Woo Chang Coupling Co.,Ltd
Mechanical Power Transmission Systems

Mechanical Power Transmission Systems

TAPER GRID COUPLING

TH TYPE

TV TYPE

TFS TYPE

THS TYPE

TBW TYPE

TFLS TYPE

01 TAPER GRID COUPLING

Characteristic & Advantages

1) Parallel Misalignment

The movement of the grid in the lubricated grooves accommodates parallel misalignment, and the steel structure permits full functioning of the grid-groove action in damping shock and vibration

2) Angular Misalignment

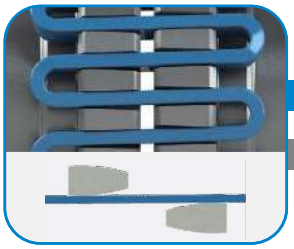
Under angular misalignment, the lubricated grid and hubs, along with the resilient grid-groove design, allow for consistent rocking and sliding motions with no power loss.

3) Axial Misalignment

End floats for both driving and driven members is permitted because the grid slides freely in the lubricated grooves.

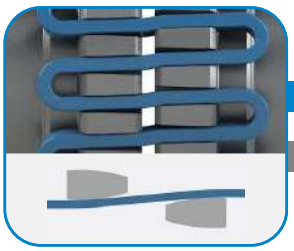
Torsional Flexibility

The great advantage of the WCC Taper Grid Coupling is that the grid will absorb the shock, vibration, and overload that occur when the machine starts. Due to the flexibility of the grid, the focus of the force is spread across the surface of the tooth, reducing vibration and shock loads.



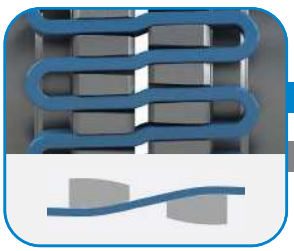
Light Load

The grid, powered by the exterior hub teeth, operates in a straight line. When a load is generated, the curved surface of the tooth and the elastic action of the grid eliminate vibration and shock.



Normal Load

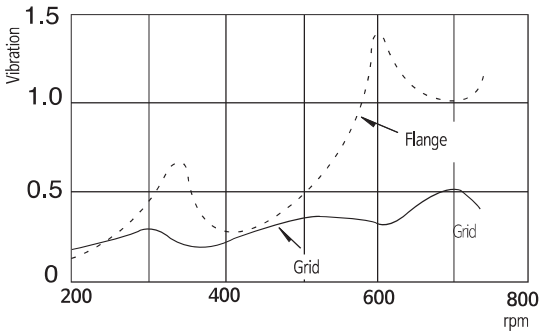
When a load is generated, the force is applied to the middle of the tooth of the hub. Due to the elastic bending of the grid, the impact load is mitigated and the engine operates freely.



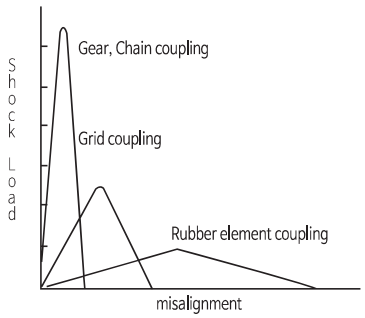
Shock Load

If a momentary overload occurs, the force jam moves to the inside of the hub teeth. Then the grid works by flexibly mitigating the extreme impact within its range of elasticity.

The graphs below demonstrate the excellent performance of the grid coupling:

