TRANSFLUID

trasmissioni industriali

K - CK - CCK

FLUID COUPLINGS

drive with us

INDEX

1. DESCRIPTION

The TRANSFLUID coupling (K series) is a constant fill type, comprising of three main elements:

1 - driving impeller (pump) mounted on the input shaft.
2 - driven impeller (turbine) mounted on the output shaft.
3 - cover, flanged to the outer impeller, with an oil-tight seal.
The first two elements can work both as pump or turbine.

2. OPERATING CONDITIONS

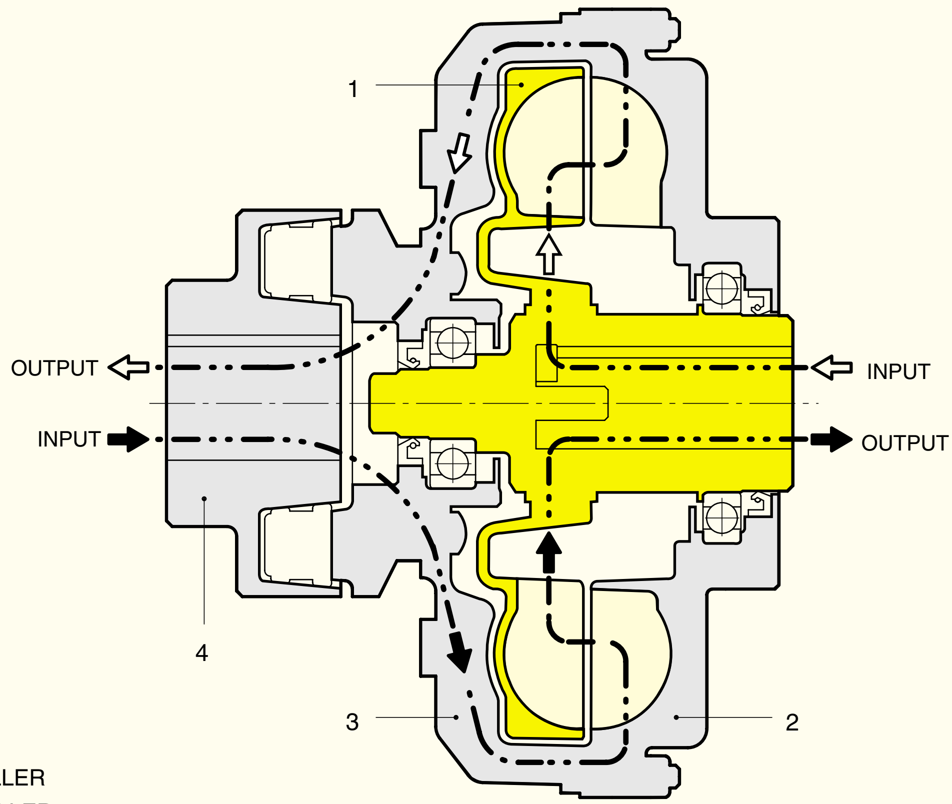
The TRANSFLUID coupling is a hydrodynamic transmission. The impellers perform like a centrifugal pump and a hydraulic turbine. With an input drive to the pump (e.g. electric motor or Diesel engine) kinetic energy is transferred to the oil in the coupling. The oil is forced, by centrifugal force, across the blades of the pump towards the outside of the coupling.
The turbine absorbs kinetic energy and generates a torque always equal to input torque, thus causing rotation of the output shaft. Since there are no mechanical connections, the wear is practically zero.
The efficiency is influenced only by the speed difference (slip) between pump and turbine.

The slip is essential for the correct operation of the coupling - there could not be torque transmission without slip! The formula for slip, from which the power loss can be deduced is as follows:

$$\text{slip \%} = \frac{\text{input speed} - \text{output speed}}{\text{input speed}} \times 100$$

In normal conditions (standard duty), slip can vary from 1,5% (large power applications) to 6% (small power applications).
TRANSFLUID couplings follow the laws of all centrifugal machines:

1 - transmitted torque is proportional to the square of input speed;
2 - transmitted power is proportional to the third power of input speed;
3 - transmitted power is proportional to the fifth power of circuit outside diameter.



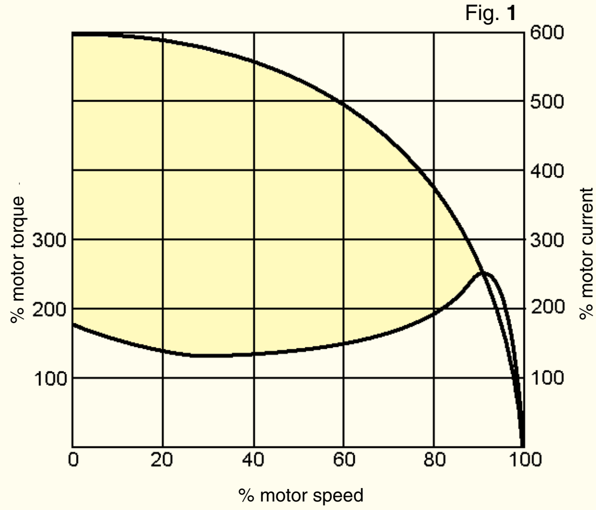
1 - INTERNAL IMPELLER
2 - EXTERNAL IMPELLER
3 - COVER
4 - FLEX COUPLING

2.1 Transfluid coupling fitted on electric motors

Three phase synchronous squirrel cage motors are able to supply maximum torque only, near synchronous speed. Direct starting is the system utilized the most. Figure 1 illustrates the relationship between torque and current. It can be seen that the absorbed current is proportional to the torque only between 85% and 100% of the synchronous speed. With a motor connected directly to the load there are the following disadvantages:

- The difference between available torque and the torque required by the load is very low until the rotor has accelerated to between 80-85% of the synchronous speed.
- The absorbed current is high (up to 6 times the nominal current) throughout the starting phase causing overheating of the windings, overloads in the electrical lines and, in cases of frequent starts, major production costs.
- Over-dimensioned motors caused by the limitations indicated above.

Fig. **1**



To limit the absorbed current of the motor during the acceleration of the load, a (⅄Δ) (wye - delta) starting system is frequently used which reduces the absorbed current by about 1/3 during starting. Unfortunately, during operation of the motor under the delta configuration, the available torque is also reduced by 1/3; and for machines with high inertias to accelerate, over-dimensioning of the motor is still required. Finally, this system does not eliminate current peaks originating from the insertion or the commutation of the device.

Any drive system using a Transfluid fluid coupling has the advantage of the motor starting essentially without load. Figure 2 compares the current demands of an electric motor when the load is directly attached verses the demand when a fluid coupling is mounted between the motor and load. The coloured area shows the energy that is lost, as heat, during start-up when a fluid coupling is not used. A Transfluid fluid coupling reduces the motor's current draw during start-up thus reducing peak current demands. This not only reduces power costs but also reduces brown outs in the power grid and extends the life of the motor. Also at start-up, a fluid coupling allows more torque to pass to the load for acceleration than in drive systems without a fluid coupling.

Fig. **2**

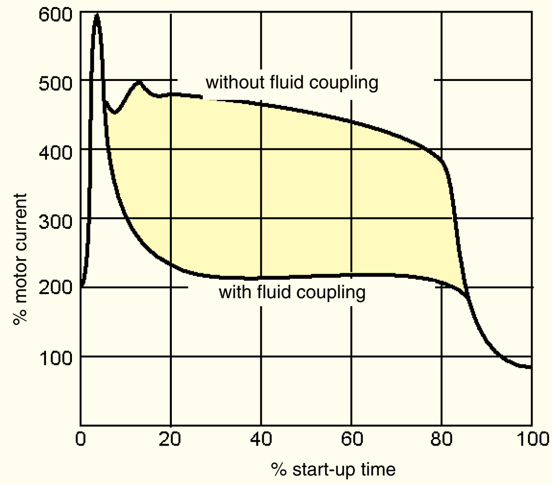


Fig. **3**

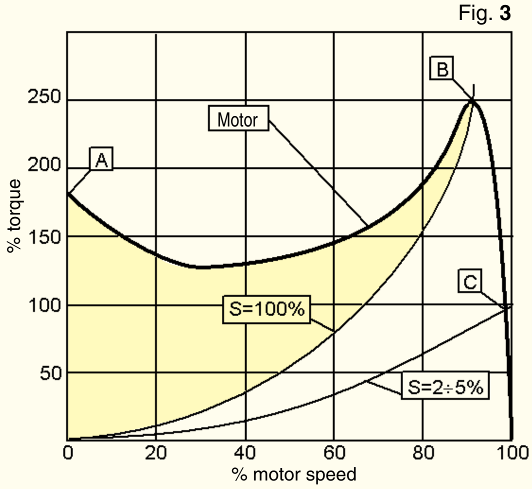


Figure 3 shows two curves for a single fluid coupling and a characteristic curve of an electric motor. It is obvious from the stall curve of the fluid coupling (s = 100%) and the available motor torque, how much torque is available to accelerate the rotor of the motor (colored area). In about 1 second, the rotor of the motor accelerates passing from point A to point B. The acceleration of the load, however, is made gradually by the fluid coupling, utilizing the motor in optimal conditions, along the part of the curve between point B, 100% and point C, 2-5%. Point C is the typical point of operation during normal running.

2.2 TRANSFLUID FLUID COUPLINGS WITH A DELAYED FILL CHAMBER

A **low starting torque** is achieved, with the standard circuit in a maximum oil fill condition because fluid couplings limit **to less than 200%** of the nominal motor torque. It is possible to limit further the starting torque **down to 160%** of the nominal torque, by decreasing oil fill: this, contrarily creates slip and working temperature increase in the fluid coupling.
The most convenient technical solution is to use fluid couplings with a **delayed fill chamber,** connected to the main circuit by **calibrated bleed orifices. These externally adjustable** valves, available from size **15CK** (Fig. **4b**), can be simply adjusted to vary starting time.

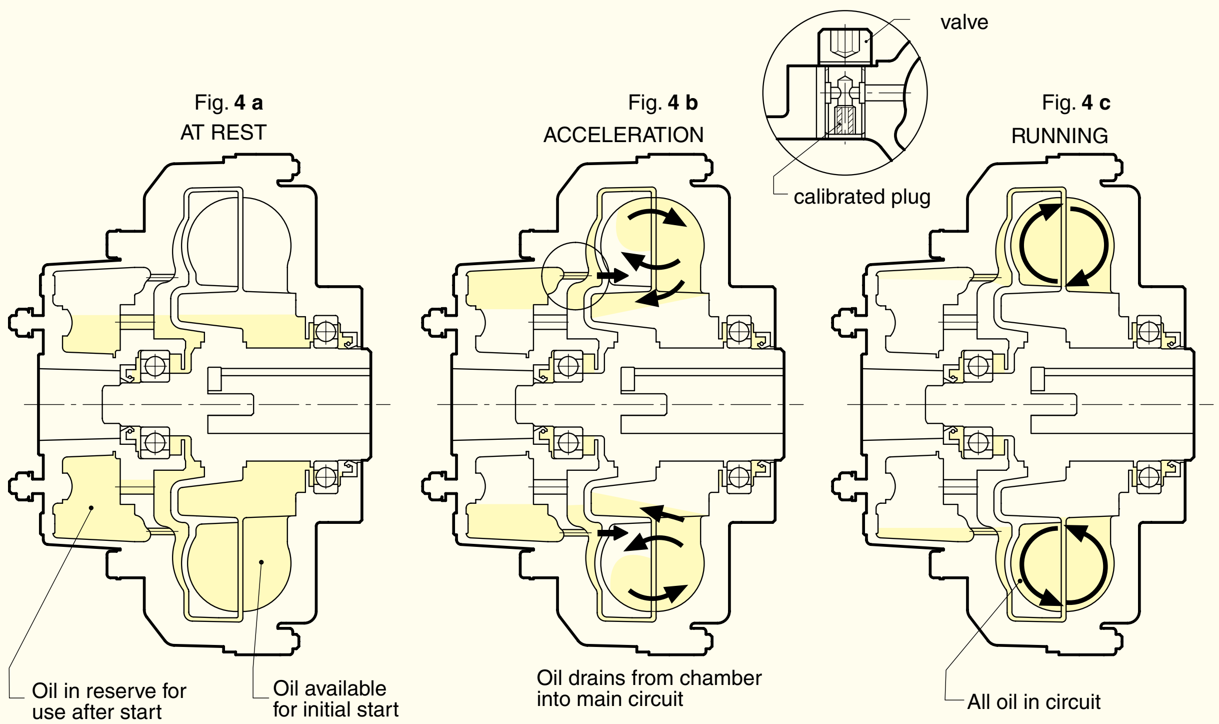
In a standstill position, the **delayed fill chamber** contains part of the filling oil, thus reducing the effective quantity in the working circuit (Fig. **4a**) and a **torque reduction** is obtained, allowing the motor to quickly reach the steady running speed **as if started without load**.

During start-up, oil flows from the **delayed fill chamber** to the main circuit (Fig. **4b**) in a quantity proportional to the rotating speed.
As soon as the fluid coupling reaches the nominal speed, all oil flows into the main circuit (Fig. **4c**) and torque is transmitted with a **minimum slip**.

With a **simple delayed fill chamber**, the ratio between starting and nominal torque may reach **150 %**. This ratio may be further reduced down to **120 %** with a **double delayed fill chamber**, which contains a higher oil quantity, to be progressively transferred into the main circuit during the starting phase.
This is ideal for very smooth start-ups with low torque absorptions, as typically required for machinery with large inertia values and for belt conveyors.
The advantages of the **delayed fill chamber** become more and more evident when the power to be transmitted increases.
The **simple chamber** is available from size **11CK**, while the **double chamber** from size **15CCK**.

3. SUMMARY OF THE ADVANTAGES GIVEN BY FLUID COUPLINGS

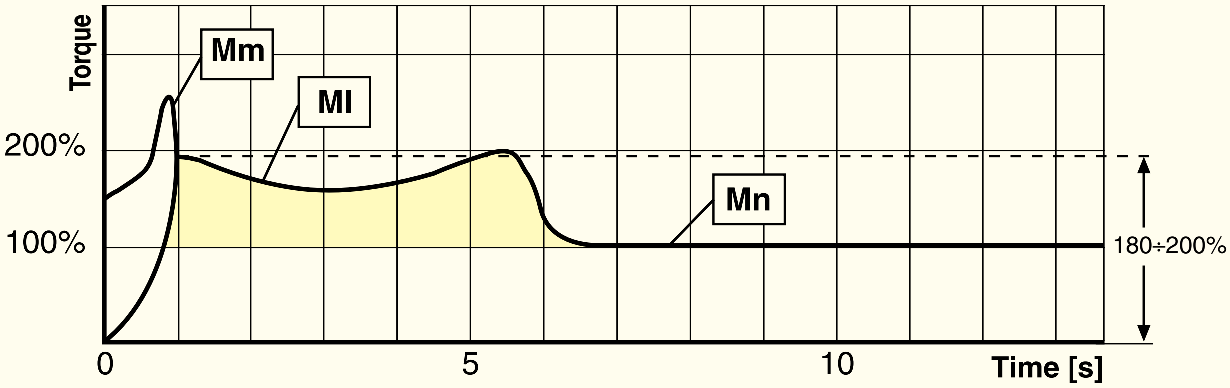
- very smooth start-ups
- reduction of current absorptions during the starting phase: the motor starts with very low load
- protection of the motor and the driven machine from jams and overloads
- utilization of asynchronous squirrel cage motors instead of special motors with soft starter devices
- higher duration and operating convenience of the whole drive train, thanks to the protection function achieved by the fluid coupling
- higher energy saving, thanks to current peak reduction
- limited starting torque down to 120% in the versions with a double delayed fill chamber
- same torque at input and output: the motor can supply the maximum torque even when load is jammed
- torsional vibration absorption for internal combustion engines, thanks to the presence of a fluid as a power transmission element
- possibility to achieve a high number of start-ups, also with an inversion of the rotation direction
- load balancing in case of a double motor drive: fluid couplings automatically adjust load speed to the motors speed
- high efficiency
- minimum maintenance
- Viton rotating seals
- cast iron and steel material with anticorrosion treatment



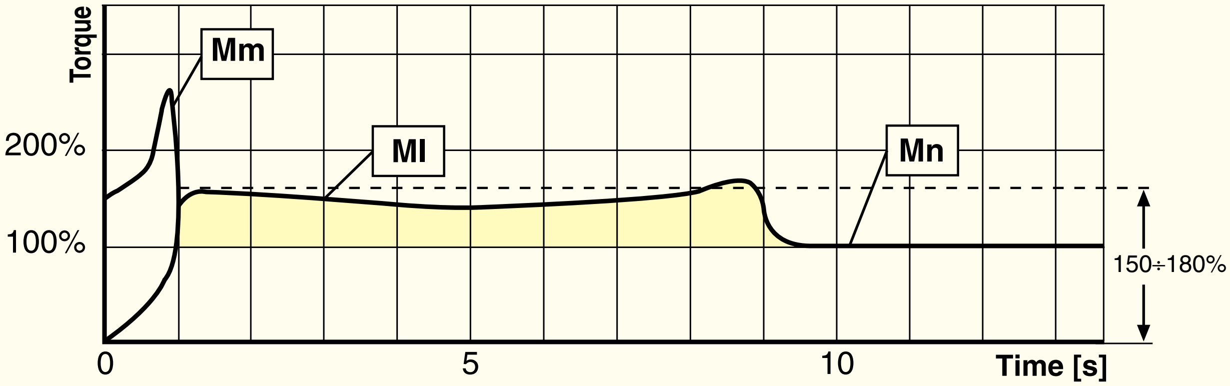
4. CHARACTERISTIC CURVES

Ml	: transmitted torque from fluid coupling
Mm	: starting torque of the electric motor
Mn	: nominal torque at full load
......	: accelerating torque

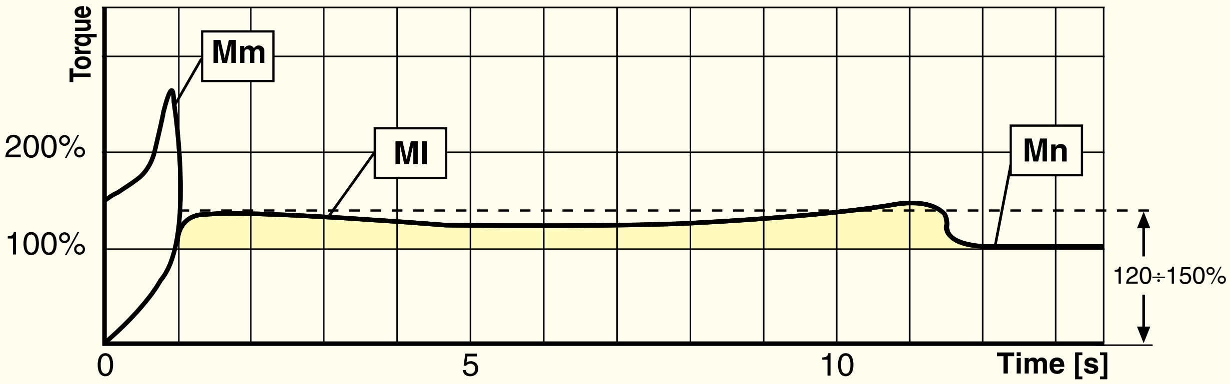
K type
(standard circuit)



CK type
(circuit with a
delayed chamber)



CCK type
(circuit with a double
delayed chamber)



5 VERSIONS

5.1 IN LINE

KR-CKR-CCKR : basic coupling (KR), with a simple (CKR) or double (CCKR) delayed fill chamber.

