Grid couplings

In high output (kW) and high torque applications where vibration, shock loads and misalignment occur, SKF Grid Couplings are an excellent choice.

The unique design of the grid and hub teeth enable these couplings to accommodate movement and stresses from all three planes, which can reduce vibration levels by as much as 30%.

The tapered grid element is manufactured from a high strength alloy steel. The grid, which, is the primary wear component of the coupling is designed for quick and easy replacement. Unlike other couplings, the hubs and other components are not
disturbed. This makes realignment virtually unnecessary and further reduces downtime and maintenance costs.

Grid couplings with taper bushing hub options

In addition to the standard plain bore hub that is offered with the grid couplings, there is the option to offer a taper bushing as a machined product.

In such circumstances there must be a re-rating of the coupling capacity, along with the reduction in the LTB hub width.

The taper bushing is normally mounted from the inner face of the coupling (Type F or flanged side configuration), but may, in certain sizes, be able to be mounted in the external ("H"or hub) configuration. However, as the hub diameter at the non-grid end is significantly reduced, a check on the location of the setscrews should be made, to avoid any stress fracture.

Page 18 may be used as a general guide as to what bushing fits the grid coupling hub, and by how much the LTB hub is reduced from the standard length (C).

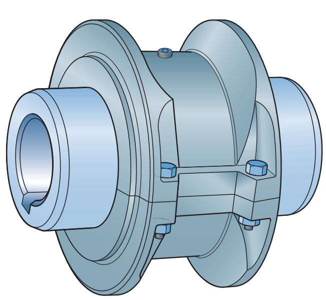
Gear and grid metallic couplings with braking capability

With regard to the SKF range of couplings, both the gear and the grid may be adapted for use in braking systems – typically disc or to a lesser extent nowadays, drum or shoe type brakes.

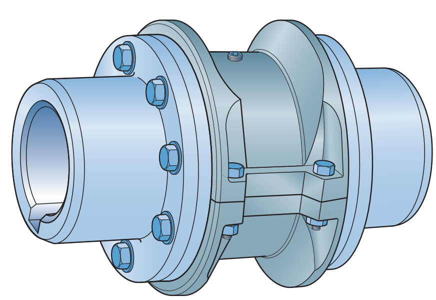
The selection of the coupling however, needs to be modified to allow for the peak loads encountered during braking (retardation).

Generally it will be the retarding torque imposed by the brake actuation that will determine the required coupling (subject to the maximum shaft capacity).

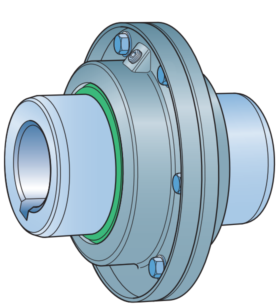
For brake-type grid couplings, the brake disc (or drum / shoe) would normally be mounted to the driveN (braked) machine. As the gear coupling is symmetrical, either hub can be the driveR or driveN.



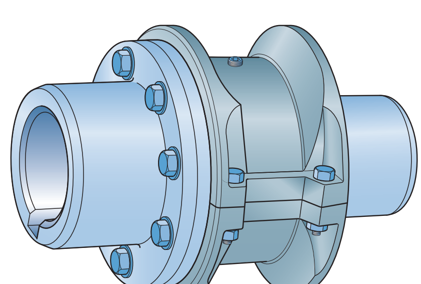
Horizontal split cover



Full spacer



Vertical split cover



Half spacer

Selection

Standard selection method

This selection procedure can be used for most motor, turbine, or engine driven applications. The following information is required to select an SKF grid coupling:

- Torque – power [kW]
- Speed [r/min]
- Type of equipment and application
- Shaft diameters
- Shaft gaps
- Physical space limitation
- Special bore or finish information

Exceptions to use of the standard selection method are for high peak loads and brake applications. For these, use the formula selection method or contact SKF.

1 **Determine system torque**
If torque is not given, use the following formula to calculate for torque (T)

$$\text{System torque} = \frac{\text{Power [kW]} \times 9\,550}{\text{Speed [r/min]}}$$

2 **Service factor**
Determine the service factor from **tables 9** to **10** on **pages 87** to **88**.

3 **Coupling rating**
Determine the required minimum coupling rating as shown below:

Coupling rating =
service factor × torque [Nm]

4 **Size**
Select the appropriate coupling from the torque column of the product tables on **pages 16** to **20** with a value that is equal to or greater than that determined in **step 3** above and check that the chosen coupling can accommodate both driving and driven shafts.

5 **Other considerations**
Possible other restrictions might be speed [r/min], bore, gap and dimensions.

Standard selection example

Select a coupling to connect a 30 kW, 1 440 r/min electric motor that is driving a boiler feed pump. The motor shaft diameter is 55 mm, pump shaft diameter is 45 mm. Shaft extensions are 140 mm and 110 mm. The coupling to be selected will replace a gear type coupling with a 3 mm gap.

1 **Determine system torque**
System torque [Nm] =

$$\frac{30\text{ kW} \times 9\,550}{1\,440\text{ r/min}} = 199\text{ Nm}$$

2 **Service factor**
From **table 9** on **page 87** = 1.50

3 **Required coupling rating**

1.5 × 199 Nm = 298.5 Nm

4 **Size**
From product tables on **page 16**, the coupling size 1060 is the proper selection based on the torque rating of 684 Nm which exceeds the required minimum rating of 298.5 Nm as well as accommodating driving and driven shaft diameter requirements.

5 **Other considerations**
The speed capacity of 4 500 (coupling size 1060) exceeds the required speed of 1 440 r/min. The maximum bore capacity of 57 mm exceeds the required shaft diameters of 55 mm and 45 mm. The resulting service factor is 2.29. This will provide a very good service life for the coupling and a high level of reliability.

Formula method

The standard selection method can be used for most coupling selections. However, the formula method, should be used for:
- high peak loads
- brake applications (if a brake wheel is to be an integral part of the coupling)

By including the system's peak torque, frequency, duty cycle and brake torque ratings, a more accurate result will be obtained.

1 **High peak loads**
Use one of the following formulas (A, B, or C) for:
- Motors with higher than normal torque characteristics.
- Applications with intermittent operations resulting in shock loads.
- Inertia effects due to frequent stops and starts or repetitive high peak torques.

Peak torque is the maximum torque that can exist in the system. Select a coupling with a torque rating equal to or exceeding the selection torque values obtained from the formulas below.

A **Non-reversing peak torque selection**
Torque [Nm] = system peak torque

or

Selection torque [Nm] =

$$\frac{\text{System peak kW} \times 9\,550}{\text{r/min}}$$

B **Reversing high peak torque**
Selection torque [Nm] =

$$\frac{2 \times \text{system peak torque}}{\text{r/min}}$$

C **Occasional peak torques (non-reversing)**
If a system peak torque occurs less than 1 000 times during the expected coupling life, use the following formula:
Selection torque [Nm] =
0.5 × system peak torque

or

Selection torque [Nm] =

$$\frac{0.5 \times \text{system peak kW} \times 9\,550}{\text{r/min}}$$

2 **Brake applications**
If the torque rating of the brake exceeds the motor torque, use the brake rating as follows:
Selection Torque [Nm] =
Brake torque rating × service factor.

Formula selection example

High peak load

Select a coupling for reversing service to connect a gear drive low speed shaft to a metal forming mill drive. The electric motor rating is 30 kW and the system peak torque at the coupling is estimated to be 9 000 Nm. Coupling speed is 66 r/min at the gear drive output with a shaft gap (between ends) of 180 mm.