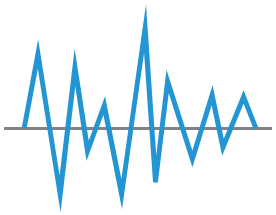


Vibration absorption



Shock load absorption

Grid Coupling Shock & Vibration



Input : Shock load and vibration

Output : Dampened vibration and shock absorption

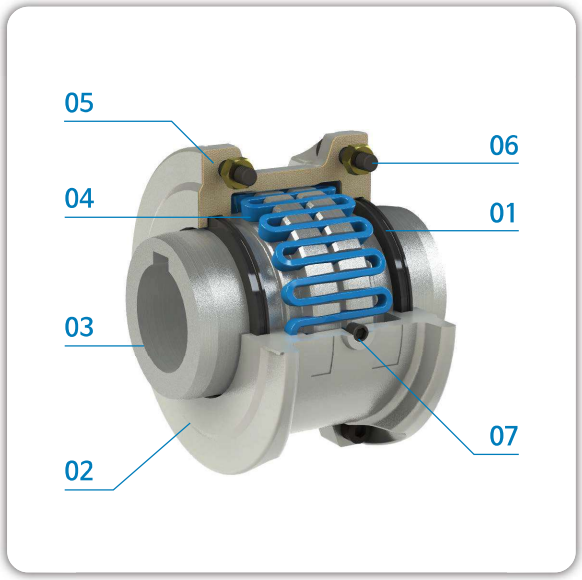
1) When an overload occurs during use, the grid breaks and acts as a safety device to prevent damage to the entire shaft and machine.
2) When serious misalignment occurs due to machinery damage during use, the grid or hub breaks away, halting action and preventing the spread of damage.
3) Vibration reduction more than doubles the service life of mechanical seals, bearings, and other parts.
4) Installation, assembly and repair work are all easily achieved without the need for repair inspections.
5) The grid is manufactured according to international standards, making it compatible with all machinery.
6) The coupling produces excellent power transmission performance with low noise.
7) Operating costs are kept low since it's possible to replace individual parts.

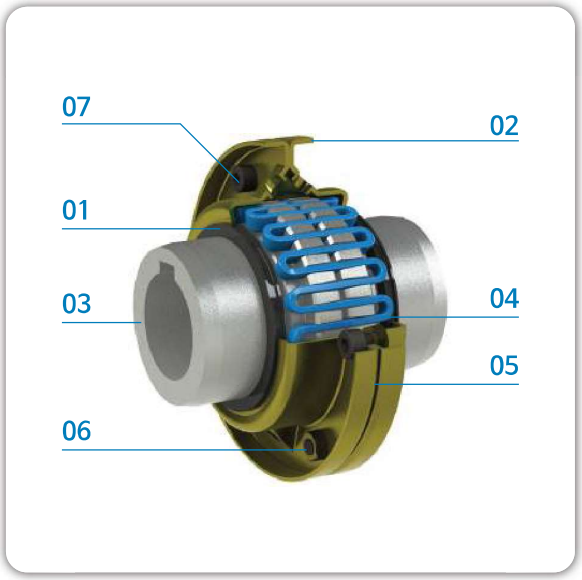
Application

In the past, flange or chain couplings were used for shaft connections, but now you can benefit by using the grid coupling in the following situations:

1) When it is necessary to prevent the transmission of vibration and shock.
2) When power must be transmitted normally, even when parallel, angular, or axial misalignment occurs.
3) To protect associated machinery where periodic overloads occur.
4) When forward/reverse rotation is required.
5) To reduce shock load.

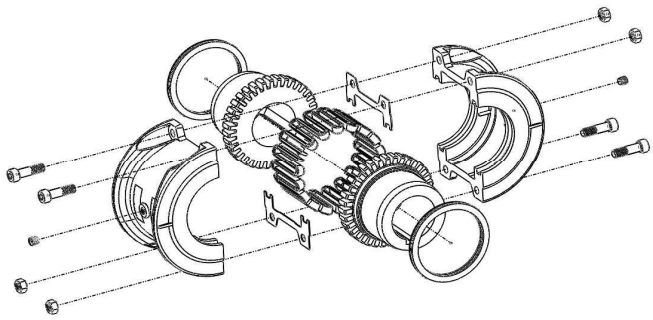
Structure



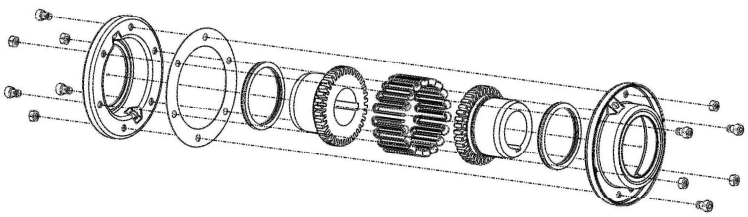


PART 01 Oil Seal 02 Cover 03 Hub 04 Grid 05 Gasket 06 Bolt 07 Lube Plug

Design features of TH Grid Coupling



Design features of TV Grid Coupling



Instruction for Installation

The operation and effective life of the coupling are highly dependent on how it is installed and used. For best operation and trouble-free use, it must be installed and used according to the instructions. Installation requires only standard tools such as a wrench, a straightener and a feeler gauge (or dial gauge).

