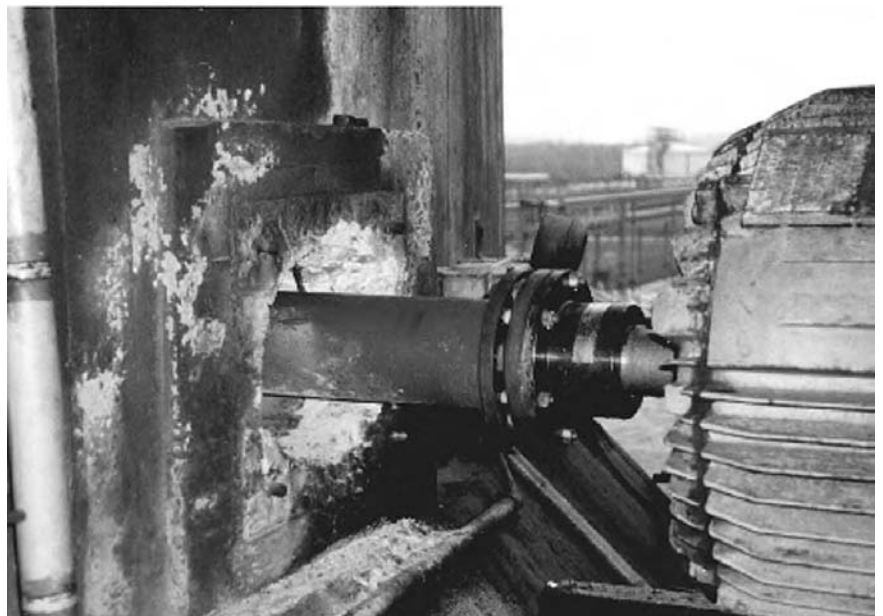
LEGEND OF USED PICTOGRAM	Notes for series DL – DMU – DPU
$\frac{\varnothing_{max.}}{\varnothing_{min.}}$ MAXIMUM BORE (mm) MINIMUM BORE (mm)	1 For key according to ISO R 773.
$\frac{T_n}{T_p}$ MAXIMUM NOMINAL TORQUE (Nm) MAXIMUM PEAK TORQUE (Nm)	2.1 Maximum transmissible torque for: $\% \Delta K_w + \% \Delta K_a + \% \Delta K_r \leq 100\%$ or 80% in $\text{⊕}$ atmosphere
MAXIMUM SPEED (rpm)	3 Higher speed on special request.
MAXIMUM ANGULAR MISALIGNMENT (degree)	3.3 Depend on S.
MAXIMUM OFFSET MISALIGNMENT (mm)	4 For solid bore.
MAXIMUM AXIAL MISALIGNMENT (mm)	5 For pilot bored hubs.
INERTIA ( $\text{kgm}^2$ )	8 Values for S minimum. S maximum depends on torque and speed.
WEIGHT (kg)	11 For larger S, contact us.
	12 Following DIN 740.
	13 $\Delta K_r \cong S \times \text{tg } \Delta K_w$

\* Max. torque, speed and misalignment tabulated values may not be cumulated.  
See IM/A100-2, -3, -4.





Water Treatment Installation

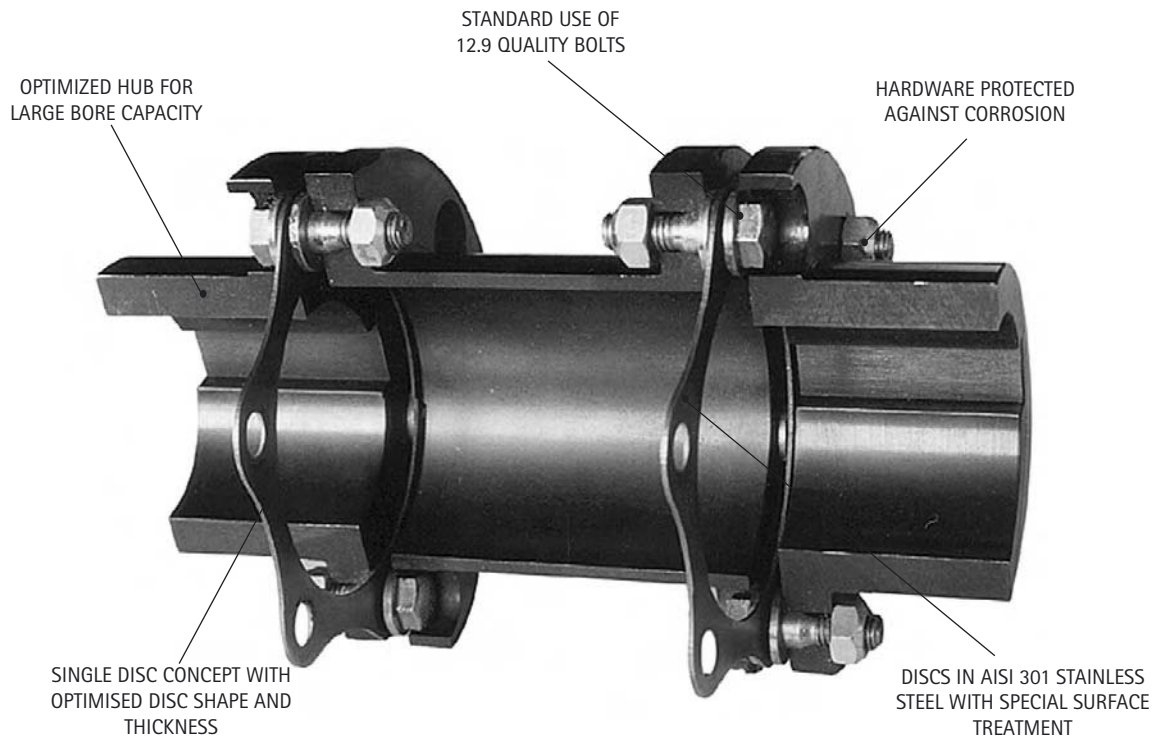


Cooling Tower

## SERIES DLC

The Economic Single Disc Concept for low to medium duty applications

Maximum torque capacity: up to 1600 Nm - Bore Capacity: up to 105 mm



### Economic Solution

The simplified design and single disc concept of the Escodisc DLC makes it the most cost effective solution for simple low to medium torque/speed applications where a maintenance free coupling is required.

### Single Disc Concept

Thanks to finite element analysis and the standard use of laser cutting, the single disc concept can be used without problems (no fretting corrosion, no buckling) for low to medium duty applications.

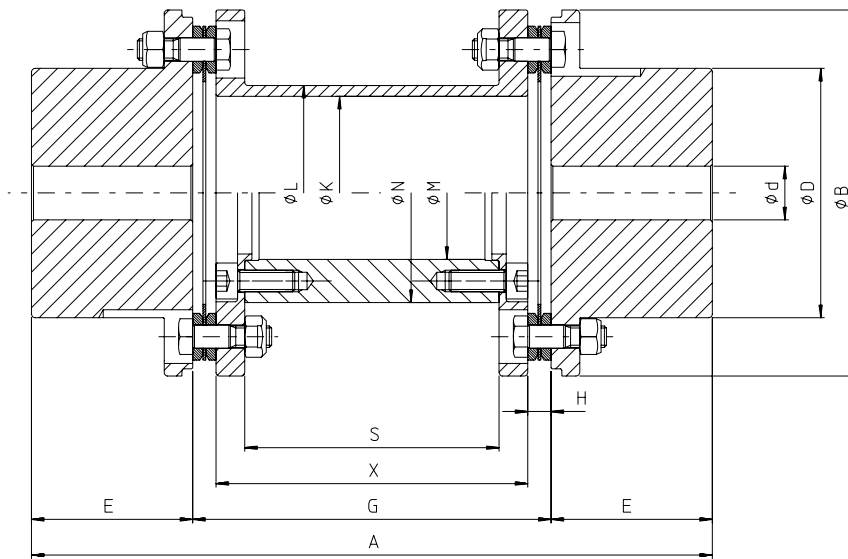
### Close Coupled design

The Escodisc DLC coupling is also available in close coupled design (DLCC) to provide the user with a very compact solution for his application. A distance between shaft ends as small as 3 mm can be obtained with maximum misalignment capacity.

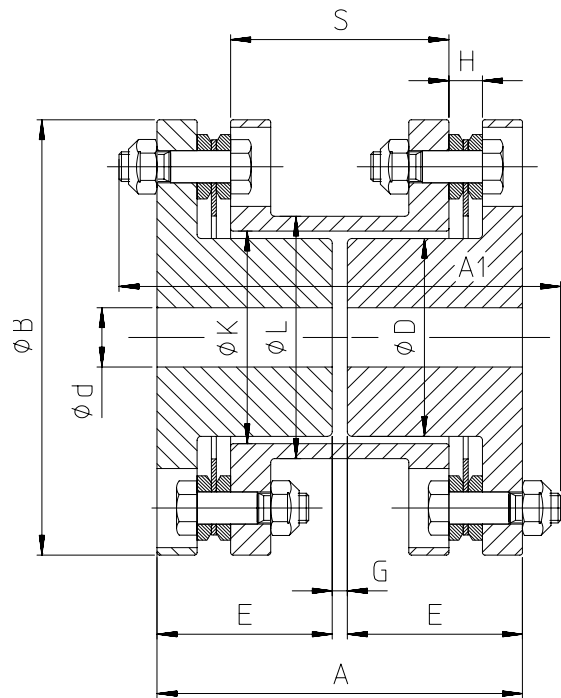
## Escodisc Series DLC - Quick Selection Table










Coupling size	Maximum Power (kW)															Max. Speed (Rpm)	Max. Bore (mm)
	1000 Rpm			1500 Rpm			1800 Rpm			3000 Rpm			3600 Rpm				
	SF 1	SF 1,5	SF 2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2		
DLC 28-28	7	5	4	11	7	5	13	9	7	22	15	11	26	18	13	5800	28
DLC 38-45	12	8	6	17	12	9	21	14	10	35	23	17	41	28	21	5000	45
DLC 45-55	21	14	10	31	21	16	38	25	19	63	42	31	75	50	38	5600	55
DLC 55-65	37	24	18	55	37	27	66	44	33	110	73	55	132	88	66	4600	65
DLC 65-75	68	45	34	102	68	51	123	82	61	204	136	102	245	163	123	3900	75
DLC 75-90	105	70	52	157	105	79	188	126	94	314	209	157	377	251	188	3500	90
DLC 85-105	168	112	84	251	168	126	302	201	151	503	335	251	603	402	302	3000	105

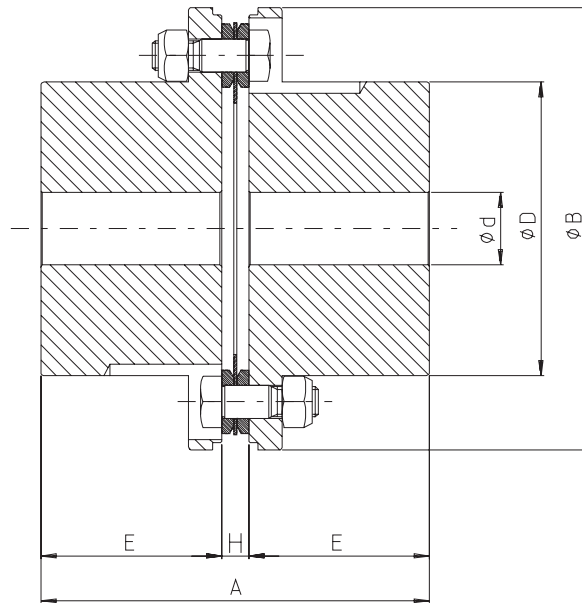













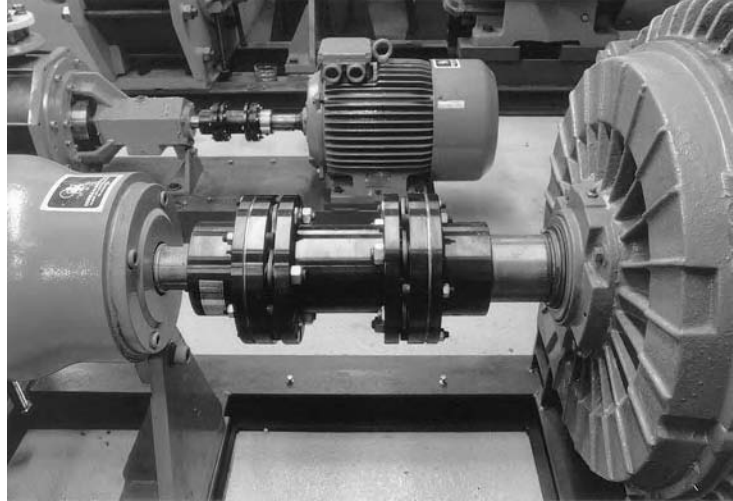
← A105			Type DLC							
			28-28	38-45	45-55	55-65	65-75	75-90	85-105	
 $\frac{d}{\varnothing \text{ min.}}$ $\varnothing \text{ max.}$	1	mm	28	45	55	65	75	90	105	
			0	0	0	0	25	32	38	
 $\frac{T_n}{T_p}$ $\frac{Nm}{1m}$	2.1	Nm	70	110	200	350	650	1000	1600	
			125	190	350	620	1150	1750	2800	
 $\frac{tr/min}{rpm}$ $\frac{omw/min}{min^{-1}}$			5800	5000	5600	4600	3900	3500	3000	
 $\Delta K_w$ $\Delta K_w$	12	degré graad degree Grad	2x0,75	2x0,75	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	
 $\Delta K_a$	12	mm: ±	1,2	1,8	1,2	1,4	1,6	2	2,4	
 $\Delta K_r$ $S$	12	mm: ±	0,8	0,8	0,8	0,8	0,8	0,8	1,1	
	13									
 $J$ $(WR^2)$	4	kgm <sup>2</sup>	0,001	0,002	0,004	0,010	0,022	0,048	0,101	
	5	kg	1,6	2,6	4,2	7,0	10,6	16,9	26,9	
mm: ±	A	11	mm	156	170	190	200	220	240	310
	B		mm	76	88	102	123	147	166	192
	D		mm	40	58,5	69,5	82	97,5	113	132
	E		mm	28	35	45	50	60	70	85
	G	11	mm	100	100	100	100	100	140	140
	H		mm	6,5	6,7	6,5	7	9	10	13
	K		mm	30	43	54	67	81	96	112
	L		mm	36	49	60	74	88	104	122
	M		mm		21	37	48	54	65	76
	N		mm		41	61	72	86	98	116
	S	11	mm	71	70,6	71	64	60	88	80
	X		mm	87	86,6	87	86	82	120	114