KRG-CKRG-CCKRG : basic coupling with elastic coupling
KRM-CKRM-CCKRM (clamp type), or superelastic.

KRB-CKRB-CCKRB : like ..KRG, but with brake drum or
...KRBP brake disc.

KRD-CKRD-CCKRD : basic coupling ..KR with output shaft. It allows the utilization of other flex couplings; it is possible to place it (with a convenient housing) between the motor and a hollow shaft gearbox.

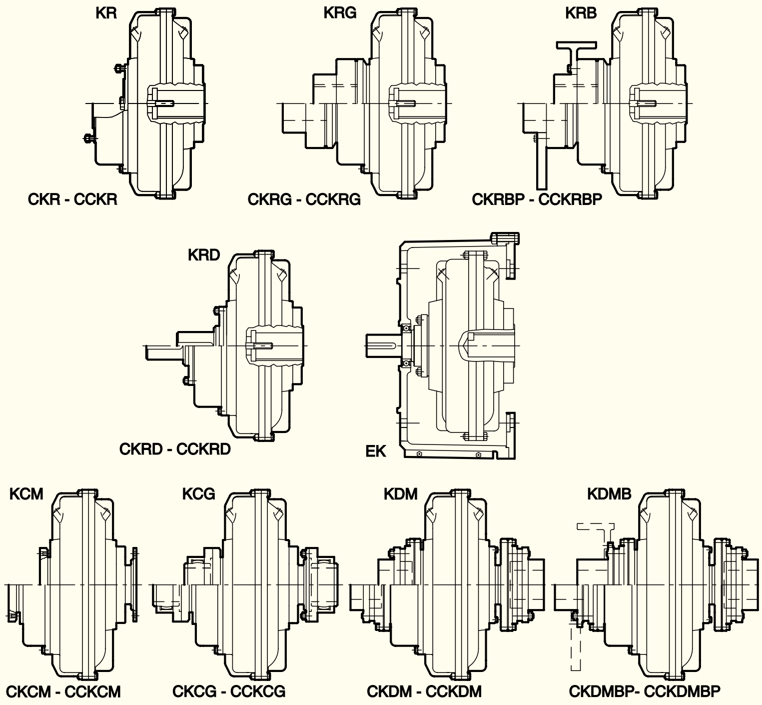
EK : fluid coupling fitted with a bell housing, to be placed between a flanged electric motor and a hollow shaft gearbox.

KCM-CKCM-CCKCM : basic coupling for half gear couplings.

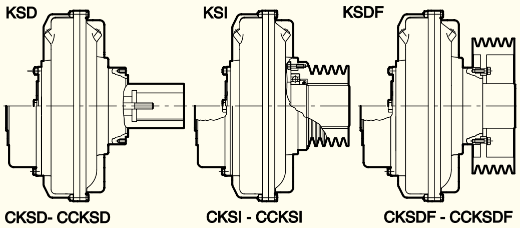
KCG-CKCG-CCKCG : basic ..KCM with half gear couplings. On request, layout with brake drum or brake disc.

KDM-CKDM-CCKDM : fluid coupling with disc couplings.

...KDMB : like ..KDM, but with brake drum or
...KDMBP brake disc.



N.B.: The ..KCG - ..KDM versions allow a radial disassembly without moving the motor or the driven machine.



5.2 PULLEY

KSD–CKSD–CCKSD : basic coupling foreseen for a flanged pulley, with simple (CK..) or double (CCK..) delayed fill chamber.

KSI-CKSI-CCKSI : fluid coupling with an incorporated pulley, which is fitted from inside.

KSDF-CKSDF-CCKS..: basic ..KSD coupling with flanged pulley, externally mounted and therefore to be easily disassembled.

6.1 IN LINE VERSIONS MOUNTING EXAMPLES

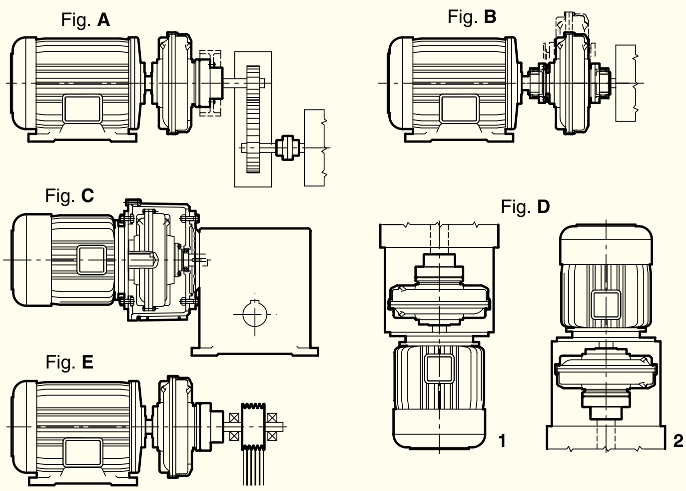
Fig. **A** Horizontal axis between the motor and the driven machine (KR-CKR-CCKR and similar).

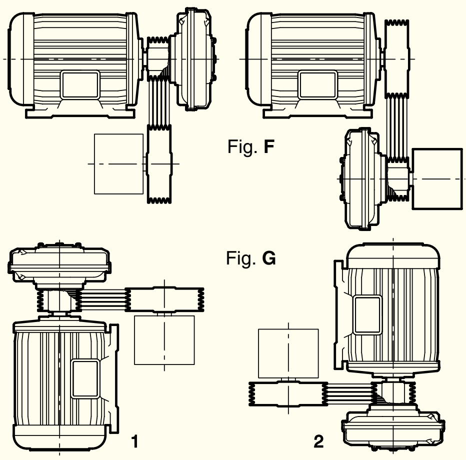
Fig. **B** It allows a radial disassembly without moving the motor and the driven machine (KCG-KDM and similar).

Fig. **C** Between a flanged electric motor and a hollow shaft gearbox by means of a bell housing (..KRD and EK).

Fig. **D** Vertical axis mounting between the electric motor and a gearbox or driven machine. **In case of order, please specify mounting type 1 or 2.**

Fig. **E** Between the motor and a supported pulley for high powers and heavy radial loads.





6. 2 PULLEY VERSIONS MOUNTING EXAMPLES

Fig. **F** Horizontal axis.

Fig. **G** Vertical axis. **When ordering, please specify mounting type 1 or 2.**

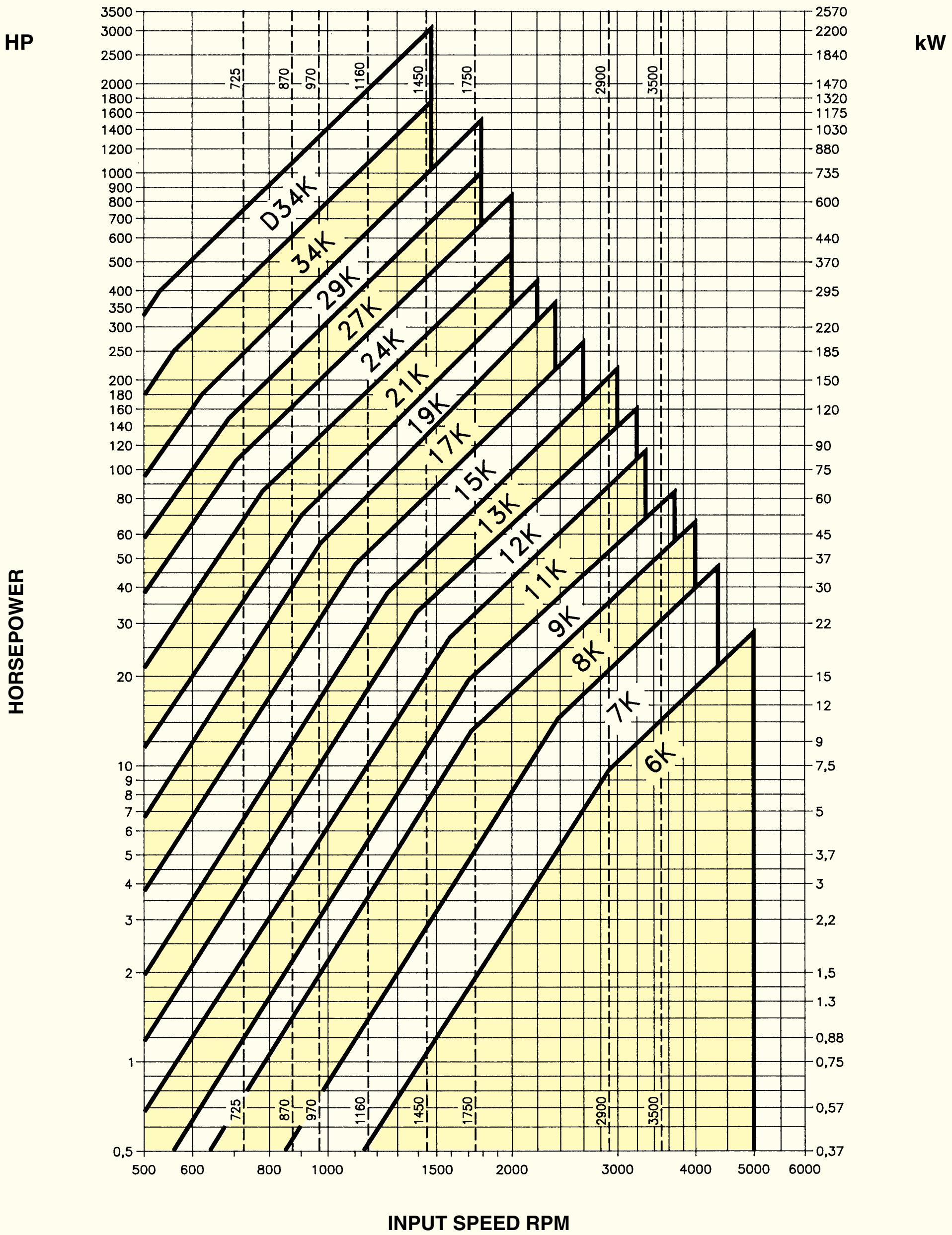
7. SELECTION

7.1 SELECTION CHART

The chart below may be used to select a unit size from the horsepower and input speed. If the selection point falls on a size limit line dividing one size from the other, it is advisable to select the larger size with a proportionally reduced oil fill.

Tab. **A**

GENERAL REFERENCE HORSEPOWER CHART



THE CURVES SHOW LIMIT CAPACITY OF COUPLING

7.2 SELECTION TABLE

Fluid couplings for standard electric motors.

Tab. **B**

MOTOR TYPE	SHAFT DIA.	3000 rpm kW	HP	COUPLING
71	14	0.37 0.55	0.5 0.75	–
80	19	0.75 1.1	1 1.5	
90S	24	1.5	2	6 K
90L	24	2.2	3	
100L	28	3	4	
112M	28	4	5.5	7 K (1)
132	38	5.5 7.5	7.5 10	
132M	38	–	–	–
160M	42	11 15	15 20	
160L	42	18.5	25	9 K (1)
180M	48	22	30	
180L	48	–	–	–
200L	55	30 37	40 50	11 K (1)
225S	60	–	–	–
225M	55 (3000) 60	45	60	11 K (1)
250M	60 (3000) 65	55	75	13 K (1)
280S	65 (3000) 75	75	100	
280M	65 (3000) 75	90	125	13 K (2)
315S	65 (3000) 80	110	150	
315M	65 (3000) 80	132 160	180 220	–
355S	80 (3000) 100	200	270	–
355M	80 (3000) 100	250	340	–

MOTOR TYPE	SHAFT DIA.	(○) 1800 rpm kW	HP	COUPLING
71	14	0.25 0.37	0.35 0.5	–
80	19	0.55 0.75	0.75 1	6 K
90S	24	1.1	1.5	
90L	24	1.5	2	7 K
100L	28	2.2 3	3 4	
112M	28	4	5.5	
132	38	5.5	7.5	8 K
132M	38	7.5	10	
160M	42	11	15	9 K
160L	42	15	20	11 K
180M	48	18.5	25	12 K (11 K)
180L	48	22	30	12 K
200L	55	30	40	13 K (12 K)
225S	60	37	50	13 K
225M	55 (3000) 60	45	60	
250M	60 (3000) 65	55	75	15 K
280S	65 (3000) 75	75	100	17 K (15 K)
280M	65 (3000) 75	90	125	17 K
315S	65 (3000) 80	110	150	
315M	65 (3000) 80	132 160 200	180 220 270	19 K
355S	80 (3000) 100	250	340	21 K
355M	80 (3000) 100	315	430	24 K

MOTOR TYPE	SHAFT DIA.	1500 rpm kW	HP	COUPLING
71	14	0.25 0.37	0.35 0.5	6 K
80	19	0.55 0.75	0.75 1	
90S	24	1.1	1.5	
90L	24	1.5	2	7 K
100L	28	2.2 3	3 4	
112M	28	4	5.5	8 K
132	38	5.5	7.5	9 K
132M	38	7.5	10	
160M	42	11	15	11 K
160L	42	15	20	
180M	48	18.5	25	12 K
180L	48	22	30	
200L	55	30	40	13 K
225S	60	37	50	
225M	55 (3000) 60	45	60	15 K
250M	60 (3000) 65	55	75	
280S	65 (3000) 75	75	100	17 K
280M	65 (3000) 75	90	125	
315S	65 (3000) 80	110	150	19 K
315M	65 (3000) 80	132 160 200	180 220 270	21 K
355S	80 (3000) 100	250	340	24 K
355M	80 (3000) 100	315	430	

MOTOR TYPE	SHAFT DIA.	(○) 1200 rpm kW	HP	COUPLING
71	14	0.25	0.33	–
80	19	0.37 0.55	0.5 0.75	7 K
90S	24	0.75	1	
90L	24	1.1	1.5	
100L	28	1.5	2	8 K
112M	28	2.2	3	
132	38	3	4	9 K
132M	38	4 5.5	5.5 7.5	11 K
160M	42	7.5	10	12 K
160L	42	11	15	
180M	48	–	–	–
180L	48	15	20	13 K
200L	55	18.5 22	25 30	
225S	60	–	–	15 K
225M	55 (3000) 60	30	40	
250M	60 (3000) 65	37	50	
280S	65 (3000) 75	45	60	17 K
280M	65 (3000) 75	55	75	
315S	65 (3000) 80	75	100	19 K
315M	65 (3000) 80	90 110 132	125 150 180	21 K
355S	80 (3000) 100	160	220	24 K
355M	80 (3000) 100	200 250	270 340	27 K

MOTOR TYPE	SHAFT DIA.	1000 rpm kW	HP	COUPLING
71	14	0.25	0.33	–
80	19	0.37 0.55	0.5 0.75	7 K
90S	24	0.75	1	8 K
90L	24	1.1	1.5	
100L	28	1,5	2	9 K
112M	28	2.2	3	
132	38	3	4	11 K
132M	38	4 5.5	5.5 7.5	
160M	42	7.5	10	12 K
160L	42	11	15	13 K
180M	48	–	–	–
180L	48	15	20	
200L	55	18.5 22	25 30	15 K
225S	60	–	–	–
225M	55 (3000) 60	30	40	17 K
250M	60 (3000) 65	37	50	19 K
280S	65 (3000) 75	45	60	
280M	65 (3000) 75	55	75	21 K
315S	65 (3000) 80	75	100	
315M	65 (3000) 80	90 110 132	125 150 180	24 K
355S	80 (3000) 100	160	220	27 K
355M	80 (3000) 100	200 250	270 340	29 K

NO - STANDARD MOTORS →

1800 rpm max kW	HP	COUPLING	1500 rpm max kW	HP	COUPLING	1200 rpm max kW	HP	COUPLING	1000 rpm kW	HP	COUPLING
700	952	27 K	510	700	27 K	440	598	29 K	370	500	29 K
1000	1360	29 K	810	1100	29 K	800	1088	34 K	600	800	34 K
			1300	1740	34 K	1350	1836	D 34 K	950	1300	D 34 K
			2300	3100	D 34 K						

(○) POWERS REFER TO MOTORS CONNECTED AT 380 V. 60 HZ
(1) SPECIAL VERSION, 24 HOURS SERVICE
(2) ONLY FOR KR
NB: THE FLUID COUPLING SIZE IS TIED TO THE MOTOR SHAFT DIMENSIONS

7.3 PERFORMANCE CALCULATIONS

For frequent starts or high inertia acceleration, it is necessary to first carry out the following calculations. For this purpose it is necessary to know:

P_m	- input power	kW
n_m	- input speed	rpm
P_L	- power absorbed by the load at rated speed	kW
n_L	- speed of driven machine	rpm
J	- inertia of driven machine	Kgm^2
T	- ambient temperature	°C

The preliminary selection will be made from the selection graph Tab. **A** depending upon input power and speed.
Then check:

A) acceleration time.
B) max allowable temperature.
C) max working cycles per hour

A) **Acceleration time** t_a:

$$t_a = \frac{n_u \cdot J_r}{9.55 \cdot M_a} \text{ (sec) where:}$$

n_u = coupling output speed (rpm)
J_r = inertia of driven machine referred to coupling shaft (Kgm^2)
M_a = acceleration torque (Nm)

$$n_u = n_m \cdot \left(\frac{100 - S}{100}\right)$$

where S is the percent slip derived from the characteristic curves of the coupling with respect to the absorbed torque M_L.

