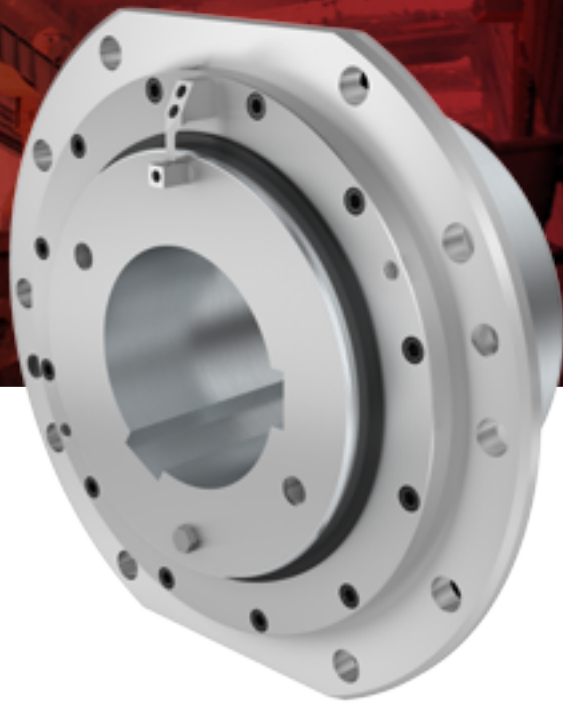


**JAURE®**



# **BARFLEX™ TCBR BARREL COUPLING**

**REGAL®**

EXPERIENCE,  
INNOVATION AND  
CLOSE COOPERATION  
WITH LEADING  
INTERNATIONAL  
COMPANIES.

# **JAURE® COUPLINGS AND POWER TRANSMISSION SOLUTIONS**

We are a leading supplier of couplings and power transmission solutions. Experience, manufacturing expertise, innovation and close cooperation with leading international companies enable us to provide customized solutions to our customers.

For over 50 years, we have developed couplings for the most demanding applications in marine, wind, energy, steel, railway and paper industries among others.

We have a broad range of manufacturing capabilities, particularly with respect to power and speed. We continue developing new products for future challenges.

The integration of Kop-Flex® and Jaure coupling products has added to our ability to apply technical expertise in providing answers, products and services to our customers for their many varied applications globally.

# BARFLEX™ BARREL COUPLING INTRODUCTION

Jaure® TCB® and TCB-HD barrel couplings were developed back in the 90s as the optimum coupling solution for hoisting applications. The advantage of these couplings compared to gear couplings is that they can absorb high misalignment and have less bending stress wear, and hence they provide longer life.

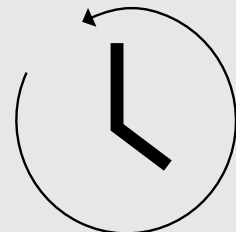
The NEW Barflex™ TCBR barrel coupling is an upgraded version of the original barrel coupling. It is 100% interchangeable with the TCB and TCB-HD coupling ranges and provides the following benefits:

## New Barflex™ TCBR Coupling Design Features

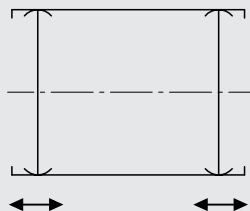
- **ABOUT 10% HIGHER TORQUE CAPACITY**, allowing a more favorable size selection and thus an important cost saving.



- **ASSEMBLY TIME REDUCTION.**



- **INCREASED AXIAL MISALIGNMENT TOLERANCE.**



- **IMPROVED VISUAL WEAR INDICATOR:**

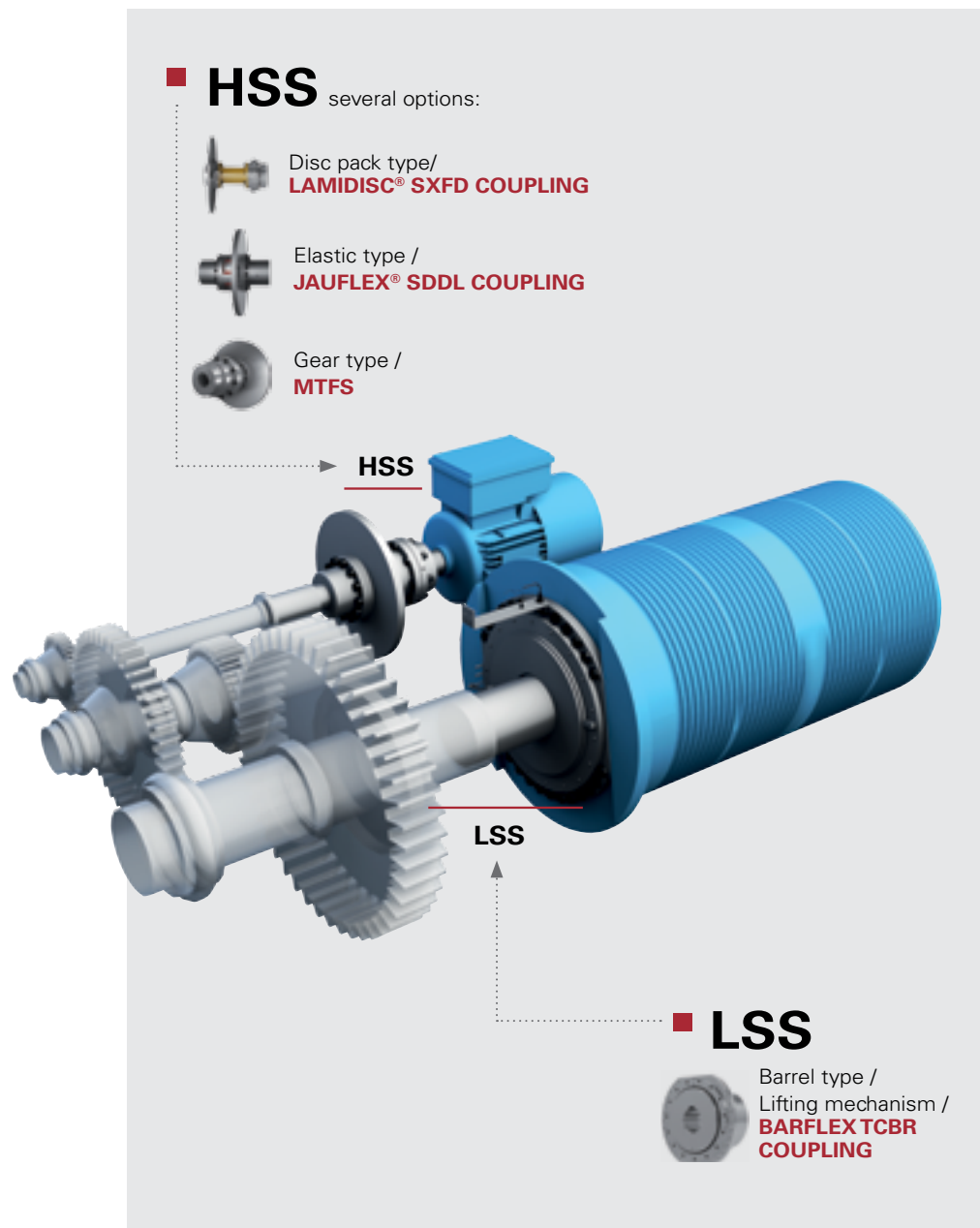
Easier to read the wear.



## APPLICATION

JAURE® Barflex™ TCBR barrel coupling is specially designed for installation in cranes & hoisting applications to connect the cable drum with the gear box output shaft. This coupling is also used in steel mills, winch and conveying applications as well as in stackers and reclaimers.

Barflex™ TCBR coupling satisfies the requirements described by German Steel & Iron Standard (Stahl-Eisen-Betriebsblatt) SEB 666212, Part 5, issued in March, 1992.



A generalized layout of lifting mechanism is shown in Fig. n° 1. The electric motor shaft is coupled to gear box input shaft by means of high speed flexible coupling, while a TCBR barrel coupling is installed in between gear box output shaft and the cable drum flange.