※ The TH Type is designed to operate in a horizontal or vertical position without partial modification.

TH Type

STEP 01

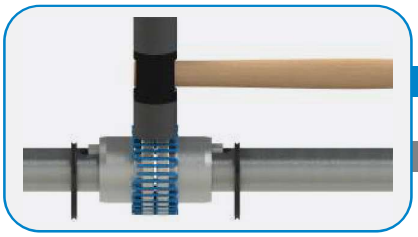
Wash all components with cleaning oil. Grease the oil seal and insert it into the shaft, then mount the hub on to the shaft.

STEP 02

Adjust the gaps and angular misalignments at four points on the circumference by inserting a gap gauge.

STEP 03

Adjust any parallel misalignment every 90˚of circumference by using a straight-edge ruler. Use a dial gauge to precisely adjust the axis misalignment and keep within limits.



STEP 04

Fill the teeth with grease. If there are two or more grids, make sure that the end of each section is facing the same direction, then tap with a hammer.

STEP 05

Apply enough grease to the grid. Place the oil seal in position so it fits well into the groove of the cover and then insert the gasket. Assemble the cover so that the match marks on the inside of the cover are always on the same side.

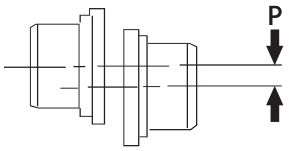
Coupling disassembly

***Coupling disassembly and grid removal.**

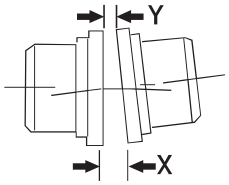
When disassembling the coupling, insert a screwdriver into the loop of the grid, alternating between the two sides of the grid as shown in the figure. Proper lubrication is an absolute necessity for the operation and life of the coupling.

Misalignment Capacity

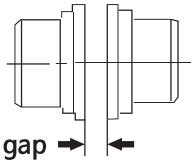
Parallel Misalignment



Angular Misalignment



Normal Gap

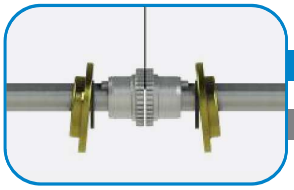


SIZE	RECOMMENDED INSTALLATION		OPERATING		Normal Gap ±10%
	Parallel offset P	Angular(1/16 °) X - Y	Parallel offset P	Angular(1/4 °) X - Y	
1020	0.15	0.06	0.3	0.24	3
1030	0.15	0.07	0.3	0.29	3
1040	0.15	0.08	0.3	0.32	3
1050	0.20	0.10	0.4	0.39	3
1060	0.20	0.11	0.4	0.45	3
1070	0.20	0.12	0.4	0.50	3
1080	0.20	0.15	0.4	0.61	3
1090	0.20	0.17	0.4	0.70	3
1100	0.25	0.20	0.5	0.82	4.5
1110	0.25	0.22	0.5	0.90	4.5
1120	0.28	0.25	0.56	1.01	6
1130	0.28	0.30	0.56	1.19	6
1140	0.28	0.33	0.56	1.34	6
1150	0.30	0.39	0.6	1.56	6
1160	0.30	0.44	0.6	1.77	6
1170	0.30	0.50	0.6	2.00	6
1180	0.38	0.56	0.76	2.26	6
1190	0.38	0.61	0.76	2.44	6
1200	0.38	0.68	0.76	2.72	6

(Unit:mm)

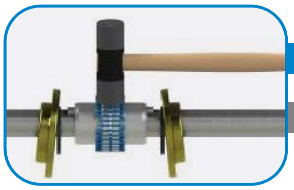
TV Type

STEP 01
Wash all components with cleaning oil. Grease the oil seal and insert it into the shaft, then first mount the cover to the shaft before mounting the hub.

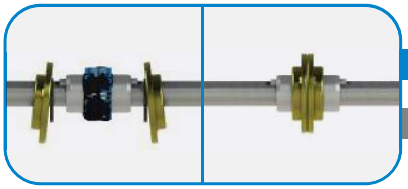


STEP 02
Adjust the gaps and angular misalignment at four points on the circumference by inserting a gap gauge.

STEP 03
Adjust any parallel misalignment every 90° of circumference using a straight-edge ruler. Use a dial gauge to precisely adjust the axis and keep within limits.