If S is not known accurately, the following assumptions may be made for initial calculations:
4 up to size 13”
3 from size 15” up to size 19”
2 for all larger sizes.

$$J_r = J \cdot \left(\frac{n_L}{n_u}\right)^2$$

Note: $J = \frac{PD^2}{4}$ o $\frac{GD^2}{4}$

$$M_a = 1.65\, M_m - M_L$$

where: $M_m = \frac{9550 \cdot P_m}{n_m}$ (Nominal Torque)

$M_L = \frac{9550 \cdot P_L}{n_u}$ (Absorbed Torque)

B) **Max allowable temperature.**

For simplicity of calculation, ignore the heat dissipated during acceleration.
Coupling temperature rise during start-up is given by:

$$T_a = \frac{Q}{C} \text{ (°C)}$$

where: Q = heat generated during acceleration (kcal)
C = total thermal capacity (metal and oil) of coupling selected from Tab. **C** (kcal/°C).

$$Q = \frac{n_u}{10^4} \cdot \left(\frac{J_r \cdot n_u}{76.5} + \frac{M_L \cdot t_a}{8}\right) \text{ (kcal)}$$

The final coupling temperature reached at the end of the acceleration cycle will be:

$$T_f = T + T_a + T_L \text{ (°C)}$$

where: T_f = final temperature (°C)
T = ambient temperature (°C)
T_a = temperature rise during acceleration (°C)
T_L = temperature during steady running (°C)

$$T_L = 2.4 \cdot \frac{P_L \cdot S}{K} \text{ (°C)}$$

where: K = factor from Tab. **D**
T_f = must not exceed 110°C for couplings with standard gaskets
T_f = must not exceed 150°C for couplings with Viton gaskets

C) **Max working cycles per hour H**

In addition to the heat generated in the coupling by slip during steady running, heat is also generated (as calculated above) during the acceleration period. To allow time for this heat to be dissipated, one must not exceed the max allowable number of acceleration cycles per hour.

$$H\ max = \frac{3600}{t_a + t_L}$$

where t_L = minimum working time

$$t_L = 10^3 \cdot \frac{Q}{\left(\frac{T_a}{2} + T_L\right) \cdot K} \text{ (sec)}$$

7.4 CALCULATION EXAMPLE

Assuming: $P_m = 20$ kW, $n_m = 1450$ giri/min
$P_L = 12$ kW, $n_L = 700$ giri/min
$J = 350$ kgm^2
$T = 25$°C

Transmission via belts.
From selection graph on Tab. **A**, selected size is 12K.

A) **Acceleration time**
From curve TF 5078-X (supplied on request) slip S = 4%

$$n_u = 1450 \cdot \left(\frac{100 - 4}{100} \right) = 1392 \text{ rpm}$$

$$J_r = 350 \cdot \left(\frac{700}{1392} \right)^2 = 88.5 \text{ Kgm}^2$$

$$M_m = \frac{9550 \cdot 20}{1450} = 131 \text{ Nm}$$

$$M_L = \frac{9550 \cdot 12}{1392} = 82 \text{ Nm}$$

$$M_a = 1.65 \cdot 131 - 82 = 134 \text{ Nm}$$

$$t_a = \frac{1392 \cdot 88.5}{9.55 \cdot 134} = 96 \text{ sec}$$

B) **Max allowable temperature**

$$Q = \frac{1392}{10^4} \cdot \left(\frac{88.5 \cdot 1392}{76.5} + \frac{82 \cdot 96}{8} \right) = 361 \text{ kcal}$$

$$C = 4.2 \text{ kcal/°C (Tab. } \mathbf{C}\text{)}$$

$$T_a = \frac{361}{4.2} = 86 \text{ °C}$$

$$K = 8.9 \text{ (Tab. } \mathbf{D}\text{)}$$

$$T_L = 2.4 \cdot \frac{12 \cdot 4}{8{,}9} = 13 \text{°C}$$

$$T_f = 25 + 86 + 13 = 124 \text{°C}$$

Viton gaskets needed

C) **Max working cycles per hour**

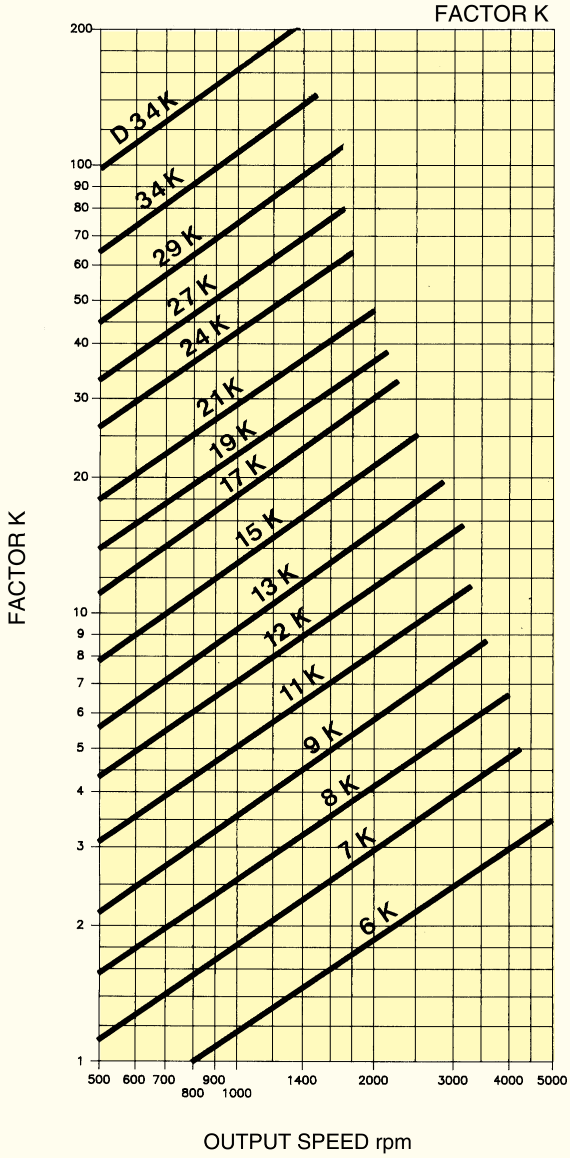
$$t_L = 10^3 \cdot \frac{361}{\left(\frac{86}{2} + 13 \right) \cdot 8.9} = 724 \text{ sec}$$

$$H = \frac{3600}{96 + 724} = 4 \text{ starts per hour}$$

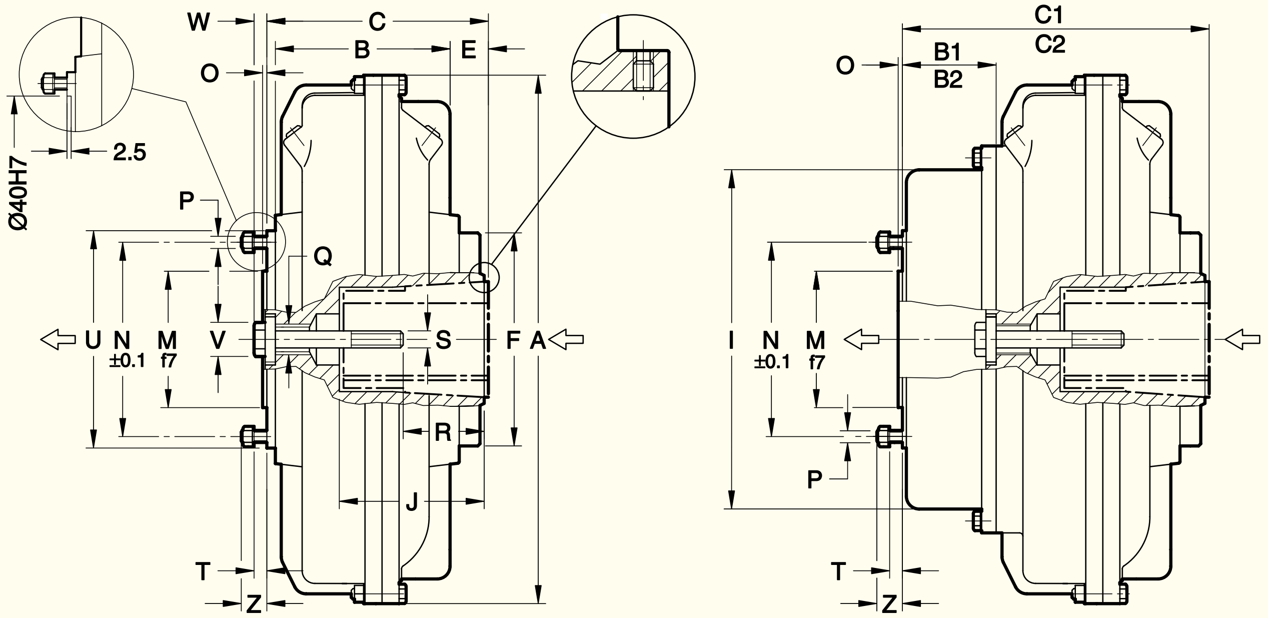
Tab. **C**
THERMAL CAPACITY

Size	K kcal/°C	CK kcal/°C	CCK kcal/°C
6	0.6	–	–
7	1.2	–	–
8	1.5	–	–
9	2.5	–	–
11	3.2	3.7	–
12	4.2	5	–
13	6	6.8	–
15	9	10	10.3
17	12.8	14.6	15.8
19	15.4	17.3	19.4
21	21.8	25.4	27.5
24	29	32	33.8
27	43	50	53.9
29	56	63	66.6
34	92	99	101
D34	138	–	–

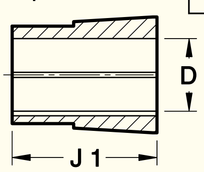
Tab. **D**
FACTOR K



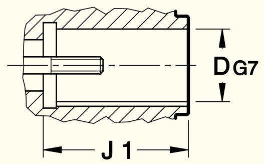
8. DIMENSIONS



KR **CKR - CCKR**



In case of installation on shafts without shoulders, please contact Transfluid



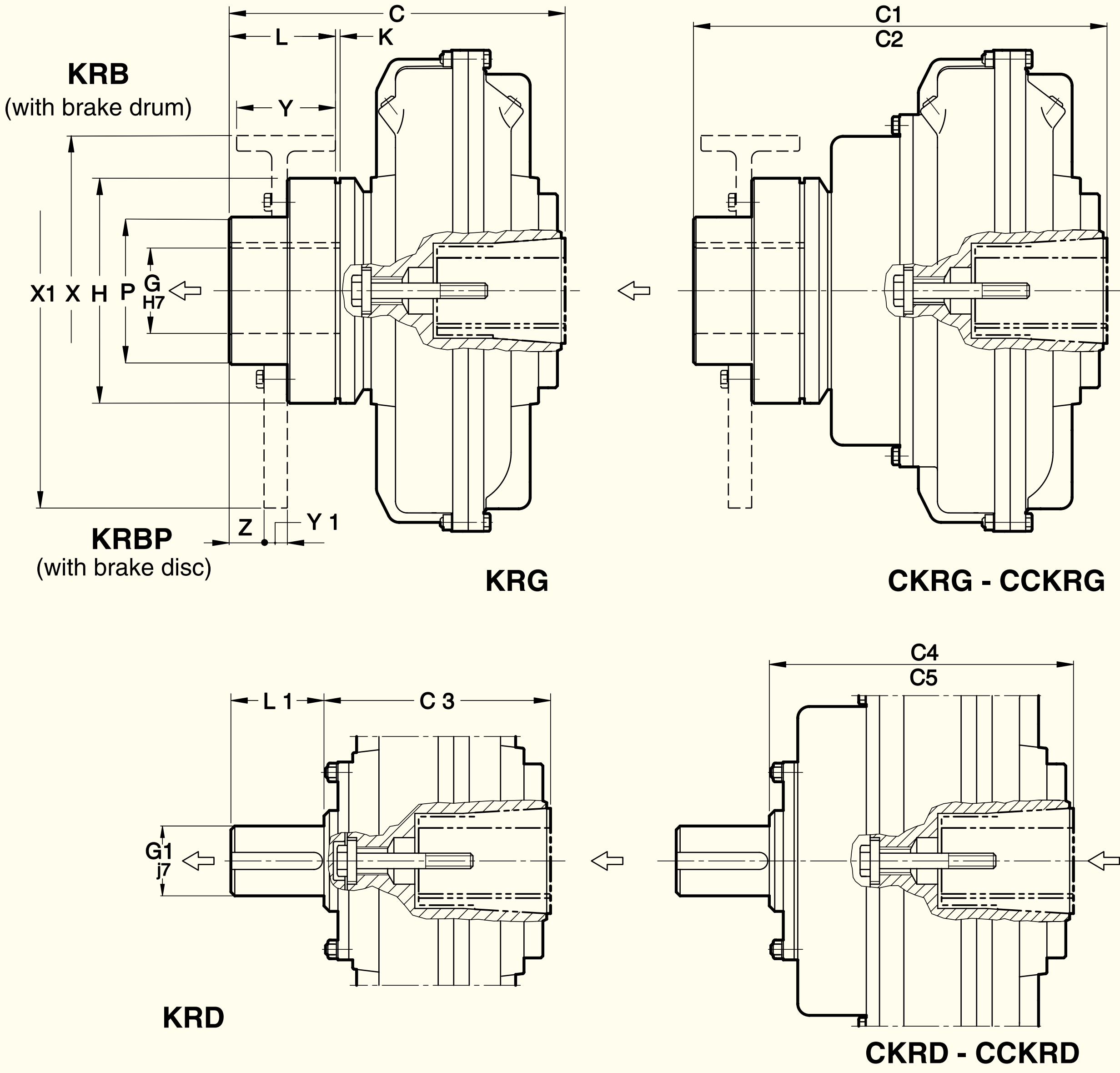
NB: The arrows ⇦ indicate input and output in the standard version.

Dimensions

Size	D		J	J_1		A	B	B_1	B_2	C	C_1	C_2	E	F	I	M	N	O	P		Q	R		S		T	U	V	W	Z	Weight Kg (without oil)			Oil max lt		
							KR	CKR	CCKR	KR	CKR	CCKR							Nr.	Ø											KR	CKR	CCKR	KR	CKR	CCKR
6	19•	24•	–	45	55	195	60	–	–	90.5	–	–	29	88		*	53	*	4	M7	–	–		–		–	68	–	–	16.5	2.7	–	–	0.50	–	–
7	19	24	69	40	50	228	77			112			22	114	–	40	73	3	6		M12	27	35	M6	M8	6	88	21	12	14	5.1			0.92		
	28			60																	M12	40		M10												
8	24			50		256	91			117			18								M12	36		M8							5.5			1.5		
	28			60																	M12	41		M10												
9	28	38	111	60	80	295	96			145			31	128		60	88.9	8		M8	M20	43	54	M10	M12		107	27	19	15	10			1.95		
	42•••	48••		110	110																	79		M16												
11	28	38		60	80	325	107	68.5		154	201		27		195							42	56	M10	M12						12	14.5		2.75	3.35	
	42•••	48••		110	110																	83		M16												
12	28	38		60	80	370	122	75			221		24	145	224							42		M10	M12						15.5	18.5		4.1	4.8	
	42•••	48••		110	110																	83		M16												
13	42	48	143	110		398	137			180	240		28	179		80	122.2	5	8	M10	M27	84		M16		7	142	34	17	17	24	27		5.2	5.8	
	55•••	60•••		110	58.5																	74	104	M20												
15	48	55	145	110		460	151	87	135	205	273	321	35	206	259	90	136					80	70	M16	M20	8	156		19	19	37	41	48.7	7.65	8.6	9.3
	60	65•••		140																		100		M20												
17	48	55	145	110		520	170	96	176	223	303	383	37	225	337	125	160	15	12			80		M16	M20		180	34	24	19	51	57	66	11.7	13.6	14.9
	60	65•••		140																		103		M20												
	75•	80•		140	170																	103	132													
19	48	55	145	110		565	190						17									80		M16	M20						58	64	73	14.2	16.5	18.5
	60	65•••		140																		103		M20												
	75•	80•		140	170																	103	133													

– **D** BORES RELATIVE TO TAPER BUSHES WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
PARTICULAR CASES:
• CYLINDRICAL BORE WITHOUT TAPER BUSH WITH A KEYWAY ISO 773 - DIN 6885/1
•• CYLINDRICAL BORE WITHOUT TAPER BUSH, WITH A REDUCED KEYWAY (DIN 6885/2)
••• TAPER BUSH WITHOUT KEYWAY
– WHEN ORDERING, SPECIFY: SIZE, MODEL, **D** DIAMETER
EXAMPLE: 11CKR - D 42
* SEE DRAWING

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



NB: The arrows ⇦ indicate input and output in the standard version.