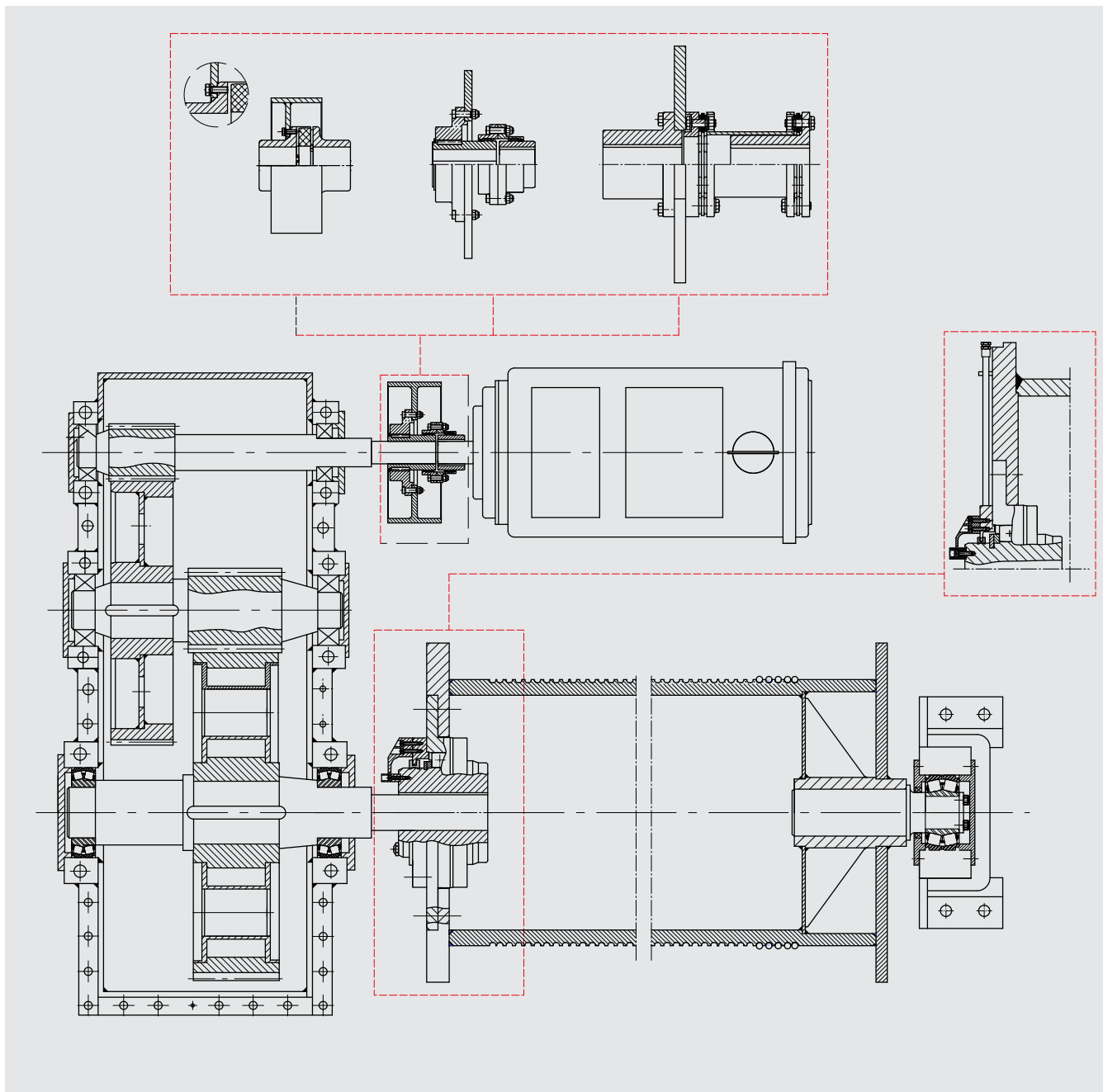
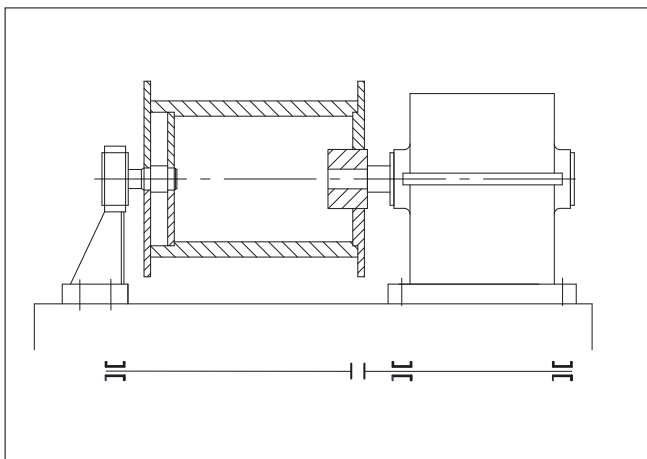


Fig. n° 1.  
Mounting of a barrel coupling in a lifting mechanism.

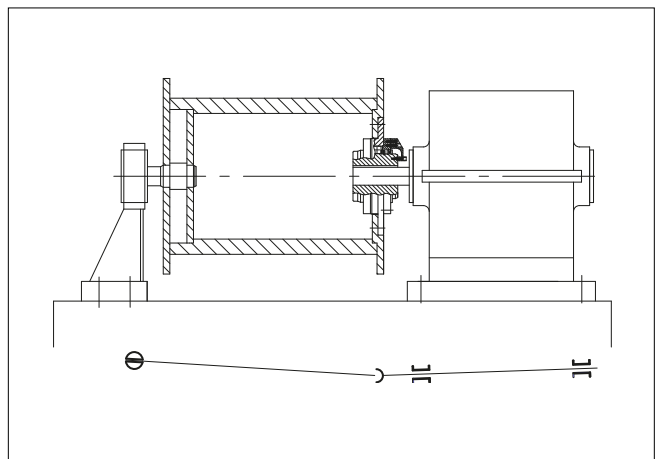
The typical arrangement for connecting the cable drum with the gear box output shaft is shown in Fig. n° 2 and Fig. n° 3.

When the gearbox output shaft is rigidly connected to drum flange in a lifting mechanism (Fig. n° 2), this originates a statically indeterminate case. This type of arrangement requires special care and considerable amount of time for doing the initial alignment, which is difficult to achieve in practice. Moreover, mounting inaccuracies, as well as deformation in structure and wear in moving part, lead to generate enormous additional forces which result in fatigue failure of shaft, driving gear or bearings.

It is highly recommended to use barrel coupling for installation between gear box output shaft and cable drum flange. As shown in Fig. n° 3, the barrel coupling acts as an articulated joint, allowing limited axial and angular misalignment. Thus, making the connection statically determinate and helping to avoid high bending moment loads which can cause fatigue failure of shaft, driving gear or bearings.




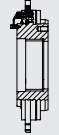
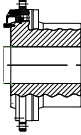
**Fig. n° 2.**  
Rigid mounting of gearbox-drum connection. Support at three points.



**Fig. n° 3.**  
Mounting with barrel coupling.

Since the barrel coupling allows a limited axial displacement it is imperative to use a self-aligning roller bearing fixed at the opposite end of drum shaft in order to withstand the axial forces that may be generated.

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# BARFLEX™

## BARREL COUPLING

### DESCRIPTION

The barrel coupling consists of a sleeve which is provided with semi-circular toothing around its internal diameter and a hub which is provided with similar kind of toothing over its external diameter. A series of specially designed spherical hardened barrels are inserted inside the hub and sleeve pockets.

The torque is transmitted from hub to sleeve through these self-aligning barrels, which act as a floating member. The internal space between the hub and sleeve pockets, in addition to the convex shape of the barrels with a specially designed crowning radius allow the coupling to take angular misalignment up to 1° and an axial displacement in the range of ±3mm to ±12mm. See product data on page 18-19.

The sleeve is provided with two diametrically opposite flat faces on flange to establish a connection between the sleeve flange and drum flange. The torque is transferred partially in friction through a series of high tensile bolted connection between the sleeve flange and drum flange and in compressive mode between the flat faces.

The axial movement of barrel is restricted with a retainer ring & seeger ring.

The external cover and sleeve are provided with specially designed seals to avoid lubrication losses by assuring perfect integrity of lubrication zone and avoiding penetration of foreign particles.

The barrel design is appropriate to minimize the contact pressure under large radial loads and minimize the effect of alternating bending stress on the toothing. The sliding velocity is kept to minimum under the misalignment compensation which helps to minimize the wear in the hub and sleeve pockets.

The teeth design is robust and in semi-circular shape. The height of teeth is small compared to its width at the bottom. In addition to this, due to the effect of a “crush polishing” of the hardened barrel on the tooth profile, its wear resistance is appreciably improved.

Barrel couplings are prone to wear during usage. Wear is a common phenomenon which occurs due to sliding and rolling actions of the barrel over the coupling hub and sleeve pocket interface. Due to this, there is a relative displacement between the hub and sleeve. This displacement as a function of wear is detected by means of a mechanical wear indicator. The coupling should be replaced when the predefined wear limit is reached.

The torque and radial load rating of new Barflex™ TCBR coupling is improved significantly. Extensive research in the field of design optimization, Finite Element Analysis, and rigorous testing enabled us to improve the performance of newly designed TCBR coupling.

New TCBR coupling is equipped with modern mechanical wear indicator system. The specially designed pointer/Indicator is mounted on cover which moves relative to the axially mounted square pin on the hub as a function of wear, permits control of internal wear of the tothing without the need to disassemble any part of the coupling. The same indicator also controls the axial position of the sleeve relative to the hub. Optionally, an electronic wear indicator can be installed for remote control (for more details see page 24).

TCBR couplings can be used at -30°C to 70°C temperature range. For other temperatures, please contact the Jaure® couplings engineering team.

The Barflex™ TCBR coupling design is verified by Finite Element Analysis (see Fig. n° 5) and validated by performing in-house test.

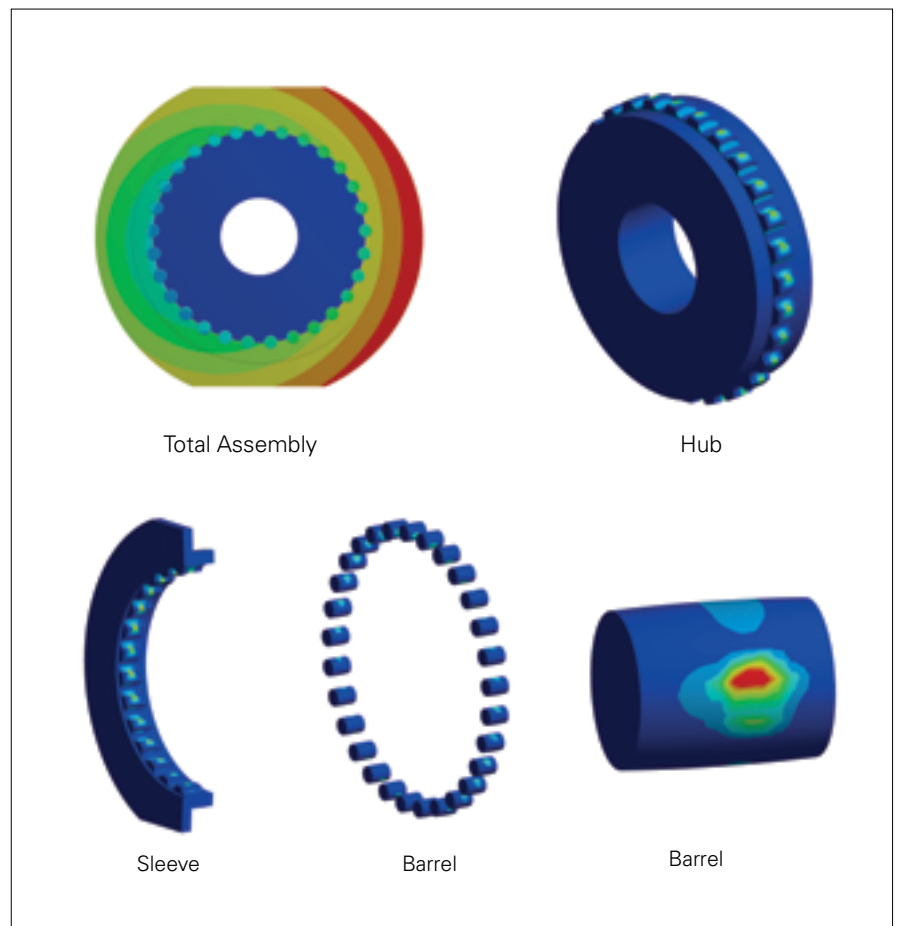


Fig. n.º 5

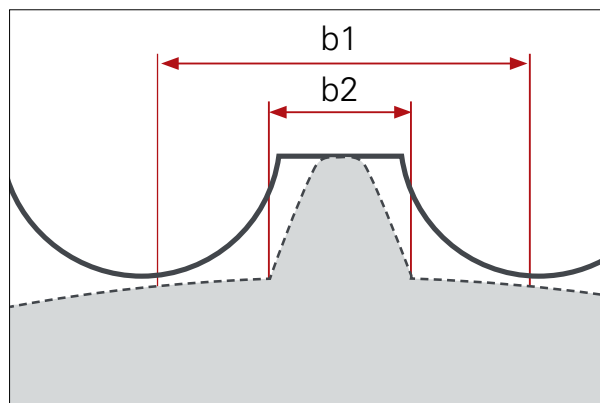
## BENEFITS OF USING BARREL COUPLINGS INSTEAD OF GEAR COUPLING

The mounting space required for barrel coupling is significantly lower as compared to a gear coupling. A barrel coupling is narrower than the equivalent gear coupling, and it is partially positioned inside the drum.