 ←A105			Type DLCC							
			28-20	38-28	45-40	55-50	65-60	75-70	85-85	
 $d$ $\varnothing$ max. $\varnothing$ min.	1	mm	20	28	40	50	60	70	85	
			0	0	0	0	25	32	38	
 $T_n$ $T_p$	2.1	Nm	70	110	200	350	650	1000	1600	
			125	190	350	620	1150	1750	2800	
 min.max.		tr/min omw/min rpm min <sup>-1</sup>	5800	5000	5600	4600	3900	3500	3000	
 $\Delta K_W$	12	degré graad degree Grad	2x0,75	2x0,75	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	
 $\Delta K_a$	12	mm: $\pm$	1,2	1,8	1,2	1,4	1,6	2	2,4	
 $\Delta K_r$	12	mm: $\pm$ 13	0,8	0,8	0,8	0,8	0,8	0,8	1,1	
 $J$ (WR <sup>2</sup> )	4	kgm <sup>2</sup>	0,0008	0,0016	0,003	0,009	0,018	0,041	0,084	
	5	kg	1,4	2,05	3,2	5,8	8,5	13,5	22,1	
mm $\pm$	A	11	mm	116 (66)	116 (73)	116 (93)	122 (103)	122	132	174
	B		mm	76	88	102	123	147	166	192
	D		mm	29	40	52	65	78	92	108
	E		mm	28	35	45	50	59	64	85
	G	11	mm	60 (10)	46 (3)	26 (3)	22 (3)	4	4	4
	H		mm	6,5	6,7	6,5	7	9	10	13
	K		mm	30	43	54	67	81	96	112
	L		mm	36	49	60	74	88	104	122
	S	11	mm	87 (37)	86,6 (43,6)	87 (64)	86 (67)	82	80	114
	A1		mm	133 (83)	133 (90)	133 (110)	142 (123)	148	162	210



 ← A105			Type DLFR						
			28-28	38-45	45-55	55-65	65-75	75-90	85-105
 $d$ $\varnothing$ max. $\varnothing$ min.	1	mm	28	45	55	65	75	90	105
			0	0	0	0	25	32	38
 $T_n$ $T_p$	2.1	Nm	70	110	200	350	650	1000	1600
			125	190	350	620	1150	1750	2800
 /min.max.		tr/min omw/min rpm min <sup>-1</sup>	5800	5000	5600	4600	3900	3500	3000
 $\Delta K_w$	12	degré graad degree Grad	0,75	0,75	0,5	0,5	0,5	0,5	0,5
 $\Delta K_a$	12	mm: $\pm$	0,6	0,9	0,6	0,7	0,8	1	1,2
 $\Delta K_r$	12	mm: $\pm$	0	0	0	0	0	0	0
 $J$ (WR <sup>2</sup> )	4	kgm <sup>2</sup>	0,0005	0,0012	0,0027	0,007	0,015	0,032	0,068
	5	kg	1	1,9	3,2	5,3	8,3	13,1	21
mm $\pm$	A	mm	62,5	76,7	96,5	107	129	150	183
	B	mm	76	88	102	123	147	166	192
	D	mm	40	58,5	69,5	82	97,5	113	132
	E	mm	28	35	45	50	60	70	85
	H	mm	6,5	6,7	6,5	7	9	10	13



Pump drive

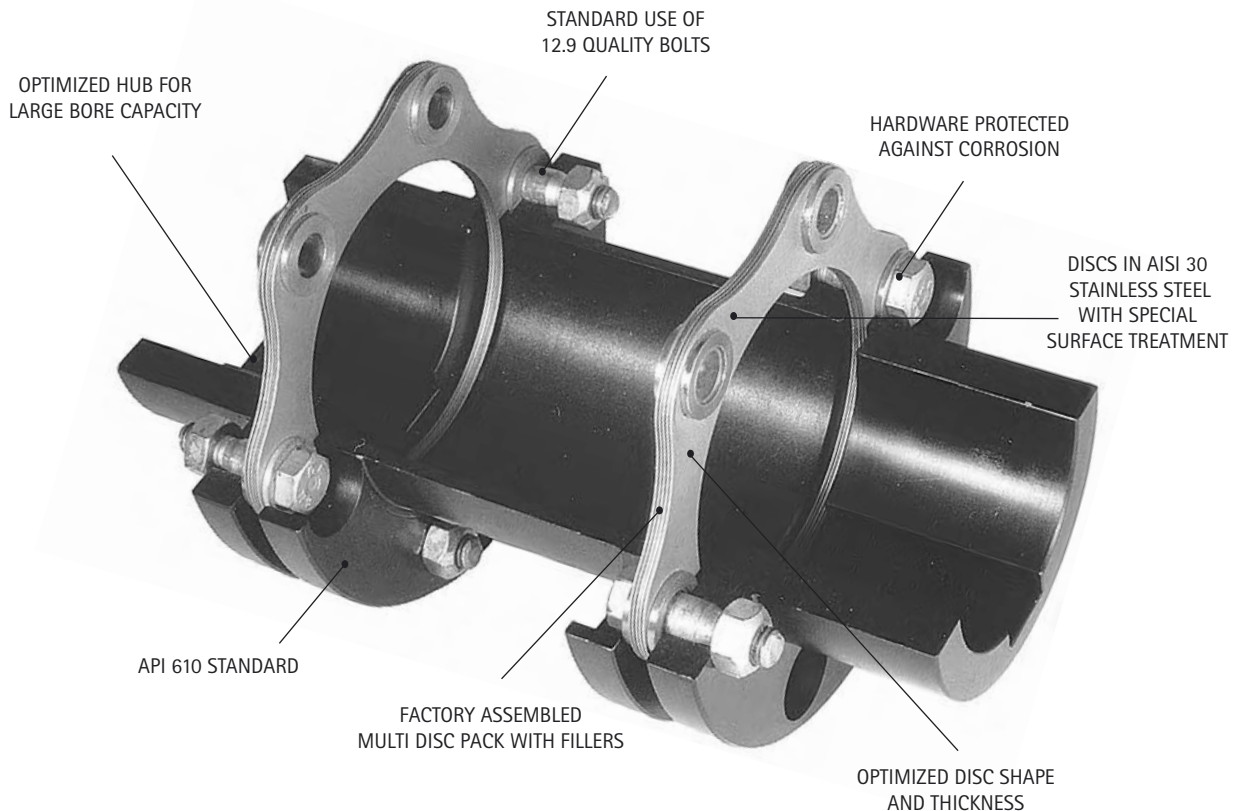


Test bench drive, with combination of FET torque limiter

## SERIES DMU

The General Purpose High Torque/High Misalignment Solution

Maximum torque capacity: up to 260000 Nm – Bore Capacity: up to 370 mm



### General Purpose Design

Because of the high torque, bore and misalignment capacity of the Escodisc DMU coupling range, its high degree of natural inherent balance (AGMA class 9) up to size 85 and the fact that it meets the API 610 standards, this coupling is the ideal solution in a multitude of applications up to 260000 Nm (and larger upon request).

### Unitised Disc Pack

The DMU disc pack consists of an optimised number of discs or separated links (for sizes greater or equal to size 190) and has been factory assembled for easy field assembly. To eliminate fretting corrosion (which limits disc type coupling life), stainless steel fillers between the discs are used.

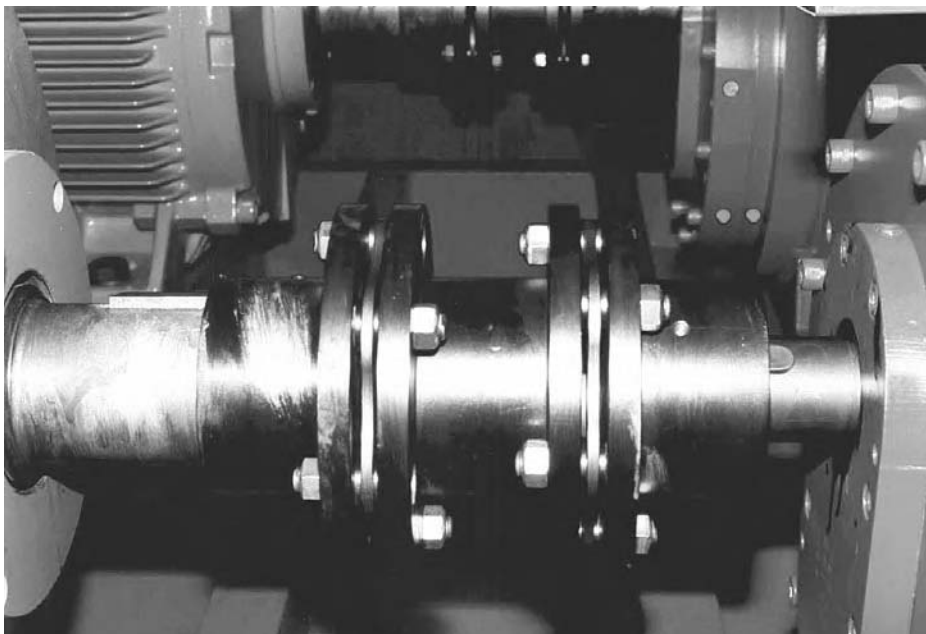
### Close Coupled Design

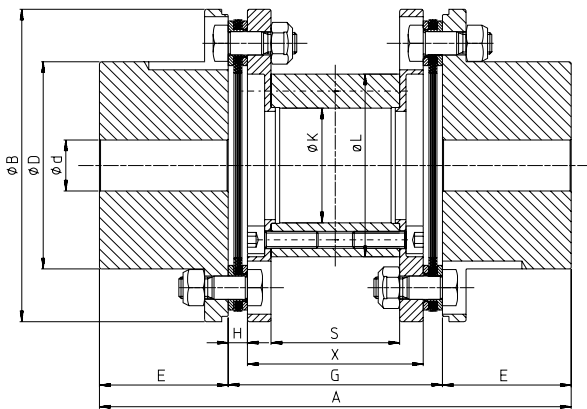
The Escodisc DMU coupling is also available in close coupled design (DMUCC). The high torque/bore capacity makes it an ideal maintenance free alternative for close coupled gear and elastic type couplings and can be modified in such a way that replacement of gear and elastic couplings is possible without modifications to an existing installation. Furthermore, thanks to the split spacer design, disconnection of the two machines and replacement of the disc pack is possible without axial displacement of the connected machines.



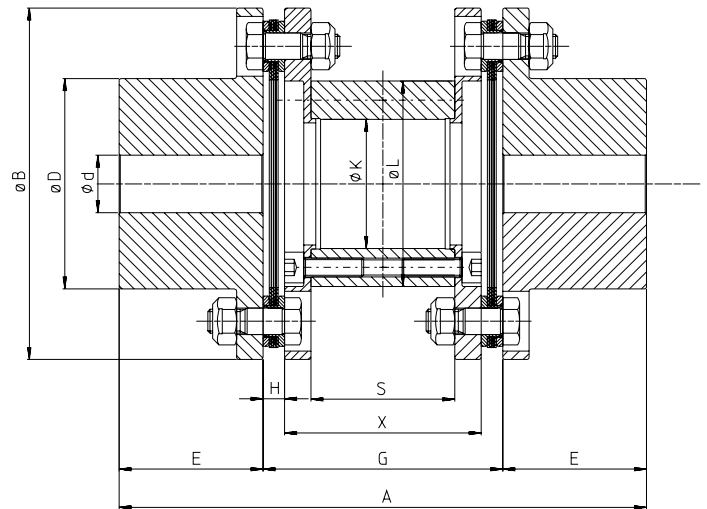
## Escodisc Series DMU - Quick Selection Table

Coupling size	Maximum Power (kW)															Max. Speed (Rpm)	Max. Bore (mm)
	1000 Rpm			1500 Rpm			1800 Rpm			3000 Rpm			3600 Rpm				
	SF 1	SF 1,5	SF 2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2		
DMU 38-45	20	13	10	30	20	15	36	24	18	60	40	30	72	48	36	16000	45
DMU 45-55	35	23	17	52	35	26	62	41	31	104	69	52	124	83	62	13600	55
DMU 55-65	79	52	39	118	79	59	141	94	71	236	157	118	283	188	141	12000	65
DMU 65-75	139	93	70	209	139	104	251	167	125	418	279	209	501	334	251	10000	75
DMU 75-90	230	154	115	346	230	173	415	276	207	691	461	346	829	553	415	8600	90
DMU 85-105	366	244	183	550	366	275	660	440	330	1099	733	550	1319	880	660	7200	105
DMU 95-105	586	391	293	880	586	440	1056	704	528	1759	1173	880	2111	1407	1056	6400	105
DMU 110-120	838	558	419	1257	838	628	1508	1005	754	2513	1675	1257	3016	2010	1508	5600	120
DMU 125-135	1141	761	571	1712	1141	856	2054	1370	1027	3424	2283	1712	4109	2739	2054	5000	135
DMU 140-160	1487	991	744	2231	1487	1115	2677	1784	1338	4461	2974	2231	5353	3569	2677	4600	160
DMU 160-185	2074	1383	1037	3109	2073	1554	3735	2490	1868	6226	4151	3113	11245	7497	5623	4000	185