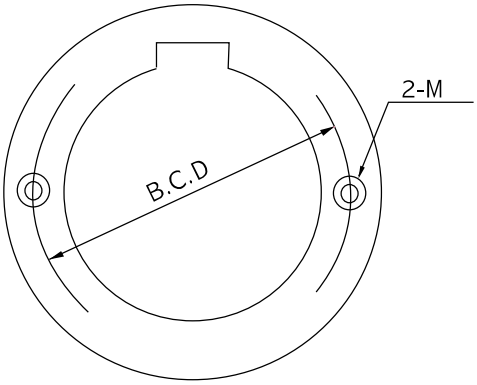
STEP 04
Fill the teeth with grease. If there are two or more grids, make sure that the end of each section is facing the same direction, then tap with a hammer.



STEP 05
Apply enough grease to the grid and insert the gasket, ensuring that the grease inlet of both covers is at the 180-degree position. (For model 1150T and larger, make sure that the injection port position is at 90°.)

Selection of Puller holes

Size	B.C.D. (㎜)	Bolt Size (in)
1100	133	3/8
1110	149	7/16
1120	168	7/16
1130	197	5/8
1140	236	5/8
1150	263	3/4
1160	298	7/8
1170	338	1 1/8
1180	378	1 1/4
1190	413	1 1/2
1200	456	1 1/2
1210	497	1 1/2
1220	541	1 1/2
1230	586	1 1/2



Selection of Puller Holes

Selection Method

Selection process

a. Use the following formula to determine the torque

$$T = 974 \frac{H'}{N} \times S \cdot F \text{ or } T = 716.2 \frac{H}{N} \times S \cdot F$$

T = Design torque(kg·m) · H' = Power(kw) · H = Power(HP) · N = Working revolution(rpm) · S·F = Recommended service factor

b. Compare the calculated torque with the torque rating for each model and select the one with the same or larger rating.
c. Compare the maximum inner diameter of the shaft and coupling of the machine to be used and select the appropriate model.

Precaution for selection

a. When there is a commercial N and a minimum N, use the lowest N for the calculation.
b. Loads with frequent reverse rotation, repeated overload, or discontinuous operation should be twice that for normal operation.
c. Calculate the maximum horsepower when there are both peak horsepower and commercial horsepower in the system.

Example

I want to connect a 30-horsepower, 1,750rpm motor to a rotary type pump. The shaft diameter of the motor is 48 mm and of the pump it is 52 mm.

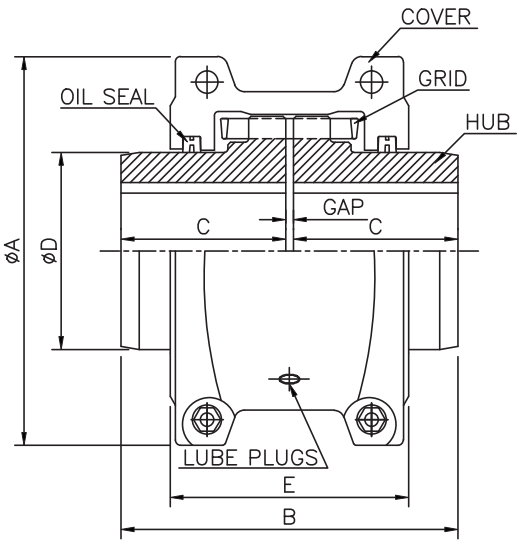
a. On page 60, the safety factor of the pump is listed as 1.75.
b. The commercial horsepower is 30HP.

$$\text{Torque}(kg \cdot m) = \frac{30 \times 716.2 \times 1.75}{1,750} = 21.49$$

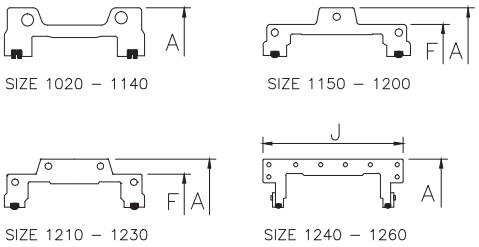
c. Since the transmission torque is 21.49 kg·m, select model 1040T.
d. The maximum inner diameter of model 1040T is 43 mm, so it is too small for the required 48mm of the motor shaft.
e. Select model 1060T with a maximum inner diameter of 56mm.
f. Verify that the rpm of model 1060T is sufficient to meet the needs of the required 1,750 rpm.
g. Since all criteria are met by the 1060T, it is the final selection.