1 Type
Refer to product tables on **pages 16** to **20** and select the appropriate coupling type.

2 Required minimum coupling rating
Use the reversing high peak torque formula in step 1B.

2 × 9 000 Nm = 18 000 Nm = Selection torque

3 Size
From product table on **page 16**, size 1130 with a torque rating of 19 900 which exceeds the selection torque of 18 000 Nm.

4 Other considerations
Grid coupling size 1130 has a maximum "DBSE" dimension (distance between shaft ends) of 205 mm; the shaft hub has a maximum bore of 190 mm.

Note: See product table on **page 16**. The T hub has a maximum bore of 170 mm and the allowable speed of 1 800 r/min.

Formula method for brake disc applications

To determine the capacity required for a dynamic brake application:

$$\text{(1a)}\ M_{TB} = \frac{kW \times 60 \times 10^3}{2 \times \pi\ r/min} = \times 2.0\ [Nm]$$

which may be simplified to:

$$\text{(1b)}\ M_{TB} = \frac{kW \times 9\,550}{r/min} = \times 2.0\ [Nm]$$

Additionally, where the inertias involved (I) are known or can be determined (by reference to the brake position), and the braking deceleration time, in rads/sec (α) is known, the torque may also be determined from:

$$\text{(1c)}\ M_{TB} = I \times \alpha \times 2.0\ [Nm]$$

The coupling capacity [MT] from the catalogue must be greater than the figures obtained in 1(a), 1(b) or 1(c) above.

$$\text{(2)}\ M_{TNOM} \geq MTB\ [Nm]$$

Note: Where the brake is only being used as a holding brake, i.e. the system is brought to a stop by other means, prior to application of the brake, standard coupling selection procedures may be used.

(a) **Grid coupling** with brake disc (schematic only) (**→ fig. 1**).

The grid coupling usually consists of the following SKF components:

A major advantage of using the grid-type coupling (TGH) is that the covers are horizontally split, thus allowing ease of access to the grid for replacement. No additional axial spacing is required – something that can be critical, as brake calipers and actuator mechanisms can take up space.

Note:

a. Brake disc dimensioning

- In general the coupling selection for dynamic braking should be no less than 200% of the running (installation) torque, unless the results of a full analysis of the inertias involved are known, along with the desired stopping time.
- The diameter of the brake disc (Db), will be determined from the required torque, and the caliper's force at the effective diameter (Dcal in the above diagrams) at which the caliper unit (or units) will engage.
- Multiple calipers, typically no more than two, are generally set 180° apart. The thickness of the disc, and whether plain or ventilated, will also be determined by
  - the inertias ΣI (kgm^2) being retarded, relative to the brake position,
  - the stopping time t_s (in seconds) required

b. Brake disc (general)

- International standards, such as DIN 15435, have tables of recommended diameters and thicknesses (or widths) for both disc and drum (shoe) type brakes. (Many brake-system manufacturers also have their own factory standards).
- Disc material will vary depending on the application, capacity and the amount of energy that is required to be dissipated during engagement. Typically however, they are made of spheroidal graphite (nodular) cast iron (e.g. DIN GGG40, AISI 60-40-18; JIS FCD400).
- Thickness variation overall should be <0.05 mm total, and surface finish ≤0.002 µm.

Table 1

Typical grid coupling brake rating capacities (M_{TMAX})

SKF Coupling Size (PHE 1XXXTGHBD)	Nominal Standard Disc O/Dia. D_b x T	Max. Brake Rating of Coupling MTMAX (Nm)
1020 TGHBD	200 x 6.4	10.8
1030 TGHBD	250 x 6.4	35.2
1040 TGHBD	250 x 6.4	65
1050 TGHBD	250 x 6.4	118
1060 TGHBD	305 x 6.4	208.8
1070 TGHBD	305 x 6.4	330
1080 TGHBD	305 x 6.4	637
1090 TGHBD	405 x 13	1.085
1100 TGHBD	405 x 13	1.898
1110 TGHBD	450 x 13	2.847
1120 TGHBD	510 x 13	4.339
1130 TGHBD	560 x 13	6.493
1140 TGHBD	610 x 13	8.813

Larger sizes available on request.

Engineering data

For additional useful information on grid couplings, such as an interchange guide, misalignment capability, puller bolt hole, inertia and standard stock spacer lengths data, please refer to **tables 1** to **7**.

Order data

A complete grid coupling consists of 2 hubs, a cover and a grid. For further details and options refer to **table 8**, **pages 12** and **13**.

Fig. 1

Grid coupling with disc brake

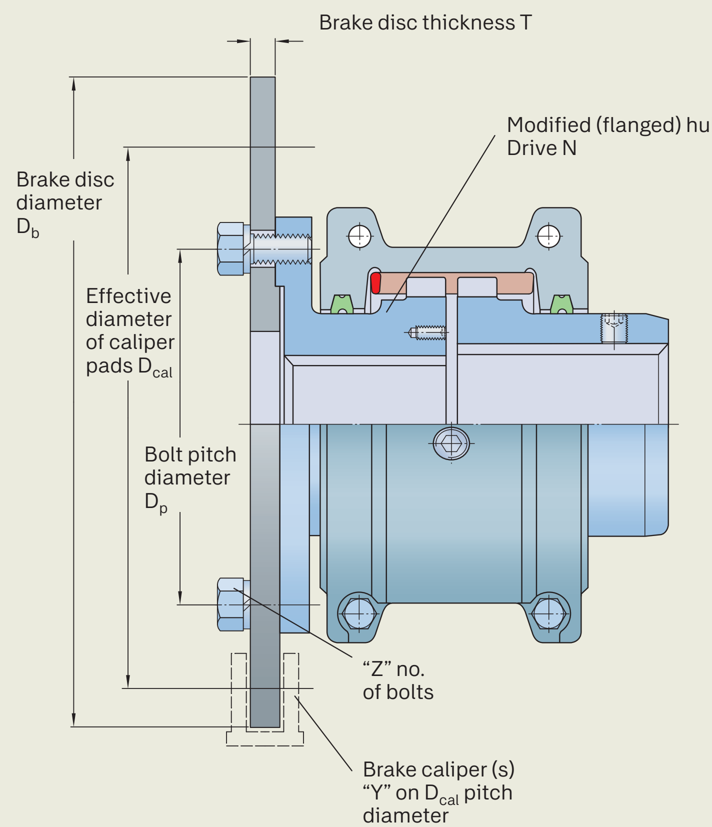


Table 2

SKF grid coupling interchange guide

Horizontal split cover

SKF	Falk	Morse/ Browning	Dodge	Kop-Flex	Lovejoy	Bibby
PHE 1020TGH	1020T10	GF2020H	1020T10	1020H	1020	2020H
PHE 1030TGH	1030T10	GF2030H	1030T10	1030H	1030	2030H
PHE 1040TGH	1040T10	GF2040H	1040T10	1040H	1040	2040H
PHE 1050TGH	1050T10	GF2050H	1050T10	1050H	1050	2050H
PHE 1060TGH	1060T10	GF2060H	1060T10	1060H	1060	2060H
PHE 1070TGH	1070T10	GF2070H	1070T10	1070H	1070	2070H
PHE 1080TGH	1080T10	GF2080H	1080T10	1080H	1080	2080H
PHE 1090TGH	1090T10	GF2090H	1090T10	1090H	1090	2090H
PHE 1100TGH	1100T10	GF2100H	1100T10	1100H	1100	2100H
PHE 1110TGH	1110T10	GF2110H	1110T10	1110H	1110	2110H
PHE 1120TGH	1120T10	GF2120H	1120T10	1120H	1120	2120H
PHE 1130TGH	1130T10	GF2130H	1130T10	1130H	1130	2130H
PHE 1140TGH	1140T10	GF2140H	1140T10	1140H	1140	2140H
PHE 1150TGH	1150T10	–	–	–	1150	–
PHE 1160TGH	1160T10	–	–	–	1160	–
PHE 1170TGH	1170T10	–	–	–	1170	–
PHE 1180TGH	1180T10	–	–	–	1180	–
PHE 1190TGH	1190T10	–	–	–	1190	–
PHE 1200TGH	1200T10	–	–	–	1200	–