Size 38 -45 to 85 -105

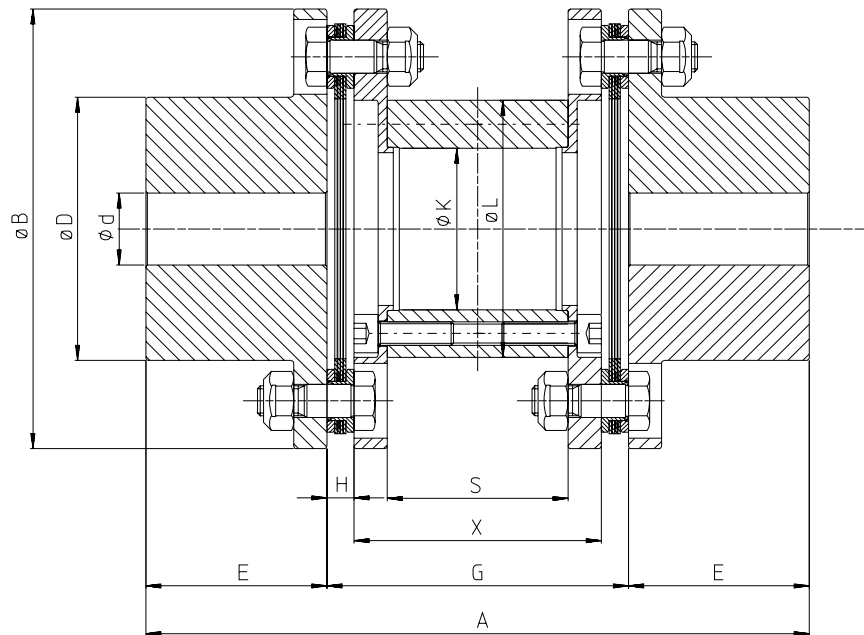


Size 95 -105 to 160 -185

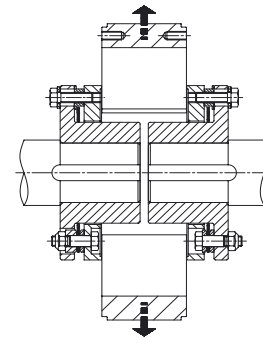
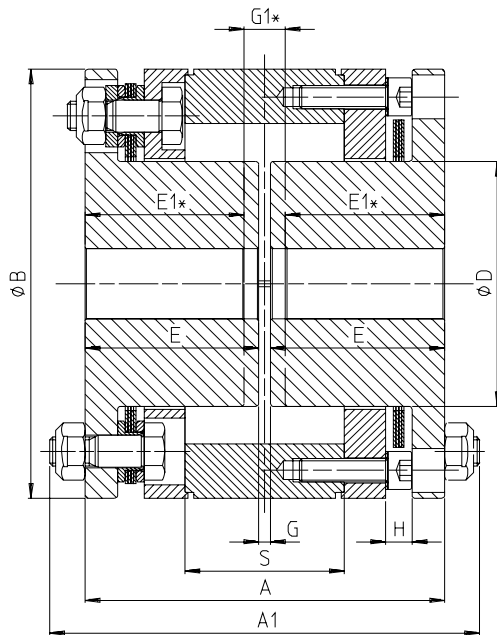
← A105			Type DMU											
			38-45	45-55	55-65	65-75	75-90	85-105	95-105	110-120	125-135	140-160	160-185	
	1	mm	Ø max.	45	55	65	75	90	105	105	120	135	160	185
			Ø min.	0	0	0	25	32	38	45	55	65	65	80
	2.1	Nm	Tn	190	330	750	1330	2200	3500	5600	8000	10900	14200	19800
			Tp	290	500	1120	2000	3320	5200	8400	12000	16400	21200	29600
	3	tr/min omw/min rpm min <sup>-1</sup>	min.	8000	6800	6000	5000	4300	3600	3200	2800	2500	2300	2000
			max.	16000*	13600*	12000*	10000*	8600*	7200*	6400*	5600*	5000*	4600*	4000*
	12	mm: ±	ΔK <sub>w</sub>	2x0,75	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5
			ΔK <sub>a</sub>	2,4	2	2,4	2,6	3	4	4	4,4	5,2	6,6	6,8
	12	mm: ±	ΔK <sub>r</sub>	0,8	0,8	0,8	0,8	1,1	1,1	1,1	1,4	1,4	2	2
			S											
	4	kgm <sup>2</sup>	J (WR <sup>2</sup> )	0,0015	0,004	0,008	0,018	0,04	0,084	0,136	0,262	0,434	0,779	1,436
	5	kg		3,08	4,98	8	12,05	20,12	30,65	39,5	59,8	79,04	115,5	163,6
mm ±	A	11	mm	170	190	200	220	280	310	330	400	430	530	570
	B		mm	88	102	123	147	166	192	224	244	273	303	340
	D		mm	58,5	69,5	82	97,5	113	132	133	154	175	196	228
	E		mm	35	45	50	60	70	85	95	110	125	140	160
	G	11•	mm	100	100	100	100	140	140	140	180	180	250	250
	H		mm	6,7	6,5	7	9	10	13	14	15,5	19	20	20
	K		mm	21	37	48	54	65	76	94	108	123	143	165
	L		mm	41	61	72	86	98	116	134	156	171	191	221
	S	11	mm	70,6	71	64	60	88	80	76	103	96	160	154
X		mm	86,6	87	86	82	120	114	112	149	142	210	210	

\* Balancing needed – • Other lenght available – Please consult us.

DMU 190-220 ⇨ 360-370



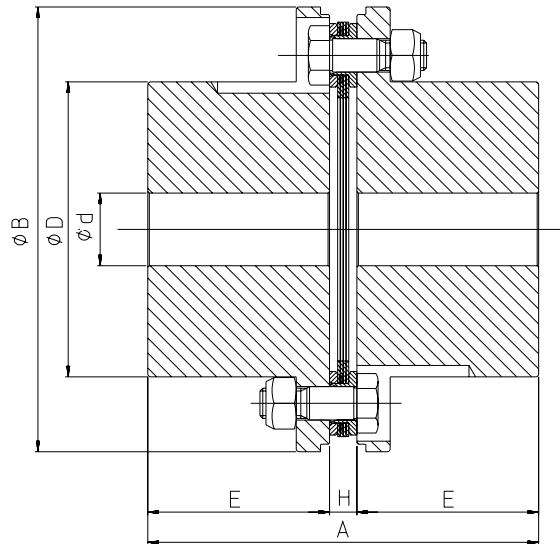
←A105			Type DMU						
			190-220	220-255	250-290	280-320	320-360	360-370	
 d $\varnothing$ max. $\varnothing$ min.	1	mm	220	255	290	320	360	370	
			90	120	150	180	200	200	
 Tn Tp	2.1	Nm	30700	53000	93000	120000	167000	260000	
			46000	80000	140000	180000	250000	390000	
 /min.max.	3	tr/min omw/min rpm min <sup>-1</sup>	1800	1500	1300	1200	1050	900	
 $\Delta K_w$	12	degré graad degree Grad	2x0,33	2x0,33	2x0,25	2x0,25	2x0,2	2x0,2	
 $\Delta K_a$	12	mm: $\pm$	5	6,6	7,6	8	9	6	
 $\Delta K_r$	12	mm: $\pm$	1,4	1,6	1,3	1,4	1,3	1,4	
 J (WR <sup>2</sup> )	4	kgm <sup>2</sup>	3	7,3	11,6	23	36	72	
	5	kg	222	358	418	680	916	1400	
mm $\pm$	A	11	mm	630	720	800	900	1020	1120
	B		mm	368	445	515	554	604	704
	D		mm	266	320	350	392	431	504
	E		mm	190	220	250	280	320	360
	G		mm	250	280	300	340	380	400
	H		mm	19,25	24,6	38	41	44,9	34
	K		mm	204	254	292	314	330	432
	L		mm	268	318	364	394	426	528
	S		mm	165,5	174,8	160	186	217,2	252
	X		mm	211,5	230,8	224	258	290,2	332



Split spacer

←A105			Type DMUCC										
			45-45	55-50	65-65	75-75	85-90	95-95	110-115	125-130	140-140	160-170	
	d	Ø max.	45	50	65	75	90	95	115	130	140	170	
		Ø min.	0	0	25	32	38	45	55	65	65	80	
	1m	Tn	330	750	1330	2200	3500	5600	8000	10900	14200	19800	
		Tp	500	1120	2000	3320	5200	8400	12000	16400	21200	29600	
	/min.max.	tr/min	6800	6000	5000	4300	3600	3200	2800	2500	2300	2000	
		omw/min rpm min <sup>-1</sup>											
	ΔK <sub>w</sub>	degré	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	
		grad degree Grad											
	ΔK <sub>a</sub>	mm: ±	2	2,4	2,6	3	4	4	4,4	5,2	6,6	6,8	
	ΔK <sub>r</sub>	mm: ±	0,8	0,8	0,8	0,8	1,1	1,1	1,4	1,4	2	2	
	J (WR <sup>2</sup> )	kgm <sup>2</sup>	0,006	0,014	0,032	0,062	0,135	0,272	0,459	0,8	1,36	2,5	
		kg	4,52	7,57	12,01	17,42	29,08	42,7	61,2	84,3	118	170	
mm ±	A	11	mm	93	103	122	132	174	194	226	256	286	328
	A1	11	mm	108	123	146	160	204	230	269	302	336	382
	B		mm	102	123	147	166	192	224	244	273	303	340
	D		mm	59	70	84	97	112	126	151	166	182	213
	E		mm	45	50	59	64	85	95	110	125	140	160
	E1*		mm	43	47,5	56	60,5	80	89,5	104,8	118	132,5	153,5
	G	11	mm	3	3	4	4	4	4	6	6	6	8
	G1*		mm	7	8	10	11	14	15	16,5	20	21	21
	H		mm	6,5	7	9	10	13	14	15,5	19	20	20
S		mm	46	43	54	46	76	88	98	117	135	167	

\* E1 and G1 are min. dimensions to allow disc-pack disassembly without moving the machines.



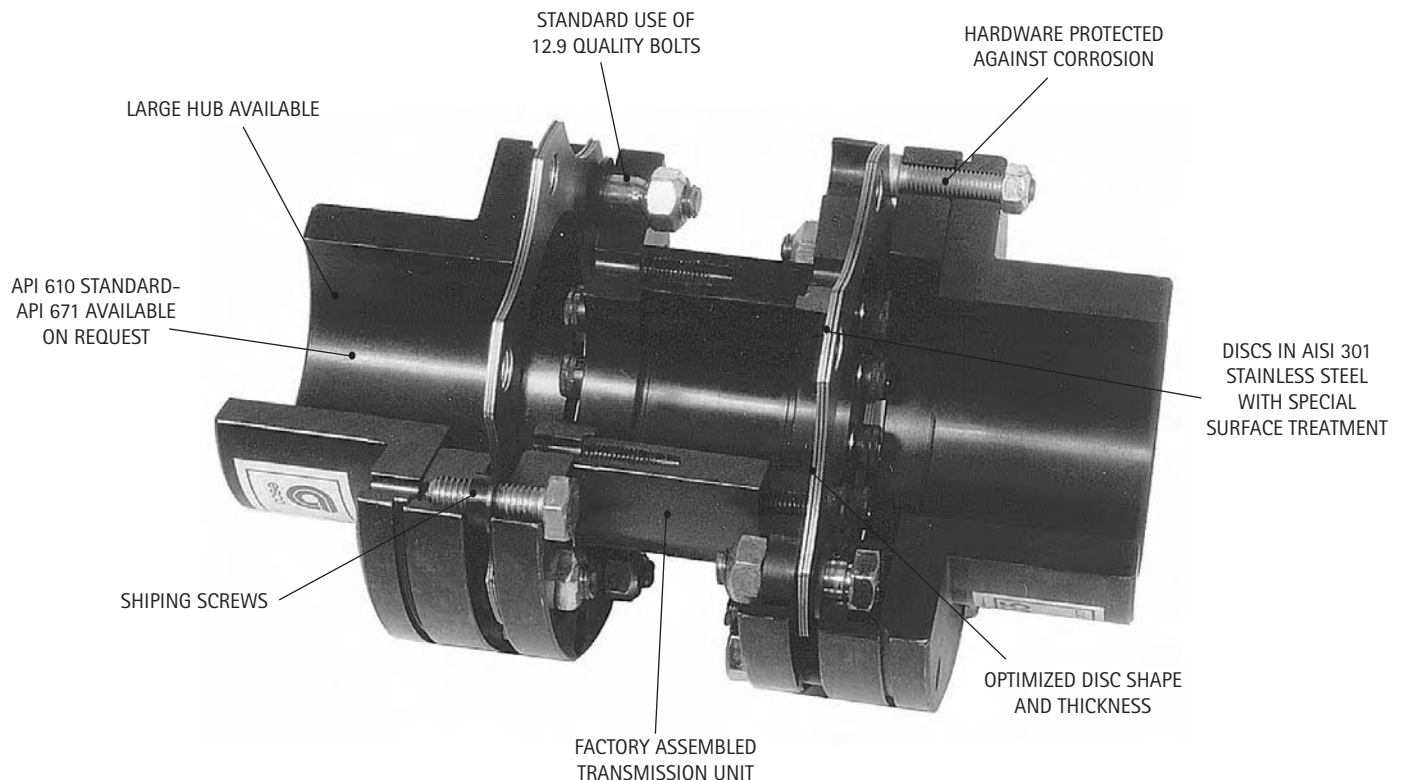
← A105			Type DMUFR											
			38-45	45-55	55-65	65-75	75-90	85-105	95-105	110-120	125-135	140-160	160-185	
	1	mm	Ø max.	45	55	65	75	90	105	105	120	135	160	185
			Ø min.	0	0	0	25	32	38	45	55	65	65	80
	2.1	Nm	Tn	190	330	750	1330	2200	3500	5600	8000	10900	14200	19800
			Tp	290	500	1120	2000	3320	5200	8400	12000	16400	21200	29600
	3	tr/min omw/min rpm min <sup>-1</sup>	min.max.	8000	6800	6000	5000	4300	3600	3200	2800	2500	2300	2000
				16000*	13600*	12000*	10000*	8600*	7200*	6400*	5600*	5000*	4600*	4000*
	12	degré graad degree Grad	ΔK <sub>w</sub>	0,75	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
	12	mm: ±	ΔK <sub>a</sub>	1,2	1	1,2	1,3	1,5	2	2	2,2	2,6	3,3	3,4
	12	mm: ±	ΔK <sub>f</sub>	0	0	0	0	0	0	0	0	0	0	0
	4	kgm <sup>2</sup>	J (WR <sup>2</sup> )	0,001	0,003	0,007	0,015	0,032	0,0683	0,1095	0,2035	0,3493	0,601	1,136
	5	kg		1,91	3,23	5,31	8,3	13,15	21,13	26,21	38,94	54,3	77,35	113,6
mm ±	A	11	mm	76,7	96,5	107	129	150	183	204	235,5	269	300	340
	B		mm	88	102	123	147	166	192	224	244	273	303	340
	D		mm	58,5	69,5	82	97,5	113	132	133	154	175	196	228
	E		mm	35	45	50	60	70	85	95	110	125	140	160
	H		mm	6,7	6,5	7	9	10	13	14	15,5	19	20	20

\* Balancing needed

## SERIES DPU

The easy to assemble High Torque/High Misalignment Solution

Maximum torque capacity: up to 23100 Nm - Bore Capacity: up to 220 mm



### Easy assembly and disassembly

Thanks to the standard use of shipping screws and the factory assembled transmission unit, Escodisc DPU couplings combine the high torque and misalignment capacity of the DMU couplings with easiness of assembly. On average users can cut down assembly and disassembly costs by 50% when using Escodisc DPU couplings. Furthermore, because the transmission unit is factory assembled, the risk for assembly errors is reduced to an absolute minimum level which results in reliable operation and extended life of the coupling.