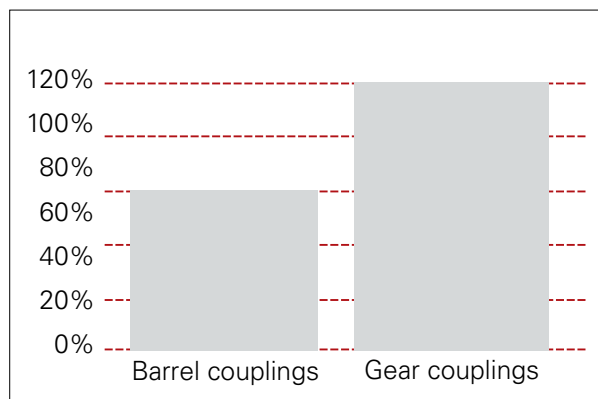
Due to the profile of barrel and shape of hub and sleeve pocket, barrel couplings are subjected to much lower bending stress on the root of the teeth. Therefore, increased safety factor is obtained against bending and peak radial loads.

The radial load in barrel coupling is better distributed due to the increased contact area (Fig. n.º 6) and hence the life of the coupling is increased.

Below graph (Fig. n.º 7) shows the comparison of stresses in barrel coupling and gear coupling under the radial load. This radial load is even better distributed with coupling wear in barrel coupling.



**Fig. n.º 6**  
Technical modifications reserved.  $b_1 \geq 2 \cdot b_2$



**Fig. n.º 7**  
Bending stress in the coupling for a given radial load (%).

# COUPLING SELECTION

Coupling selection requires the validation of:

- 1/ Coupling maximum permissible torque  $T_{c\text{MAX}}$
- 2/ Coupling admissible radial load  $F_r$
- 3/ Connection between coupling and shaft

## 1. COUPLING MAXIMUM PERMISSIBLE TORQUE $T_{c\text{MAX}}$

Selection torque  $T$  will be the maximum of the values calculated in two ways: based on the installed power ( $P_i$ ) or based on the consumed power ( $P_c$ ).

Coupling maximum permissible torque  $T_{c\text{MAX}}$  rating must be over this selection torque  $T$ .

### 1.1 Based on installed power ( $P_i$ )

The calculation based on the installed power of the motor ( $P_i$ ) requires knowing the value of the drum turning speed ( $n$ ) and applying the correction of the operating factor ( $K_1$ ) according to the cable transmission group.

①

$$T = 9550 \cdot \frac{P_i}{n} \cdot K_1$$

WHERE:

$P_i$  (kW) = max. installed power of the motor

$n$  (rpm) = drum turning speed

$K_1$  = operating factor (see Table n°1)

Table n.° 1. Operating factor  $K_1$ , according to cable transmission group

GROUP DIN 15020	1B m	1A m	2 m	3 m	4 m	5 m
GROUP FEM (1970)	IB	IA	II	III	IV	V
GROUP FEM (1987)	M1, M2, M3	M4	M5	M6	M7	M8
GROUP BS 466 (1984)	M1, M2, M3	M4	M5	M6	M7	M8
Operating factor $K_1$	1, 12	1,25	1,40	1,60	1,80	2

### 1.2 Based on consumed power ( $P_c$ )

The formula for the calculation of the torque based on the consumed power of the motor ( $P_c$ ) is the same as the previous case, but for knowing the consumed power of the motor, values of the drum static pull ( $F_p$ ) and the drum lifting speed rate ( $V_r$ ) are required. The drum lifting speed is calculated with the turning speed ( $n$ ) and the drum diameter ( $D$ ):

**Different examples of hoist tackle configurations.**

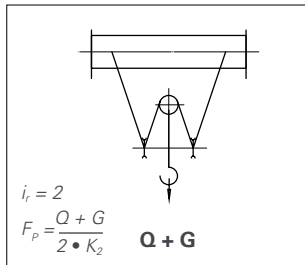


Fig. n.º 8.  
Twin hoist, 2 sheaves. Double line to drum.

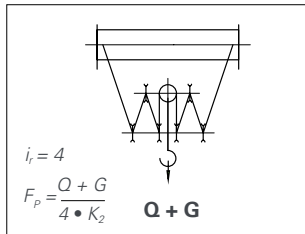


Fig. n.º 9.  
Twin hoist, 4 sheaves. Double line to drum.

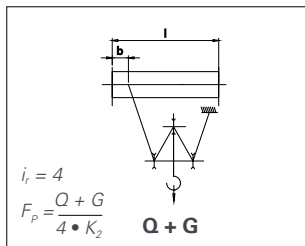


Fig. n.º 10.  
Hoist, 2 sheaves. Single line to drum.

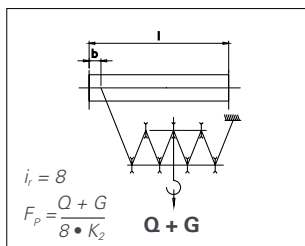


Fig. n.º 11.  
Hoist, 4 sheaves. Single line to drum.

$$T = \frac{P_c \cdot 9550}{n} \cdot K_1$$

$$P_c = \frac{F_p \cdot V_r}{60000}$$

$$V_r = \pi \cdot D \cdot n$$

**WHERE:**

$P_c$  (kW) = max. power consumed by the motor

$F_p$  (N) = drum static pull, including cable and pulley efficiency (see Equation 6)

$V_r$  (m/min) = drum cable lifting rate

$n$  (rpm) = drum turning speed

$D$  (m) = drum pitch diameter

$K_1$  = operating factor (see Table n.º 1)

The determination of the Drum Static Pull ( $F_p$ ) is based on the Max load on the hook ( $Q$ ), the weight of the hoist tackle and cables ( $G$ ), transmission ratio ( $i_r$ ) and the operating factor of drum and hoist ( $K_2$ ).

The transmission ratio ( $i_r$ ) depends on the hoist tackle configuration. Examples on figs 8, 9, 10 and 11 for different configurations.

$$F_p = \frac{Q + G}{i_r \cdot K_2}$$

**WHERE:**

$Q$  (N) = max. load on hook

$G$  (N) = weight of hoist tackle and cables

$K_2$  = operating factor of drum and hoist tackle efficiency (see Table n.º 2)

$i_r$  = transmission ratio =  $\frac{\text{Total number of lines}}{\text{Number of lines leaving the drum}}$

Table n.º 2. Operating factor $K_2$ according to drum and tackle efficiency							
Hoist tackle reduction $i_r$	2	3	4	5	6	7	8
$K_2$ , with bronze bearings	0,92	0,90	0,88	0,86	0,84	0,83	0,81
$K_2$ , with ball bearings	0,97	0,96	0,95	0,94	0,93	0,92	0,91

## 2. COUPLING ADMISSIBLE RADIAL LOAD $F_r$

Selection of radial load calculation is based on static pull of the drum ( $F_p$ ), the weight of the drum with cables and parts of the coupling ( $w$ ) and the geometry of the drum.

Coupling radial load  $F_r$  rating must be over this selection radial load.

For systems with double cables to the drum (fig. 8 and fig. 9) formula is:

$$\textcircled{6} \quad F = \frac{F_p}{2} + \frac{w}{2}$$

And for systems with a single line to the drum (fig. 10 and fig. 11):

$$\textcircled{7} \quad F = [F_p (1 - \frac{b}{l})] + \frac{w}{2}$$

### WHERE:

$F_p$  (N)= Static pull of drum, including cable and pulley efficiency

$b$  (mm)= Shortest possible distance from cable in drum to the geometric centre axis of barrels in the coupling.

$l$  (mm)= Distance between drum supports

$w$  (N)= Own weight of drum with cables and parts of the coupling

### 2.1. Corrected radial load $F_A$

When selection torque is below coupling torque  $T_{C\text{MAX}}$  and selection radial load is greater than the admissible radial load  $F_r$ , it is possible to increase the coupling admissible radial load by considering the operating factor ( $K_1$ ) according to the cable transmission group using below equation:

$$\textcircled{8} \quad F_A = F_r + \left( \frac{T_{C\text{MAX}} - T}{K_1} \right)$$

### WHERE:

$F_A$  = Corrected radial load (N)

$T$  = Selection Torque (Nm)

$F_r$  = Coupling max radial load (N)  
(See Table at page 18-19)

$K_1$  = operating factor (see Table n.º 1)

$T_{C\text{MAX}}$  = Coupling maximum torque (Nm)  
(See Table at page 18-19)

The reverse procedure, i.e. to increase the max. permissible torque if the radial load is not fully used, is not allowed.

## 3. CONNECTION BETWEEN COUPLING AND SHAFT

There is a limitation in the maximum shaft diameter allowed in a coupling size. The diameters shown in the table of page 18 are valid for shaft with keyways according DIN 6885/1.