Table 3

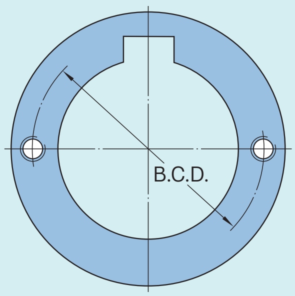
SKF grid coupling interchange guide

Vertical split cover

SKF	Falk	Morse/ Browning	Dodge	Kop-Flex	Lovejoy	Bibby
PHE 1020TGV	1020T20	GF2020V	1020T20	1020V	1020	2020 V
PHE 1030TGV	1030T20	GF2030V	1030T20	1030V	1030	2030 V
PHE 1040TGV	1040T20	GF2040V	1040T20	1040V	1040	2040 V
PHE 1050TGV	1050T20	GF2050V	1050T20	1050V	1050	2050 V
PHE 1060TGV	1060T20	GF2060V	1060T20	1060V	1060	2060 V
PHE 1070TGV	1070T20	GF2070V	1070T20	1070V	1070	2070 V
PHE 1080TGV	1080T20	GF2080V	1080T20	1080V	1080	2080 V
PHE 1090TGV	1090T20	GF2090V	1090T20	1090V	1090	2090 V
PHE 1100TGV	1100T20	GF2100V	1100T20	1100V	1100	2100 V
PHE 1110TGV	1110T20	GF2110V	1110T20	1110V	1110	2110 V
PHE 1120TGV	1120T20	GF2120V	1120T20	1120V	1120	2120 V
PHE 1130TGV	1130T20	GF2130V	1130T20	1130V	1130	2130 V
PHE 1140TGV	1140T20	GF2140V	1140T20	1140V	1140	2140 V
PHE 1150TGV	1150T20	–	–	–	1150	–
PHE 1160TGV	1160T20	–	–	–	1160	–
PHE 1170TGV	1170T20	–	–	–	1170	–
PHE 1180TGV	1180T20	–	–	–	1180	–
PHE 1190TGV	1190T20	–	–	–	1190	–
PHE 1200TGV	1200T20	–	–	–	1200	–

Table 4

Puller bolt hole data (grid)

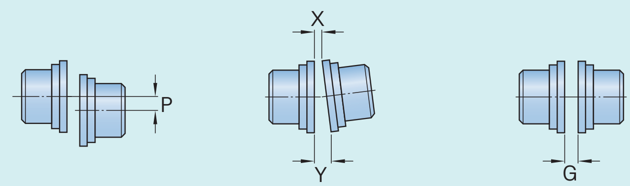


Size	B.C.D.[1]	Bolt size
–	mm	Tr (UNC)
PHE 1100TGRSB	133	$^{3}/_{8}$"-16
PHE 1110TGRSB	149	$^{1}/_{2}$"-13
PHE 1120TGRSB	168	$^{1}/_{2}$"-13
PHE 1130TGRSB	197	$^{5}/_{8}$"-11
PHE 1140TGRSB	236	$^{3}/_{4}$"-10
PHE 1150TGRSB	263	$^{3}/_{4}$"-10
PHE 1160TGRSB	298	$^{3}/_{4}$"-10
PHE 1170TGRSB	338	1"-8
PHE 1180TGRSB	378	1"-8
PHE 1190TGRSB	413	1"-8
PHE 1200TGRSB	456	1"-8
PHE 1210TGRSB	497	1 $^{1}/_{2}$"-6
PHE 1220TGRSB	541	1 $^{1}/_{2}$"-6
PHE1230TGRSB	586	1 $^{1}/_{2}$"-6
PHE1240TGRSB	633	1 $^{1}/_{2}$"-6
PHE1250TGRSB	690	1 $^{1}/_{2}$"-6
PHE1260TGRSB	749	1 $^{1}/_{2}$"-6

[1] B.C.D. = Bolt Centre Diameter

Table 5

Misalignment capability



Size	Recommended installation Parallel offset P	Angular $^{1}/_{16}$° X-Y	Operating Parallel offset P	Angular $^{1}/_{4}$° X-Y	Normal gap ±10%	Tightening torque
–	mm	–	–	mm	–	Nm
1020	0.15	0.06	0.30	0.24	3	11.30
1030	0.15	0.07	0.30	0.29	3	11.30
1040	0.15	0.08	0.30	0.32	3	11.30
1050	0.20	0.10	0.40	0.39	3	22.60
1060	0.20	0.11	0.40	0.45	3	22.60
1070	0.20	0.12	0.40	0.50	3	22.60
1080	0.20	0.15	0.40	0.61	3	22.60
1090	0.20	0.17	0.40	0.70	3	22.60
1100	0.25	0.20	0.50	0.82	4.50	35.00
1110	0.25	0.22	0.50	0.90	4.50	35.00
1120	0.28	0.25	0.56	1.01	6	73.00
1130	0.28	0.30	0.56	1.19	6	73.00
1140	0.28	0.33	0.56	1.34	6	73.00
1150	0.30	0.39	0.60	1.56	6	73.40
1160	0.30	0.44	0.60	1.77	6	73.40
1170	0.30	0.50	0.60	2.00	6	146.90
1180	0.38	0.56	0.76	2.26	6	146.90
1190	0.38	0.61	0.76	2.44	6	146.90
1200	0.38	0.68	0.76	2.72	6	259.90

Order data

Coupling type	Hubs Solid bore	Qty	Bored to size[1]	Qty	Taper bushing on one side	Qty	Taper bushing on both sides	Qty
Horizontal split cover	PHE 1050TGRSB –	2 or –	PHE 1050TG...MM –	2 or –	PHE 1050TGHTB PHE 1050TGRSB	1 1	PHE 1050TGHTB –	2 –
Vertical split cover	PHE 1050TGRSB –	2 or –	PHE 1050TG... MM –	2 or –	PHE 1050TGVTB PHE 1050TGRSB	1 1	PHE 1050TGVTB –	2 –
Full spacer	PHE 1050TGS-SHRSB –	2 or –	PHE 1050TGS-SH...MM –	2 or –	PHE 1050TGS-SHTB PHE 1050TGS-SHRSB	1 1	PHE 1050TGS-SHTB –	2 –
Half spacer	PHE 1050TGRSB PHE 1050TGS-SHRSB	1 and 1 or	– PHE 1050TGS-SH... MM	– 1	– –	– –	– –	– –
Brake capability option[2]	PHE 1050TGRSB –	– –	PHE 1050TGX...MM PHE 1050TGFLG...MM	– –	– –	– –	– –	– –

[1] For bored-to-size designations, add bore size. For example, PHE 1050TG25MM
The cover assembly kit is supplied with the cover. The spacer hub assembly kit is supplied with the spacer hub set.
The assembly kit is supplied with the cover and includes oil seals, gasket, bolts and lock-nuts.
For coupling sizes 1020 to 1090, SKF will supply the requested bore size with a clearance fit and standard keyways unless otherwise specified. For sizes 1100 and above, interference fit with standard keyways will be supplied unless otherwise specified.