### High Speed/Long DBSE applications

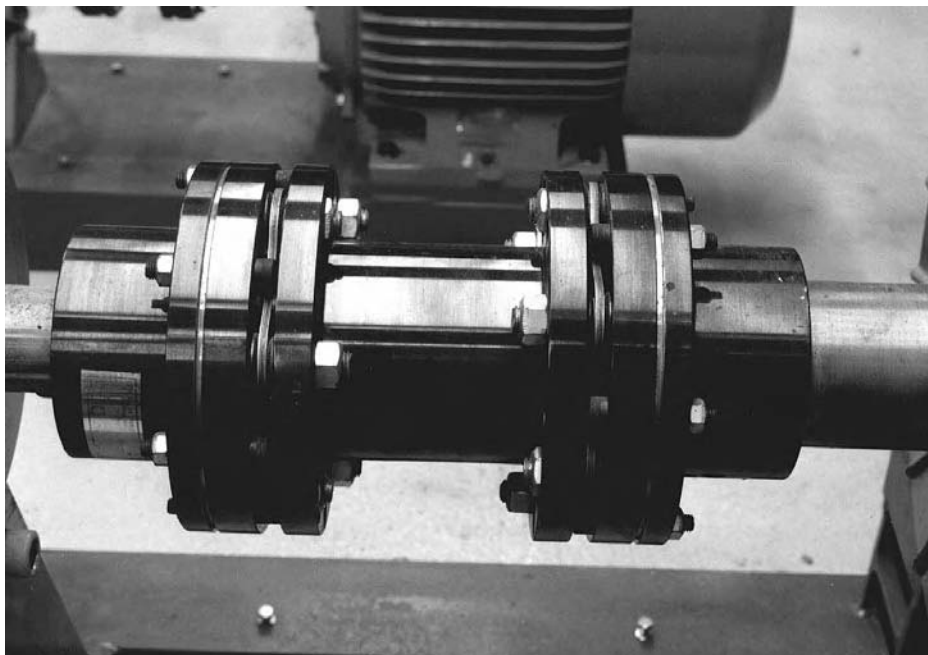
Thanks to the concept of the DPU coupling range (centring spigots) and the high manufacturing standards, it is ideal for use in medium to high speed applications with no or minor modifications. Furthermore, thanks to the perfect centring of the transmission unit, it can be used in applications where a long DBSE is required (e.g. cooling towers) and it can be adapted to meet the API 671 requirements.

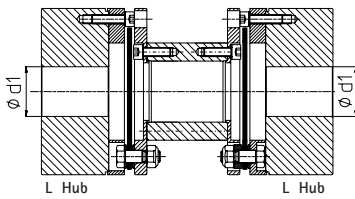
### Large Bore Capacity

The Large Hub execution (L-hub) of the Escodisc DPU series makes selection virtually independent of the shaft size which makes it possible in several applications to downsize compared with DLC or DMU type couplings.

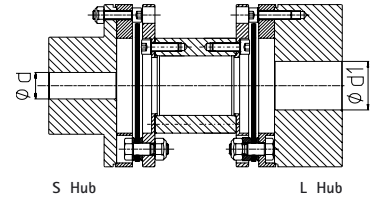
## Escodisc Series DPU - Quick Selection Table

Coupling size	Maximum Power (kW)															Max. Speed (Rpm)	Max. Bore	
	1000 Rpm			1500 Rpm			1800 Rpm			3000 Rpm			3600 Rpm				S-Hub (mm)	L-Hub (mm)
	SF 1	SF 1,5	SF 2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2	SF 1	SF 1,5	SF2			
DPU 38-60	20	13	10	30	20	15	36	24	18	60	40	30	72	48	36	24000	45	60
DPU 45-70	35	23	17	52	35	26	62	41	31	104	69	52	124	83	62	20400	55	70
DPU 55-80	79	52	39	118	79	59	141	94	71	236	157	118	283	188	141	18000	65	80
DPU 65-100	139	93	70	209	139	104	251	167	125	418	279	209	501	334	251	15000	75	100
DPU 75-110	230	154	115	346	230	173	415	276	207	691	461	346	829	553	415	12900	90	110
DPU 85-130	366	244	183	550	366	275	660	440	330	1099	733	550	1319	880	660	10800	105	130
DPU 95-145	696	464	348	1044	696	522	1253	836	627	2089	1393	1044	2507	1671	1253	9600	105	145
DPU 110-160	979	653	490	1469	979	734	1762	1175	881	2937	1958	1469	3525	2350	1762	8400	120	160
DPU 125-180	1330	887	665	1995	1330	997	2394	1596	1197	3990	2660	1995	4887	3192	2394	7500	135	180
DPU 140-200	1738	1159	869	2607	1738	1304	3129	2086	1564	5215	3476	2607	6258	4172	3129	6900	160	200
DPU 160-220	2149	1613	1075	3626	2418	1813	4358	2906	2179	7624	4843	3812	8719	5811	4359	6000	185	220

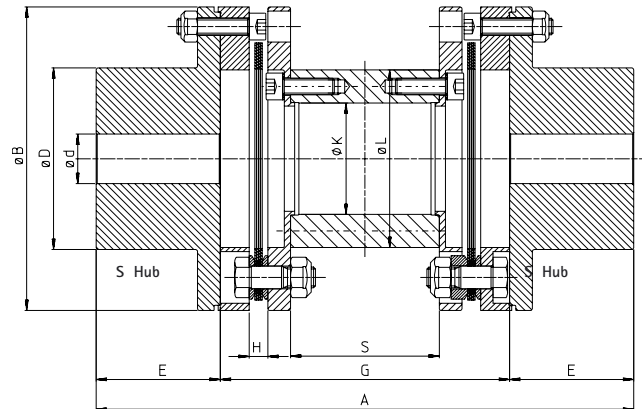




DPU 38-60



DPU 160-220



DPUSS

← A105			Type DPU											
			38-60	45-70	55-80	65-100	75-110	85-130	95-145	110-160	125-180	140-200	160-220	
	d	∅ max.	45	55	65	75	90	105	105	120	135	160	185	
		∅ min.	0	0	0	25	32	38	45	55	65	65	80	
	d1	∅ max.	60	70	80	100	110	130	145	160	180	200	220	
		∅ min.	0	0	0	25	32	38	45	55	65	65	80	
	1m	Tn	190	330	750	1330	2200	3500	6650	9350	12700	16600	23100	
		Tp	290	500	1120	2000	3320	5200	10000	14000	19100	24900	34650	
	/min.max.	tr/min	8000	6800	6000	5000	4300	3600	3200	2800	2500	2300	2000	
		rpm	24000*	20400*	18000*	15000*	12900*	10800*	9600*	8400*	7500*	6900*	6000*	
	$\Delta K_W$	degré	2x0,75	2x0,5	2x0,5	2x0,5	2x0,5	2x0,5	2x0,33	2x0,33	2x0,33	2x0,33	2x0,33	
		Grad												
	12	mm: ±	2,4	2	2,6	2,8	3,2	4	2,5	2,8	2,6	3	3,4	
	12 13	mm: ±	0,6	0,6	0,6	0,9	0,8	1,1	1	1,4	1,4	1,4	1,4	
	4	kgm²	0,003	0,0057	0,015	0,033	0,07	0,145	0,259	0,475	0,775	1,3	2,39	
	5	kg	3,54	5,49	9,07	14,8	22,8	36,35	47	71,7	94,2	128	179	
mm ±	A	11	mm	170	190	200	260	280	350	370	470	500	530	570
	B		mm	88	102	123	147	166	192	224	244	273	303	340
	D		mm	58,5	69,5	82	97,5	113	132	133	154	175	196	228
	E		mm	35	45	50	60	70	85	95	110	125	140	160
	G	11	mm	100	100	100	140	140	180	180	250	250	250	250
	H		mm	7,1	6,5	7	9	10	13	14	15,5	19	20	20
	K		mm	21	37	48	54	65	76	94	108	123	143	165
	L		mm	41	61	72	86	98	116	134	156	171	191	221
S	11	mm	51,8	53	40	72	54	82	74	122	111	99	89	

4 bolts <

6 bolts

> <

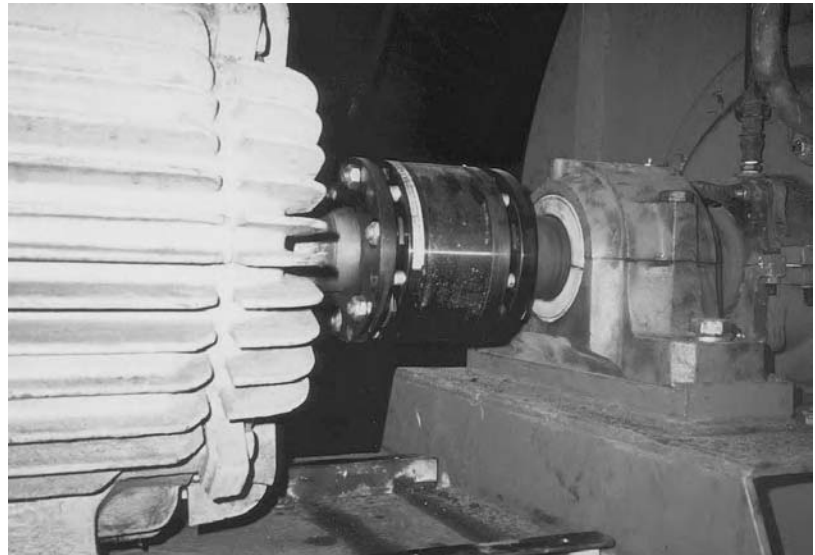
8 bolts

>

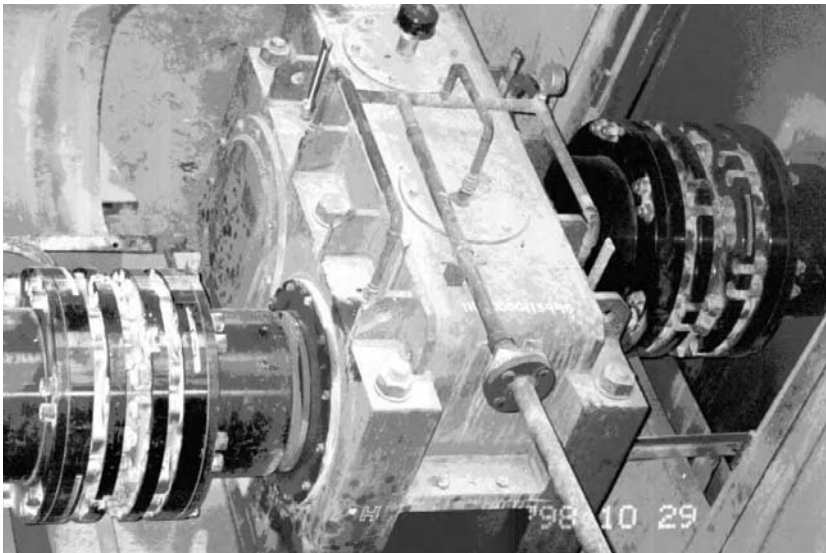
\*Balancing needed - Consult us - • For DPUSS



Torque Capacity (Nm)	Escodisc DPU	Flender ARH	John Crane Flexibox Metastream TSKS	Jaure Lamidisc DO-6	Wellman Bibby Euroflex DJ	Kopflex KD2	Rexnord Thomas Series 71
100	38-60	96-6	0013	110-6	62	053	150
250	45-75	120-6	0033	132-6	82	103	225
500	55-80	142-6	0075	158-6	102	153	300
750							
1000	65-100	162-6	0135	185-6	103	203	350
1500							
2000	75-110	190-6	0230	202-6	122	253	375
3000	85-130	214-6	0350	228-6	142	303	412
5000	95-145	230-6	0500	255-6	162	353	462
			245-6				0740
7500	110-160	275-6	0930	278-6	192	403	562
10000							
	125-180	310-6	1400	302-6	193	453	600
15000	140-200	345-6			232		712
							800

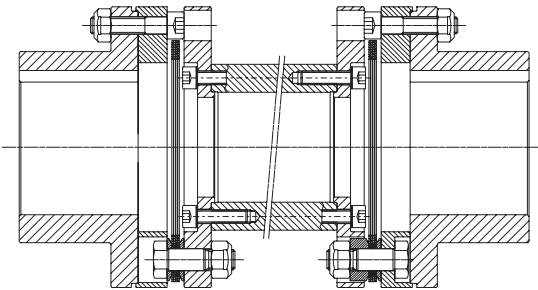


Fan application

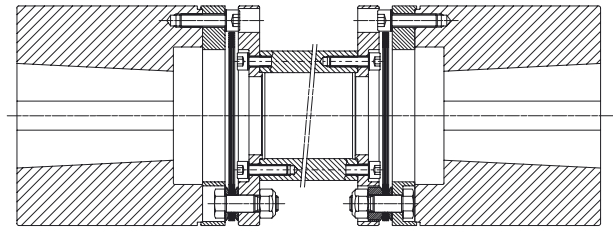


Cement Mill

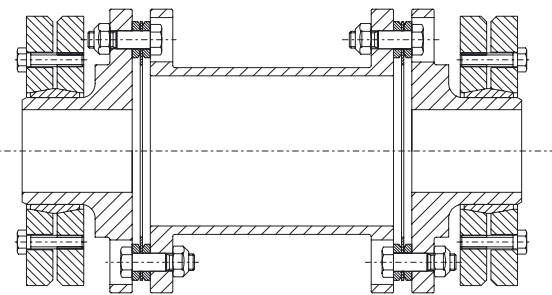
## Escodisc Shaft Connections



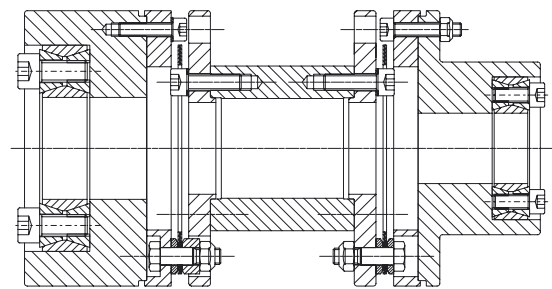
Cylindrical Bore and Keyway  
(Esco uses H7 as standard bore tolerance and keyway is according to DIN 6885/1)