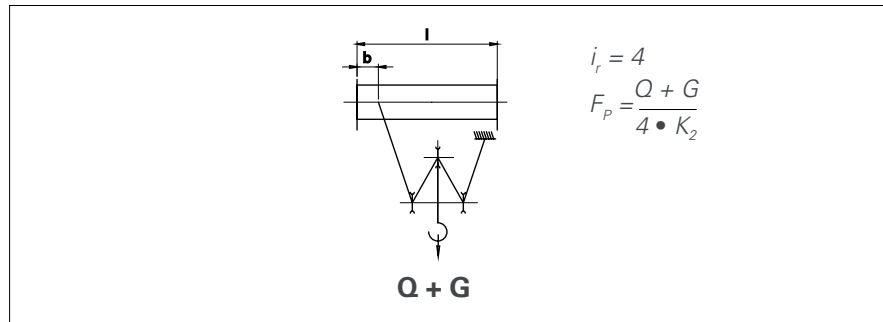
If a different connection is used such as splines shafts according 5480, interference connection, or other connection, validation is required. Please contact the Jaure® Couplings Engineering Department.

# SELECTION EXAMPLE

As a coupling selection example, the crane has the following characteristics:

$Q = 300000 \text{ N}$ (useful load to be lifted)	$K_1 = 1.8$ (Group IV)
$G = 10000 \text{ N}$ (hoist weight)	$K_2 = 0.95$ (Drum and hoist efficiency)
$w = 14000 \text{ N}$ (weight of drum and cables)	$b = 400 \text{ mm}$ (distance between cable and coupling)
$P_i = 30 \text{ kW}$ (motor power)	$l = 1200 \text{ mm}$ (drum length)
$n = 8 \text{ rpm}$ (drum turning rate)	$d = 200 \text{ mm}$ (gearbox output shaft, with key)
$D = 800 \text{ mm}$ (drum diameter)	
$i_r = 4$ Hoist reduction	

And the installation layout is the one shown in Fig. 10:



**Table n.º 3.**  
Conversion table

1 mm	0,0394 inch
1 inch	25,4 mm
1 m	39,4 inch 3.283 ft
1 kg	2,2046 lb (weight)
1 lb (wt)	0,4536 kg
1 N	0,2248 lbs (force)
1 lb (f)	4,4482 N
1 Nm	0,7376 lb-ft
1 lb-ft	1,3558 Nm
1 kgm	23,76 lb-ft
1 lb-ft	0,1382 kgm
1 kW	1,34 HP
1 HP	0,746 kW

## 1. COUPLING MAXIMUM PERMISSIBLE TORQUE $T_{C \text{ MAX}}$

### 1.1 Based on installed power ( $P_i$ )

$$T = \frac{9550 \cdot P_i}{n} \cdot K_1 = \frac{9550 \cdot 30}{8} \cdot 1,8 = 64462 \text{ Nm}$$

### 1.2 Based on consumed power ( $P_c$ )

First calculate the drum static pull ( $F_p$ ):

$$F_p = \frac{Q + G}{i_r \cdot K_2} = \frac{300000 + 10000}{4 \cdot 0,95} = 81579 \text{ N}$$

And with the drum lifting speed rate ( $V_r$ ):

$$V_r = \pi \cdot D \cdot n = \pi \cdot 0,8 \cdot 8 = 20,1 \text{ m/min}$$

Consumed Power of the motor ( $P_c$ ) is calculated:

$$P_c = \frac{F_p \cdot V_r}{60000} = \frac{81579 \cdot 20,1}{60000} = 27,3 \text{ kW}$$

And then the Torque:

$$T = \frac{9550 \cdot P_c}{n} \cdot K_1 = \frac{27,3 \cdot 9550}{8} \cdot 1,8 = 58660 \text{ Nm}$$

Worst case of 1.1 and 1.2 is 64462 Nm, coupling maximum permissible Torque  $T_{c \text{ MAX}}$  must be over this value.

With this requirement, minimum size of coupling is TCBR - 500 with a value of 102600 Nm.

## 2. COUPLING ADMISSIBLE RADIAL LOAD $F_r$

With the layout like Fig. 10, equation number 7 is required for the Radial Load:

$$F = [ F_p (1 - \frac{b}{l}) ] + \frac{W}{2} =$$

$$[ 81600 (1 - \frac{400}{1200}) ] + \frac{14000}{2} = 61400 \text{ N}$$

Since the TCBR – 500 can withstand a radial load  $F_r$  of 133400 N and is over the calculated 61400 N, the selection is correct.



## 2.1 CORRECTED RADIAL LOAD $F_A$

If there is a case where the calculation required radial load  $F$  is over the coupling admissible radial load  $F_r$ , prior to select a bigger coupling, there is a chance of doing a calculation for the Corrected Radial Load  $F_A$ . using equation 8:

$$F_A = F_r + \frac{[(T_{c \text{ MAX}} - T)]}{K_1}$$
$$[133400 + (102600 - 64462) / 1,8] = 154588 \text{ N}$$

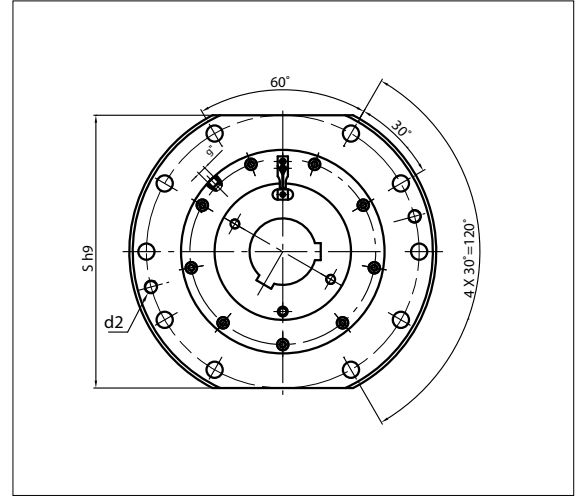
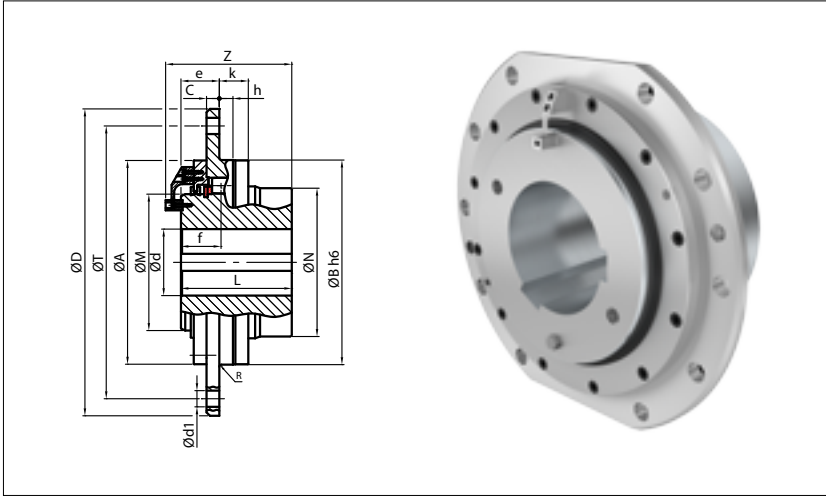
So, in this case the coupling will be able to withstand a radial load  $F$  up to 154588 N.

## 3. CONNECTION BETWEEN COUPLING AND SHAFT

Last step is to check shaft connection.

Maximum allowed diameter for TCBR – 500 coupling is 215mm, since the shaft diameter is 200mm, selection is correct. This maximum bore is for an execution with keyways according to DIN 6885/1, for other type of connections validation of torque transmission must be performed.

# TCBR HEAVY DUTY STANDARD DESIGN



SIZE	SELECTION STANDARD SEB	T <sub>c</sub> MAX	Fr ADMISSIBLE RADIAL LOAD	Ød MAX (1)	Ød MIN	ØD	L	L min	ØM	ØN	ØA	ØB
TCBR		Nm	N	mm	mm	mm	mm	mm	mm	mm	mm	mm
<b>25</b>	-	7500	19600	68	38	250	95	85	95	106	159	160
<b>50</b>	-	9500	22250	80	48	280	100	85	110	122	179	180
<b>75</b>	-	12000	24000	90	58	320	110	95	125	140	199	200
<b>100</b>	-	16300	29700	100	58	340	125	95	140	154	219	220
<b>130</b>	-	23500	41800	115	78	360	130	95	160	174	239	240
<b>160</b>	-	29100	46000	130	78	380	145	95	180	194	259	260
<b>200</b>	SG 130	33900	50850	136	98	400	170	95	198	212	279	280
<b>300</b>	-	42600	58250	156	98	420	175	95	220	234	309	310
<b>400</b>	SG 140	57200	82500	185	98	450	185	120	260	273	339	340
<b>500</b>	-	102600	133400	215	98	510	220	132	300	318	399	400
<b>600</b>	SG 185	138150	143650	235	118	550	240	132	310	330	419	420
<b>1000</b>	SG 200	185300	158050	250	138	580	260	140	350	368	449	450
<b>1500</b>	SG 240	250700	190750	295	158	650	315	143	400	432	529	530
<b>2100</b>	-	381500	288850	305	168	665	330	153	420	456	544	545
<b>2600</b>	SG 270	442800	334800	315	168	680	350	153	440	471	559	560
<b>3400</b>	SG 315	532500	372750	340	198	710	380	170	470	500	599	600
<b>4200</b>	SG 355	665650	426000	385	228	780	410	170	530	563	669	670
<b>6200</b>	SG 400	816200	498200	430	258	850	450	170	600	626	729	730
<b>8200</b>	-	900000	525000	455	255	940	500	191	630	673	796	800
<b>9200</b>	-	1050000	550000	500	255	1025	500	191	695	736	856	860
<b>10200</b>	-	1300000	600000	560	270	1120	500	191	780	820	946	950