Table 6

Full spacer coupling

TGFS Standard stock spacer lengths (DBSE = Distance between shaft ends)

DBSE		Pump std	Coupling size 1020	1030	1040	1050	1060	1070	1080	1080	1090	1100	1110
–	in.	–	–										
89	3.50	ANSI	X	X	X	–	–	–	–	–	–	–	–
100	3.94	ISO	X	X	X	–	–	–	–	–	–	–	–
108	4.25	MISC	X	X	X								
111	4.38	ANSI	X	X	X	X	–	–	–	–	–	–	–
119	4.69	MISC	X	X	X	X	–	–	–	–	–	–	–
127	5.00	ANSI	X	X	X	X	X	X	–	–	–	–	–
133	5.22	MISC	–	–	X	–	–	–	–	–	–	–	–
137	5.38	MISC	–	X	X	–	–	–	–	–	–	–	–
140	5.51	ISO	X	X	X	X	X	X	–	–	–	–	–
144	5.66	MISC	–	X	X	–	–	–	–	–	–	–	–
148	5.81	MISC	–	X	X	X	–	–	–	–	–	–	–
152	5.97	MISC	–	–	X	X	–	–	–	–	–	–	–
155	6.12	MISC	–	X	X	X	X	X	–	–	–	–	–
176	6.94	MISC	X	X	X	X	X	–	–	–	–	–	–
178	7.00	ANSI	–	–	–	–	–	X	X	–	–	–	–
180	7.09	ISO	–	–	X	X	–	X	X	X	–	–	–
184	7.25	ANSI	–	X	X	X	X	X	X	X	–	–	–
203	8.00	MISC	–	–	–	–	–	–	–	–	X	–	–
218	8.59	MISC	–	–	–	–	–	–	X	–	–	–	–
219	8.62	MISC	–	–	–	–	X	X	–	–	–	–	–
226	8.88	MISC	–	–	–	–	–	–	–	–	X	–	–
248	9.75	ANSI	–	–	–	–	X	X	X	X	X	X	–
250	9.84	ISO	–	–	–	–	–	–	–	–	X	X	–
252	9.94	MISC	–	–	–	–	–	–	X	–	–	–	–
282	11.09	MISC	–	–	–	–	–	–	X	–	–	–	–
311	12.25	ANSI	–	–	–	–	X	X	X	X	–	–	–
357	14.05	MISC	–	–	–	–	–	–	–	–	–	X	–

Table 7

Moment of inertia

Size	Horizontal	Vertical
–	kg/m²	kg/m²
1020	0.0014	0.0016
1030	0.0022	0.0024
1040	0.0033	0.0035
1050	0.0072	0.0074
1060	0.012	0.011
1070	0.019	0.017
1080	0.045	0.042
1090	0.079	0.079
1100	0.179	0.179
1110	0.270	0.270
1120	0.512	0.486
1130	0.99	1.065
1140	1.85	1.89
1150	3.49	3.29
1160	5.82	6.01
1170	10.41	10.42
1180	18.30	–
1190	26.17	–
1200	43.55	–

The values are based on hubs with no bore.

Table 8

Coupling type	Cover	Qty	Grid	Qty	Spacer hub set	Qty	Brake disc	Qty	Bolt set	Qty
Horizontal split cover	PHE 1050TGHCOVER	1	PHE 1050TGGRID	1	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
Vertical split cover	PHE 1050TGVCOVER	1	PHE 1050TGGRID	1	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
Full spacer	PHE 1050TGHCOVER	1	PHE 1050TGGRID	1	PHE 1050TGFS-SPACERX...MM	1	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
–	PHE 1050TGHCOVER	1	–	–	PHE 1050TGHS-SPACERX... MM	1	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–
Brake capability option[2)]	PHE 1050TGHCOVER	1	PHE 1050TGGRID	1	–	–	PHE 1050TGDISC...MM	1	PHE 1050TGDBOLT	1
–	–	–	–	–	–	–	–	–	–	–

Installation

The performance of the coupling depends largely upon how it is installed, aligned and maintained.

SKF Grid Couplings are designed to operate in either a horizontal or a vertical position without modification.

1 **Mount the seals and the hubs**
Clean all metal parts using non-flammable solvent and check hubs, shafts and keyways for burrs and remove if necessary. Lightly coat the seals with grease and place well back on the shafts before mounting the hubs. Mount the hubs on their respective shafts so that each hub face is flush with the end of the shafts (→ **fig. 1**).

2 **Gap and angular alignment**
Using a feeler gauge equal in thickness to the gap specified in **table 5** on **page 12**. Insert the gauge as shown in image (→ **fig. 2**) to the same depth at 90° intervals and measure the clearance between the gauge and hub face. The difference in the minimum and the maximum measurements must not exceed the angular limits specified in **table 5** on **page 12**.

3 **Offset alignment**
Align the two hubs so that a straight edge rests squarely on both hubs and also at 90° intervals (Fig. 3). The clearance must not exceed the parallel offset installation limits specified in **table 5** on **page 12**. Tighten all foundation bolts and repeat **steps 2** and **3**. Realign the application if necessary.

4 **Mount the grid**
Pack the gap and all of the grooves in the two hubs with a specified lubricant (→ **page 94**) before mounting the grid. Fit the grid over the hubs by starting at one cut end, work the coils of the grid tooth by tooth in one direction and seat firmly as you go with a soft mallet (→ **fig. 4**).

5 **Pack with grease and assemble the covers**
Pack the spaces between and around the grid with as much lubricant as possible and wipe off the excess so that it is flush with the top of the grid (→ **fig. 5**). Position the seals on hubs so they line up with the grooves in the cover. Position gaskets on the flanges of the lower cover half and assemble the covers so that the match marks are on the same side. Push gaskets in until they stop against the seals and secure cover halves with the fasteners provided and tighten them accordingly. Make sure that the gaskets stay in position during this tightening procedure (→ **fig. 7**). Once the coupling is completely assembled, remove both of the lubrication plugs in the cover and insert a lubrication fitting. Then, pump in the appropriate lubricant until it is forced out of the opposite lubrication hole (→ **fig. 8**). Replace the two lubrication plugs and the installation is complete.

Grid removal

Whenever it is necessary to replace the grid, first remove the cover halves and set aside. Beginning at the cut end of the grid, carefully insert a screwdriver into the loop (→ **fig. 9**). Using the hub teeth for leverage, gradually pry the grid up, alternating sides while working around the coupling.

SKF does not recommend re-using the removed grid.