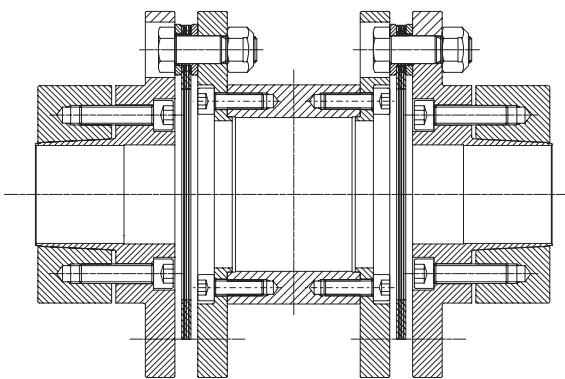
Conical Bore



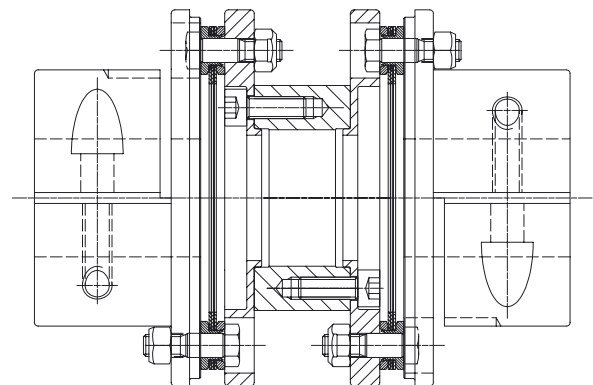
External Clamping Device



Internal Clamping Device



Clamping Hubs



Split Clamping Hubs

For more details on the above mentioned Shaft Connections - Please Consult us

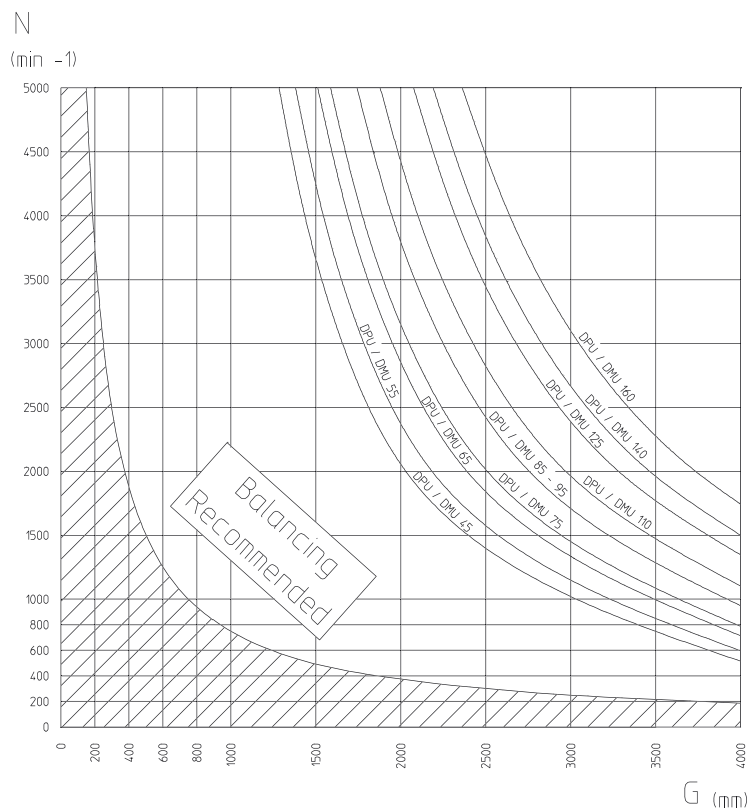
# Balancing of escodisc couplings

## 1. Balancing Requirements

The actual requirement for balancing of a coupling depends amongst other on:

- Manufacturing quality of the coupling (Natural Inherent Balance Quality)
- Application speed
- The mass of the coupling (relative to the masses of the machine rotors)
- Distance between shaft ends
- Sensitivity of the system

Thanks to their high manufacturing quality, escodisc couplings have a high degree of natural inherent balance and generally don't require additional balancing for normal speed applications. Up to size 95, escodisc DLC/DMU/DPU couplings have a minimum balance quality of Q6.3 at 1500 rpm. For larger sizes, Q6.3 is guaranteed without any additional balancing until 1000 rpm. In the below graph you can find when additional balancing is required based on application speed and DBSE. Also you can find the maximum limits for high speed/long DBSE applications based on the coupling size. Above these limits, please consult us. For applications requiring additional balancing, the use of DLC couplings is not recommended.



## 2. Esco Balancing Procedures

Based on the application data or specific customer requirements, Esco Transmissions will perform a component balancing to Q6.3 or Q2.5 (as specified - Q1 is obtainable yet not advisable for standard couplings) for standard couplings and a component balancing followed by an assembly balancing procedure for high speed applications. Esco transmissions will also perform balancing before the keyway, if any, is shaped in the coupling. Other balancing options are of course available upon request but must be clearly specified when ordering.

Remark: for DMU couplings, only component balancing is possible.

## Escodisc References

Since 1986 escodisc standard, as well as special couplings have been in use in the chemical, petrochemical, pulp, paper, printing, textile, steel, cement and general machine building industry to full customer satisfaction. The field of application is various going from pumps, compressors, fans, turbines to water treatment installations, machining centers to even test benches for Formula 1 racing car...

Thanks to this, esco has built up a level of expertise and knowledge from which our customers can benefit.

ABB Lumus Global  
Belgian Refining Corporation  
BP Amoco Chemicals  
Cockerill Sambre  
Corus Steel  
Dow Chemicals  
Fina Refinery  
Flowserve Corporation  
Howden  
KSB Pumps  
Pasaban  
Pompes d'Enival  
Shell International  
Siam Cement  
Solvay  
Stora Cell  
THY Marcinelle  
Valmet



## SERIE DL

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1. Introduction
2. Preparation
3. Warnings
4. Assembly
5. Inspection and maintenance

### INSTALLATION & MAINTENANCE



# ESCODISC SERIE DL

## 1. INTRODUCTION –

Coupling must be selected properly according to selection chart A 103, A 104 and A 105 and corresponding charts (A110, A111 and A112). These documents are available in coupling catalogue ESCODISC or on our web site « [www.escocoupling.com](http://www.escocoupling.com) ». Maximum misalignment figures at assembly are given in this document (see point 4: assembly). Max misalignment figures in operation (combination of radial, angular and axial) are given in ESCODISC catalogue. Max misalignment values may not be applied simultaneously as mentioned in selection chart A 104. In case of any change or adaptation not performed by ESCO on the coupling, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the coupling and the connected machines. It is customer responsibility to make sure that shaft and key material, size and tolerance suit the application. Maximum bore capacity is given in the catalogue. If key assembly is not calculated and machined by ESCO, it is customer responsibility to make sure that hub length, bore size and machining tolerances will transmit the torque. If interference fit is not calculated and machined by ESCO, it is customer responsibility to make sure that interference and machining tolerances will transmit the torque and not exceed hub material permissible stress. The hubs must be axially secured on the shaft by means of a setscrew, an end plate or a sufficient interference. In case of spacer not supplied by ESCO, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the Discs. It is customer responsibility to protect

## 2. PREPARATION

Ensure the conformity of the supplied equipment:

- Verify coupling size and conformity (see catalogue or web site).
- Identify any damaged and/or missing parts.
- Verify conformity of the coupling/machine interfaces.

Coupling original protection allows for storage indoors dry 18 months, indoors humid 12 months, outdoors covered: 9 months and outdoors open 3 months. For longer periods, it is customer responsibility to protect the parts properly. Instructions are a part of the supply of the coupling. Be sure valid and complete assembly, operation and maintenance instructions are available. Make sure they are well understood. In case of doubt, refer to ESCO. Assembly, disassembly and maintenance must be performed by qualified, trained and competent fitters. Before starting with assembly, disassembly and maintenance, verify the availability of the tooling necessary

- To manipulate the parts
- To assemble the interfaces
- To align the coupling
- To tighten the screws and nuts.

## 3. WARNINGS

Before removing the coupling guard and proceeding with any assembly, operation or maintenance operation of the coupling, make sure the complete system is completely shut down and definitively disengaged from any possible source of rotation, such as, for example:

- Electrical power supply.
- Any loss of braking effect.

Make sure everyone attending the equipment area will be properly informed (for example by means of warnings properly located) about the maintenance or assembly situation.

In case of use in explosive atmospheres  $\text{Ex}$ , specific protective measures must be considered. They are described in an extra attachment (IM/A100-Ex) to the actual instructions with the couplings marked  $\text{Ex}$ .

## 4. ASSEMBLY

### 4.0. WARNING

- 4.0.1 The hubs (1) and the spacer (2) are supplied unassembled. The discs (3) are supplied packed with the screws and nuts (4) under plastic film to ensure a perfect protection. They will only be unpacked during final mounting on the machine.
- 4.0.2 If coupling is supplied rough bored, bore and keyway must be machined in hubs (1). When machining the bore, surface marked (M) must be taken as the turning reference.

### 4.1. ASSEMBLY

- 4.1.1 Ensure that parts are clean and mount the hubs (1) in the correct position on the shafts of the machines (the flange at the shaft end for the DLC Series, the flange at the machine side for the DLCC Series). Hub faces must be flush with shaft end. In case of doubt, please consult us. Introduce setscrew on key with Loctite and tighten properly. In case of interference fit, refer to ESCO for proper instructions
- 4.1.2 Position the machines to be connected (for DLCC Series, the spacer (2) and the discs (3) must be placed on the hubs (1) during the installation, see also point 4.1.4 and check distance G between the hubs (for the DLCC Series, check also distance A). See tabulation or approved drawing for distance G following type of coupling. In case of doubt, please consult us.
- 4.1.3 Align the shafts using an indicator. The alignment precision (X, Y - Z) is given in the tabulation.
- 4.1.4 Ensure that the flanges of the hubs (1) and the spacer (2) are perfectly degreased. Unpack the discs and the screws. Mount the disc (3) on one hub (1) with screws and nuts (4) in the direction shown on the fig. Tighten to torque T while holding the screws still and turning the nuts. See tabulation for tightening torque (T Nm) and socket size (s mm).
- 4.1.5 Install the spacer (2) between the hubs and connect it to the already assembled disc (3) with screws and nuts (4), in the direction shown on the fig. (in case of long spacer, it is essential to support the spacer in position from the beginning to the end of the assembly). Tighten to torque T mentioned while holding the screws still and turning the nuts. See tabulation for tightening torque (T Nm) and socket size (s mm).
- 4.1.6 En
- 4.1.7 Check once again the alignment by measuring the max. value  $H_1$  and the min. value  $H_2$  of the distance between the hub flange and the spacer flange (see figure). See tabulation for the permissible values.

## 5. OPERATION, INSPECTION AND MAINTENANCE

### 5.1. OPERATION AND MAINTENANCE

No maintenance is necessary. It is however recommended to verify the alignment (see point 4.1.7) and the tightening torque of the screws and nuts (5) (see tabulation) after the first running hours. Every 6.000 hours or 12 month, inspect the discs for any fatigue crack and verify alignment.

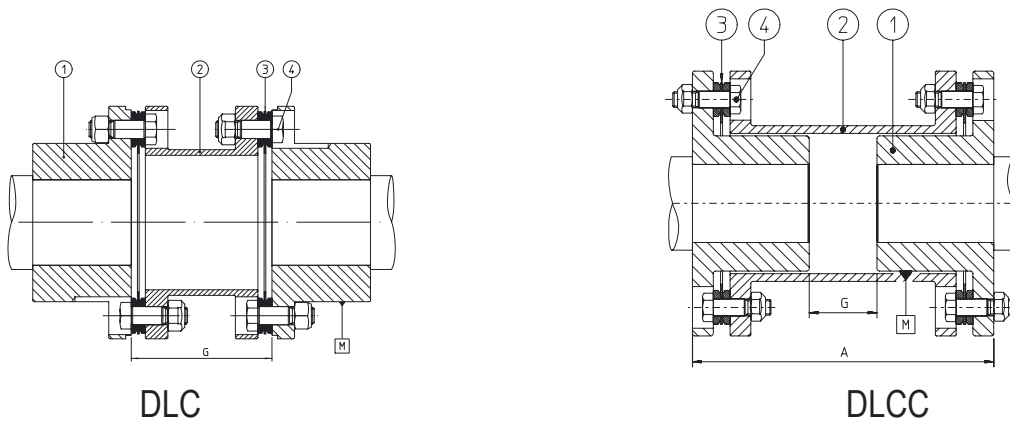
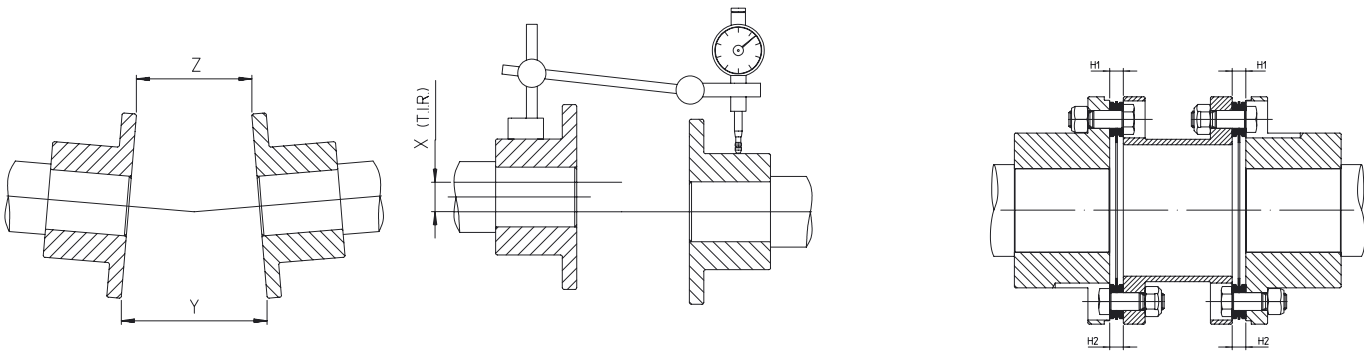
### 5.2. DISASSEMBLY AND INSPECTION

Every 12.000 hours or every 24 month.