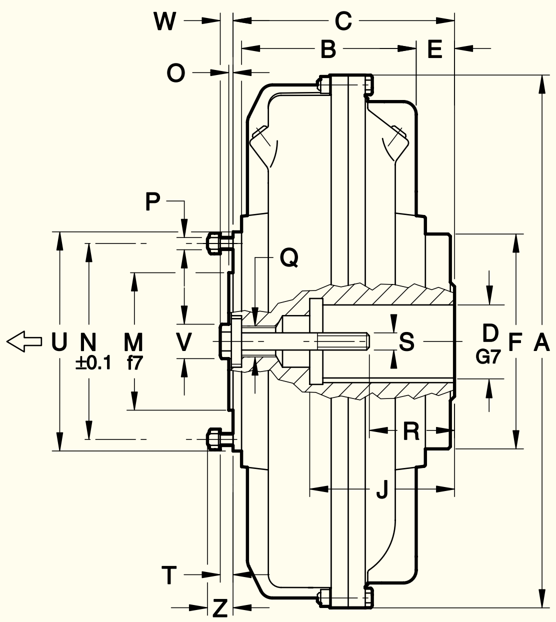
Dimensions

Size	C KRG	C_1 CKRG	C_2 CCKRG	C_3 KRD	C_4 CKRD	C_5 CCKRD	G max	G_1	H	K	L	L_1	P	Flex coupling (7)	Brake drum X x Y	Brake disc X_1 x Y_1	Z	Weight Kg (without oil) KRG	CKRG	CCKRG	KRD	CKRD	CCKRD
6	149	–	–	107	–	–	28	19	73	2	40	30	45	BT 02	on request	on request	–	3.9	–	–	3	–	–
7	189			133			42	28	110		60	40	70	BT 10	160 x 60			8.3			5.7		
8	194			138														8.7			6.1		
9	246			176			55	38	132		80	50	85	BT 20	160 x 60 200 x 75			16			11.6		
11	255	302		185	232			42										18	20.5		13	15.5	
12		322			252													21.5	24.5		16.7	19.7	
13	285	345		212	272		70	48	170	3		60	100	BT 30	200 x 75 250 x 95	400 x 30 450 x 30	5	34	37		26.3	29.3	
15	343	411	459	230	298	346	80	60			110	80	120	BT 40	250 x 95 315 x 118	400 x 30 450 x 30	35	50.3	54.3	62	40.4	44.4	52.1
17	362	442	522	263	343	423	90	75	250		110	100	135	BT 50 (7)	315 x 118 400 x 150	445 x 30 450 x 30	15	77	83	92	58.1	64.1	73.1
19																		84	90	99	65.1	71.1	80.1

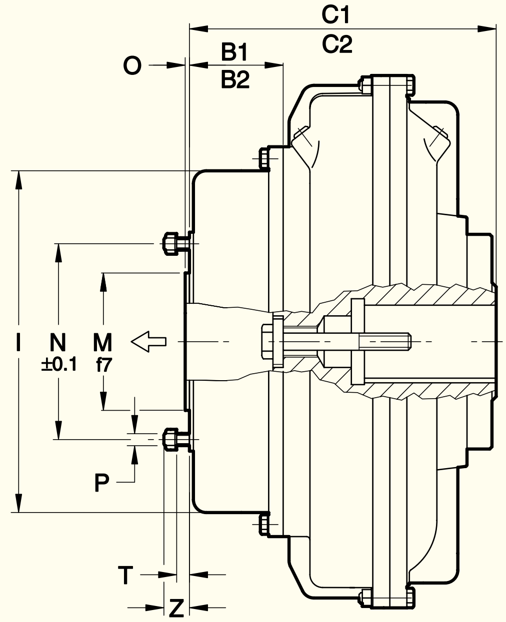
(7) **BT ELASTIC COUPLING WITH REPLACING RUBBER ELEMENTS WITHOUT MOVING THE MACHINES ARE UPON REQUEST. (DIMENSIONS AS PER TF 6412)**

– G1 SHAFT BORE WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
– WHEN ORDERING, SPECIFY: SIZE - MODEL - **D** DIAMETER
– UPON REQUEST: BORE G_1 MACHINED; G SPECIAL SHAFT
– FOR …KRB - KRBP SERIES SPECIFY **X** AND **Y** OR **X_1** AND **Y_1** DIAMETER
EXAMPLE: 9KRB - D38 - BRAKE DRUM = 160x60

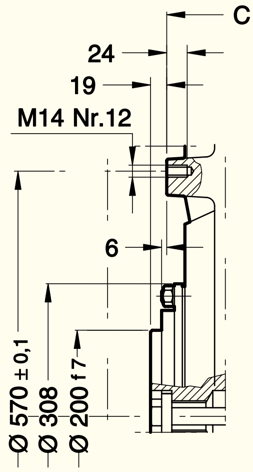
DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



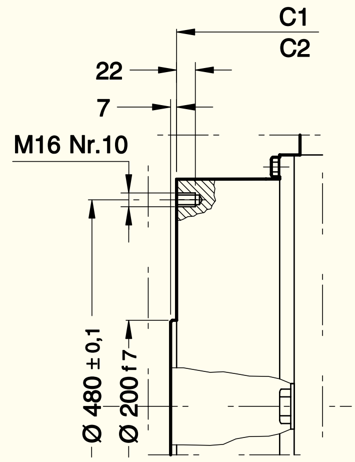
KR



CKR - CCKR



34KR



34CKR - 34CCKR

Size	Weight Kg (without oil)			Oil max lt		
	KR	CKR	CCKR	KR	CKR	CCKR
21	87	97	105	19	23	31
24	105	115	123	28,4	31,2	39
27	158	176	195	42	50	61
29	211	229	239	55	63	73
34	337	352	362	82,5	92,5	101

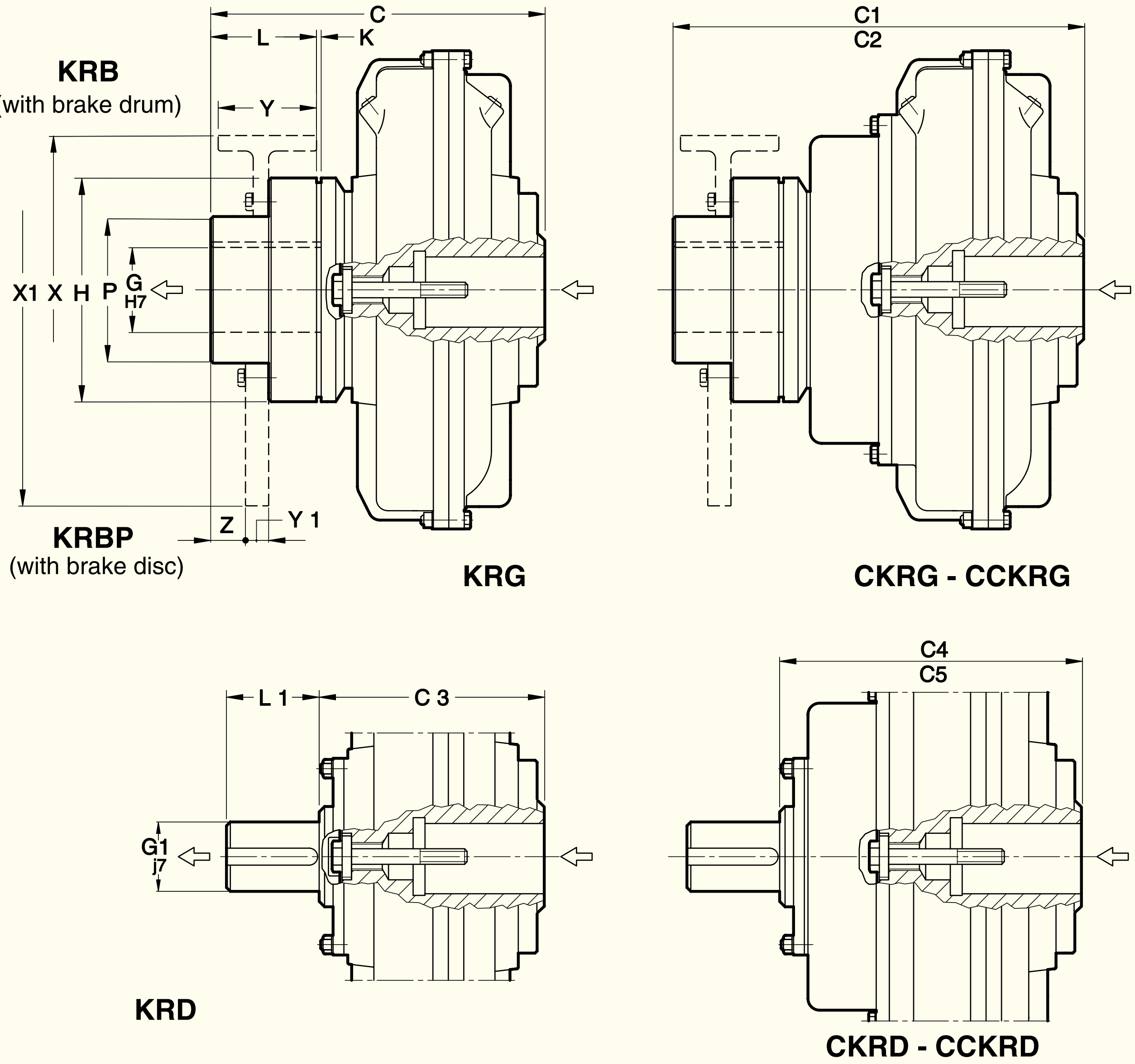
NB: The arrows ⇦ indicate input and output in the standard version.

Dimensions

Size	D	J	A	B	B_1	B_2	C	C_1	C_2	E	F	I	M	N	O	P		Q	R	S	T	U	V	W	Z
				KR	CKR	CCKR	KR	CKR	CCKR							Nr.	Ø								
21	•80 90	170	620	205	110	200	260	360	450	45	250	400	160	228	5	8	M14	M36	130	M20 M24	14	255	40	15	30
	••100	210					295	395	485										165	M24					
24	•80 90	170	714	229			260	360	450	21									130	M20 M24					
	••100	210					295	395	485	56									165	M24					
27	120 max	210	780	278	131	231	297	415	515	6	315	537	200	275	7		M16	M45	167	M24 (for max bore)		308	–	–	33
29	135 max	240	860	295			326	444	544	18	350								167	M24 (for max bore)			–	–	
34	150 max	265	1000	368			387	518	618	19	400		*	*	*	*	*		200	M36 (for max bore)	*	*	–	–	*

– **D** BORES WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
• STANDARD DIMENSIONS WITH A KEYWAY ISO 773 - DIN 6885/1
•• STANDARD DIMENSIONS WITH REDUCED KEYWAY (DIN 6885/2)
* SEE DRAWING
– WHEN ORDERING, SPECIFY: SIZE, MODEL, **D** DIAMETER
EXAMPLE: 2ICCKR - D 80

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



NB: The arrows ⇦ indicate input and output in the standard version.

Dimensions

Size	C KRG	C_1 CKRG	C_2 CCKRG	C_3 KRD	C_4 CKRD	C_5 CCKRD	G max	G_1	H	K	L	L_1	P	Flex coupling (7)	Brake drum X x Y	Brake disc X_1 x Y_1	Z	Weight kg (without oil) KRG	CKRG	CCKRG	KRD	CKRD	CCKRD
21 (3)	433 (3)	533 (3)	623 (3)	292 (3)	392 (3)	482 (3)	110	90	290	3	140	120	170	BT60	400 x 150	560 x 30 630 x 30	45	129	139	147	99.5	109.5	117.5
24 (3)															500 x 190	710 x 30 795 x 30		147	157	165	117.5	127.5	135.5
27	489	607	707	333	451	551	130	100	354	4	150	140	200	BT80	500 x 190	710 x 30 795 x 30	20	228	246	265	178	186	215
29	518	636	736	362	480	580												281	299	309	231	249	259
34	595	726	826	437	568	668	160	140	425	5	180	150	240	CT90	630 x 265	1000 x 30	50	449	468	478	358	373	383

(3) FOR BORES **D** 100 INCREASE DIMENSIONS BY 35 mm.

(7) **BT ELASTIC COUPLING WITH REPLACING RUBBER ELEMENTS WITHOUT MOVING THE MACHINES ARE UPON REQUEST. (DIMENSIONS AS PER TF 6412)**

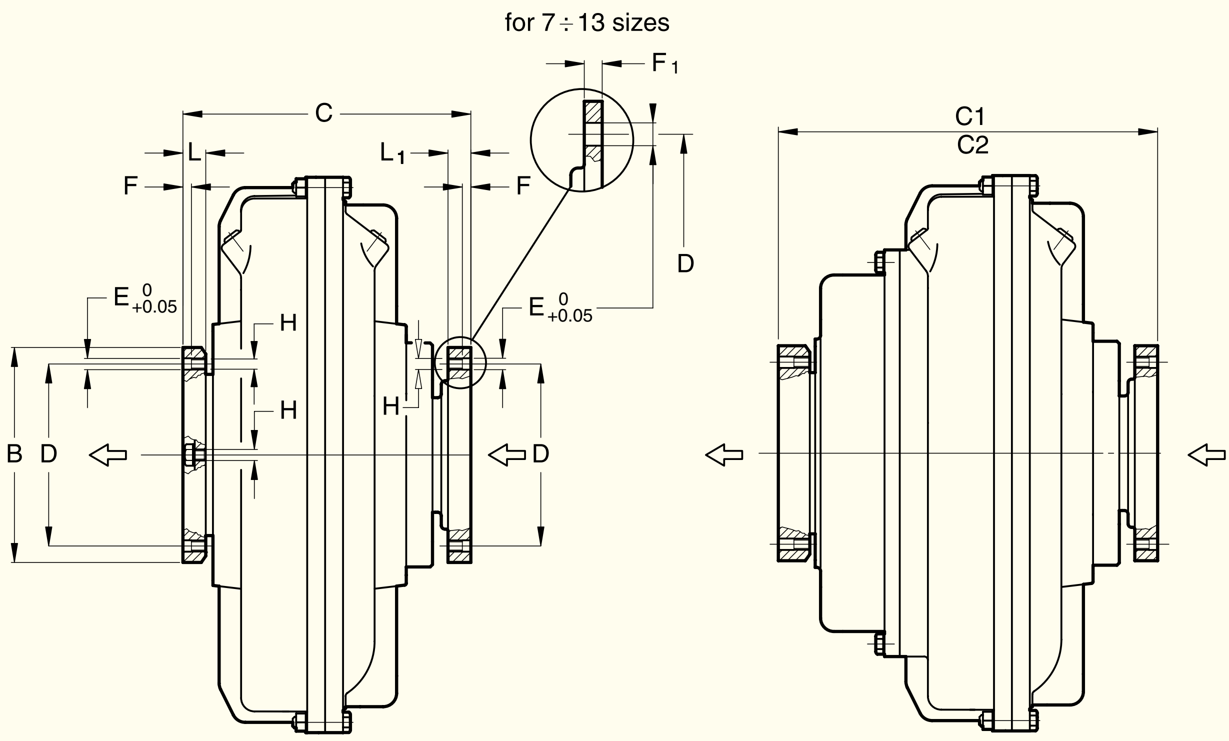
– G_1 SHAFT WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1

– UPON REQUEST, G FINISHED BORE AND G_1 SPECIAL SHAFT DIAMETER

– WHEN ORDERING, SPECIFY: SIZE - MODEL - **D** DIAMETER FOR ...KRB OR ...KRBP, SPECIFY **X** AND **Y** OR X_1 AND Y_1 DIMENSIONS BRAKE DRUM OR DISC

EXAMPLE: 19KRBP - D80 - BRAKE DISC 450 x 30

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



KCM **CKCM - CCKCM**

NB: The arrows ⇦ indicate input and output in the standard version.

THIS FLUID COUPLING IS FORESEEN FOR THE ASSEMBLY OF HALF GEAR COUPLINGS

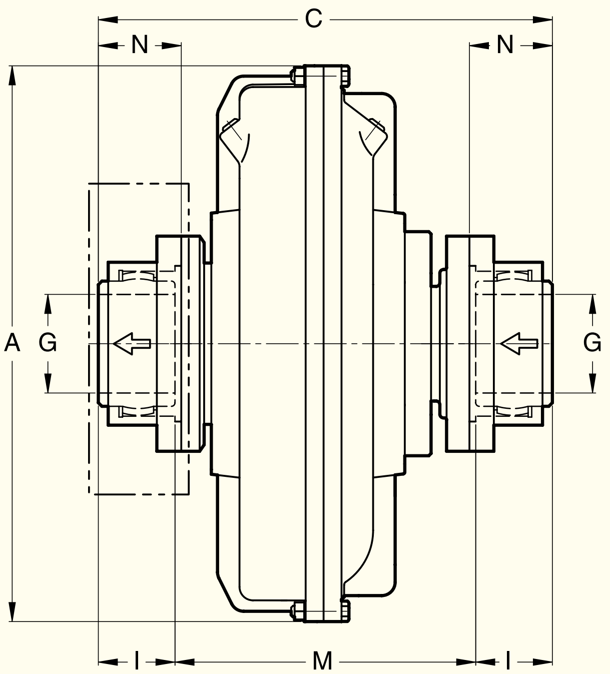
Dimensions

Size	A	B	C KCM	C_1 CKCM	C_2 CCKCM	D	E Nr.	E Ø	F	F_1	H	L	L_1	Weight kg (without oil) KCM	Weight kg (without oil) CKCM	Weight kg (without oil) CCKCM	Gear coupling size
7	228	116	140	–	–	95.25	6	6.4	7	6.5	1/4 28 UNF	17	–	7.3	–	–	1" S
8	256		145											7.7			
9	295	152.5	189			122.22	8	9.57			3/8 24 UNF	18.5		14.9			1" 1/2 S
11	325		198	245										16.9	19.4		
12	370		198	265								21		20.5	23.4		
13	398		223.5	289.5										29.6	32.6		
15	460	213	251	319	367	180.975	6	15.87	6	–	5/8 11 UNC	23	22	50.5	54.5	62.2	2" 1/2 E (6)
17	520		275	355	435							29		65	71	80	
19	565													72	78	87	
21	620	240	316	416	506	206.375	8					31	25	104	114	122	3" E (6)
24	714													122	132	140	
27	780	280	408	526	626	241.3	8	19.05	22	–	3/4 10 UNC	51	51	194	213	232	3" 1/2 E
29	860		437	555	655									248	266	276	
34	1000	318	503	634	734	279.4						58	58	403	418	428	4" E

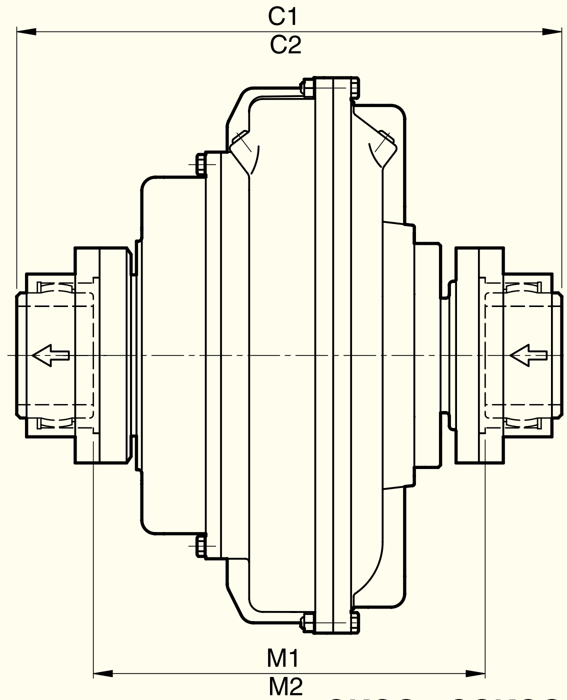
(6) GEAR COUPLING WITH SPECIAL CALIBRATED BOLTS

– WHEN ORDERING, SPECIFY: SIZE - MODEL
EXAMPLE: 34CCKCM

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

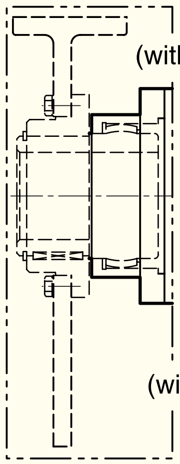


KCG



CKCG - CCKCG

NB: The arrows ⇦ indicate input and output in the standard version.