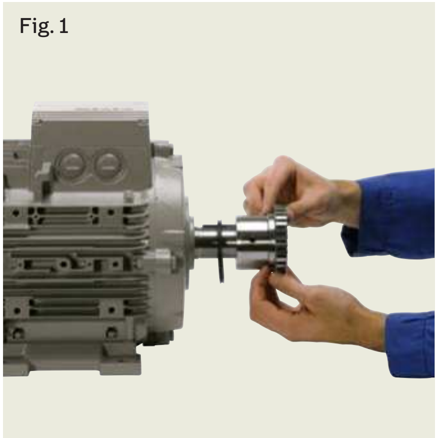


Fig. 1

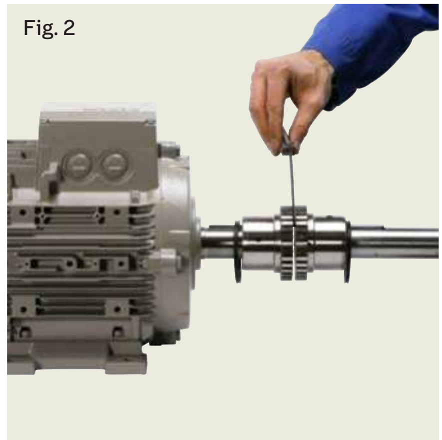


Fig. 2

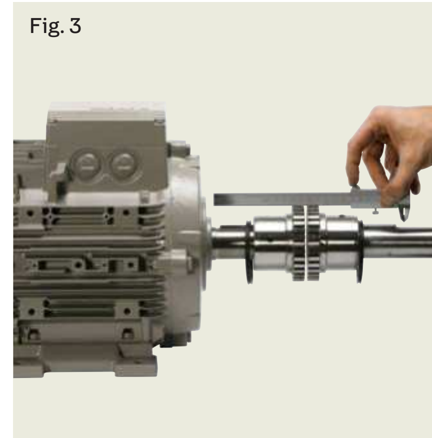


Fig. 3


Fig. 4

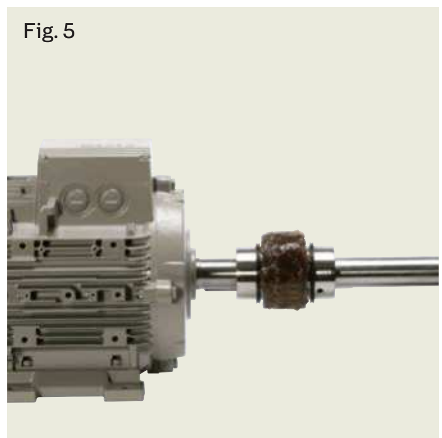


Fig. 5

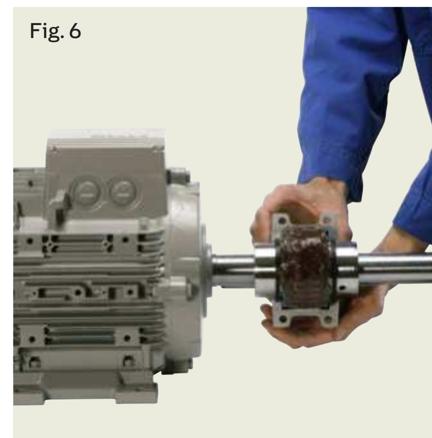


Fig. 6

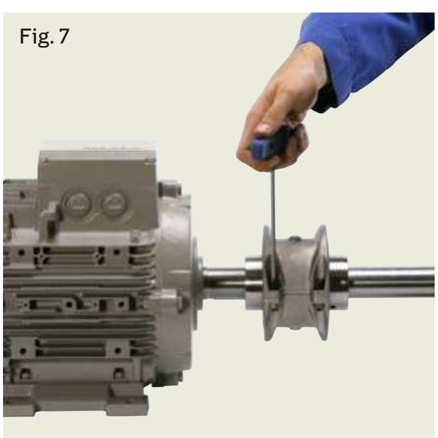


Fig. 7

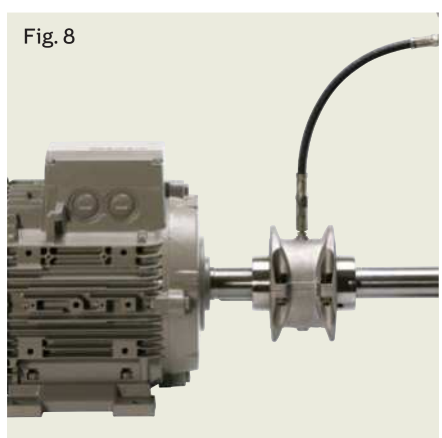


Fig. 8

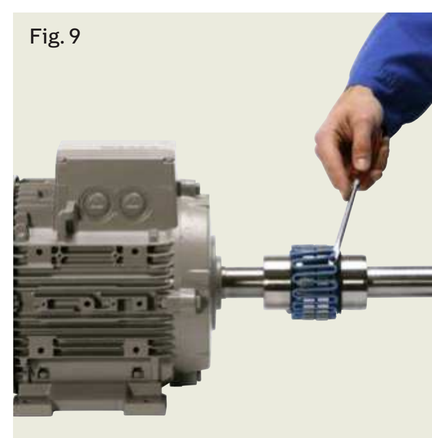
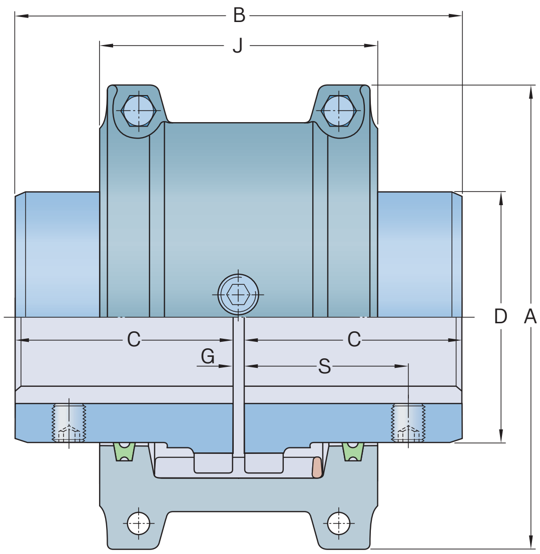
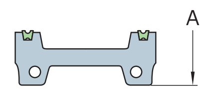