- 5.2.1 Remove the screws and nuts (4) each side.
- 5.2.2 Remove the spacer (2) and inspect the discs (3). In case of damage, the disc-pack (3) must be replaced.

SERIE DL

Type Size Typ Tipo Storlek Tamaño Koko	Distances - Afstanden - Abstand Avstand - Distancias - Distanze - Etäisyydet				Alignment - Uitlijning - Alignment - Verlagerung Uppriktning - Alineación - Allineamento - Poikkeamat				T Nm	Socket	
	DLC		DLCC		X mm	Y - Z max. mm	H <sub>1</sub> - H <sub>2</sub> max. mm	H <sub>1</sub> + H <sub>2</sub> 2 mm		Size s mm	Driver mm
	G Standard mm	G (optional) mm	G mm	A mm							
28	100	(140)	56	116	0,10	0,10	0,10	6,5 ± 0,2	12,5	10	1/4
38	100	(140)	46	116	0,10	0,10	0,11	6,7 ± 0,2	12,5	10	1/4
45	100	(140)	26	116	0,10	0,10	0,12	6,5 ± 0,2	12,5	10	1/4
55	100	(140)	22	122	0,10	0,20	0,16	7,0 ± 0,2	30	13	3/8
65	100	(140, 180)	4	122	0,10	0,20	0,19	9,0 ± 0,2	60	17	1/2
75	100	(140, 180)	4	132	0,10	0,20	0,22	10,0 ± 0,3	100	19	1/2
85	140	(180, 250)	4	174	0,15	0,25	0,25	13,0 ± 0,4	160	22	1/2



DLC

DLCC



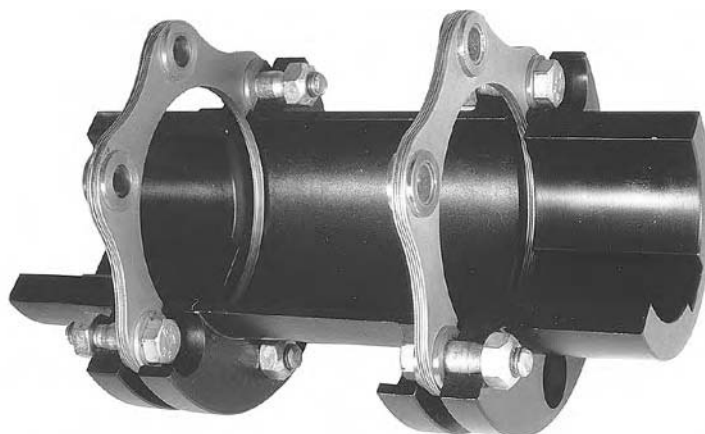


## SERIE DMU

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1. Introduction
2. Preparation
3. Warnings
4. Assembly
5. Inspection and maintenance

### INSTALLATION & MAINTENANCE



# ESCODISC SERIE DMU

## 1. INTRODUCTION

Coupling must be selected properly according to selection chart A 103, A 104 and A 105 and corresponding chart (A115). These documents are available in coupling catalogue ESCODISC or on our web site « [www.escocoupling.com](http://www.escocoupling.com) ». Maximum misalignment figures at assembly are given in this document (see point 4: assembly). Max misalignment figures in operation (combination of radial, angular and axial) are given in ESCODISC catalogue. Max misalignment values may not be applied simultaneously as mentioned in selection chart A 104. In case of any change or adaptation not performed by ESCO on the coupling, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the coupling and the connected machines. It is customer responsibility to make sure that shaft and key material, size and tolerance suit the application. Maximum bore capacity is given in the catalogue. If key assembly is not calculated and machined by ESCO, it is customer responsibility to make sure that hub length, bore size and machining tolerances will transmit the torque. If interference fit is not calculated and machined by ESCO, it is customer responsibility to make sure that interference and machining tolerances will transmit the torque and not exceed hub material permissible stress. The hubs must be axially secured on the shaft by means of a setscrew, an end plate or a sufficient interference. In case of spacer not supplied by ESCO, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the Discs. It is customer responsibility to protect the coupling by p.ex. a coupling guard and to comply with the local safety rules regarding the protection of rotating parts.

## 2. PREPARATION

Ensure the conformity of the supplied equipment:

- Verify coupling size and conformity (see catalogue or web site).
- Identify any damaged and/or missing parts.
- Verify conformity of the coupling/machine interfaces.

Coupling original protection allows for storage indoors dry 18 months, indoors humid 12 months, outdoors covered: 9 months and outdoors open 3 months. For longer periods, it is customer responsibility to protect the parts properly. Instructions are a part of the supply of the coupling. Be sure valid and complete assembly, operation and maintenance instructions are available. Make sure they are well understood. In case of doubt, refer to ESCO. Assembly, disassembly and maintenance must be performed by qualified, trained and competent fitters. Before starting with assembly, disassembly and maintenance, verify the availability of the tooling necessary



- To manipulate the parts
- To assemble the interfaces
- To align the coupling
- To tighten the screws and nuts.

## 3. WARNINGS

Before removing the coupling guard and proceeding with any assembly, operation or maintenance operation of the coupling, make sure the complete system is completely shut down and definitively disengaged from any possible source of rotation, such as, for example:

- Electrical power supply.
- Any loss of braking effect.

Make sure everyone attending the equipment area will be properly informed (for example by means of warnings properly located) about the maintenance or assembly situation.

In case of use in explosive atmospheres , specific protective measures must be considered. They are described in an extra attachment (IM/A100-Ex) to the actual instructions with the couplings marked .

## 4. ASSEMBLY

### 4.0. WARNING

4.0.1 The hubs (1) and the spacer (4) are supplied unassembled. The disc-packs (3) are supplied packed with the screws (2) and nuts (5) under plastic film to ensure a perfect protection. They will only be unpacked during final mounting on the machine.

4.0.2 If coupling is supplied rough bored, bore and keyway must be machined in hubs (1). When machining the bore, surface marked (M) must be taken as the turning reference.

### 4.1. ASSEMBLY

4.1.1 Ensure that parts are clean and mount the hubs (1) in the correct position on the shafts of the machines (the flange at the shaft end). Hub faces must be flush with shaft end. In case of doubt, please consult us. Introduce setscrew on key with Loctite and tighten properly. In case of interference fit, refer to ESCO for proper instructions

4.1.2 Position the machines to be connected and check distance G between the hubs (fig. 1). See tabulation or approved drawing for distance G following type of coupling. In case of doubt, please consult us.

4.1.3 Align the shafts using an indicator. The alignment precision (X, Y - Z) is given in the tabulation.

4.1.4 Ensure that the flanges of the hubs (1) and the spacer (4) are perfectly degreased. Unpack the discs and the screws. Mount the disc-pack (3) on one hub (1) with screws (2) and nuts (5) in the direction shown on the fig 2. Tighten to torque T mentioned while holding the screws still and turning the nuts. See tabulation for tightening torque (T Nm) and socket size (s mm).

4.1.5 Install the spacer (4) between the hubs and connect it to the already assembled disc-pack (3) with screws (2) and nuts (5), in the direction shown on the fig. 3 (in case of long spacer, it is essential to support the spacer in position from the beginning to the end of the assembly). Tighten to torque T mentioned in the tabulation while holding the screws still and turning the nuts.

4.1.6 Engage the fig. 4).

4.1.7 Check once again the alignment by measuring the max. value H<sub>1</sub> and the min. value H<sub>2</sub> of the distance between the hub flange and the spacer flange (see figure 5). See tabulation for the permissible values.

## 5. OPERATION, INSPECTION AND MAINTENANCE

### 5.1. OPERATION AND MAINTENANCE

No maintenance is necessary. It is however recommended to verify the alignment (see point 4.1.7) and the tightening torque of the screws (2) and nuts (5) (see tabulation) after the first

### 5.2. DISASSEMBLY AND INSPECTION

Every 12.000 hours or every 24 month.

5.2.1 Remove the screws (2) and nuts (5) each side.

5.2.2 Remove the spacer (4) and inspect the discs (3). In case of damage, the disc-pack (3) must be replaced.

SERIE DMU

Type Size Typ Tipo Storlek Tamaño Koko	Distances - Afstanden - Abstand - Avstand Distancias - Distanze - Etäisyydet		Alignment - Uitlijning - Alignment - Verlagerung Uppriktning - Alineación - Allineamento - Poikkeamat				T Nm	Socket	
	DBSE		X mm	Y - Z max. mm	H <sub>1</sub> - H <sub>2</sub> max. mm	$\frac{H_1 + H_2}{2}$ mm		Size s mm	Driver mm
	G Standard mm								
38	100		0,10	0,10	0,11	$6,7 \pm 0,15$	14	10	1/4
45	100		0,10	0,10	0,12	$6,5 \pm 0,20$	14	10	1/4
55	100		0,10	0,20	0,15	$7,0 \pm 0,2$	34	13	3/8
65	100		0,10	0,20	0,18	$9,0 \pm 0,20$	67	17	1/2
75	140		0,12	0,20	0,20	$10,0 \pm 0,30$	114	19	1/2
85	140		0,12	0,25	0,23	$13,0 \pm 0,40$	180	22	1/2
95	140		0,12	0,25	0,27	$14,0 \pm 0,40$	277	24	1/2
110	180		0,15	0,30	0,30	$15,5 \pm 0,40$	380	27	3/4
125	180		0,20	0,30	0,33	$19,0 \pm 0,50$	540	30	3/4
140	250		0,20	0,40	0,37	$20,0 \pm 0,60$	725	32	3/4
160	250		0,20	0,40	0,42	$20,0 \pm 0,70$	920	36	3/4

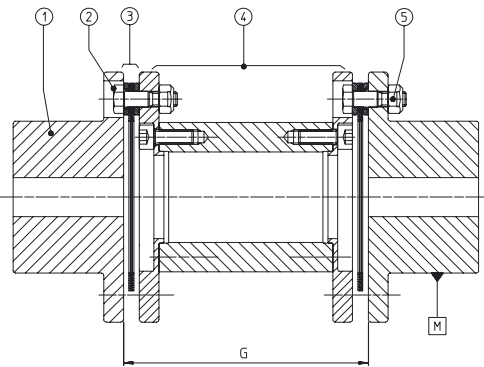


FIG. 1

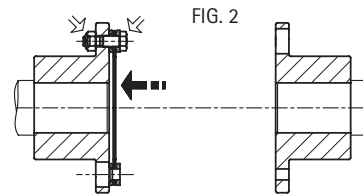


FIG. 2

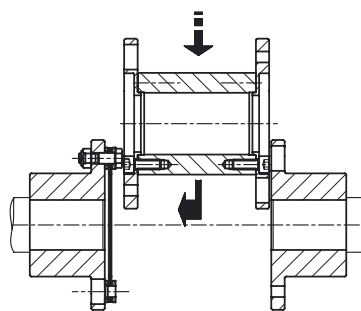


FIG. 3

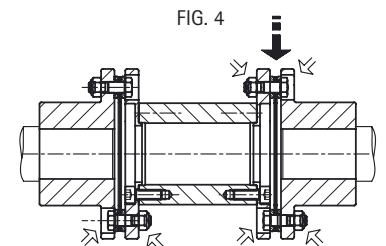


FIG. 4

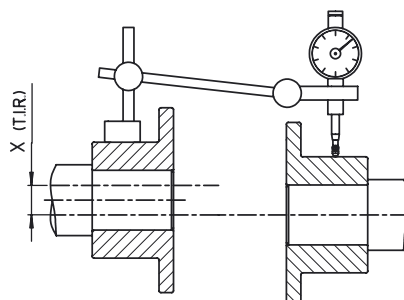
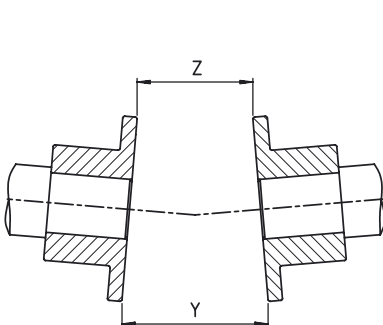
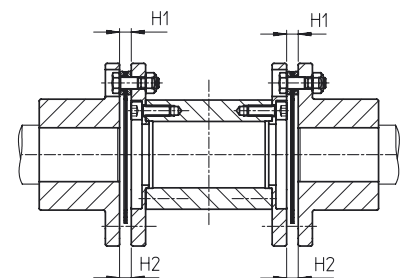


FIG. 5



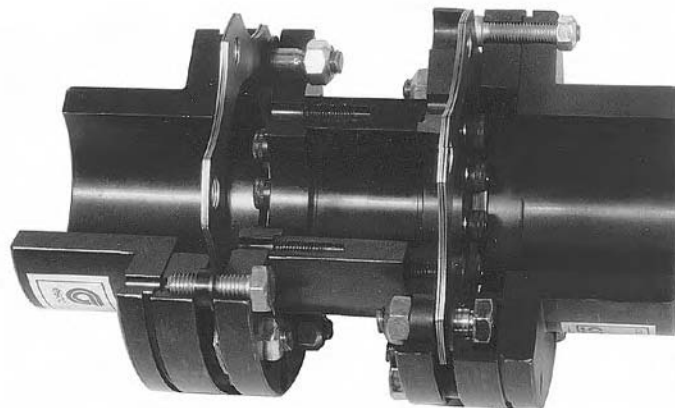


## SERIE DPU

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1. Introduction
2. Preparation
3. Warnings
4. Assembly
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### INSTALLATION & MAINTENANCE



# ESCODISC SERIE DPU

## 1. INTRODUCTION

Coupling must be selected properly according to selection chart A 103, A 104 and A 105 and corresponding chart (A121). These documents are available in coupling catalogue ESCODISC or on our web site « [www.escocoupling.com](http://www.escocoupling.com) ». Maximum misalignment figures at assembly are given in this document (see point 4: assembly). Max misalignment figures in operation (combination of radial, angular and axial) are given in ESCODISC catalogue. Max misalignment values **may not be applied simultaneously** as mentioned in selection chart A 104. In case of any change or adaptation not performed by ESCO on the coupling, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the coupling and the connected machines. It is customer responsibility to make sure that shaft and key material, size and tolerance suit the application. Maximum bore capacity is given in the catalogue. If key assembly is not calculated and machined by ESCO, it is customer responsibility to make sure that hub length, bore size and machining tolerances will transmit the torque. If interference fit is not calculated and machined by ESCO, it is customer responsibility to make sure that interference and machining tolerances will transmit the torque and not exceed hub material permissible stress. The hubs must be axially secured on the shaft by means of a setscrew, an end plate or a sufficient interference. In case of spacer not supplied by ESCO, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the Discs. It is customer responsibility to protect the coupling by p.ex. a coupling guard and to comply with the local safety rules regarding the protection of rotating parts.