Types TH and TV differ only in their covers, so either would be suitable.

Type TH (Horizontal Split Aluminum Cover)



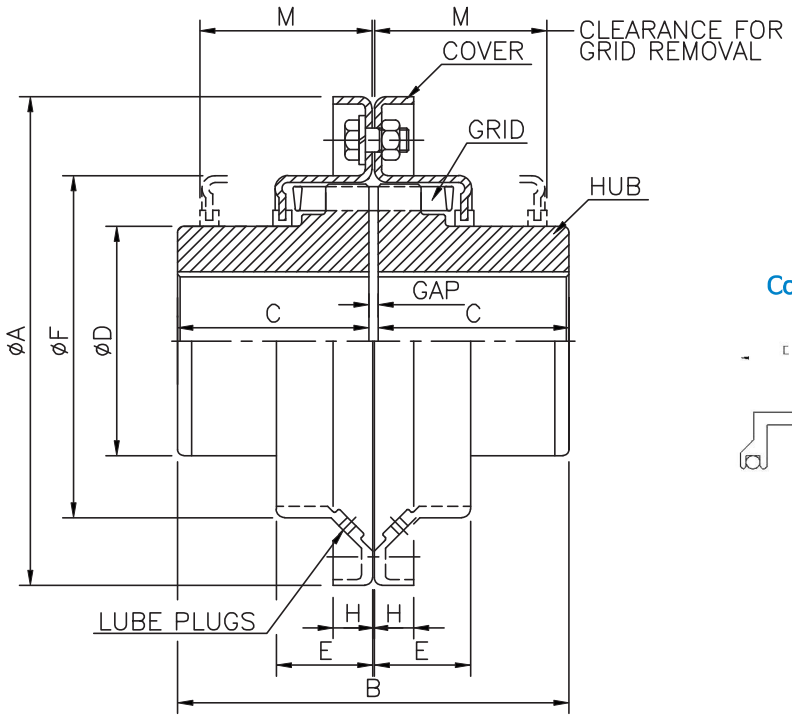
Cover Profiles



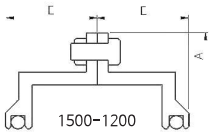
Size	Max. Speed RPM	Torque Rating		Bore Dia (㎜)		Dimensions (㎜)					Gap (㎜)	Cplg wt (kg)	Lube wt (kg)
		kg·m	Nm	Max.	Min.	A	B	C	D	E			
1020T	4,500	5.3	52	28	13	101.6	98.0	47.5	39.7	66.5	3	1.9	0.03
1030T	4,500	15.2	149	35	13	110.0	98.0	47.5	49.2	71.8	3	2.6	0.03
1040T	4,500	25	249	43	13	116.9	104.6	50.8	57.1	70.0	3	3.4	0.05
1050T	4,500	44	435	50	13	138.0	123.6	60.3	66.7	79.5	3	5.4	0.05
1060T	4,350	69	684	56	20	150.0	130.0	63.5	76.2	92.0	3	7.3	0.09
1070T	4,125	101	994	67	20	162.0	155.4	76.2	87.3	96.0	3	10	0.11
1080T	3,600	209	2,050	80	27	194.0	180.8	88.9	104.8	116.0	3	18	0.17
1090T	3,600	380	3,730	95	27	213.0	199.8	98.4	123.8	122.0	3	25	0.25
1100T	2,440	640	6,280	110	42	250.0	245.7	120.6	142.0	155.5	4.5	42	0.43
1110T	2,250	950	9,320	120	42	270.0	258.5	127.0	160.3	161.5	4.5	55	0.51
1120T	2,025	1,397	13,700	140	61	308.0	304.4	149.2	179.4	191.5	6	75	0.73
1130T	1,800	2,029	19,900	170	67	346.0	329.8	161.9	217.5	195.0	6	116	0.91
1140T	1,650	2,916	28,600	200	67	384.0	374.2	184.1	254.0	201.0	6	171	1.13
1150T	1,500	4,058	39,800	215	108	454.0	372.0	183.0	269.0	273.0	6	216	1.95
1160T	1,350	5,700	55,900	240	121	501.0	402.0	198.0	305.0	279.0	6	304	2.81
1170T	1,225	7,607	74,600	280	134	569.0	438.0	216.0	356.0	309.0	6	423	3.49
1180T	1,100	10,503	103,000	300	153	630.0	484.0	239.0	394.0	321.0	6	594	3.76
1190T	1,050	13,970	137,000	335	153	676.0	524.0	259.0	437.0	325.0	6	764	4.40
1200T	900	18,966	186,000	360	178	757.0	564.0	279.0	498.0	356.0	6	1,042	5.62
1210T	820	25,390	249,000	390	178	845.0	622.3	304.8	533.4	432.0	12.7	1,424	10.5
1220T	730	34,262	336,000	420	203	921.0	662.7	325.0	572.0	490.0	12.7	1,785	16.1
1230T	680	44,357	435,000	450	203	1,003.0	703.8	345.0	610.0	546.0	13	2,267	24.0
1240T	630	57,002	559,000	480	254	1,087.0	749.0	368.0	648.0	648.0	13	2,950	33.8
1250T	580	76,070	746,000	-	254	1,181.0	815.0	401.0	711.0	699.0	13	3,833	50.1
1260T	540	95,037	932,000	-	254	1,261.0	877.0	432.0	762.0	762.0	13	4,682	67.2