Fig. 9

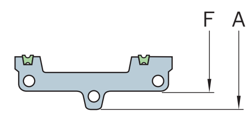
Horizontal split cover



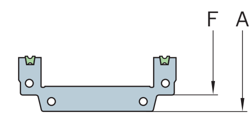
Cover profiles



Sizes 1020–1140



Sizes 1150–1200



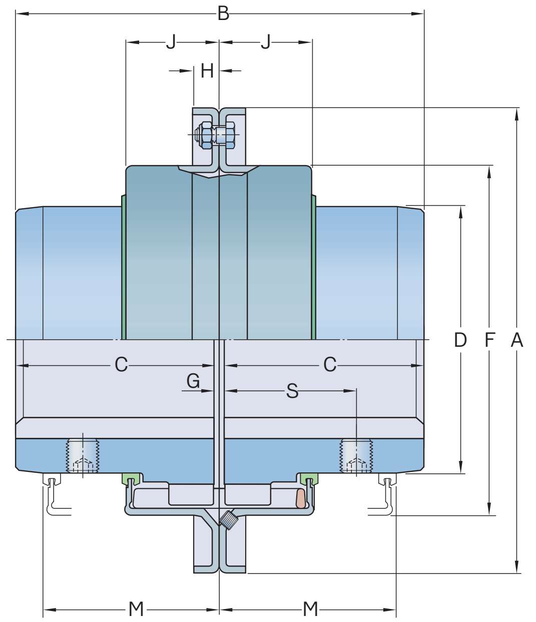
Sizes 1210–1260

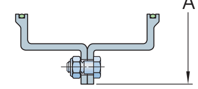
Size	Power per 100 r/min	Rated torque	Speed	Bore diameter		Dimensions							Gap			Lubricant weight	Coupling weight without bore
						A	B	C	D	J	F	S	G				
			Max.	Min.	Max.								Min.	Normal	Max.		
–	kW	Nm	r/min	mm									mm			kg	
1020 TGH	0.54	52	4 500	13	28	101.6	98.2	47.5	39.7	66	–	39.1	1.5	3	4.5	0.027	1.9
1030 TGH	1.6	149	4 500	13	25	110	98.2	47.5	49.2	68.3	–	39.1	1.5	3	4.5	0.040	2.6
1040 TGH	2.6	249	4 500	13	43	117.5	104.6	50.8	57.2	70	–	40.1	1.5	3	4.5	0.054	3.4
1050 TGH	4.6	435	4 500	13	50	138	123.6	60.3	66.7	79.5	–	44.7	1.5	3	4.5	0.068	5.4
1060 TGH	7.2	684	4 500	20	56	150.5	130.0	63.5	76.2	92	–	52.3	1.5	3	4.5	0.086	7.3
1070 TGH	10.4	994	4 125	20	67	161.9	155.4	76.2	87.3	95	–	53.8	1.5	3	4.5	0.113	10
1080 TGH	21.5	2 050	3 600	27	80	194	180.8	88.9	104.8	116	–	64.5	1.5	3	6	0.172	18
1090 TGH	39.0	3 730	3 600	27	95	213	199.8	98.4	123.8	122	–	71.6	1.5	3	6	0.254	25
1100 TGH	65.7	6 280	2 440	42	110	250	246.2	120.6	142.1	155.5	–	–	1.5	5	9.5	0.426	42
1110 TGH	97.6	9 320	2 250	42	120	270	259.0	127.0	160.3	161.5	–	–	1.5	5	9.5	0.508	54
1120 TGH	143.0	13 700	2 025	61	140	308	304.4	149.2	179.4	191.5	–	–	1.5	6	13	0.735	81
1130 TGH	208.0	19 900	1 800	67	170	346	329.8	161.9	217.5	195	–	–	1.5	6	13	0.907	121
1140 TGH	299.0	28 600	1 650	67	200	384	374.4	184.2	254.0	201	–	–	1.5	6	13	1.13	178
1150 TGH	416.0	39 800	1 500	108	215	453.1	371.8	182.9	269.2	271.3	391.2	–	1.5	6	13	1.95	234
1160 TGH	586.0	55 900	1 350	121	240	501.4	402.2	198.1	304.8	278.9	436.9	–	1.5	6	13	2.81	317
1170 TGH	781.0	74 600	1 225	134	280	566.4	437.8	215.9	355.6	304.3	487.2	–	1.5	6	13	3.49	448
1180 TGH	1 080.0	103 000	1 100	153	300	629.9	483.6	238.8	393.7	321.1	554.7	–	1.5	6	13	3.76	619
1190 TGH	1 430.0	137 000	1 050	153	335	675.6	524.2	259.1	436.9	325.1	607.8	–	1.5	6	13	4.40	776
1200 TGH	1 950.0	186 000	900	178	360	756.9	564.8	279.4	497.8	355.6	660.4	–	1.5	6	13	5.62	1 057
1210 TGH	2 611.0	249 000	820	178	390	844.5	622.3	304.8	533.4	431.8	750.8	–	1.5	13	19	10.5	1 425
1220 TGH	3 523.0	336 000	730	203	420	920.7	662.9	325.1	571.5	490.2	822.2	–	1.5	13	1	16.1	1 785
1230 TGH	4 555.0	435 000	680	203	450	1 003.3	703.8	345.4	609.6	546.1	–	–	3.0	13	22	24.0	2 265
1240 TGH	5 853.0	559 000	630	254	480	1 087.1	749.6	368.3	647.7	647.7	–	–	3.0	13	22	33.8	2 950
1250 TGH	7 812.0	746 000	580	– [1]	– [1]	1 181.1	815.5	401.3	711.2	698.5	–	–	3.0	13	22	50.1	3 835
1260 TGH	9 759.0	932 000	540	– [1]	– [1]	1 260.9	876.5	431.8	762.0	762.0	–	–	3.0	13	25	67.2	4 680

Horizontal split cover couplings are high performance, general purpose and easy to maintain.
The grid is designed to be replaced without disturbing any other component in the drive.