KCGB
(with brake drum)

KCGBP
(with brake disc)

Brake drum or disc upon request

FLUID COUPLING FITTED WITH HALF GEAR COUPLINGS, TO BE RADIALLY DISASSEMBLED WITHOUT MOVING THE MACHINES

Dimensions

Size	A	C KCG	C_1 CKCG	C_2 CCKCG	G max	I	M KCG	M_1 CKCG	M_2 CCKCG	N	Gear coupling Size	Gear coupling Weight Kg
7	228	229	–	–	50	43	143	–	–	44.5	1" S (4)	4
8	256	234					148					
9	295	292			65	49.3	192			50.8	1" 1/2 S (4)	8
11	325	301	348				201	248				
12	370	301	368				201	268				
13	398	325.1	385.1				226.5	286.5				
15	460	410	478	526	95	77	256	324	372	79.5	2" 1/2 E (5)(6)	23.5
17	520	434	514	594			280	360	440			
19	565											
21	620	503	603	693	111	91	321	421	511	93.5	3" E (5)(6)	35.2
24	714											
27	780	627	745	845	134	106.5	414	532	632	109.5	3" 1/2 E (5)	56.6
29	860	656	774	874			443	561	661			
34	1000	750	881	981	160	120.5	516	640	740	123.5	4" E (5)	81.5

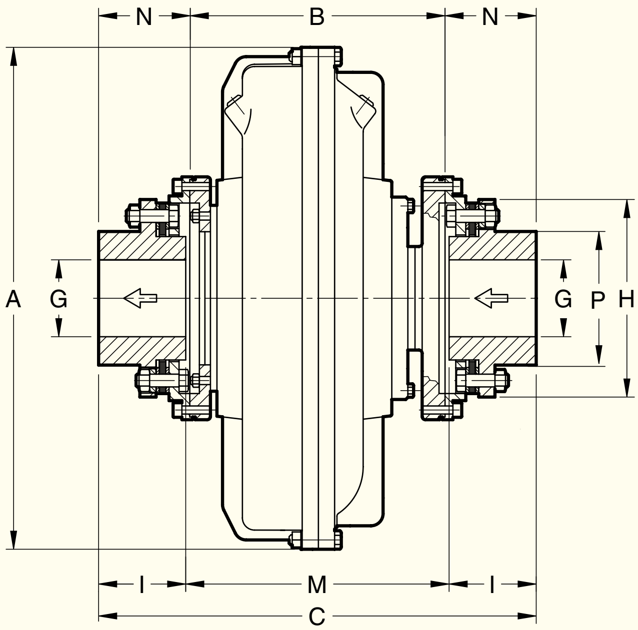
(4) S = SHROUDED SCREWS

(5) E = EXPOSED SCREWS

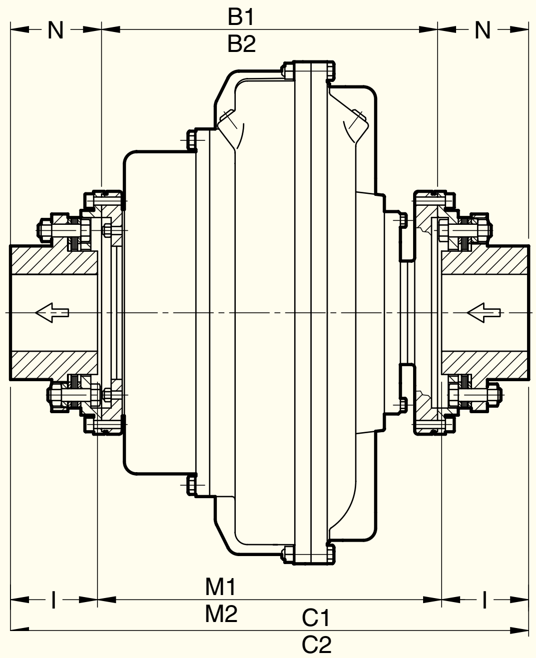
(6) GEAR COUPLING WITH SPECIAL CALIBRATED BOLTS

– WHEN ORDERING, SPECIFY: SIZE - MODEL
EXAMPLE: 21CKCG

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



KDM



CKDM - CCKDM

NB: The arrows ⇦ indicate input and output in the standard version.

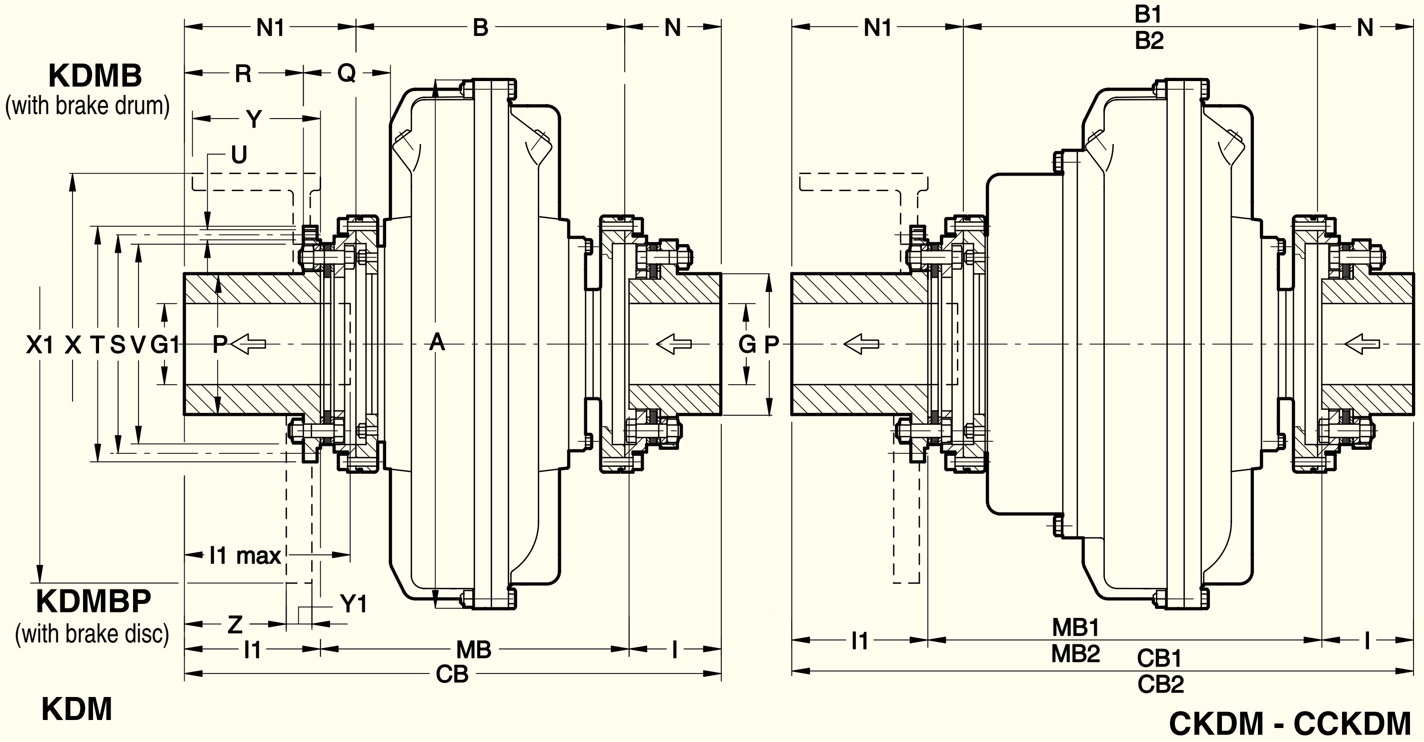
FLUID COUPLING FITTED WITH HALF DISC COUPLINGS, WITHOUT MAINTENANCE AND PRESCRIBED FOR PARTICULAR AMBIENT CONDITIONS. TO BE RADIALLY DISASSEMBLED WITHOUT MOVING THE MACHINES.

Dimensions

Size	A	B	B_1	B_2	C	C_1	C_2	G	H	I	M	M_1	M_2	N	P	Disc coupling	Weight kg (without oil)		
		KDM	CKDM	CCKDM	KDM	CKDM	CCKDM	max			KDM	CKDM	CCKDM			size	KDM	CKDM	CCKDM
9	295	177	–	–	278	–	–	55	123	50	180	–		51.5	76	1055	20.5	–	–
11	325	186	233		289	336					189	236	–				22.5	25	
12	370		253			356						256					26	29	
13	398	216	276		339	399		65	147	60	219	279		61.5	88	1065	41.3	44.3	
15	460	246	314	362	391	459	507	75	166	70	251	319	367	72.5	104	1075	65	69	76.7
17	520	269	349	429	444	524	604	90	192	85	274	354	434	87.5	122	1085	89	95	104
19	565																96	102	111
21	620	315	415	505	540	640	730	115	244	110	320	420	510	112.5	154	1110	159	169	177
24	714																177	187	195
27	780	358	476	576	644	762	862	135	300	140	364	482	582	143	196	1140	289	307	326
29	860	387	505	605	673	792	891				393	511	611				342	360	370
34	1000	442	573	673	768	899	999	165	340	160	448	579	679	163	228	1160	556	555	565

– WHEN ORDERING, SPECIFY: SIZE - MODEL
– FINISHED **G** BORE UPON REQUEST
EXAMPLE: 27 CKDM

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



NB: The arrows ⇦ indicate input and output in the standard version.

LIKE KDM, BUT FORESEEN FOR A BRAKE DRUM OR DISC ASSEMBLY

Dimensions

Size	Brake drum X x Y	Brake disc X_1 x Y_1	Weight kg (without oil, brake drum and disc) KDM	CKDM	CCKDM
12	200 x 75	on request	27	30	–
13			42.8	45.8	
15	250 x 95	450 x 30	69.3	73.3	81
17	315 x 118	500 x 30	99	105	114
19	400 x 150	560 x 30	105	112	125
21	400 x 150	630 x 30	179	189	197
24	500 x 190	710 x 30	197	207	215
27	500 x 190	800 x 30	317	335	354
29			370	388	398
34	on request	800 x 30 1000 x 30	599	587	597

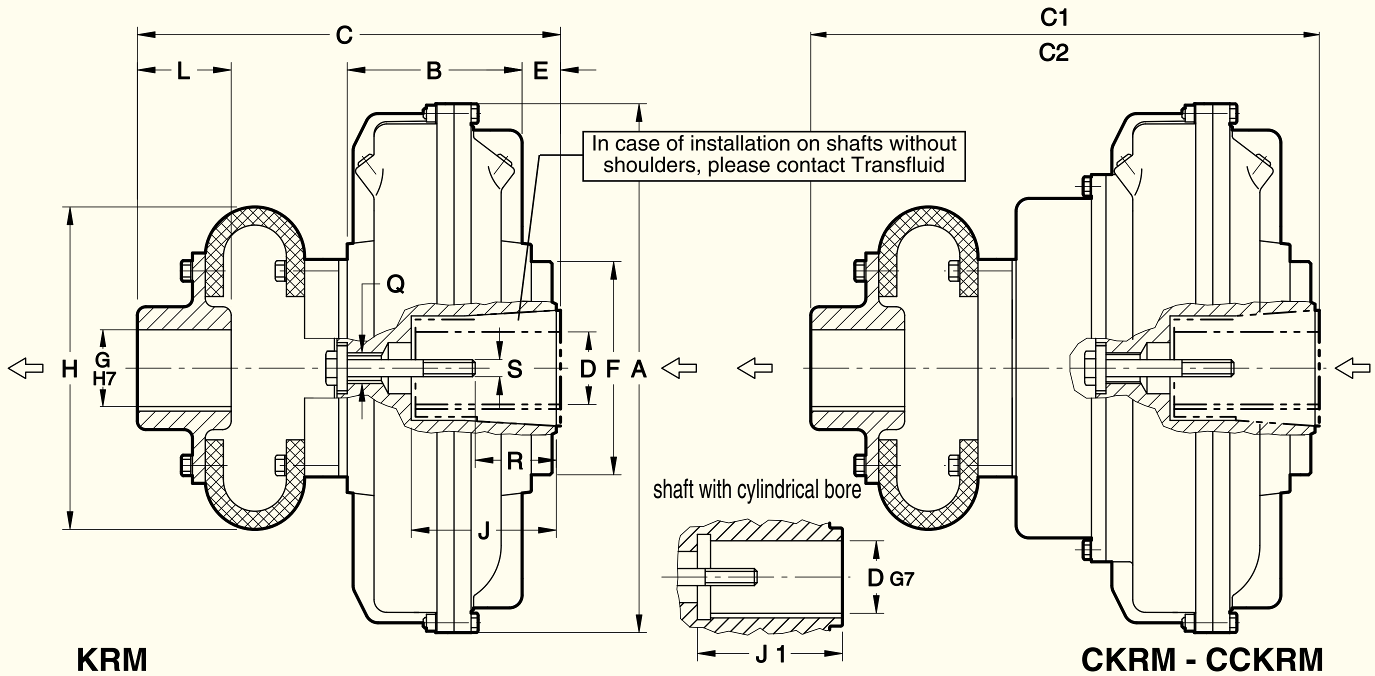
Dimensions

Size	A	B KDM	B_1 CKDM	B_2 CCKDM	CB KDM	CB_1 CKDM	CB_2 CCKDM	G max	G_1 max	I	I_1 Std	I_1 max	MB KDM	MB_1 CKDM	MB_2 CCKDM	N	N_1 Std	P	Q	R	S ±0.1	T f7	U Nr.	U Ø	V	Z	Disc coupling size
12	370	186	253	–	336.5	403.5	–	55	60	50	80	80	206.5	273.5	–	51.5	99	76	67	69	128	142	8	M8	114	–	1055
13	398	216	276		440.5	500.5		65	70	60	140	170	240.5	300.5		61.5	163	88	78	129	155	170	12		140		1065
15	460	246	314	362	495.5	563.5	611.5	75	80	70	150		275.5	343.5	391.5	72.5	177	104	98	134	175	192		M10	157	129	1075
17	520	269	349	429	548.5	628.5	708.5	90	95	85	160	210	303.5	383.5	463.5	87.5	192	122	107	143	204	224			185	168	1085
19	565																		87								
21	620	315	415	505	628.5	728.5	818.5	115	120	110		240	358.5	458.5	548.5	112.5	201	154	133	137	256	276		M12	234	192	1110
24	714																		109								
27	780	358	476	576	731.5	849.5	949.5	135	145	140	180		411.5	529.5	629.5	143	230.5	196	107	155	315	338		M14	286	193	1140
29	860	387	505	605	760.5	878.5	978.5						440.5	558.5	658.5				109								
34	1000	442	573	673	845.5	976.5	1076.5	165	175	160			505.5	636.5	736.5	163	240.5	228	124	152	356	382		M16	325	190	1160

- WHEN ORDERING, SPECIFY: SIZE - MODEL
- **G** AND **G_1** FINISHED BORES UPON REQUEST, AND SPECIAL **I_1** DIMENSION
- FOR BRAKE DRUM OR DISC, SPECIFY DIMENSIONS **X** AND **Y** OR **X_1** AND **Y_1**

  EXAMPLE : 17KDMB - BRAKE DRUM 400 x 150

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



KRM

CKRM - CCKRM

NB: The arrows ⇦ indicate input and output in the standard version.