## 2. PREPARATION

Ensure the conformity of the supplied equipment:

- Verify coupling size and conformity (see catalogue or web site).
- Identify any damaged and/or missing parts.
- Verify conformity of the coupling/machine interfaces.

Coupling original protection allows for storage indoors dry 18 months, indoors humid 12 months, outdoors covered: 9 months and outdoors open 3 months. For longer periods, it is customer responsibility to protect the parts properly. Instructions are a part of the supply of the coupling. Be sure valid and complete assembly, operation and maintenance instructions are available. Make sure they are well understood. In case of doubt, refer to ESCO. Assembly, disassembly and maintenance must be performed by qualified, trained and competent fitters. Before starting with assembly, disassembly and maintenance, verify the availability of the tooling necessary

- To manipulate the parts
- To assemble the interfaces
- To align the coupling
- To tighten the screws and nuts.

## 3. WARNINGS

Before removing the coupling guard and proceeding with any assembly, operation or maintenance operation of the coupling, make sure the complete system is completely shut down and definitively disengaged from any possible source of rotation, such as, for example:

- Electrical power supply.
- Any loss of braking effect.

Make sure everyone attending the equipment area will be properly informed (for example by means of warnings properly located) about the maintenance or assembly situation.

**In case of use in explosive atmospheres , specific protective measures must be considered. They are described in an extra attachment (IM/A100-Ex) to the actual instructions with the couplings marked .**

### 4.0. WARNING

- 4.0.1 The pack sub-assembly (1) including flange DP (1.1) discs (1.2), sandwich flange (1.3) and bolts and nuts (1.4) has to be considered as one single component. Bolts have been factory tightened for optimal torque transmission and infinite life. It may not be disassembled. Any external intervention to this sub-assembly (torquing bolts and nuts, separating components) will automatically cancel suppliers guarantee, customer being fully responsible of any operation risk and damage.
- 4.0.2 The pack sub-assembly (1) is supplied compressed and fixed by shipping screws (15). This arrangement protects the flexible discs during storage and shipment and makes assembly easier. These shipping screws (15) must be removed at assembly and before starting the machines (see point 4.1.5).
- 4.0.3 If coupling is supplied roughly bored, bore and keyway must be machined in hubs (8) and (9). When machining the bore, surface marked (M) must be taken as the turning reference.
- 4.0.4 It is customer's responsibility to protect the coupling and to conform his equipment do local safety legislation.

### 4.1. ASSEMBLY

- 4.1.1 Install hubs (8) and (9) on their respective shafts in their proper position (see fig. 6). Hub faces must be flush with shaft end. In case of doubt, please consult us. Introduce setscrew on key with Loctite and tighten properly. In case of interference fit, refer to ESCO for proper instructions.
- 4.1.2 Position units to be connected and check distance G between the hubs. See tabulation or approved drawing for correct distance G, according to coupling type. In case of doubt, please consult us.
- 4.1.3 Align the two shafts using an indicator. Alignment precision (X and Y - Z) is given in alignment tabulation (fig. 6).
- 4.1.4 Ensure that both spacer ends (2) and DP flange (1.1) are perfectly degreased. Mount (see fig. 2) hub sub-assemblies (1) on spacer (2) with screws (3) and washers (4). Tighten screws (3) uniformly (tightening torque T3). See tabulation for correct tightening torque (Spacer T3 Nm) and key size (s mm).
- 4.1.5 Ensure that both hub faces (8) and (9) and sandwich flange (1.3) are perfectly degreased. Introduce floating assembly between the two hubs (fig. 3). Remove the shipping screws (15) with rings (17) and shipping inserts (16) at each end (fig. 4). The floating assembly must be maintained in position by the two hubs (8)
- 4.1.6 Engage the 6 or 8 screws (5) and washers (6) or/and the 6 or 8 screws and nuts (7) (following case) in each hub (fig. 5). Tighten the screws (5) or (7) uniformly (tightening torque T5). See tabulation for correct tightening torque T5 Nm and Allen key (s mm).
- 4.1.6a ASSEMBLY DPULE (limited end float)  
During assembly of each 6 or 8 screws (5) and washers (6) or/and each 6 or 8 screws and nuts (7) (following case) and on each side, slip one « axial limiter short » between the DP flange (1.1) and the sandwich flange (1.3) of the pack sub-assembly (1) and one « axial limiter long » in each hole of the DP flange (1.1) (fig. 7). Tighten the screws (5) or (7) uniformly (tightening torque T5). See tabulation for correct tightening torque T5 Nm and Allen key (s mm).
- 4.1.7 Check once again alignment and axial distance by measuring max. value H1 and min. value H2 of the distance between flange DP (1.1) and sandwich flange 1.3) (see figure). See alignment tabulation for permissible values.

## 5. OPERATION, INSPECTION AND MAINTENANCE

### 5.1. OPERATION AND MAINTENANCE

No maintenance is necessary; however, it is recommended to verify alignment (see point 4.1.7) and tightening torque of the screws (5) (see point 4.1.6) after the first

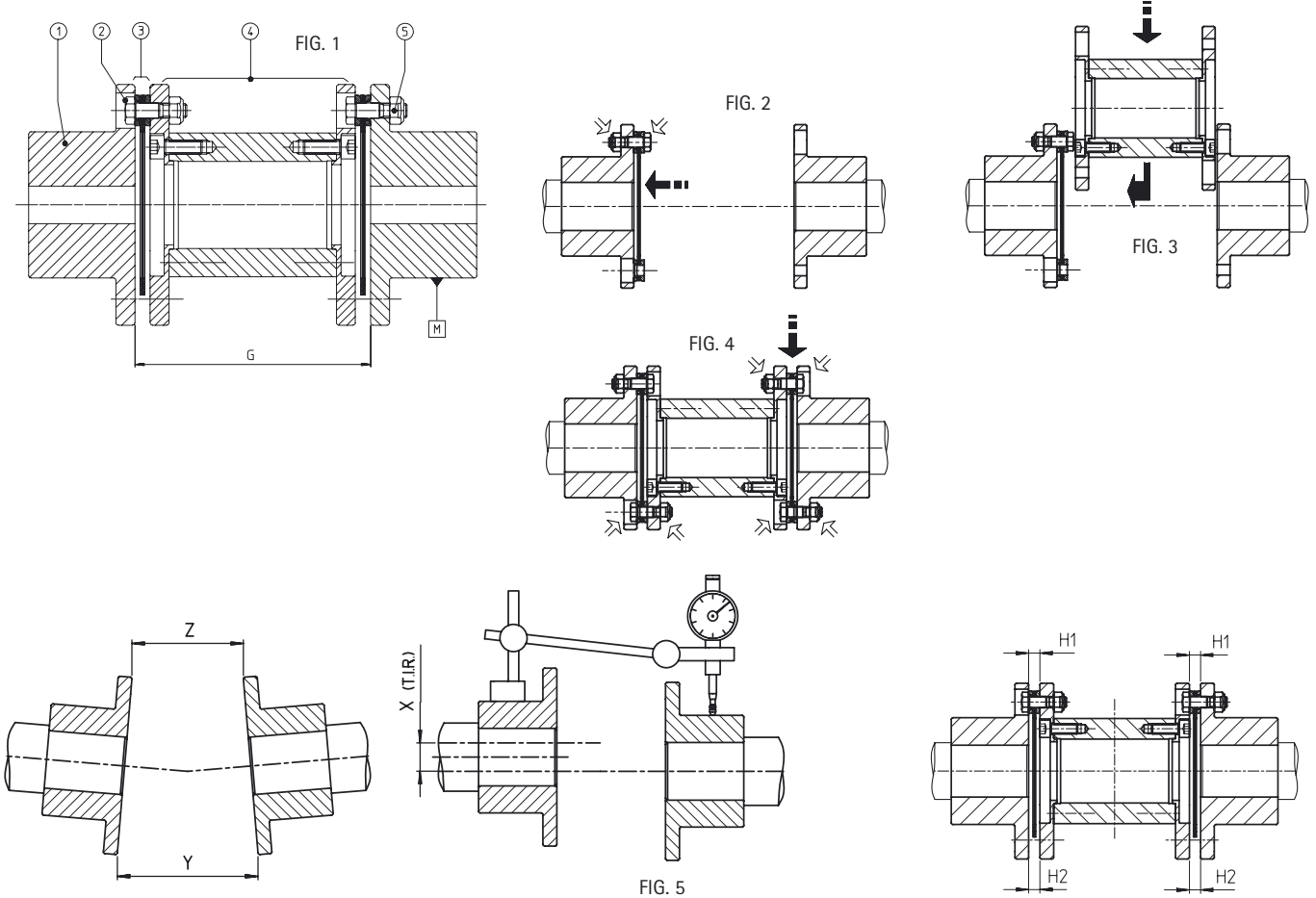
### 5.2. DISASSEMBLY AND INSPECTION

Every 12.000 hours or every 24 month.

- 5.2.1 Remove the 6 screws (5) or (7) (according to the case) each side. Introduce the shipping screws (15) and shipping inserts (16) and tighten the screws (15) to compress pack sub-assembly (1). Note that the minimum distance H0 in stationary condition between flange DP (1.1) and sandwich flange (1.3) should never be less than H0 given in tabulation.
- 5.2.2 Remove floating assembly (2) and inspects discs (1.2) without dismounting hub sub-assembly (1) (see point 4.0.1). In case of damage, complete sub-assembly (1) must be replaced.

# SERIE DMU

Type Size Typ Tipo Storlek Tamaño Koko	Distances - Afstanden - Abstand - Avstand Distancias - Distanze - Etäisyydet				Alignment - Uitlijning - Alignment - Verlagerung Uppriktning - Alineación - Allineamento - Poikkeamat				Socket		
	DBSE				X mm	Y - Z max. mm	H <sub>1</sub> - H <sub>2</sub> max. mm	$\frac{H_1 + H_2}{2}$ mm			T Nm
	G Standard mm										
38	100				0,12	0,24	0,24	$6,7 \pm 0,25$	14	10	1/4
45	100				0,08	0,16	0,17	$6,5 \pm 0,20$	14	10	1/4
55	100				0,08	0,16	0,19	$7,0 \pm 0,25$	34	13	3/8
65	100				0,08	0,16	0,21	$9,0 \pm 0,25$	67	17	1/2
75	140				0,11	0,22	0,26	$10,0 \pm 0,30$	114	19	1/2
85	140				0,11	0,22	0,28	$13,0 \pm 0,40$	180	22	1/2
95	140				0,11	0,22	0,30	$14,0 \pm 0,40$	277	24	1/2
110	180				0,14	0,28	0,36	$15,5 \pm 0,45$	380	27	3/4
125	180				0,14	0,28	0,38	$19,0 \pm 0,50$	540	30	3/4
140	250				0,20	0,40	0,46	$20,0 \pm 0,65$	725	32	3/4
160	250				0,20	0,40	0,50	$20,0 \pm 0,70$	920	36	3/4
190	250				0,13	0,26	0,35	$19,25 \pm 0,50$	540	30	3/4
220	280				0,15	0,29	0,40	$24,6 \pm 0,65$	920	36	3/4
250	300				0,11	0,22	0,34	$38,0 \pm 0,75$	1855	46	3/4
280	340				0,13	0,26	0,37	$41,0 \pm 0,80$	2490	50	1
320	380				0,12	0,23	0,33	$44,9 \pm 0,90$	3180	55	1
360	400				0,13	0,26	0,37	$34,0 \pm 0,60$	3180	55	1







# SERIE DMUCC

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2. Preparation
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4. Assembly
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## INSTALLATION & MAINTENANCE



# ESCODISC SERIE DMUCC

## 1. INTRODUCTION

Coupling must be selected properly according to selection chart A 103, A 104 and A 105 and corresponding chart (A117). These documents are available in coupling catalogue ESCODISC or on our web site « [www.escocoupling.com](http://www.escocoupling.com) ». Maximum misalignment figures at assembly are given in this document (see point 4: assembly). Max misalignment figures in operation (combination of radial, angular and axial) are given in ESCODISC catalogue. Max misalignment values may not be applied simultaneously as mentioned in selection chart A 104. In case of any change or adaptation not performed by ESCO on the coupling, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the coupling and the connected machines. It is customer responsibility to make sure that shaft and key material, size and tolerance suit the application. Maximum bore capacity is given in the catalogue. If key assembly is not calculated and machined by ESCO, it is customer responsibility to make sure that hub length, bore size and machining tolerances will transmit the torque. If interference fit is not calculated and machined by ESCO, it is customer responsibility to make sure that interference and machining tolerances will transmit the torque and not exceed hub material permissible stress. The hubs must be axially secured on the shaft by means of a setscrew, an end plate or a sufficient interference. In case of spacer not supplied by ESCO, it is customer responsibility to size and manufacture it properly to guarantee safe torque transmission and absence of unbalance that could affect the life of the Discs. It is customer responsibility to protect the coupling by p.ex. a coupling guard and to comply with the local safety rules regarding the protection of rotating parts.

## 2. PREPARATION

Ensure the conformity of the supplied equipment:

- Verify coupling size and conformity (see catalogue or web site).
- Identify any damaged and/or missing parts.
- Verify conformity of the coupling/machine interfaces.

Coupling original protection allows for storage indoors dry 18 months, indoors humid 12 months, outdoors covered: 9 months and outdoors open 3 months. For longer periods, it is customer responsibility to protect the parts properly. Instructions are a part of the supply of the coupling. Be sure valid and complete assembly, operation and maintenance instructions are available. Make sure they are well understood. In case of doubt, refer to ESCO. Assembly, disassembly and maintenance must be performed by qualified, trained and competent fitters. Before starting with assembly, disassembly and maintenance, verify the availability of the tooling necessary

- To manipulate the parts    --- To assemble the interfaces
- To align the coupling        --- To tighten the screws and nuts.

## 3. WARNINGS

Before removing the coupling guard and proceeding with any assembly, operation or maintenance operation of the coupling, make sure the complete system is completely shut down and definitively disengaged from any possible source of rotation, such as, for example:

- Electrical power supply.    --- Any loss of braking effect.

Make sure everyone attending the equipment area will be properly informed (for example by means of warnings properly located) about the maintenance or assembly situation.