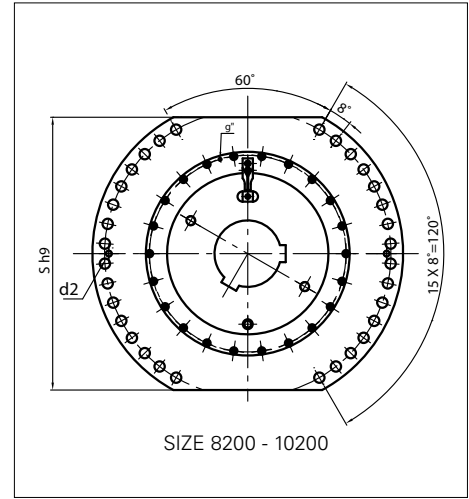
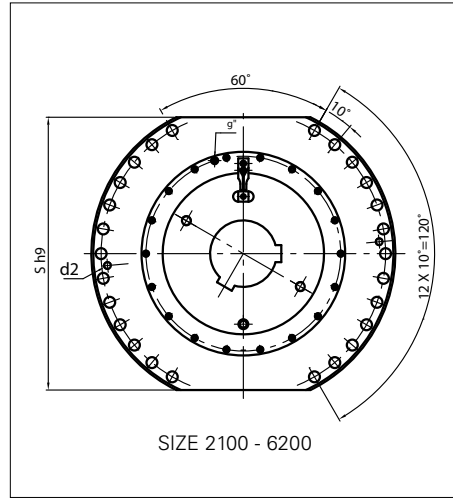
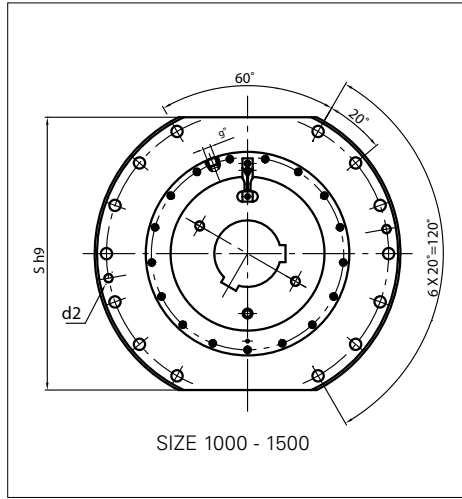
1) Maximum bore diameters for execution with keyways according to DIN 6885/1. For other types of connections consult our Technical Department.

2) Aproximate weight.

g = lubrication point.

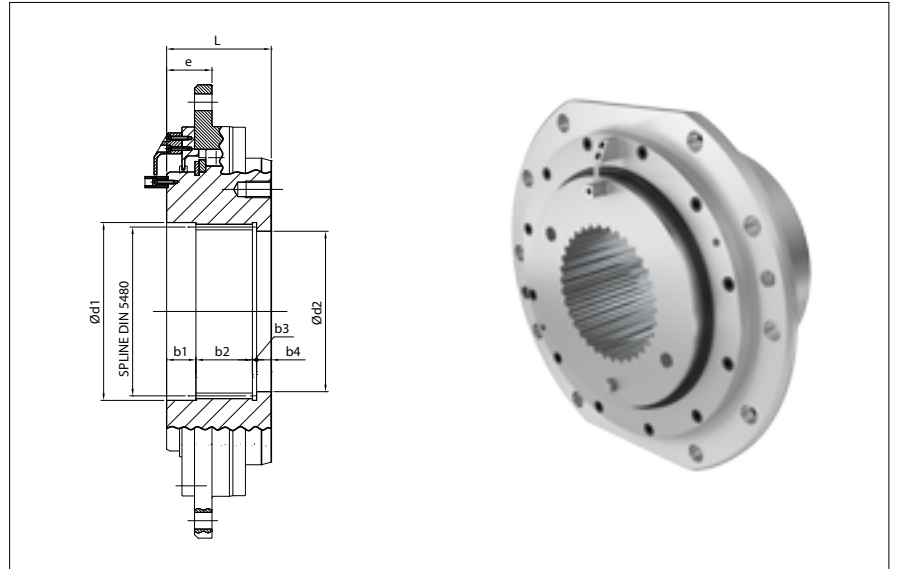
Up to size 160: R. 1/8" Gas, above size 200: R. 1/4" Gas.

Technical modifications reserved



ØT	Ød1	S	e	f	C	R	h	k	Ød2	Z	MAXIMUM DISPLACEMENT	WEIGHT (2)
mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	+/- mm	kg
220	15	220	42	44	12	2,5	16	33	M 12	113	3	13
250	15	250	42	44	12	2,5	16	33	M 12	118	3	21
280	19	280	45	46	15	2,5	17	33	M 16	128	4	25
300	19	300	45	46	15	2,5	17	33	M 16	143	4	30
320	19	320	45	47	15	2,5	19	36	M 16	148	4	36
340	19	340	45	47	15	2,5	19	36	M 16	163	4	46
360	19	360	45	47	15	2,5	19	36	M 16	188	4	59
380	19	380	45	49	15	2,5	19	38	M 16	193	4	77
400	24	400	60	57	20	2,5	22	38	M 20	205	4	105
460	24	460	60	65	20	2,5	30	46	M 20	242	6	161
500	24	500	60	65	20	2,5	30	46	M 20	262	6	178
530	24	530	60	66	20	2,5	32	47	M 20	282	6	215
600	24	580	65	71	25	2,5	30	51	M 20	346	10	336
615	24	590	65	74	25	4	43	69	M 20	361	10	363
630	24	600	65	78	25	4	43	69	M 20	381	10	396
660	28	640	81	87,5	35	4	40	69	M 20	416	10	449
730	28	700	81	91	35	4	40	69	M 20	446	12	638
800	28	760	81	91	35	4	40	69	M 20	486	12	787
875	28	830	86	92	40	4	50	75	M 20	541	12	1370
945	34	900	86	92	40	4	50	75	M 20	541	12	1669
1040	34	1000	86	92	40	4	50	76	M 20	541	12	1791

# TCBR WITH SPLINED SHAFT



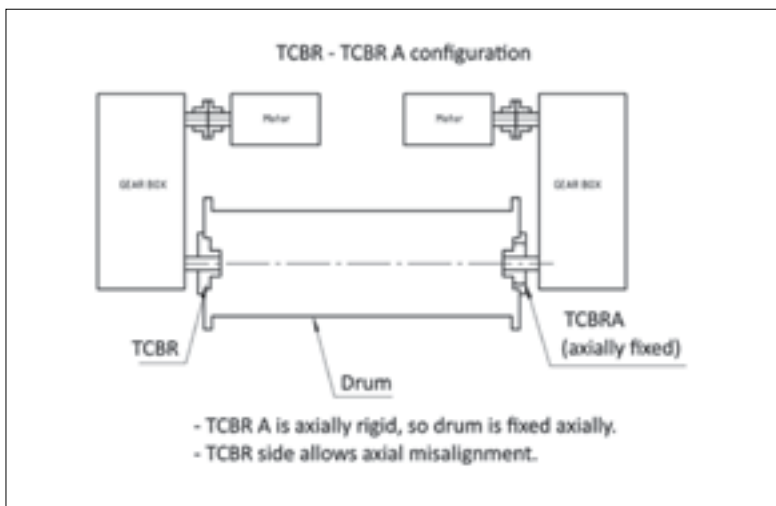
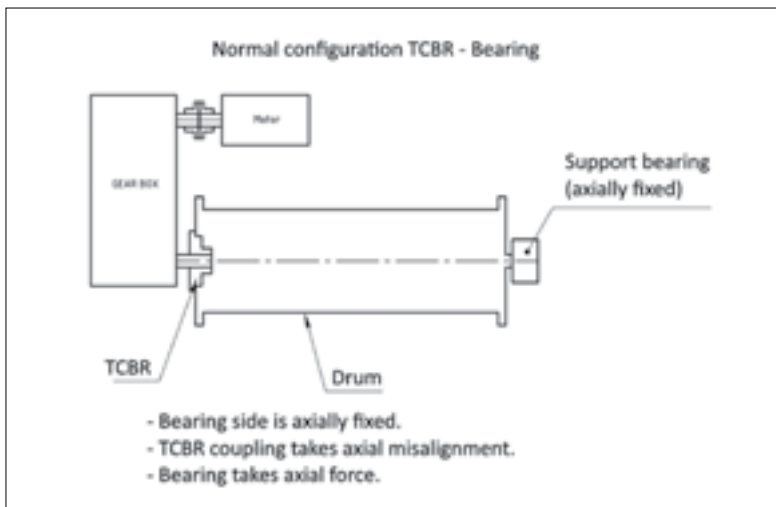
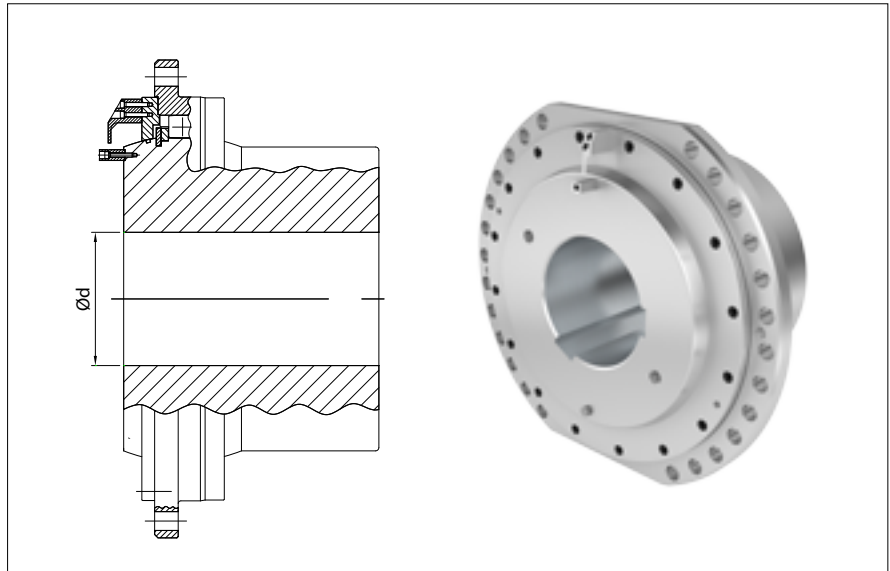
SIZE	L	e	SPLINE	d1	d2	b1	b2	b3	b4
TCBR with spline	mm	mm	DIN-5480	H7 mm	H7 mm	mm	mm	mm	mm
200	95	45	N100x5x30x18x9H	100	85	15	55	10	15
300	95	45	N140x5x30x26x9H	140	125	15	55	10	15
400	120	60	N180x8x30x21x9H	180	160	15	75	10	20
500	135	60	N180x8x30x21x9H	180	160	20	75	10	30
600	135	60	N180x8x30x21x9H	180	160	20	75	10	30
1000	140	60	N200x8x30x24x9H	200	180	20	80	10	30
1500	145	65	N240x8x30x28x9H	240	220	25	85	10	25
2100	155	65	N240x8x30x28x9H	240	220	25	85	10	35
2600	155	65	N300x8x30x36x9H	300	280	30	83	10	33
3400	170	81	N300x8x30x36x9H	300	280	30	100	10	30
4200	170	81	N340x8x30x41x9H	340	320	30	100	10	30
6200	170	81	N340x8x30x41x9H	340	320	30	100	10	30
8200	191	86	N400x8x30x48x9H	400	380	35	111	10	35
9200	191	86	N440x8x30x54x9H	440	420	35	111	10	35
10200	191	86	N500x10x30x48x9H	500	475	35	111	10	35

The geometry of the splined shaft can be adapted to customer's requirements.