COUPLING ALLOWING HIGHER MISALIGNMENTS AND THE REPLACEMENT OF THE ELASTIC ELEMENTS WITHOUT MOVING THE MACHINES

Dimensions

TAPER BUSH VERSION

Size	D		J	J_1		A	B	C KRM	C_1 CKRM	C_2 CCKRM	E	F	G max	H	L	Q	R		S		Elastic coupling	Weight kg (without oil) KRM	CKRM	CCKRM
9	28	38	111	60	80	295	96	276	–	–	31	128	50	185	50	M 20	43	54	M 10	M 12	53 F	14.5	–	–
	42•••	–		110													79		M 16					
11	28	38		60	80	325	107	285	332		27						42	56	M 10	M 12		16.5	19	
	42•••	48••		110													83		M 16					
12	38			80		370	122		352		24	145					42	56	M 12			20	23	
	42•••	48••		110													83		M 16					
13	42	48	143	110		398	137	332	392		28	177	65	228	72	M 27	84				55 F	33	36	
	55•••	60•••		110	58.5												74	104	M 20					
15	48	55	145	110		460	151	367	435	483	35	206	70	235	80		80	70	M 16	M 20	56 F	48	52	59.7
	60	65•••		140													100		M 20					
17	48	55	145	110		520	170	380	460	540	37	225	75	288	90		80		M16	M20	58 F	67	73	82
	60	65•••		140													103		M20					
	75•	80•		140	170												105	135						
19	48	55	145	110		565	190				17						80		M16	M20		74	80	89
	60	65•••		140													103		M20					
	75•	80•		140	170												105	135	M20					

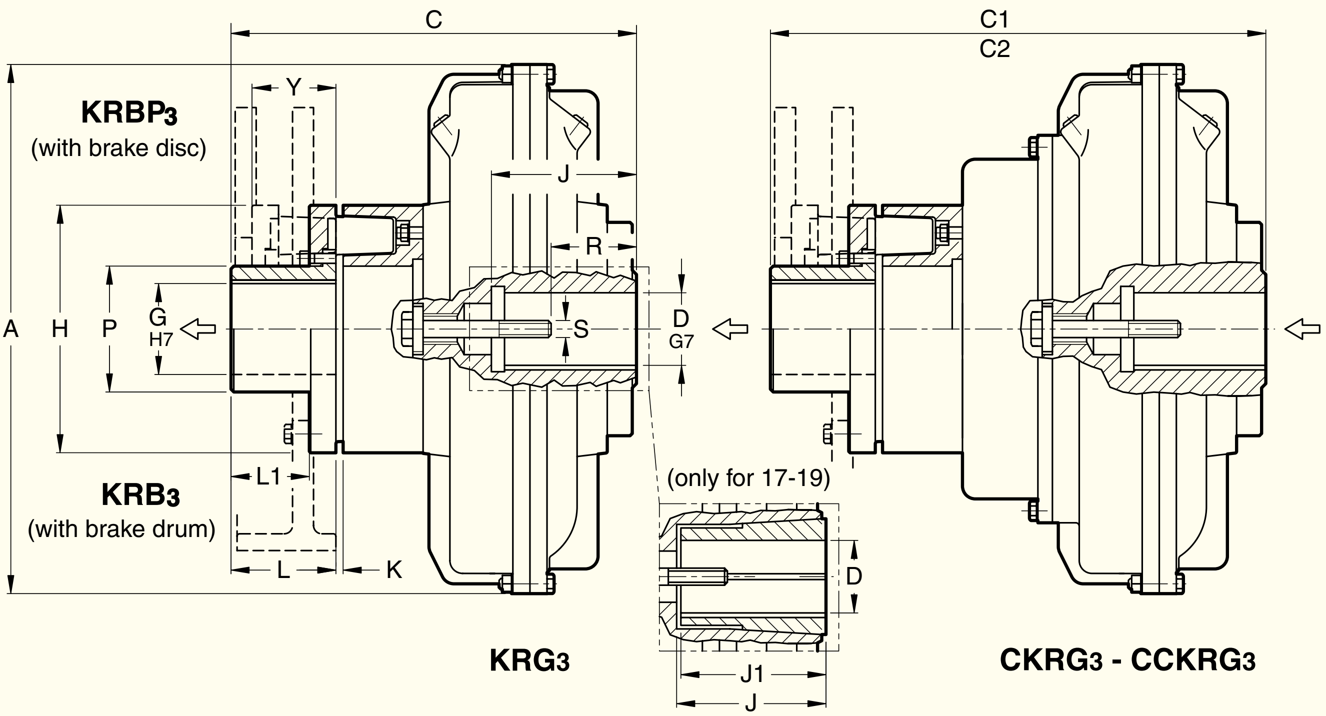
– **D** BORES RELATIVE TO TAPER BUSHES WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
• CYLINDRICAL BORE WITHOUT TAPER BUSH WITH A KEYWAY ISO 773 - DIN 6885/1
•• CYLINDRICAL BORE WITHOUT TAPER BUSH, WITH A REDUCED KEYWAY (DIN 6885/2)
••• TAPER BUSH WITHOUT KEY WAY

CYLINDRICAL BORE VERSION

Size	D		J	J_1	A	B	C KRM	C_1 CKRM	C_2 CCKRM	E	F	G max	H	L	Q	R	S		Elastic coupling	Weight kg (without oil) KRM	CKRM	CCKRM
21	80•	90	–	170	620	205	496	596	686	45	250	90	378	110	M 36	130	M 20	M 24	65 F	124	134	142
	100••			210			531	631	721							165	M 24					
24	80•	90		170	714	229	496	596	686	21						130	M 20	M 24		142	152	160
	100••			210			531	631	721	56						165	M 24					
27	120 max			210	780	278	525	643	743	6	315	100	462	122	M 45	167 (for max bore)	M 24		66 F	211	229	248
29	135 max			240	860	295	577	695	795	18	350	120	530	145		167 (for max bore)	M 24		68 F	293	311	321
34	150 max			265	1000	368	648	779	879	19	400	140	630	165		200 (for max bore)	M 36		610 F	467	482	492

– **D** BORES WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
• STANDARD DIMENSIONS WITH A KEYWAY ISO 773 - DIN 6885/1
•• STANDARD DIMENSIONS WITH REDUCED KEYWAY (DIN 6885/2)
– WHEN ORDERING, SPECIFY: SIZE - SERIE **D** DIAMETER - EXAMPLE: 13 CKRM-D 55

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



The three pieces flexible coupling **B3T**, allows the removal of the elastic elements (rubber blocks), without removal of the electric motor; only with the **..KRB3** (with brake drum) coupling the electric motor must be removed by the value of **'Y'**.
'Y' = axial displacement male part of the coupling **B3T** necessary for the removal of the elastic elements.

Dimensions

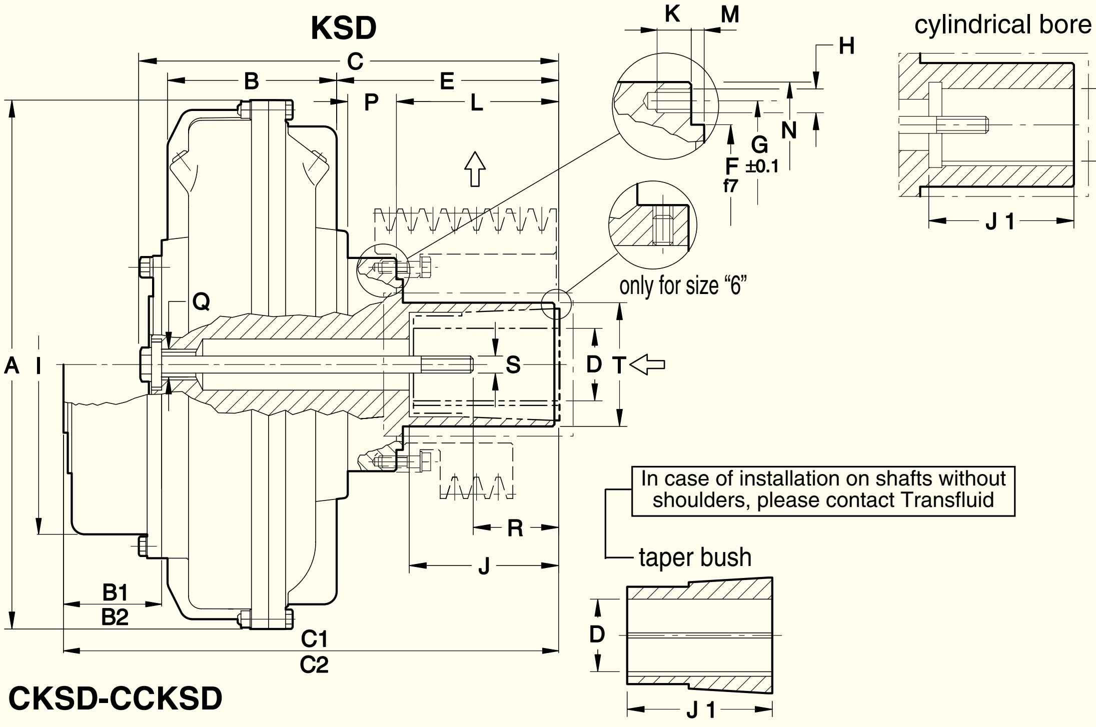
Size	D		J	J_1	A	C	C_1	C_2	G max	H	K	L	L_1	P	R		S		Y	Elastic coupling	Rubber block Nr.	Rubber block type
17	48	55	145	110	520	418	498	578	80	240	3	110	82	130	80		M16	M20	82	B3T-50	12	BT-P
	60	65•••		140											103		M20					
	75•	80•		140 - 170											103	132						
19	48	55		110	565										80		M16	M20				
	60	65•••		140											103		M20					
	75•	80•		140 - 170											103	132						

– **D** BORES RELEVANT TO TAPER BUSH WITH KEYWAY ACCORDING TO ISO773 - DIN6886/1
• STANDARD CYLINDRICAL BORES WITHOUT TAPER BUSH WITH KEYWAY ACCORDING TO ISO773 - DIN6885/1
••• TAPER BUSH WITHOUT KEYWAY

Size	D		J	J_1	A	C	C_1	C_2	G max	H	K	L	L_1	P	R		S		Y	Elastic coupling	Rubber block Nr.	Rubber block type
21	80•	90	170	–	620	457	557	647	110	290	3	140	78	150	130		M20	M24	82	B3T-60	16	BT-P
	100••		210			492	592	682							165		M24					
24	80•	99	170		714	457	557	647							130		M20	M24				
	100••		210			492	592	682							165		M24					
27	120 max		210		780	566	684	784	130	354	4	150	112	180	167		M24		120	B3T-80	16	BT-T
29	135 max		240		860	595	713	813							for max hole							
34	150 max		265		1000	686	817	917	130	395	5	170	119	205	200		M36		151	B3T- 90	12	BT-I
															for max hole							

– **D** CYLINDRICAL BORES WITHOUT TAPER BUSH WITH KEYWAY ACCORDING TO ISO773 – DIN6885/1
• STANDARD DIMENSIONS
•• STANDARD DIMENSION WITH REDUCED HIGH KEYWAY (DIN 6885/2)
– ON ORDER FORM PLEASE SPECIFY: DIMENSION, MODEL, DIAMETER **D** - EXAMPLE: 21CCKRG3 - **D80**

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE



Size	Weight kg (without olio) KSD	CKSD	CCKSD
6	3.2	–	–
7	5.9		
8	6.5		
9	13		
11	15	17.5	
12	19	22	
13	31	34	
15	46	50	57.5
17	74	80	89
19	82	88	97
21	110	120	128
24	127	137	145
27	184	202	221

NB: The arrows ⇦ indicate input and output in the standard version.

Dimensions

TAPER BUSH VERSION

Size	D	J	J_1	A	B KSD	B_1 CKSD	B_2 CCKSD	C max	C_1 CKSD	C_2 CCKSD	E	F	G	H Nr.	H Ø	I	K	L	M	N	P	Q	R	S	T max
6	•19	–	45	195	60	–	–	140	–	–	62	45	57	4	M 6	–	7	42	3	88	17	–	–	–	35
7	19 | 24 28	69	40 | 50 60	228	77			159 174			55 70	75	90			–	8	35 50		114	14	M 12 M 12	29 | 38 43	M 6 | M 8 M 10	50
8	24 28		50 60	256	91			194			81							65				M 12 M 12	33 43	M 6 | M 8 M 10	
9	28 | 38 •••42	111	60 | 80 110	295	96			250			116	96	114	8	M 8		13	85	5	128	20	M 20	39 | 54 78	M 10 | M 12 M 16	69
11	28 | 38 •••42		60 | 80 110	325	107	73.5		259	290.5		113					195							38 | 59 78	M 10 | M 12 M 16	
12	38 | 42 •••48	113	80 | 110 110	370	122	80		274	327		125	112	130			224		98	7	145	22		54 | 83 83	M 12 | M 16 M 16	80
13	42 | 48 •••55 | •••60	144	110 110 | 58.5	398	137			367	407		190	135	155	12				158	6	177	29	M 27	76 76 | 106	M 16 M 20	88
15	48 | 55 60 | •••65	145	110 140	460	151	92	140	390	438	486	195	150	178		M10	259	17	159	7	206	28		80 | 70 100	M 16 | M 20 M 20	100
17	48 | 55 60 | •••65 •75 | •80	145	110 140 140 | 170	520	170	101	181	455	516	596	245	180	200			337	17	180		225	60		69 99 99 | 139	M 20	132
19	48 | 55 60 | •••65 •75 | •80		110 140 140 | 170	565	190						225										45		69 99 99 | 139		

– **D** BORES RELATIVE TO TAPER BUSHES WITH A KEYWAY ACCORDING TO ISO 773 - DIN 6885/1
PARTICUALR CASED:
• CYLINDRICAL BORE WITHOUT TAPER BUSH ISO 773 - DIN 6885/1
••• TAPER BUSH WITHOUT A KEYWAY

CYLINDRICAL BORE VERSION

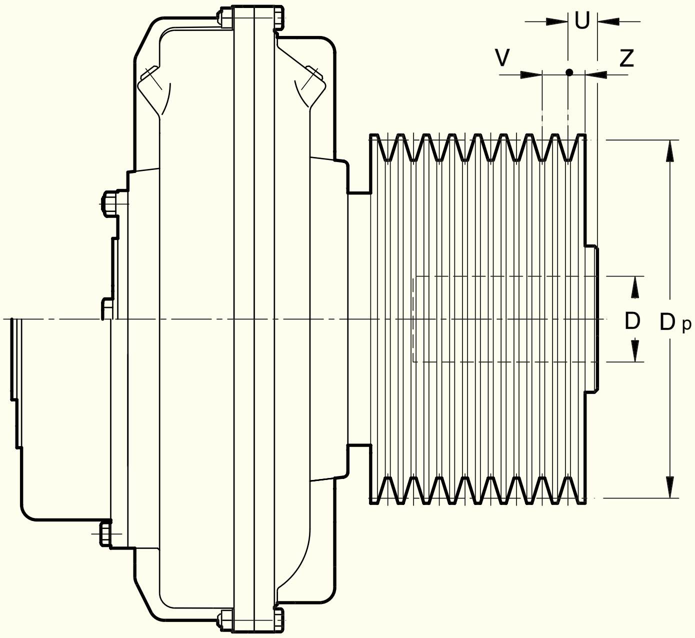
Size	D	J	J_1	A	B	B_1	B_2	C	C_1	C_2	E	F	G	H Nr.	H Ø	I	K	L	M	N	P	Q	R	S	T
21	•80 •100	–	170 210	620	205	115	205	505 545	580 620	670 710	260 300	200	228	8	M 14	400	20	190 230	7	250	57	M 36	135 165	M 20 M 24	145
24	•80 •100		170 210	714	229			505 545	580 620	670 710	236 276							190 230			46		135 165	M 20 M 24	
27	120 max		210	780	278	138	CONSULT OUR ENGINEERS																		

• STANDARD CYLINDRICAL BORES WITH KEYWAYS ACCORDING TO ISO 773 - DIN 6885/1
– WHEN ORDERING SPECIFY: SIZE - MODEL - **D** DIAMETER
EXAMPLE: 12KSD - D 42

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

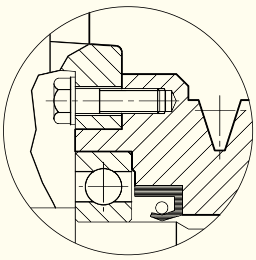
TRANSFLUID
trasmissioni industriali

KSI - KSDF

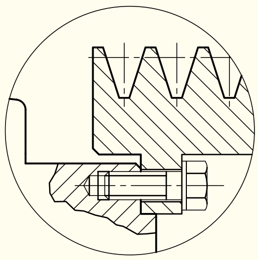


..CKSI - ..CKSDF

...KSI



..KSDF



Dimensions

Size	D	U	Integral pulley Dp	Integral pulley N° type
6	19	24	63	2 - SPA/A
			80	
			100	
7	19 - 24	11.5	80	
			90	
			100	
	28	26.5	80	
			90	
			100	
8	19 - 24 28	26.5	90	3 - SPA/A
			100	
9 11	28 - 38 42	10	112	5 - SPA/A
		15	125	4 - SPB/B
12	38 - 42 48	12	140	5 - SPB/B
13	42 - 48 55 - 60	50	180	6 - SPB/B
15	48 - 55 60 - 65	50	200	