※ Coupling weight, without bore machining
※ Please contact us for the parts that do not have specifications in chart

Type TV (Vertical Split Steel Cover)



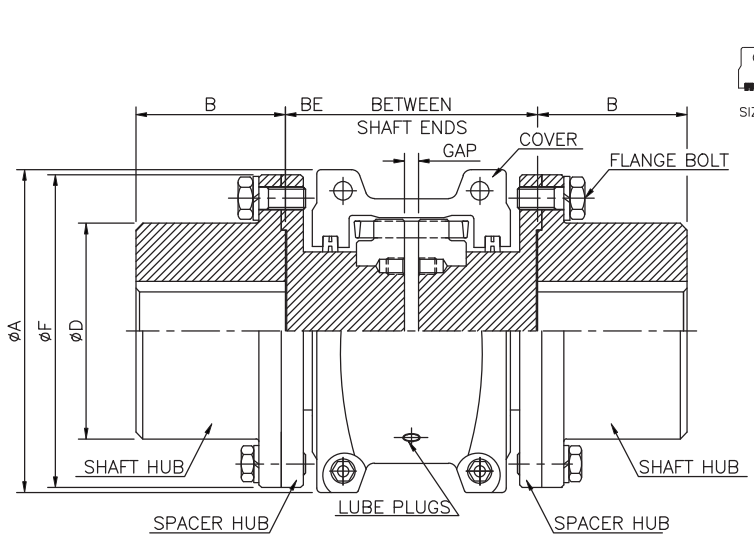
Cover Profile



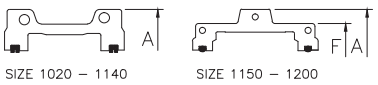
Size	Max. Speed RPM	Torque Rating		Bore Dia (㎜)		Dimensions (㎜)							Gap (㎜)	Cplg wt (kg)	Lube wt (kg)
		kg·m	Nm	Max.	Min.	A	B	C	D	F	H	E			
1020T	6,000	5.3	52	28	13	111.1	98.0	47.5	39.7	62.5	9.5	24.2	3	1.9	0.03
1030T	6,000	15.2	149	35	13	120.7	98.0	47.5	49.2	72.2	9.5	25.0	3	2.6	0.03
1040T	6,000	25	249	43	13	128.5	104.6	50.8	57.1	80.0	9.5	25.7	3	3.4	0.05
1050T	6,000	44	435	50	13	147.6	123.6	60.3	66.7	96.7	13	31.2	3	5.4	0.05
1060T	6,000	69	684	56	20	162.0	130.0	63.5	76.2	109.8	13	32.2	3	7.3	0.09
1070T	5,500	101	994	67	20	173.0	155.4	76.2	87.3	120.7	13	33.7	3	10.0	0.11
1080T	4,750	209	2,050	80	27	200.0	180.8	88.9	104.8	147.4	13	44.2	3	18.0	0.17
1090T	4,000	380	3,730	95	27	231.8	199.8	98.4	123.8	165.7	13	47.7	3	25.0	0.25
1100T	3,250	640	6,280	110	42	266.7	245.7	120.6	142.0	196.8	16	60.2	4.5	42.0	0.43
1110T	3,000	950	9,320	120	42	285.8	258.5	127.0	160.3	285.8	16	63.3	4.5	54.0	0.51
1120T	2,700	1,397	13,700	140	61	319.0	304.4	149.2	179.4	319.0	16	73.4	6	73.0	0.73
1130T	2,400	2,029	19,900	170	67	377.8	329.8	161.9	217.5	377.8	22	75.4	6	114.0	0.91
1140T	2,200	2,916	28,600	200	67	416.0	374.2	184.1	254.0	416.0	22	78.5	6	171.0	1.13
1150T	2,000	4,058	39,800	215	108	476.3	372.0	183.0	269.0	379.0	-	106.0	6	228.0	1.95
1160T	1,750	5,700	55,900	240	121	533.4	402.0	198.0	305.0	427.0	-	114.0	6	319.0	2.81
1170T	1,600	7,607	74,600	280	134	584.2	438.0	216.0	356.0	480.0	-	119.0	6	435.0	3.49
1180T	1,400	10,503	103,000	300	153	630.0	484.0	239.0	394.0	545.0	-	129.0	6	584.0	3.76
1190T	1,300	13,970	137,000	335	153	685.0	524.0	259.0	437.0	585.0	-	144.0	6	772.0	4.40
1200T	1,100	18,966	186,000	360	178	737.0	564.0	279.0	498.0	645.0	-	145.0	6	1,045.0	5.62