Technical modifications reserved

# TCBRA WITH LIMITED AXIAL TRAVEL

For special layouts where no axial limiting bearing can be used in one side of the drum, it is required the use of special coupling design doing the bearing job. An example is a crane lifting layout where the drum is driven from both sides, in one side standard Barflex™ TCBR coupling is used but in the other side, the special TCBRA design is required replacing the bearing and avoiding axial oscillations.



Barrel coupling TCBRA is not designed to support axial load. For each size, there is a maximum value that the coupling can withstand:

<b>F<sub>A</sub> MAXIMAL AXIAL LOAD (kN)</b>		
<b>SIZE</b>	<b>MAX AXIAL LOAD</b>	<b>d MAX (KEYED CONNECTION)</b>
TCBR	kN	mm
200	60	135
300	65	150
400	76	178
500	95	215
600	112	217
1000	130	250
1500	147	295
2100	121	305
2600	130	315
3400	201	340
4200	226	378
6200	251	425
8200	277	445
9200	302	490
10200	327	520

# CABLE DRUM DETAILS

The quality of the flange material will be S355JR acc. to EN-10025-2 or higher.

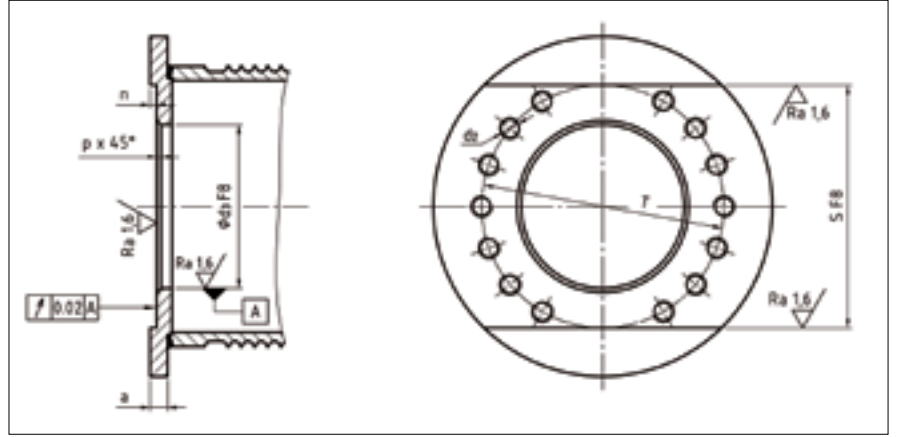


Fig. n.º 12.  
Cable drum flange details.

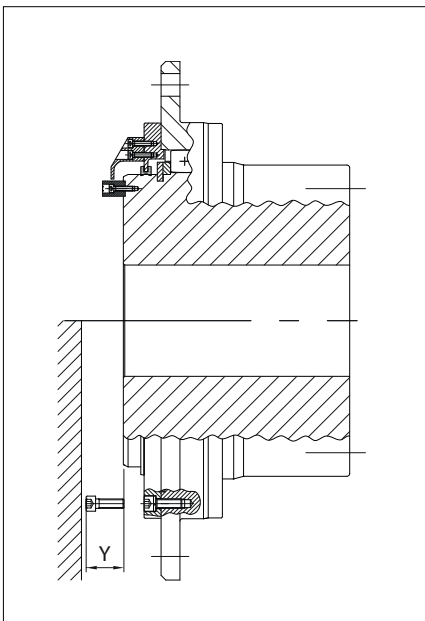


Fig. n.º 13.  
Distance necessary for screw removal.

Table n.º 5. Y distance			
TCBR Coupling size	25 400	500 2600	3400 10200
Min. Y [mm]	50	65	75

Table n.º 4. General Dimensions

SIZE	T	S F8	a min.	d <sub>2</sub>	d <sub>3</sub> F8	p	n min.
TCBR	mm	mm	mm		mm	mm	mm
25	220	220	25	M 12	160	3	10
50	250	250	25	M 12	180	3	10
75	280	280	25	M 16	200	3	10
100	300	300	25	M 16	220	3	10
130	320	320	25	M 16	240	3	10
160	340	340	25	M 16	260	3	10
200	360	360	25	M 16	280	3	10
300	380	380	25	M 16	310	3	10
400	400	400	30	M 20	340	3	10
500	460	460	30	M 20	400	3	10
600	500	500	30	M 20	420	3	10
1000	530	530	40	M 20	450	3	20
1500	600	580	50	M 20	530	3	25
2100	615	590	50	M 20	545	5	25
2600	630	600	60	M 20	560	5	25
3400	660	640	60	M 24	600	5	35
4200	730	700	60	M 24	670	5	35
6200	800	760	60	M 24	730	5	35
8200	875	830	70	M 24	800	6	40
9200	945	900	70	M 30	860	6	40
10200	1040	1000	70	M 30	950	6	40

Technical modifications reserved

# WEAR INDICATOR

One big advantage of barrel couplings compared to other types of couplings is the ability to perform preventative maintenance using a wear indicator. The design of barrel couplings allows them to tolerate a greater amount of wear without appreciable decrease in operating capacity, which makes it possible to more easily monitor wear.

Although some manufacturers provide wear indicators for gear couplings, the small amount of wear allowed for this type of coupling makes them unreliable and overly complex to use for preventative maintenance purposes.

The amount of wear in the barrel coupling can be inspected by comparing the location of the pointer which is mounted on cover with respect to the edges of the indicator pin mounted on hub, as shown in Figure 14.

When this Pointer edge, reaches to either of the edge of indicator pin, then it is the time to replace the coupling.

Recommended wear limit values ( $m/2$ ) are found in Table n.º 6.

The recommended wear limits shown in Table n.º 6 are for applications in which the load is applied in only one direction (example: crane hoists). In the case where the coupling is loaded in both directions (examples: travelling, looper cars in steel mills), then the recommended wear limits are HALF the values shown in Table n.º 6. Unless otherwise specified in the customer's order, the wear indicator marks on the coupling will be equal to the values shown in Table n.º 6.

Table n.º 6. Control of coupling wear

Coupling size	25	50	75	100	130	160	200	300	400	500	600
Max. wear $m/2$ [mm]	4	4	4	4	6	6	6	6	6	8	8
Coupling size	1000	1500	2100	2600	3400	4200	6200	8200	9200	10200	
Max. wear $m/2$ [mm]	8	8	8	8	8	8	8	8	8	8	

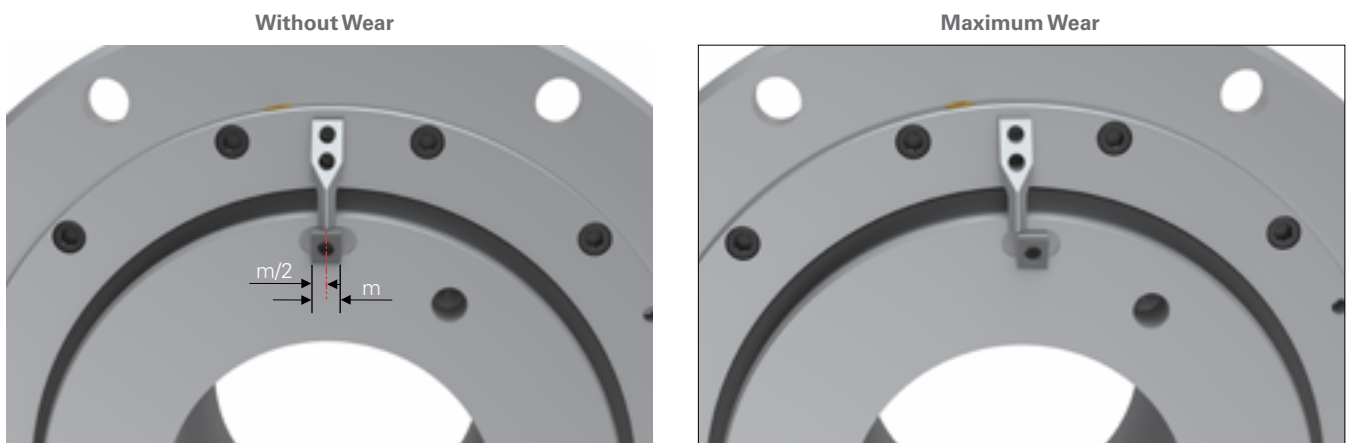


Fig. n.º 14.  
Wear position

Technical modifications reserved

# ELECTRONIC WEAR INDICATOR IN HOISTING SOLUTION

An electronic wear indicator feature is also available on demand. This feature allows the user to monitor wear remotely. So, in addition to the visual wear indicator, an electronic wear indicator can be connected either to the operator's control system or to an optional display unit to allow continuous or periodic monitoring of the barrel coupling wear.