GROOVE	V	Z
SPZ-Z	12	8
SPA-A	15	10
SPB-B	19	12.5
SPC/C	25.5	17
D	37	24
3 V	10.3	8,7
5 V	17.5	12.7
8 V	28.6	19

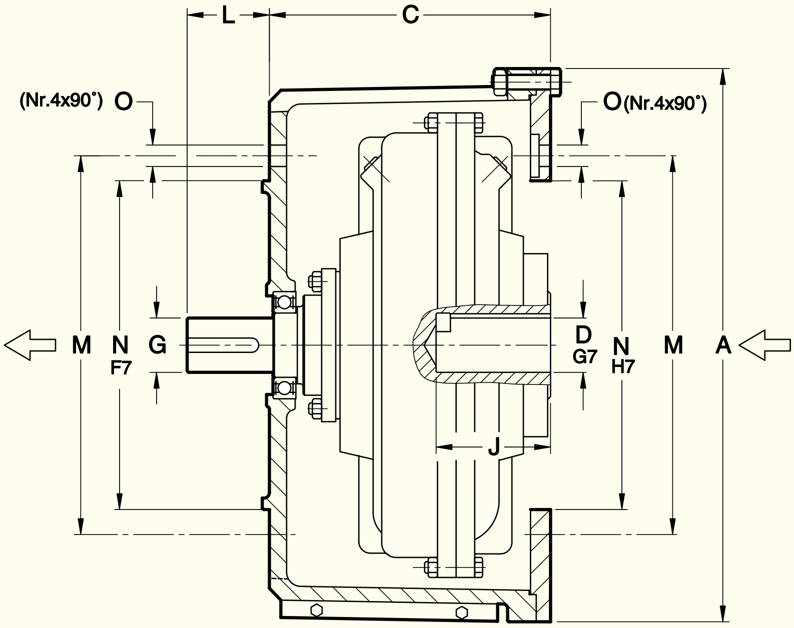
Dimensions

Size	D	U	Flanged pulley Dp	Flanged pulley N° type
7	19 - 24	6	125	2 - SPA/A
	28	21		
8	19 - 24 28	36	125	
		9	112	3 - SPA/A
9 11	28 - 38 42	34	160	4 - SPB/B
		58	200	3 - SPB/B
12	38 - 42 48	50	180	4 - SPB/B
		51	200	3 - SPC/C
		26		4 - SPC/C
13	42 - 48 55 - 60	12.5	180	6 - SPB/B
		50 49	250	6 - SPB/B 5 - SPC/C
15	48 - 55 60 - 65	12.5	200	6 - SPB/B
		17	250	5 - SPC/C
		69	280	5 - SPB/B
17 19	65 - 75 80	72.5	280	6 - SPB/B
		35.5	310	6 - SPC/C
		72	315	6 - SPB/B
		59	345	6 - SPC/C
21 24	80	45	400	6 - SPC/C
		20		8 - SPC/C
	100	45		6 - SPC/C
		20		8 - SPC/C
27	120 max	15	400	12 - SPC/C

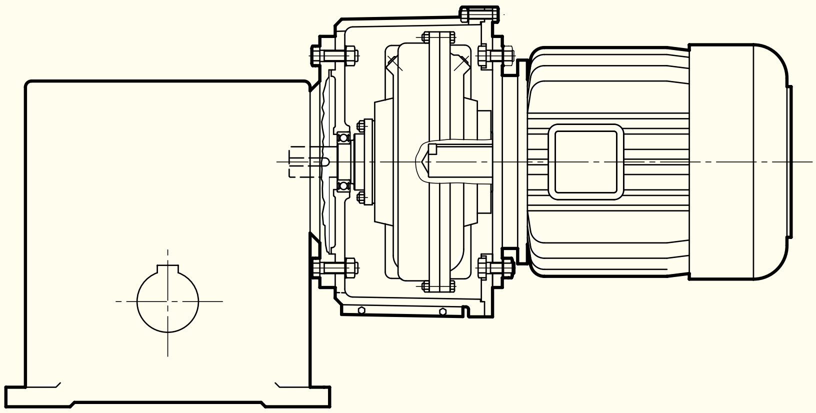
– WHEN ORDERING, SPECIFY: SIZE - MODEL - **D** DIAMETER - **Dp** - **NUMBER** AND **TYPE OF GROOVES**
EXAMPLE: 13 CKSDF - D55 - PULLEY Dp. 250 - 5 SPC/C

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

EK



Example of application



NB: The arrows ⇐ indicate input and output in the standard version.

Dimensions

Size	D	J	G	L	A	C	M	N	O	Weight Kg (without oil)	OIL max lt	Electric Motors TYPE	kW 1500 r.p.m.
6	14	35	14	28	248	110	130	110	9	5.3	0.50	71	0.37
	• 19	45	19	33			165	130	11			80	0.55 - 0.75
	24	55	24	38								90 S	1.1
7	• 24	52	24	38	269	132	165	130	11	11.4	0.92	90S - 90L ** 90LL	1.1 - 1.5 1.8
8	• 28	62	28	44	299	142	215	180	13	12.2	1.5	100 L 112 M	2.2 - 3 4
9	• 38	82	38	57	399	187	265	230	13	26.9	1.95	132S - 132 M ** 132L	5.5 - 7.5 9.2
11	• 42	112	42	63	399	187	300	250	17	28.3	2.75	160M - 160 L	11 - 15
12	•• 48	112	48	65	485	214	300	250	17	66	4.1	180 M 180 L	18.5 22
13	• 55	112	55	80			350	300		76	5.2	200 L	30

• CYLINDRICAL BORE WITH A KEYWAY ISO 773 - DIN 6885/1
•• CYLINDRICAL BORE WITH A REDUCED KEYWAY (DIN 6885/2)
** NOT STANDARD
WHEN ORDERING SPECIFY: SIZE - MODEL **D** - DIAMETER
EXAMPLE: 12KSD - D 42

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

TRANSFLUID
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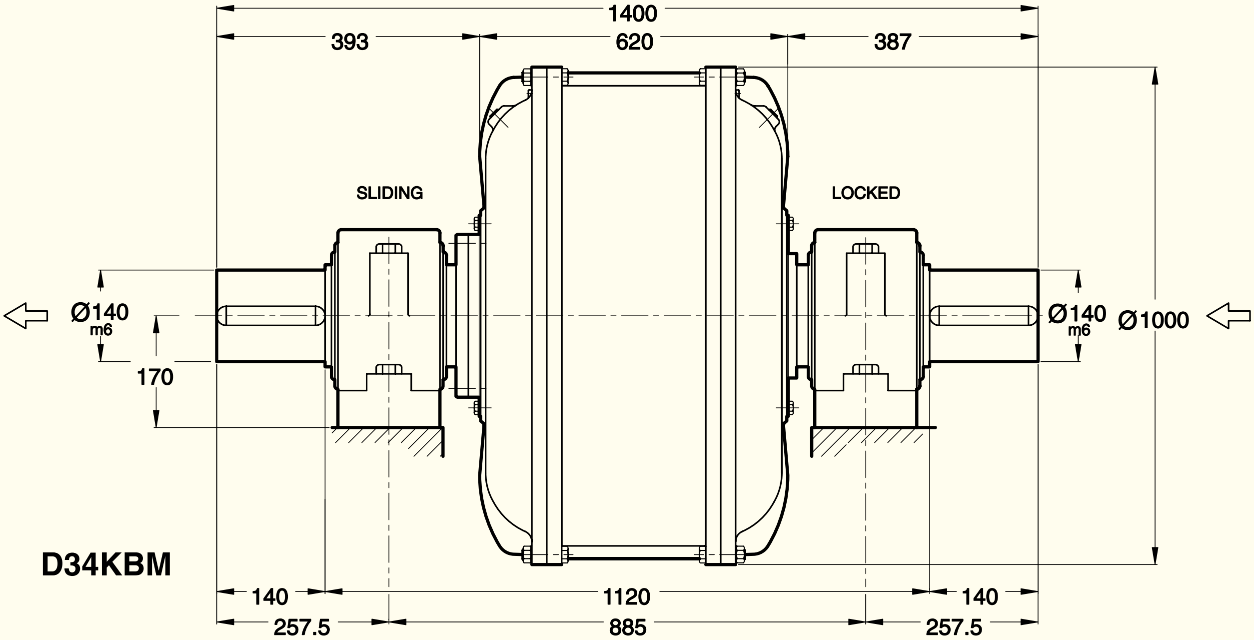
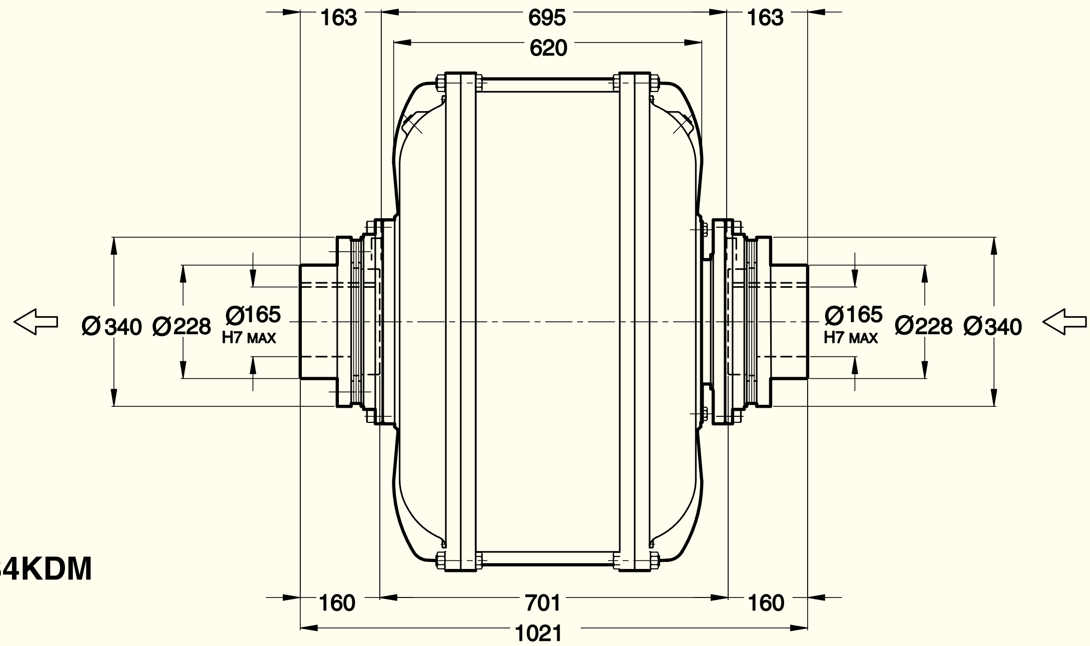
FLUID COUPLING WITH DOUBLE CIRCUIT, FITTED WITH MAIN JOURNALS AND INPUT AND OUTPUT SHAFTS



KEYWAYS ACCORDING TO ISO 773 - DIN 6885/1

FLUID COUPLING FITTED WITH DOUBLE CIRCUIT, WITH HALF DISC COUPLINGS, WITHOUT MAINTENANCE AND PRESCRIBED FOR PARTICULAR AMBIENT CONDITIONS. TO BE RADIALLY DISASSEMBLED WITHOUT MOVING THE MACHINES.



SERIES	WEIGHT Kg (without oil)	OIL max. lt
D34KBM	810	162
D34KDM	880	

NB: The arrows ⇦ indicate input and output in the standard version.

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

9. OIL FILL

Transfluid fluid couplings are not generally filled with oil from the factory so it is necessary to follow this procedure to achieve the standard fill X for K series, fill 2 for CK series and fill 3 for CCK series:

1 - position the fluid coupling axis horizontally, turn it until the X mark (respectively 2 or 3 according to the fluid coupling type), cast into the housing, is at the top vertical (maximum oil fill), so that the oil plug is inclined as shown in Fig. **5**.

2 - fill with oil until it overflows out of the filler hole. While filling, gently rock the coupling on its axis to make sure all excess air is vented out of the circuit. The quantities to be introduced are those reported in Tab. **E**.

3 - screw in the cap and make sure no leakage occurs; otherwise use thread sealant on filler plug threads.

4 - the fillings marked X-1-2-3-4 may be chosen by the operators to meet the best performance in terms of start-up and steady running conditions.

5 - for normal operating conditions, use only ISO HM 32 (or equivalent SAE 10W).
At low ambient temperatures (near 0°C), it is recommended to use ISO FD 10 (or equivalent SAE 5W) oil.
For temperatures below –10°C, ask Transfluid.

6 - for vertical mounted applications, the couplings recommended oil fill quantities are reported in Tab. **E**.

RECOMMENDED OIL: ISO 32 HM

Agip	OSO 32
Aral	VITAM GF 32
Bp	ENERGOL HLP 32
Castrol	HYSPIN AWS 32
Chevron	RYKON OILS AW32
Esso	NUTO H32
Mobil	DTE 24
Shell	TELLUS 32
Texaco	RANDO HD 32
Total	AZOLLA ZS 32

10. SAFETY DEVICES

FUSIBLE PLUG

In case of overloads, or when slip reaches very high values, oil temperature increases excessively, damaging oil seals and conseguently allowing leakage.
To avoid damage when used in severe applications, it is advisable to fit a fusible plug. Fluid couplings are supplied with a fusible plug at 140°C (120°C, 175°C or 198°C upon request).

SWITCHING PIN

Oil venting from fusible plug may be avoided with the installation of a switching pin. When the temperature reaches the melting point of the fusible ring element, a pin releases that intercepts a relay cam that can be used for an alarm or stopping the main motor.
As for the fusible plug, 3 different fusible rings are available (see page 25).

ELECTRONIC OVERLOAD CONTROLLER

This device consists of a proximity sensors measuring the speed variation between the input and output of the fluid coupling and giving an alarm signal or stopping the motor in case the set threshold is overcome.
With such a device, as well as with the infrared temperature controller, no further maintenance or repair intervention is necessary after the overload occupance, because the machinery can operate normally, once the cause of the inconvenience has been removed (see page 26).

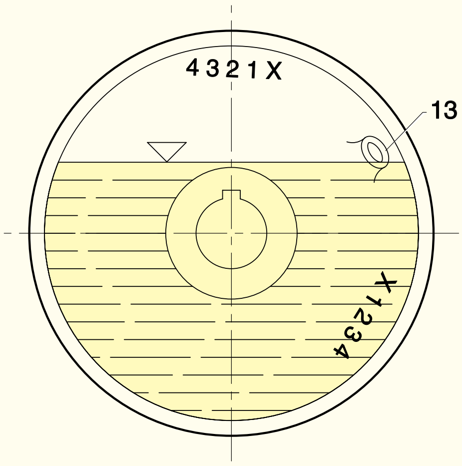
INFRARED TEMPERATURE CONTROLLER

To measure the operating temperature, a device fitted with an infrared sensor is available. After conveniently positioning it by the fluid coupling, it allows a very precise non-contact temperature measurement.
Temperature values are reported on a display that also allows the setting of 2 alarm thresholds, that can be used by the customer (see page 27).

Tab. **E**

Size \ Fillings	OIL QUANTITY lt		
	SERIES K — FILL X	SERIES CK — FILL 2	SERIES CCK — FILL 3
6	0.50	—	—
7	0.92	—	—
8	1.50	—	—
9	1.95	—	—
11	2.75	3.35	—
12	4.1	4.8	—
13	5.2	5.8	—
15	7.65	8.6	9.3
17	11.7	13.6	16.4
19	14.2	16.5	18.8
21	19	23	27.3
24	28.4	31.2	35.5
27	42	50	59.5
29	55	63	70.6
34	82.5	92.5	96.7
D34	162	—	—

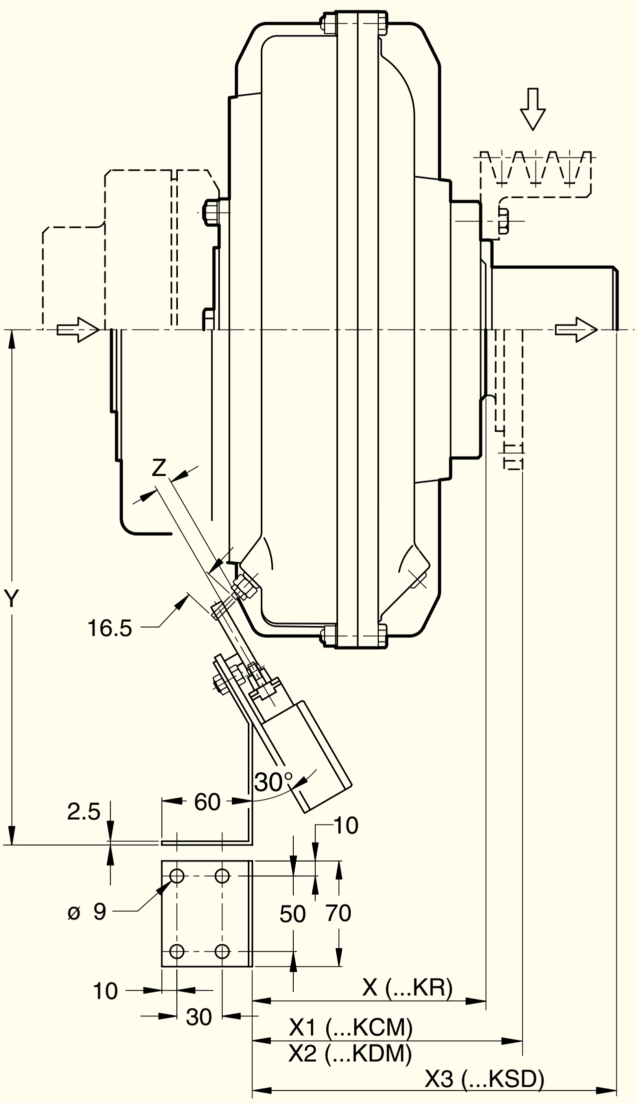
Fig. **5**



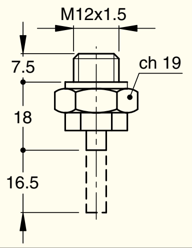
10.1 SWITCHING PIN DEVICE

This device includes a percussion fusible plug installed on the taper plug pos. 13 (Fig. 6).
The percussion fusible plug is made of a threaded plug and a pin hold by a fusible ring coming out due to the centrifugal force when the foreseen melting temperature is reached.
Such increase of temperature can be due to overload, machinery blockage or insufficient oil filling. The pin, moving by approx. 16 mm, intercepts the cam of the switch to operate an alarm or motor trip signal.
After a possible intervention and removal of the producing reason, this device can be easily restored with the replacement of the percussion plug or even the fusible ring following the specific instructions included in the instruction manual.
With external wheel as driver, as indicated in Fig. 6, the percussion plug operates in any condition, while in case of driven external wheel it can operate correctly only in case of increase of the slip due to overload or excessive absorption.
It is possible to install this system on all fluid couplings starting from size 13K even in case it has not been included as initial supply, asking for a kit including percussion fusible plug, gasket, taper plug, counterweight for balancing, glue, installation instructions.
In order to increase the safety of the fluid coupling a standard fusible plug is always installed, set at a temperature greater than that of the percussion fusible plug.
For a correct operation, please refer to the instructions relevant to the standard or reverse installation described at page 28.