[1] Contact SKF for bore dimensions of these coupling sizes

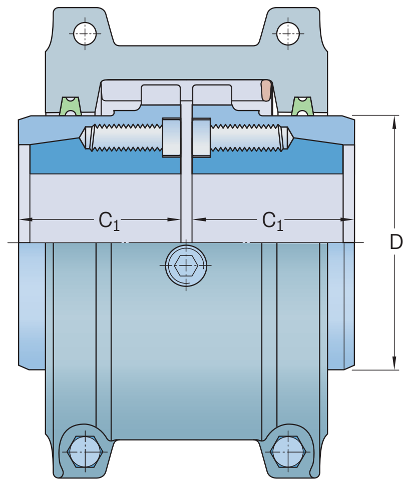
Vertical split cover

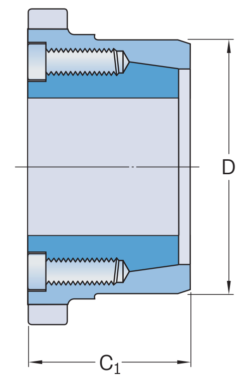




Size	Power per 100 r/min	Rated torque	Speed	Bore diameter		Dimensions									Gap			Lubricant weight	Coupling weight without bore
						A	B	C	D	F	H	J	M	S	G				
			Max.	Min.	Max.										Min.	Normal	Max.		
–	kW	Nm	r/min	mm											mm			kg	
1020 TGV	0.54	52	6 000	12	30	111.1	98.0	47.5	39.7	64.3	9.7	24.2	47.8	39.1	1.5	3	4.5	0.027	2.0
1030 TGV	1.6	149	6 000	12	36	120.7	98.0	47.5	49.2	73.8	9.7	25.0	47.8	39.1	1.5	3	4.5	0.040	2.6
1040 TGV	2.6	249	6 000	12	44	128.5	104.6	50.8	57.2	81.8	9.7	25.7	50.8	40.1	1.5	3	4.5	0.054	3.4
1050 TGV	4.6	435	6 000	12	50	147.6	123.6	60.3	66.7	97.6	11.9	31.2	60.5	44.7	1.5	3	4.5	0.068	5.4
1060 TGV	7.2	684	6 000	19	57	162.0	130.0	63.5	76.2	111.1	12.7	32.2	63.5	52.3	1.5	3	4.5	0.086	7.3
1070 TGV	10.4	994	5 500	19	65	173.0	155.4	76.2	87.3	122.3	12.7	33.7	66.5	53.8	1.5	3	4.5	0.113	10
1080 TGV	21.5	2 050	4 750	27	79	200.0	180.8	88.9	104.8	149.2	12.7	44.2	88.9	64.5	1.5	3	6	0.172	18
1090 TGV	39.0	3 730	4 000	27	95	231.8	199.8	98.4	123.8	168.3	12.7	47.7	95.2	71.6	1.5	3	6	0.254	25
1100 TGV	65.7	6 280	3 250	41	107	266.7	245.7	120.6	142.1	198.0	15.7	60.0	120.7	–	1.5	5	9.5	0.426	42
1110 TGV	97.6	9 320	3 000	41	117	285.8	258.5	127.0	160.3	216.3	16.0	64.2	124.0	–	1.5	5	9.5	0.508	54
1120 TGV	143.0	13 700	2 700	60	136	319.0	304.4	149.2	179.4	245.5	17.5	73.4	142.7	–	1.5	6	12.5	0.735	81
1130 TGV	208.0	19 900	2 400	66	165	377.8	329.8	161.9	217.5	283.8	20.6	75.1	146.0	–	1.5	6	12.5	0.907	122
1140 TGV	299.0	28 600	2 200	66	184	416.0	371.6	184.2	254.0	321.9	20.6	78.2	155.4	–	1.5	6	12.5	1.13	180
1150 TGV	416.0	39 800	2 000	108	203	476.3	371.8	182.9	269.2	374.4	19.3	106.9	203.2	–	1.5	6	12.5	1.95	230
1160 TGV	586.0	55 900	1 750	120	228	533.4	402.2	198.1	304.8	423.9	30.0	114.3	215.9	–	1.5	6	12.5	2.81	321
1170 TGV	781.0	74 600	1 600	133	279	584.2	437.8	215.9	355.6	474.7	30.0	119.4	226.1	–	1.5	6	12.5	3.49	448
1180 TGV	1 080.0	103 000	1 400	152	311	630.0	483.6	238.8	393.7	–	–	130.0	265.0	–	1.5	6	12.5	3.76	591
1190 TGV	1 430.0	137 000	1 300	152	339	685.0	524.2	259.1	436.9	–	–	135.0	275.0	–	1.5	6	12.5	4.40	761
1200 TGV	1 950.0	186 000	1 100	177	361	737.0	564.8	279.4	497.8	–	–	145.0	295.0	–	1.5	6	12.5	5.62	1 021

Vertical split cover couplings are high performance, general purpose and easy to maintain.
The grid is designed to be replaced without disturbing any other component in the drive. The vertical cover allows for higher running speeds.

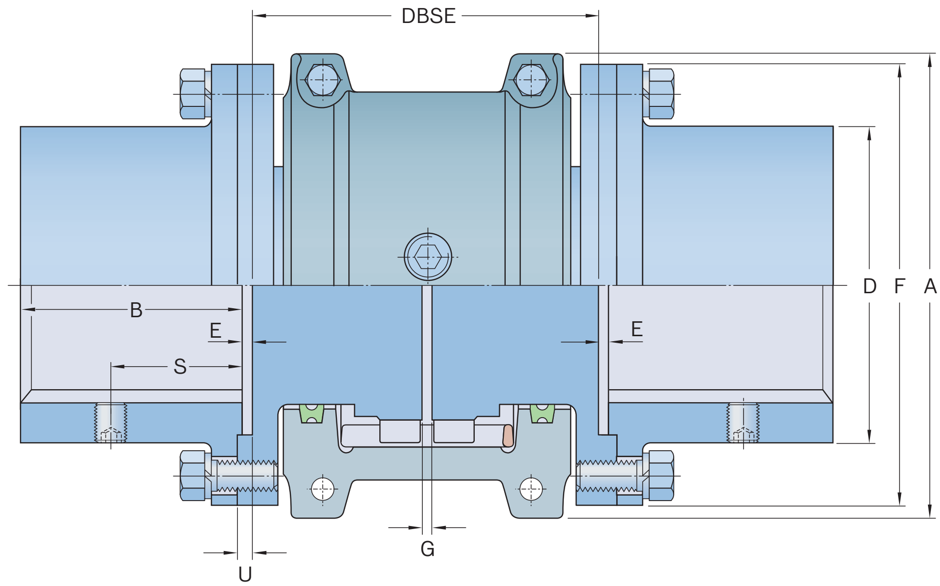




Size	Taper bushing designation	Bushing torque capacity[1]	Bore diameter range[1]		Reduced hub length	Hub length reduction	Hub diameter
					C_1		D
			Min.	Max.			
–	–	Nm	mm		mm	mm	mm
1020	Not available	–	–	–	–	–	–
1030	PHF TB1108	147	13	25	45	2.5	49.2
1040	PHF TB 1108	147	13	25	45	5.8	57.2
1050	PHF TB 1215	405	13	32	50	10.3	66.7
1060	PHF TB 1615	485	13	42	55	8.5	76.2
1070	PHF TB 2012	810	13	50	55	21.2	87.3
1080	PHF TB 2525	1275	25	65	70	18.9	104.8
1090	PHF TB 3030	2710	24	80	83	15.4	123.8
1100	PHF TB 3030	2710	24	80	90	30.6	142.1
1110	PHF TB 3535	5060	32	91	95	32	160.3
1120	PHF TB 4040	8727	37	103	115	34.2	179.4

[1] Bore capacities are based on standard ISO keyway dimensions to ISO773 (DIN6885/1) unless otherwise stated. For full coupling dimensions and technical details, refer to **page 12**.
[2] The limitations in the couplings' torque capacity with when fitted with a taper bushing, is based on the maximum recommended torque for the relevant taper bushing with a standard keyway. For this reason it becomes impractical, and uneconomical, to offer the larger sizes with a taper bushing option.
Different bushing type options, such as FX and QD, are also available for certain sizes. Please contact SKF.