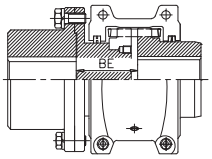
※ Coupling weight, without bore machining
※ Please contact us for the parts that do not have specifications in chart

Type TFS(FullSpacer) THS (HalfSpacer)

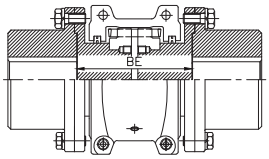


Cover Profiles





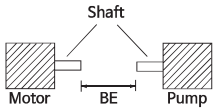
(HALF SPACER)



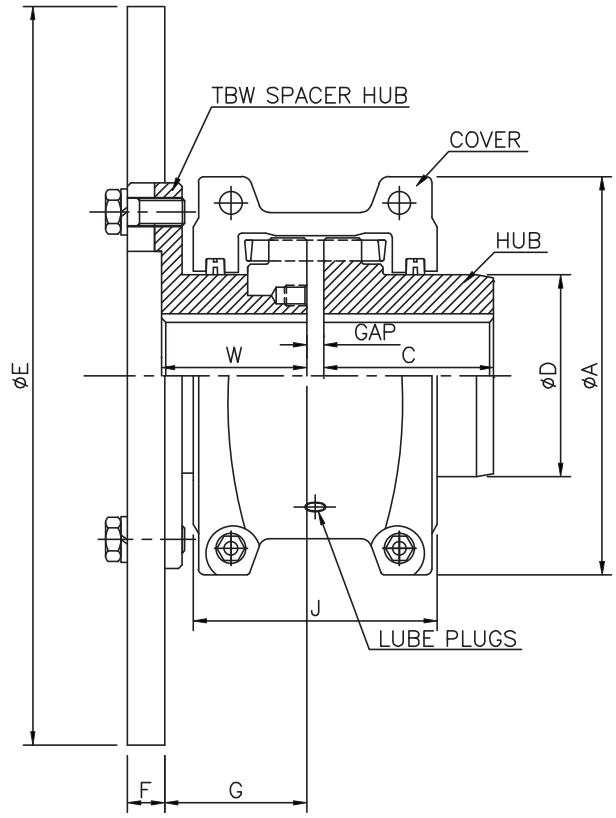
(FULL SPACER)