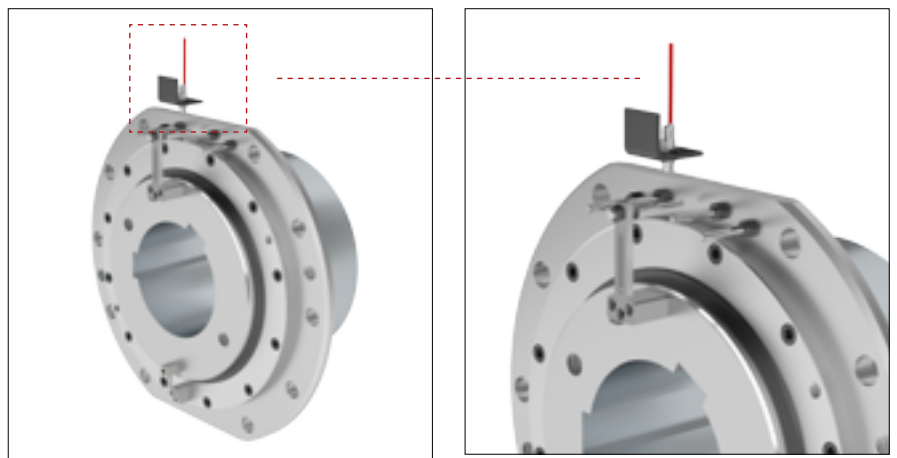


Fig. n°. 15.  
Electronic indicator

- Real time wear indicator: shows real progressive wear magnitude against wear limit.
- Reliable and accurate wear value, even in max. misalignment working conditions.
- Gives alarm once max. wear limit is reached.
- Can give direct signal to crane PLC.
- Can be placed inside crane control panel.
- In very dusty working atmosphere positively tested.
- Operating temperature from -15°C to 60°C.

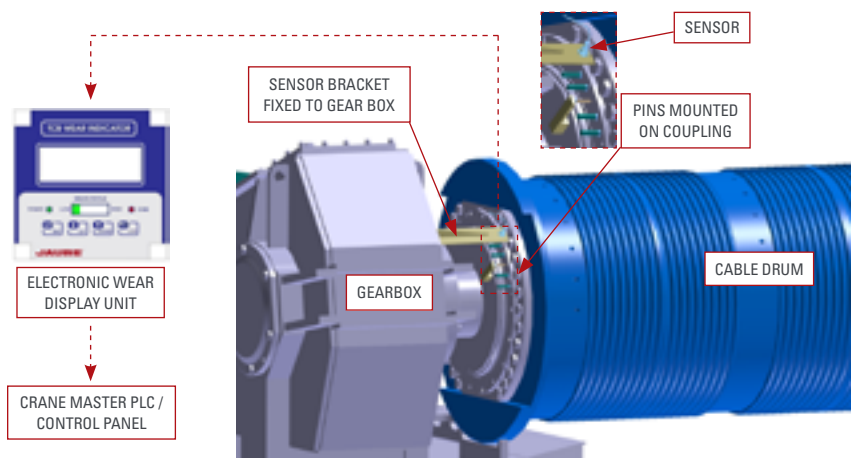


Fig. n°. 16.  
Electronic wear indicator working layout

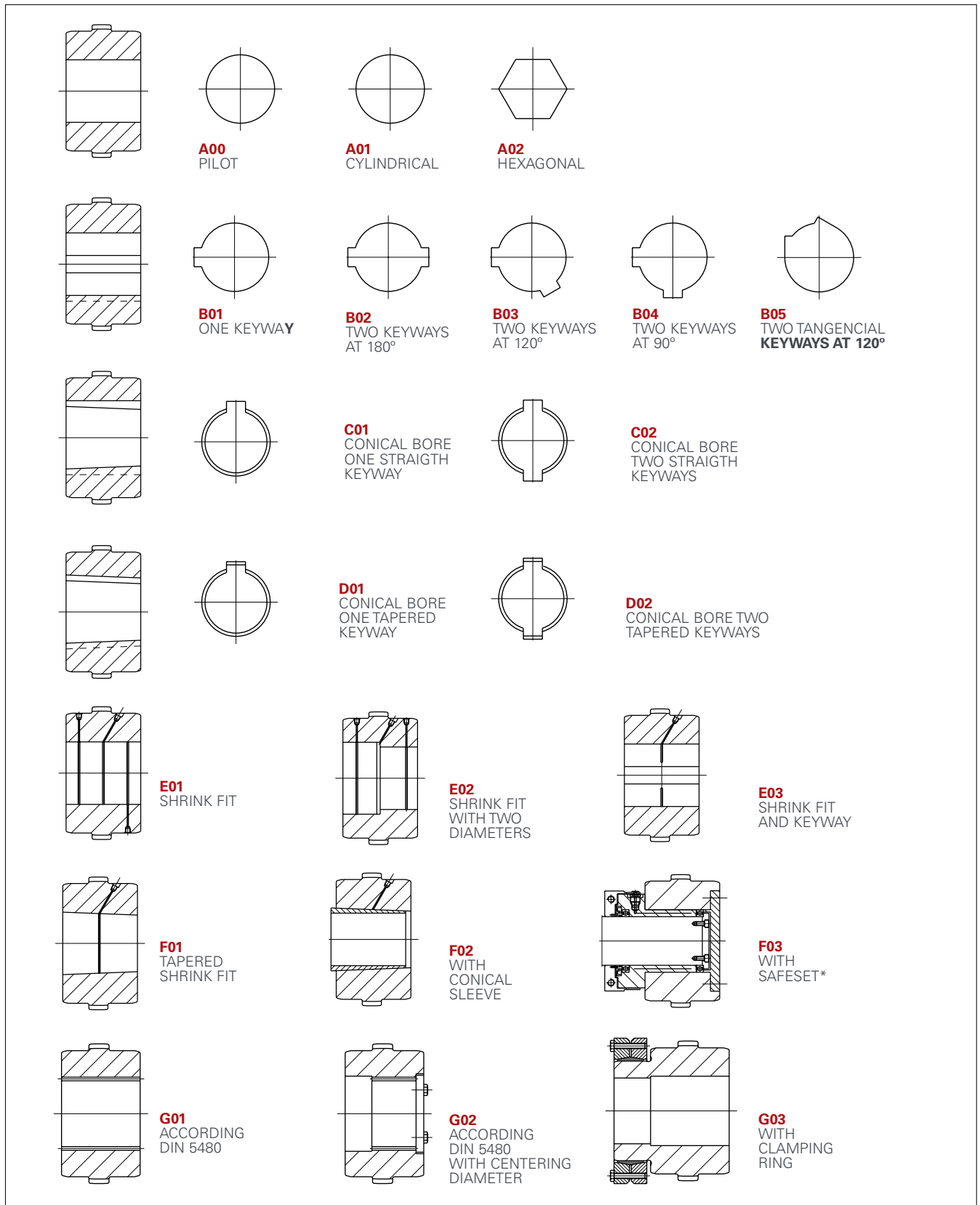
Technical modifications reserved





**OTHER  
INFORMATION,  
BARFLEX™  
COUPLING  
DESIGNS &  
REFERENCES**

# SHAFT CONNECTION TYPES



\*SAFESET is believed to be the trademark and/or trade name of Voith Turbo Safeset AB, and is not owned or controlled by Regal Beloit Corporation.

# RECOMMENDATIONS FOR SHAFT/BORE FITS

The following recommendations, according to ISO, are given for shaft/bores fits.

TYPE OF FIT	SHAFT TOLERANCES	BORE TOLERANCES
<b>INTERFERENCE FITS WITH PARALLEL KEYWAY</b>	h 6	S 7
	k 6	M 7
	m 6	K 7
	n 6	J 7
	p 6	H 7
<b>SHRINK FITS* WITHOUT PARALLEL KEY</b>	u 6	H 7
	v 6	
	x 6	

\* The stresses on the hub must be checked.

For other types of connection, please consult our Engineering Department. For one keyway, a keyway tolerance width ISO P9 is recommended. For double keyway, ISO JS9 is recommended.

## BARFLEX™ COUPLING DESIGNS

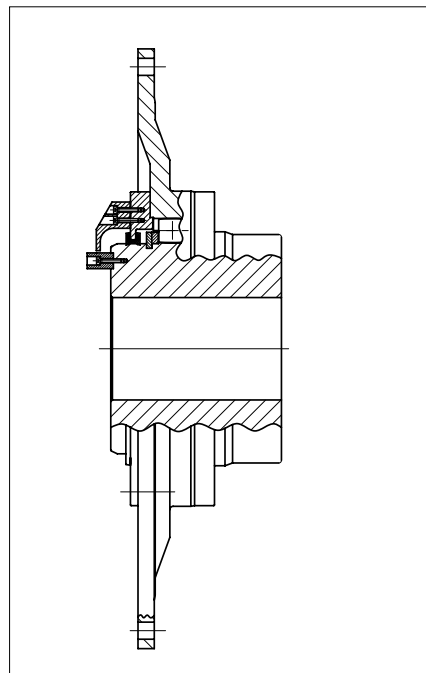


Fig. n.º 17.  
TCBR with special flange.