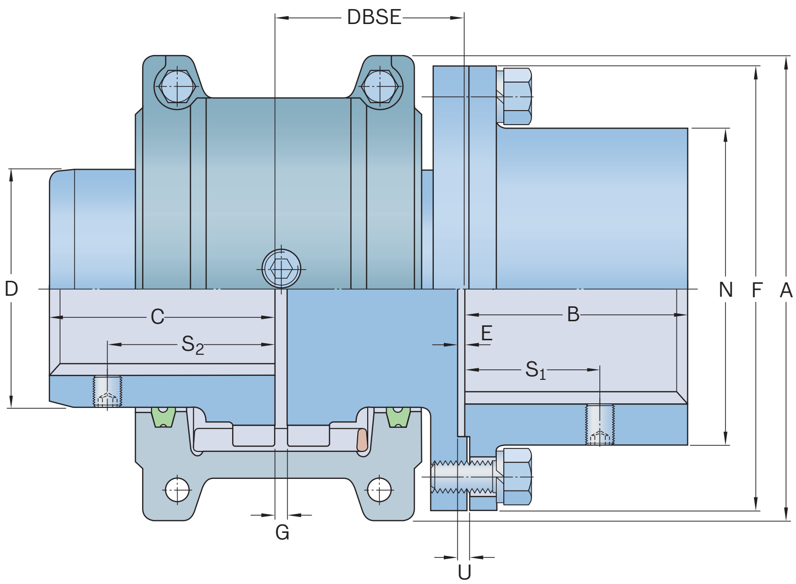
Full spacer



Size	Power per 100 r/min	Rated torque	Speed	Bore diameter		Dimensions									Gap		Flange bolts	Lubricant weight	Coupling weight without bore and min. DBSE
			Max.	Min.	Max.	A	B	DBSE Min.	DBSE Max.	D	E	F	S	U	G Min.	Normal	Qty		
–	kW	Nm	r/min	mm											mm			kg	
1020 TGFS	0.54	52	3 600	12	35	101.6	35	89	203	52	0.8	86	27.4	1.8	1.5	5	4	0.027	3.9
1030 TGFS	1.6	149	3 600	12	43	110	41	89	216	59	0.8	94	31.5	1.8	1.5	5	8	0.040	5.2
1040 TGFS	2.6	249	3 600	12	56	117.5	54	89	216	78	0.8	113	27.4	1.8	1.5	5	8	0.054	8.4
1050 TGFS	4.6	435	3 600	12	67	138	60	112	216	87	0.8	126	40.6	1.8	1.5	5	8	0.068	12.8
1060 TGFS	7.2	684	3 600	19	80	150.5	73	127	330	103	1.8	145	43.2	2.8	1.5	5	8	0.086	20.5
1070 TGFS	10.4	994	3 600	19	85	161.9	79	127	330	109	1.8	153	46.7	2.8	1.5	5	12	0.113	24.8
1080 TGFS	21.5	2 050	3 600	27	95	194	89	184	406	122	1.8	178	49.8	2.8	1.5	5	12	0.172	40
1090 TGFS	39.0	3 730	3 600	27	110	213	102	184	406	142	1.8	210	56.9	2.8	1.5	5	12	0.254	60
1100 TGFS	65.7	6 280	2 440	41	130	250	90	203	406	171	1.6	251	–	3.2	1.5	6.5	12	0.426	90.2
1110 TGFS	97.6	9 320	2 250	41	150	270	104	210	406	196	1.6	277	–	3.2	1.5	6.5	12	0.508	119
1120 TGFS	143.0	13 700	2 025	60	170	308	119	246	406	225	1.6	319	–	4	1.5	9.5	12	0.735	178
1130 TGFS	208.0	19 900	1 800	66	190	346	135	257	406	238	1.6	346	–	4	1.5	9.5	12	0.907	237
1140 TGFS	299.0	28 600	1 650	66	210	384	152	267	406	266	1.6	386	–	4	1.5	9.5	12	1.13	327
1150 TGFS	416.0	39 800	1 500	108	270	453.1	173	345	371	334	5.1	425	–	–	1.5	9.5	14	1.95	462
1160 TGFS	586.0	55 900	1 350	120	290	501.4	186	356	406	366	6.6	457	–	–	1.5	9.5	14	2.81	566
1170 TGFS	781.0	74 600	1 225	133	340	566.4	220	384	445	425	8.4	527	–	–	1.5	9.5	16	3.49	856
1180 TGFS	1 080.0	103 000	1 100	133	340	629.9	249	400	490	451	5.1	591	–	8.1	1.5	9.5	16	3.76	1 135
1190 TGFS	1 430.0	137 000	1 050	152	380	675.6	276	411	530	508	5.1	660	–	8.1	1.5	9.5	18	4.40	1 525
1200 TGFS	1 950.0	186 000	900	177	400	756.9	305	445	575	530	6.1	711	–	9.1	1.5	9.5	18	5.62	1 910

SKF horizontal split cover full spacer couplings are designed to accommodate long distances between the shafts that are to be connected.
This coupling gives you the added advantage of being able to drop out the entire centre section of the coupling for easy service. This coupling is an ideal choice for pumps.

Half spacer



Size	Power per 100 r/min	Rated torque	Speed	Bore diameter		Shaft hub	Dimensions									Shaft hub			Gap		Flange bolts	Lubricant weight	Coupling weight without bore
							A	B	C	D	DBSE	DBSE	N	E	F	S_1	S_2	U	G				
			Max.	Min.	Max.	Max.					Min.	Max.							Min.	Normal	Qty		
–	kW	Nm	r/min	mm															mm			kg	
1020 TGHS	0.54	52	3 600	12	30	35	101.6	35	47.5	39.7	45	102	52	0.8	86	27.4	39.1	1.8	1.5	3	4	0.027	2.9
1030 TGHS	1.6	149	3 600	12	36	43	110	41	47.5	49.2	45	109	59	0.8	94	31.5	39.1	1.8	1.5	3	8	0.040	3.9
1040 TGHS	2.6	249	3 600	12	44	56	117.5	54	50.8	57.2	45	109	78	0.8	113	27.4	40.1	1.8	1.5	3	8	0.054	5.9
1050 TGHS	4.6	435	3 600	12	50	67	138	60	60.3	66.7	57	109	87	0.8	126	40.6	44.7	1.8	1.5	3	8	0.068	9.1
1060 TGHS	7.2	684	3 600	19	57	80	150.5	73	63.5	76.2	64	166	103	1.8	145	43.2	52.3	2.8	1.5	3	8	0.086	14
1070 TGHS	10.4	994	3 600	19	65	85	161.9	79	76.2	87.3	64	166	109	1.8	153	46.7	53.8	2.8	1.5	3	12	0.113	17.6
1080 TGHS	21.5	2 050	3 600	27	79	95	194	89	88.9	104.8	93	204	122	1.8	178	49.8	64.5	2.8	1.5	3	12	0.172	29
1090 TGHS	39.0	3 730	3 600	27	95	110	213	102	98.4	123.8	93	204	142	1.8	210	56.9	71.6	2.8	1.5	3	12	0.254	42.8
1100 TGHS	65.7	6 280	2 440	41	107	130	250	90	120.6	142.1	103	205	171	1.6	251	–	–	3.2	1.5	5	12	0.426	66
1110 TGHS	97.6	9 320	2 250	41	117	150	270	104	127.0	160.3	106	205	196	1.6	277	–	–	3.2	1.5	5	12	0.508	84.5
1120 TGHS	143.0	13 700	2 025	60	136	170	308	119	149.2	179.4	125	205	225	1.6	319	–	–	4	1.5	6	12	0.735	129
1130 TGHS	208.0	19 900	1 800	66	165	190	346	135	161.9	217.5	130	205	238	1.6	346	–	–	4	1.5	6	12	0.907	179
1140 TGHS	299.0	28 600	1 650	66	184	210	384	152	184.2	254.0	135	205	266	1.6	386	–	–	4	1.5	6	12	1.13	252
1150 TGHS	416.0	39 800	1 500	108	203	270	453.1	173	182.9	269.2	175	187	334	5.1	425	–	–	–	1.5	6	14	1.95	348
1160 TGHS	586.0	55 900	1 350	120	228	290	501.4	186	198.1	304.8	180	205	366	6.6	457	–	–	–	1.5	6	14	2.81	441
1170 TGHS	781.0	74 600	1 225	133	279	340	566.4	220	215.9	355.6	194	224	425	8.4	527	–	–	–	1.5	6	16	3.49	652
1180 TGHS	1 080.0	103 000	1 100	133	311	340	629.9	249	238.8	393.7	202	247	451	5.1	591	–	–	8.1	1.5	6	16	3.76	877
1190 TGHS	1 430.0	137 000	1 050	152	339	380	675.6	276	259.1	436.9	207	267	508	5.1	660	–	–	8.1	1.5	6	18	4.40	1 150
1200 TGHS	1950.0	186 000	900	177	361	400	756.9	305	279.4	497.8	224	289	530	6.1	711	–	–	9.1	1.5	6	18	5.62	1 484

SKF horizontal split cover half spacer couplings are designed to be used where there is no need to accommodate long distances between the shafts. It provides an economical alternative to the full spacer and is an ideal choice for pumps.