In case of use in explosive atmospheres  $\text{Ex}$ , specific protective measures must be considered. They are described in an extra attachment (IM/A100-Ex) to the actual instructions with the couplings marked  $\text{Ex}$ .

## 4. ASSEMBLY

### 4.0. WARNING

- 4.0.1 The hub sub-assembly including the hub (1), the disc-pack (2), the rings (3), the screws (C), the nuts (B) and the sandwich flange (5) are factory pre-assembled and may not be disassembled unless in case of disc-pack change (see figure 1 and point 5.2.2).
- 4.0.2 The hub sub-assembly indicated in 4.0.1. is supplied compressed and rigidified with shipping screws (10), rings (9) and inserts (8). These shipping screws must be removed at assembly and before starting the machines (see point 4.1.8.).
- 4.0.3 If hubs are supplied rough bored, bore and keyway must be machined in the hubs (1):
  - Without dismantling the sub-assembly (see point 0.1.)
  - Without dismantling the shipping screws (10)
  - Taking the surface marked (M) as the turning reference.

### 4.1. ASSEMBLY

- 4.1.1 Dismount spacer in two parts (4) by removing screws (7) and washers (6) on both sides.
- 4.1.2 Clean all the parts thoroughly.
- 4.1.3 Mount the hub sub-assemblies on their respective shafts. The hub faces must be flush with the shaft ends. In case of doubt, please consult us.
- 4.1.4 Position the units to be connected and check the distance G between the hubs(for spacer (4) in one piece, check also distance A) . See tabulation or (in case of a sp)
- 4.1.5 Align the two shafts (see figure 2 and 3). Alignment precision (X and Y - Z) is given in tabulation.
- 4.1.6 Ensure that spacer (4) ends and sandwich flanges (5) faces are perfectly degreased. Introduce spacer in two parts (4) between the two sub-assemblies. Engage 2 or 1 screws (7) with their rings (6) in both ends of both spacer parts (4).
- 4.1.7 Remove the shipping screws (10) with their rings (9) and their inserts (8) at each end (see figure 4) and engage the 3 remaining screws (7) with their rings (6) in each spacer end (see figure 4). Tighten screws uniformly using the tightening torque (T1 in Nm) and key size (s mm) indicated in tabulation.
- 4.1.8 Check alignment and axial distance by measuring the max. value H1 and the min. value H2 of the distance between the hub (1) flange and the sandwich flange (5) (see figure 5). See tabulation for permissible values.

## 5. OPERATION, INSPECTION AND MAINTENANCE

### 5.1. OPERATION AND MAINTENANCE

No maintenance is necessary. However it is recommended to verify alignment and tightening torque T1 of the screws (7) after the first running hours. Every 6.000 hours or 12 month, inspect external discs of disc pack for any fatigue crack and verify alignment.

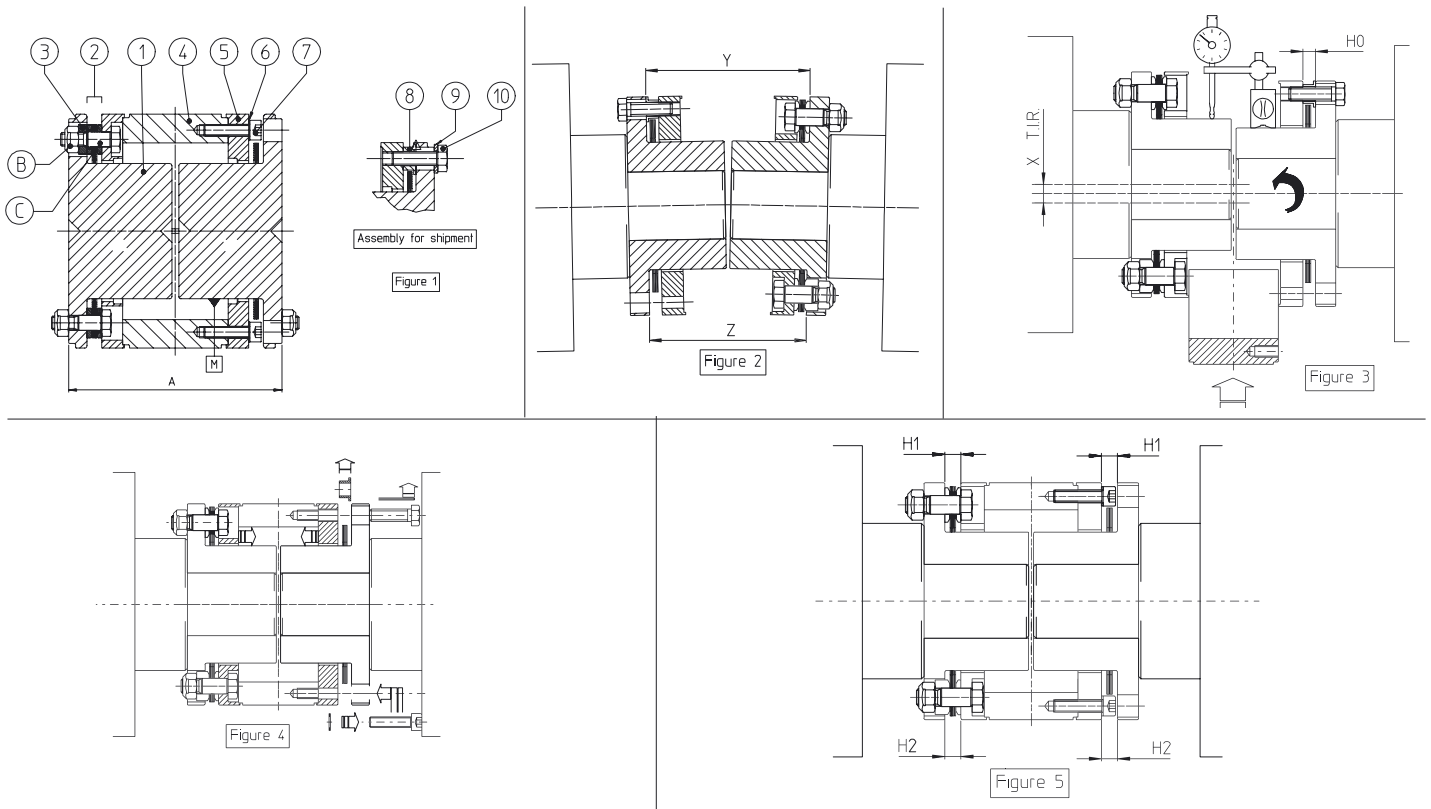
### 5.2. DISASSEMBLY AND INSPECTION

Every 12.000 hours or every 24 month.

- 5.2.1 Remove the 6 screws (7) with their rings (6) on both sides. Introduce the shipping screws (10) with their rings (9) and their inserts (8) at each end and tighten the screws (10) to compress the two disc-packs. Note that the minimum distance H0 in stationary condition between the hub (1) flange and the sandwich flange (5) should never be less than the H0 value given in the tabulation.
- 5.2.2 Remove the spacer (4) in two parts and inspect the discs (2). In case of breakage, the disc-packs (2) must be replaced respecting assembly indicated in the figure 1. The tightening torque T2 (in Nm) and socket size (s mm) of the screws (C) and the nuts (B) is given tabulation.


SERIE DMUCC

Type Size Typ Tipo Storlek Tamaño Koko	Distances - Afstanden - Abstand - Avstand Distancias - Distanze - Etäisyydet DBSE		Alignment - Uitlijning - Alignment - Verlagerung Uppriktning - Alineación - Allineamento - Poikkeamat					Spacer		Disc Pack		
	G Standard mm	A Standard mm	X mm	Y - Z max. mm	H <sub>1</sub> - H <sub>2</sub> max. mm	$\frac{H_1 + H_2}{2}$ mm	H <sub>0</sub> mm	T1 Nm	s mm	T2 Nm	Size mm	Driver mm
	45	3	93	0,10	0,10	0,12	6,5 ± 0,20	5,5	8,1	4	14	10
55	3	103	0,10	0,20	0,16	7,0 ± 0,20	5,7	13,2	5	34	13	3/8
65	4	122	0,10	0,20	0,19	9,0 ± 0,20	7,6	32	6	67	17	1/2
75	4	132	0,10	0,20	0,22	10,0 ± 0,30	8,3	55	8	114	19	1/2
85	4	174	0,20	0,25	0,25	13,0 ± 0,40	11	63	8	180	22	1/2
95	4	194	0,20	0,25	0,29	14,0 ± 0,40	12	100	10	277	24	1/2
110	6	226	0,20	0,30	0,32	15,5 ± 0,50	13,4	108	10	380	27	3/4
125	6	256	0,25	0,30	0,36	19,0 ± 0,50	17,0	180	12	540	30	3/4
140	6	286	0,30	0,40	0,40	20,0 ± 0,50	17,5	230	14	725	32	3/4
160	8	328	0,35	0,40	0,45	20,0 ± 0,60	17,5	280	14	920	36	3/4



# Attachment : Specific Protective Measures Taken for ESCODISC Couplings in case of use in explosive atmospheres.

## 0 Introduction

General assembly and maintenance instructions (called IM/... in this attachment), are established for standard ESCODISC couplings according to the following list:  
IM/A100-2 for ESCODISC DLC couplings - IM/A100-3 for ESCODISC DMU couplings  
IM/A100-4 for ESCODISC DPU couplings - IM/A100-5 for ESCODISC DMUCC couplings  
In case of use in potentially explosive atmospheres , further to the general assembly and maintenance instructions(IM/...), the specific measures described in this attachment must be taken.

## 1 Coupling Selection

The coupling must be selected according to the general assembly and maintenance instructions IM/... .

In explosive atmosphere , the following specific rules must apply:

A Service Factor of 1.5 must be applied on the max torque values for nominal torque (Tn) and peak torque (Tp) given in the charts in catalogue (see Selection chart A104 and A105).

## 2 Use of the coupling

The coupling is dedicated for use in potentially explosive atmospheres according to European Directive 94/9/EC (Atex 100 A).

Coupling is classified in equipment group II, equipment category 2 and 3, intended for use in areas in which explosive atmospheres caused by gases, vapors, mists of air/dust mixtures are likely to occur.

In function of the ambient temperature in the coupling proximity (85, 55, 45°C), the temperature classes have been defined (T4, T5, T6).

This is based on a temperature increase of the machine shafts (in regard of the ambient temperature) that will not exceed 50°C in operation.

The coupling is marked as follows: CE  II 2 G T4/T5/T6 D 120°C -20°C ≤ Ta ≤ 85°C / 55°C / 45°C

This marking covers the T3 temperature category. - This marking covers all gas categories: G IIA, G IIB and G IIC.

## 3. Warnings

The warnings mentioned in the general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere , the following specific warnings must apply:

- Complete machining of the coupling parts (bores, keyways, spacers, floating shafts etc...) must be performed by ESCO Couplings N.V. No modification shall be made on the supplied and marked product without the agreement of ESCO Couplings N.V.
- In case of supply by ESCO Couplings of couplings with a rough bore or a solid bore, the sole allowed operation that may be performed by the customer is the boring and keywaying of the coupling hubs. When machining the bore and the keyway, the following instructions must be followed:
  - This job must be performed by an authorised and adequately trained and informed operator.
  - The bore and keyway tolerances must be selected to insure the proper fit between shaft and bore. In case of loose fit, a set screw must be foreseen to locate the hub axially.
  - The max bore may not exceed the value stated in the catalogue. The tabulated values in the catalogue are based on key dimensions according to ISO R 773.
  - The reference used to centre the piece when boring, is the one referenced D in the figures of the catalogue.
- Before proceeding with any assembly, operation or maintenance operation on the coupling, make sure that the necessary measures have been taken to ensure safety, such as but not limited to:
  - Proper ventilation of the area
  - Proper lightening and electrical tools.
- If hub must be heated for assembly on the shaft, make sure heating source and surface temperature will not affect the safety of the working area.
- It is recommended to have a strong coupling guard, preferably in stainless steel with openings (if any) smaller than the smallest centrifugable part (nut is 10 mm dia). The coupling guard is intended to protect the environment from the centrifugation of any rotating part and the rotating coupling from any falling part. To limit ventilation effects, distance between cover and coupling outside surface should be at least 10 mm.

## 4. Assembly

The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere , the following specific instructions must apply:

Alignment of the machine in cold condition must take into account the possible heat expansion to make sure that in continuous running conditions, max misalignment calculated on the base of selection chart A104 will not exceed 80% of the max allowed value:  $Da/\Delta ka + \alpha/\Delta kw + dr/\Delta kr \leq 0.80$

## 5. Operation

The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere , the following specific instructions must apply:

- Before Start-up
  - Make sure coupling is perfectly clean and properly aligned.
  - Coupling guard must be properly installed and fixed.
  - Make sure, screws, nuts are properly tightened.
  - Monitoring system, if any, must be tested to verify its effectiveness.
- During start up
  - Check for any abnormal noise and/or vibration. If any, immediate stop is mandatory and appropriate action must be taken.
- Checking intervals during operation
  - After the first 3000 hours or 6 months:
    - Inspect external disc for any fatigue crack.
    - Verify alignment
- Continuous checking
  - Immediately stop the machine if noise, vibrations or other abnormal phenomena are detected during operation.
  - Further more, if direct check is not possible for access or safety reasons, proper monitoring system has to be installed to follow up couplings behaviour

## 6. Maintenance

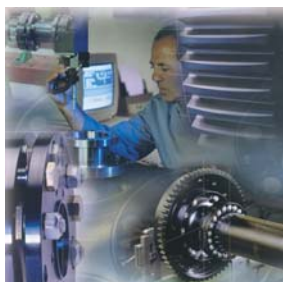
The general assembly and maintenance instructions IM/... must apply in any case.

In explosive atmosphere , the following specific instructions must apply:

- Every 8.000 hours or 18 month:
  - Dismount the coupling and inspect.
  - Proceed as indicated in point 4.



# Other coupling types available



Escogear CST / CST...M



Escogear FST



Escodisc DLC / DMU / DPU



Escogear NST



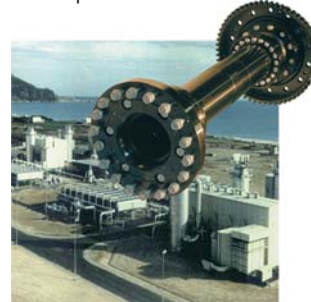
Escoflex A-R-S-T  
Esconyl A-B-C



Escorail FTRN /FTRNO



Escospeed DHSU - GHS



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