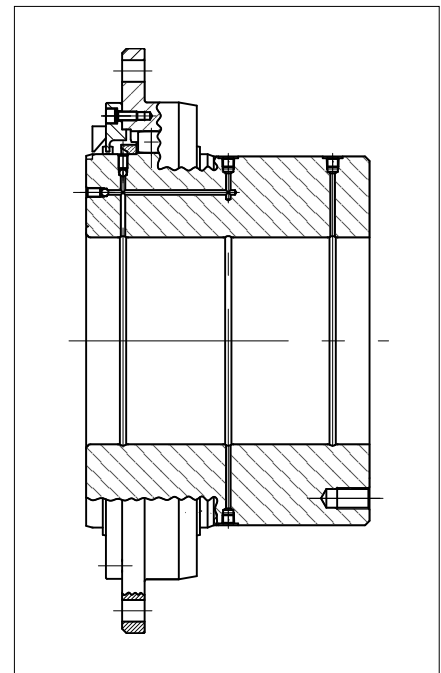


Fig. n.º 18.  
According - Sidmar  
(standard SIDMAR BR3 - 550, 01-10-89 Rev. D)

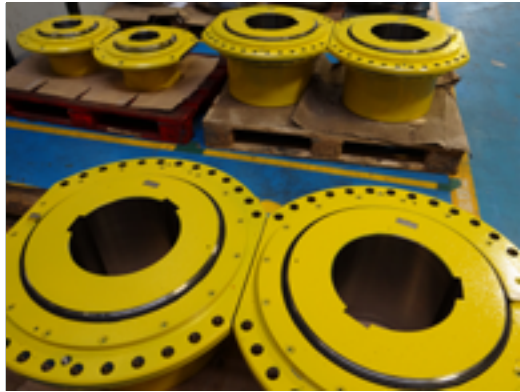
# REQUIRED MINIMUM DATA

MOTOR POWER (EACH IF MORE THAN ONE PRESENT) (OR TORQUE)	Pi		kW (kNm)
MOTOR SPEED	N		rpm
DRUM DIAMETER	D		mm
GEAR BOX OUTPUT SHAFT DIAMETER	d		mm
OPERATING FACTOR (K <sub>1</sub> )			
GEARBOX RATIO	iG		
RADIAL LOAD			N
CONNECTION TYPE			
APPLICATION			

Additional data below are suitable for a more accurate selection

CRANE CAPACITY				Ton
USEFUL LOAD TO BE LIFTED	Q			N
HOIST WEIGHT (LIFTING BEAM + WIRE ROPE)	G			N
WEIGHT OF DRUM AND CABLES (EACH)	w			N
HOOK LIFTING RATE	Vr			m/min
DRUM SPEED		BOTH MOTORS RUNNING	ONE MOTOR RUNNING	
HOIST REDUCTION	ir			
CLASS OF DUTY OR CABLE TRANSMISSION GROUP				
WHETHER USING JOURNAL BEARING OR ANTIFRICTION BEARING				
DISTANCE BETWEEN CABLE AND COUPLING	b			mm
DRUM LENGTH	l			mm
TOTAL NO. OF FALLS	nF			
TOTAL NO. OF ROPE ON ROPE DRUM	nB			
NO. OF DRUMS				
NO. OF MOTORS				

# BARREL COUPLING REFERENCES



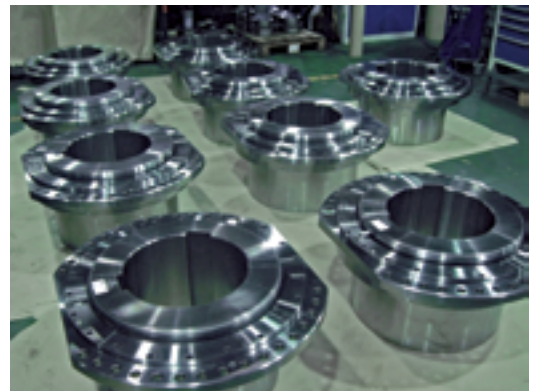
Painted barrel couplings.



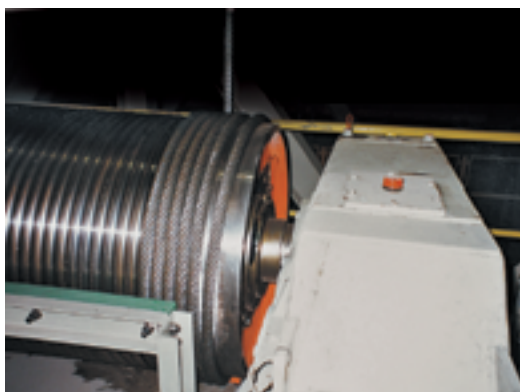
Machining of barrel coupling's hub.



Different barrel coupling sizes.



Set of TCB-HD 8200 couplings.



Hoisting mechanism in a steel picking line.



Barrel and gear coupling with brake disc.

# BARREL COUPLING REFERENCES



Travelling crane in steel plant.



Harbour crane for ship loading.



Harbour cranes for ship loading.



Wear indicator.

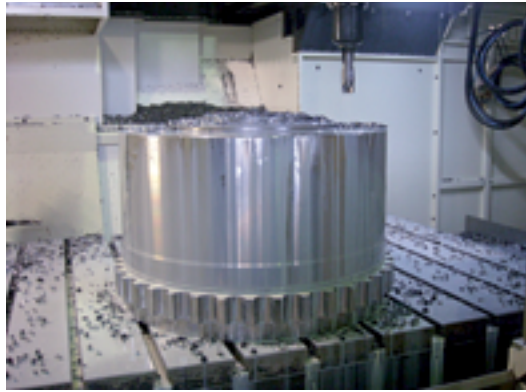


Harbour cranes for ship loading.

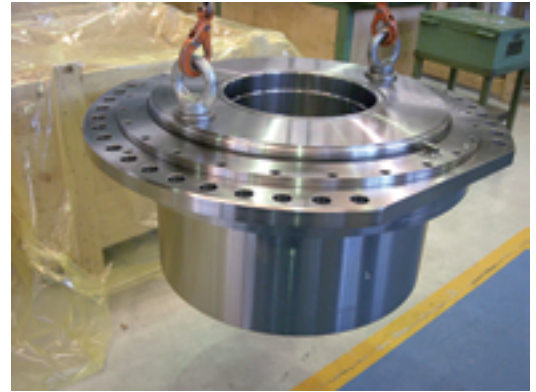


Rubber tyred gantry crane.





Machining hub TCB-HD-10200.



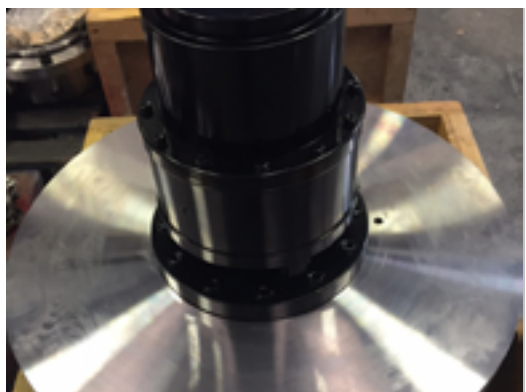
Assembly TCB-HD-10200.



Disc pack configuration with brake disc.



Ship to shore cranes.

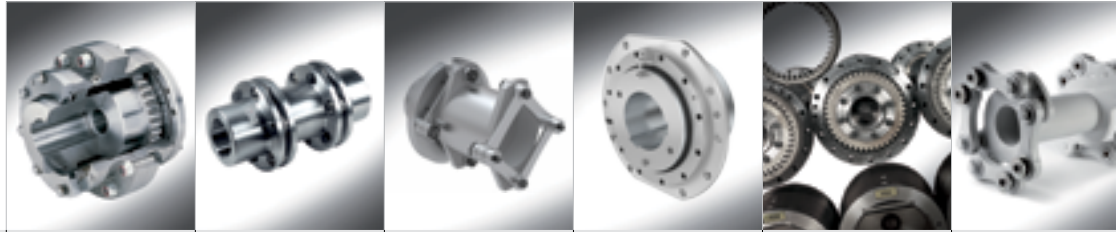


Gear coupling with brake disc.



Ship to shore cranes.

# JAURE<sup>®</sup> MANUFACTURING PROGRAM



PRODUCT BRAND NAME	MT	LAMIDISC <sup>®</sup>	LAMILINK	BARFLEX <sup>™</sup>	AL-S / AL-SD / ALD	IXILFLEX <sup>®</sup>
TYPE & DESCRIPTION	Gear	Disc pack	Metallic Link	Barrel (drum type)	Gear spindles	Elastic Link
INDUSTRY APPLICATION						
Metals & Heavy duty	•	•	•	•	•	
Minerals & Mills	•	•	•	•		
Crane & Hoisting	•	•	•	•		
Pulp & Paper	•	•	•			•
Petrochemical / Oil & Gas	•	•	•			
Cooling Towers		•	•			
Machine Tools		•	•			
Marine	•	•	•	•		•
Wind Turbines		•	•			•
Test Benches	•	•	•			•
Railway	•	•	•			•



# COUPLINGS

						
COMPOLINK®	JAUFLEX®	RECORD	JCFS	JHC / JHC-HF	JFTL TORQUE LIMITER	JS NUT
Composite Link	Elastic	Grid / spring type	Composite Shafts	Hydraulic fit (shaft couplings)	Torque Limiter	Tensioner
	•	•		•	•	•
	•	•		•	•	•
	•	•			•	•
•	•	•	•			•
•	•	•	•			•
•			•			•
•	•		•			•
•	•		•	•	•	•
•	•	•	•	•	•	•
•			•	•		•
•					•	•

# KOP-FLEX® & JAURE® COUPLINGS MANUFACTURING PROGRAM



PRODUCT BRAND NAME	MAX-C® COUPLING	HIGH PERFORMANCE PROGRAM			KOP-FLEX™ GREASE	SERVICE
TYPE & DESCRIPTION	HEAVY DUTY ELASTIC COUPLING	GEAR	DISC	DIAPHRAGM	GEAR COUPLING / SPINDLE GREASE	REPAIR & MAINTENANCE PROGRAM
<b>INDUSTRY APPLICATION</b>						
Metals & Heavy duty	•				•	•
Minerals & Mills	•				•	•
Crane & Hoisting	•				•	•
Pulp & Paper					•	•
Petrochemical / Oil & Gas	•	•	•	•	•	•
Cooling Towers					•	•
Machine Tools					•	•
Marine	•	•	•	•	•	•
Wind Turbines	•				•	•
Test Benches	•	•	•	•	•	•
Railway	•	•			•	•

# GLOBAL PRESENCE

## MANUFACTURING FACILITIES & ENGINEERING CENTERS



JAURE® & KOP-FLEX® engineered couplings are designed, manufactured, sold and serviced worldwide, with service provided from specification right through to installation.

Facilities around the globe are state of the art, with access to a large and experienced engineering staff focused on providing solutions for our customers' requirements.

A dedicated global sales and service team assists you to find the best choice and manage all your coupling needs.



*Zizurkil, Spain*



*Pune, India*



*Nove Mesto, Slovakia*



*Zhangzhou, China*



*Baltimore, Maryland - USA*



*Florence, Kentucky - USA*



*Apocadaca, México*



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[www.regalbeloit.com](http://www.regalbeloit.com)

APPLICATION CONSIDERATIONS

The proper selection and application of power transmission products and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components and the customer should carefully review its requirements. Any technical advice or review furnished by Regal Beloit America, Inc. and its affiliates with respect to the use of products and components is given in good faith and without charge, and Regal assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at customer's risk.

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