Fig. **6**



Switching pin



MELTING TEMPERATURE		+10°C 0
120°C	SPEC.	1004-A
140°C	SPEC.	1004-B
175°C	SPEC.	1004-C

DIM.	X	X_1	X_2	X_3	ø	Y	Z
7	95	108	–	128	24	262	–
				143	28		
8	104	117		167		272	
9	123	146,5	136	210		287,5	
11	130	153,5	143	216		300,5	
12	140	163,5	153	241		323	15
13	154	177,5	170	316		335	16
15	177	200	199	337		358	16
17	197	220	218	405		382	12
19	189	212	210	397		400,5	9
21	•236	261	260	••451		423	8
24	•237	262	261	••452		460	4
27	251	311	277	–		491	9
29	276	336	302			524	8
34	326	393	353			584	4

• For Dia.100 + 35 mm
•• For Dia. 100 + 40 mm
REFERENCE DIMENSIONS

DIMENSIONS ARE SUBJECT TO ALTERATION WITHOUT NOTICE

10.2 OVERLOAD CONTROLLER (Fig. 7)

When load torque increases, slip also increases and output speed consequently decreases.
The said speed variation can be measured by means of a sensor sending a pulse train to the speed controller. If the rotating speed goes lower than the set threshold (see diagram) on the controller, a signal is given through the intervention of the inner relay.
The device has a “TC” timer with a blind time before starting (1 - 120 s) avoiding the alarm intervention during the starting phase, and another “T” timer (1 – 30 s) preventing from undesired relay intervention during sudden changes of torque.
The device also provides a speed proportional analogic output signal (0 – 10 V), that can be forwarded to a display or a signal transducer (4 – 20 mA).
Standard supply is 230 V ac, other supplies are available upon request: 115 V ac, 24 V ac or 24 V dc, to be specified with the order.

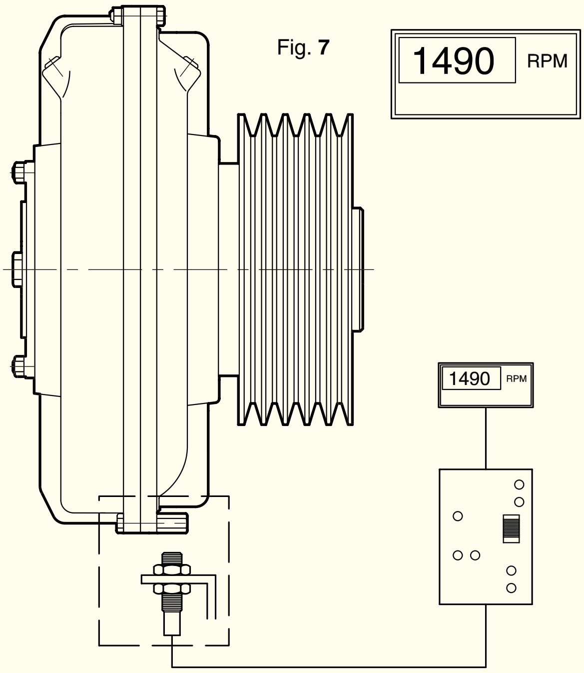


Fig. 7

CONTROLLER PANEL (Fig. 8)

TC Blind time for starting

Set screw regulation up to 120 s.

DS Speed range regulation

Programmable DIP-SWITCH (5 positions), selecting relay status, proximity type, reset system, acceleration or deceleration. Programming speed Dip-Switch with 8 positions allows to choose the most suitable speed range, according to the application being performed.

SV Speed level (set point)

Set screw regulation with digits from 0 to 10. The value 10 corresponds to full range set with Dip-Switch.

R Reset

Local manual reset is possible through R button, or remote reset by connecting a N.O. contact at pins 2-13.

SS Threshold overtaking

(RED LED) It lights up every time that the set threshold (set point) is overtaken.

A Alarm led

(RED LED) It lights up when alarm is ON and the inner relay is closed.

E Enable

(YELLOW LED) It lights up when the device is enabled.

T Delay time

Set screw regulation up to 30 s.

ON Supply

(GREEN LED) It shows that the device is electrically supplied.

FOR FURTHER DETAILS, ASK FOR TF 5800-A.

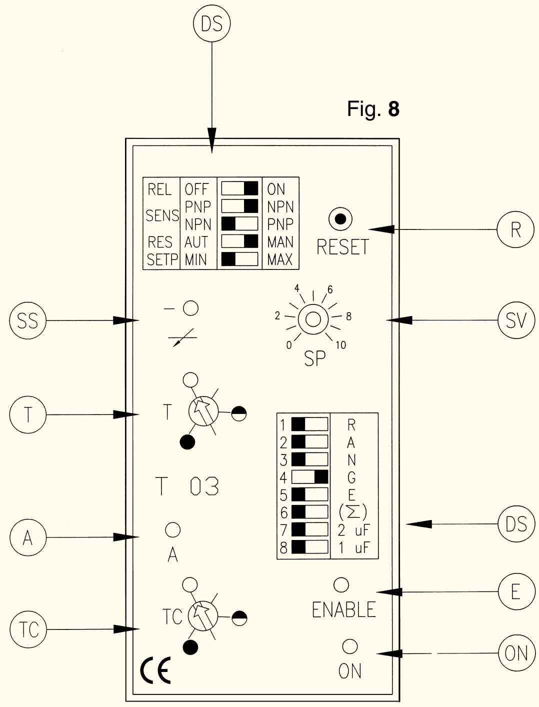
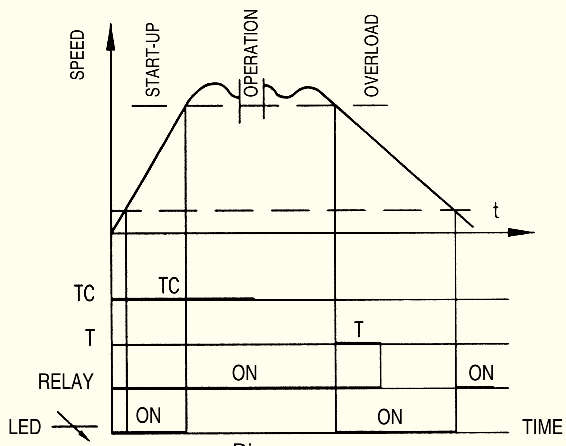


Fig. 8



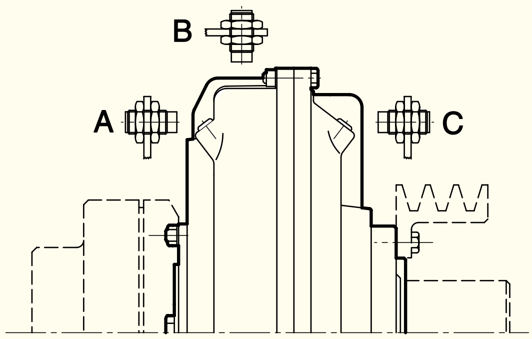
Diagram

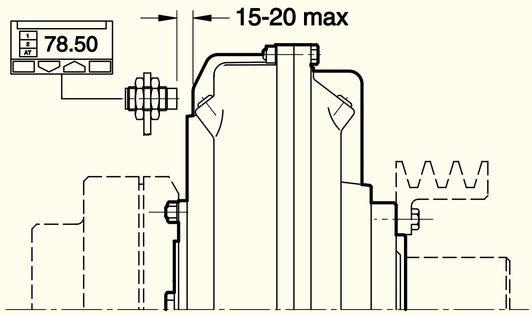
10.3 INFRARED TEMPERATURE CONTROLLER

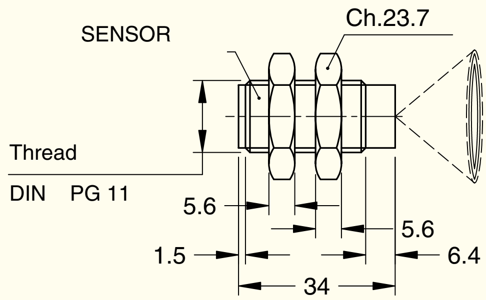
This is a non contact system used to check fluid coupling temperature. It is reliable and easily mounted.
It has 2 adjustable thresholds with one logical alarm and one relay alarm.

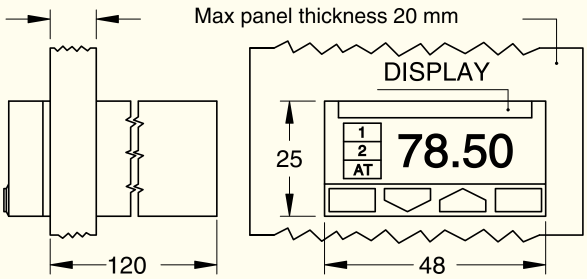
The proximity sensor must be positioned near the fluid coupling outer impeller or cover, according to one of the layouts shown in Fig. **9**.
It is advised to place it in the **A** or **C** positions, as the air flow generated by the fluid coupling, during rotation, helps removal dirt particles that may lay on the sensor lens.
The distance between the sensor and the fluid coupling must be about 15-20 mm (cooling fins do not disturb the correct operation of the sensor).
To avoid that the bright surface of the fluid coupling reflects light, and thus compromises a correct temperature reading, it is necessary to paint the surface, directly facing the sensor with a flat black colour (a stripe of 6-7 cm is sufficient).
The sensor cable has a standard length of 90 cm. If required, a longer one may be used only if plaited and shielded as per type “K” thermocouples.

Fig. **9**







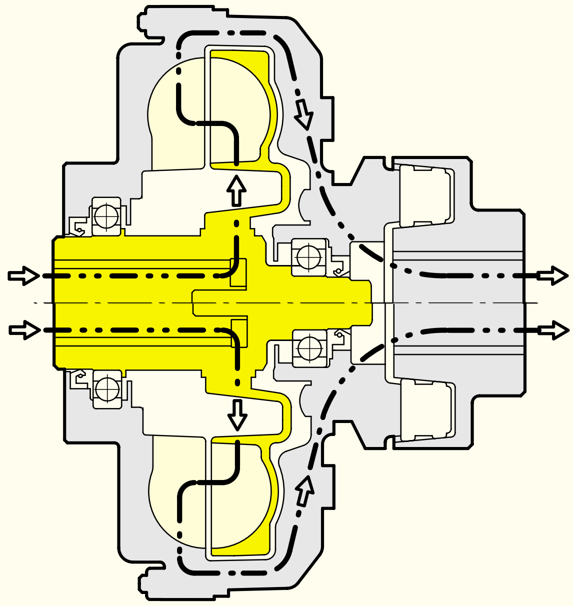


SENSOR	
Temperature range	0 ÷ 200 °C
Ambient temperature	-18 ÷ 70 °C
Accuracy	0.0001 °C
Dimensions	32.5 x 20 mm
Standard wire length •	0.9 m
Body	ABS
Protection	IP 65
CONTROLLER	
Power supply	85…264 Vac / 48…63 Hz
Relay output OP1	NO (2A – 250V)
Logical output OP2	Not insulated
(5Vdc, ±10%, 30 mA max)	
AL1 alarm (display)	Logic (OP2)
AL2 alarm (display)	Relay (OP1) (NO, 2A / 250Vac)
Pins protection	IP 20
Body protection	IP 30
Display protection	IP 65
Dimensions	1/32 DIN – 48x24x120 mm
Weight	100 gr

• TO BE MADE LONGER WITH TWISTED AND SHIELDED WIRES FOR TYPE K THERMOCOUPLES (NOT SUPPLIED)

11. INSTALLATION

11.1 STANDARD MOUNTING
Driver **inner** impeller



Minimum possible inertia is added to the motor, and therefore free to accelerate more quickly.

During the starting phase, the outer impeller gradually reaches the steady running condition. **For very long starting times, heat dissipation capacity** is **lower**.

If a braking system is required, it is **convenient and easy to install a brake drum or disc** on the flex coupling.

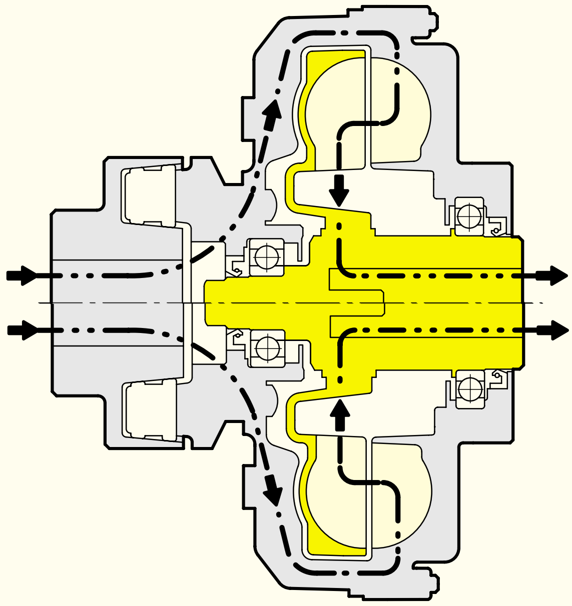
In some cases, where the driven machine cannot be rotated by hand, **maintenance procedures of oil checking and refilling**, as well as alignment, **become more difficult**.

The delayed fill chamber, when present, is fitted on the driven side. The rotating speed of the said chamber gradually increases during start-up, thus **leading to a longer starting time**, assuming the bleed orifices diameters are not changed. **If oil quantity is excessively reduced**, the transmissible torque may be lower than the starting torque of the driven machine. In such a case, part of the oil remains inside the delayed chamber. This lack of oil in the fluid coupling may cause stalling.

The **"switching pin" device might not work correctly** on machines where, owing to irregular operating conditions, the driven side may suddenly stop or jam during the starting phase.

Flex coupling is protected by the placement of the fluid coupling before it, and therefore this **configuration** is **fit for** applications with **frequent start-ups or inversions** of the rotating sense.

11.2 REVERSE MOUNTING
Driver **outer** impeller



Higher inertia directly connected to the motor.

The outer impeller, being directly connected to the motor, reaches synchronous speed instantly. **Ventilation** is therefore **maximum** from the beginning.

The **assembly of a brake disc or drum** on KR fluid couplings is **more difficult, expensive** and leads to a longer axial length of the whole machine group.

The outer impeller and cover are connected to the motor, **it is** therefore **possible to manually rotate the coupling** to check alignment and oil level, and for refilling.

The delayed fill chamber is fitted on the driver side, and reaches the synchronous speed in a few seconds.
Oil is therefore centrifuged into the main circuit gradually and completely.
Starting time is adjustable by replacing the calibrated bleed orifices.
The starting phase, however **is performed in a shorter time** than in the configuration with an inner driver impeller.

The **switching pin operation is always assured**, where fitted, as the outer impeller, always rotates because it is mounted on the driver shaft.

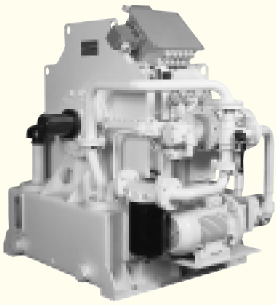
In case of frequent start-ups or inversions of the rotating direction, the **flex coupling is much more stressed**.

If not expressely required by the customer or needed for the application being performed, the fluid coupling is supplied according to our **"standard"** mounting. **Do specify** in your request for quotation **whether you need** a **"reverse" mounting**.

NOTE: Starting from size **13** included, a baffle ring is always fitted on the driver impeller, and therefore it is not recommended to **"reverse"** mount a fluid coupling equipped with a **"standard"** mounting, or viceversa.
In these cases **contact Transfluid** for more detailed information.

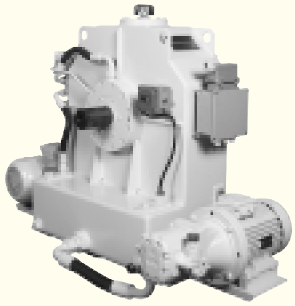
FLUID COUPLING
KSL SERIES

Start up and variable
speed drive up to 3300 kW



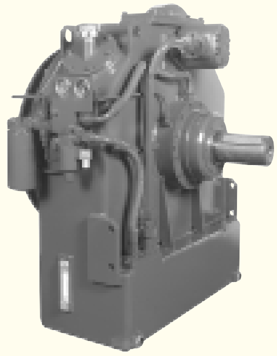
FLUID COUPLING
KPT SERIES

Start up and variable
speed drive up to 1700 kW



FLUID COUPLING
KPTO SERIES

For internal combustion engine
P.T.O. for pulley and cardan shaft
up to 1700 kW



FLUID COUPLING
KX SERIES

Constant fill
Up to 1000 kW

FLUID COUPLING
K SERIES

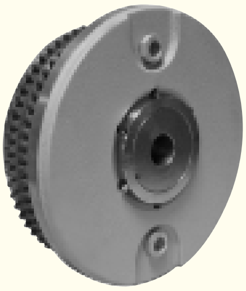
For diesel engines
Up to 1300 kW

OIL OPERATED POWER TAKE OFF
HF SERIES

Up to 800 kW

PNEUMATIC CLUTCH
TPO - SERIES

Up to 11500 Nm

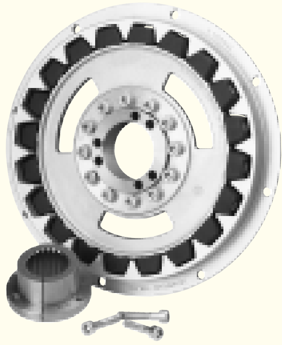


HYDRAULIC CLUTCH
HYDRAULIC BRAKE
SHC-SL SERIES

Up to 2500 Nm
Up to 9000 Nm

ELASTIC COUPLING
RBD SERIES

For internal combustion engine
up to 16000 Nm



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