Size	Max. Speed RPM	Torque Rating		Bore Dia (㎜)		Dimensions(㎜)								Gap (㎜)	Flange Bolt No.	Lube wt (kg)
		kg·m	Nm	Max.	Min.	A	B	BE(TFS) Min.	BE(TFS) Max.	BE(THS) Min.	BE(THS) Max.	D	F			
1020T	3,600	5.3	52	35	13	101.6	35	89	203	45	102	52	86	5	4	0.03
1030T	3,600	15.2	149	43	13	111.0	41	89	216	45	109	59	94	5	8	0.03
1040T	3,600	25	249	56	13	116.9	54	89	216	45	109	78	113	5	8	0.05
1050T	3,600	44	435	67	13	138.0	60	112	216	57	109	87	126	5	8	0.05
1060T	3,600	69	684	80	20	150.0	73	127	330	64	166	103	145	5	8	0.09
1070T	3,600	101	994	85	20	162.0	79	127	330	64	166	109	153	5	12	0.11
1080T	3,600	209	2,050	95	27	194.0	89	184	406	93	204	122	178	5	12	0.17
1090T	3,600	380	3,730	110	27	213.0	102	184	406	93	204	142	210	5	12	0.25
1100T	2,400	640	6,280	130	39	250.0	90	203	406	103	205	171	251	6.5	12	0.43
1110T	2,250	950	9,320	150	51	270.0	104	210	406	106	205	196	277	6.5	12	0.51
1120T	2,025	1,397	13,700	170	64	308.0	119	246	406	125	205	225	319	9.5	12	0.73
1130T	1,800	2,029	19,900	190	77	346.0	135	257	406	130	205	238	346	9.5	12	0.91
1140T	1,650	2,916	28,600	210	89	384.0	152	267	406	135	205	266	386	9.5	12	1.13
1150T	1,500	4,058	39,800	270	102	454.0	173	345	371	175	187	334	425	9.5	14	1.95
1160T	1,350	5,700	55,900	290	115	501.0	186	356	406	180	205	366	457	9.5	14	2.81
1170T	1,225	7,607	74,600	340	127	569.0	220	384	445	194	224	425	527	9.5	16	3.49
1180T	1,100	10,503	103,000	340	102	630.0	249	400	490	202	247	451	591	9.5	16	3.76
1190T	1,050	13,970	137,000	380	115	676.0	276	411	530	207	267	508	660	9.5	18	4.40
1200T	900	18,966	186,000	400	127	757.0	305	445	575	224	289	530	711	9.5	18	5.62

※ 'BE' is the distance between the shaft ends.
State the exact 'BE' number when you order.



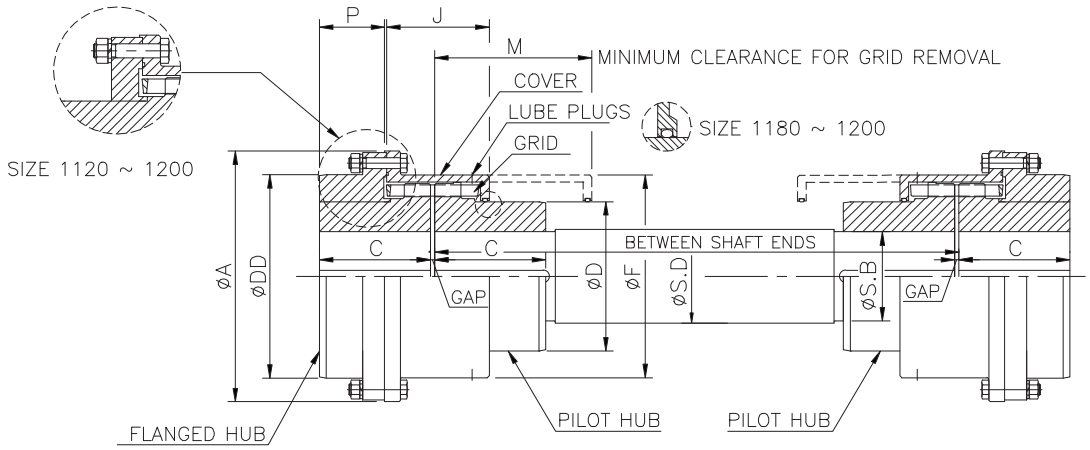
Type TBW (Disc Brake Wheel)



Size	Torque Rating		Brake Disc Size (㎜)	Bore(㎜)		Dimensions(㎜)							Lube wt (㎏)
	㎏·m	Nm		Max.	Min.	A	C	D	G	J	W	GAP	
1020T	1.1	11	203x6.4	28	13	101.6	47.5	39.7	59.9	66.5	60.5	3	0.03
1030T	3.5	35	254x6.4	35	13	110.0	47.5	49.2	59.9	71.8	60.5	3	0.04
1040T	6.6	65	254x6.4	43	13	116.9	50.8	57.1	59.9	70.0	60.5	3	0.05
1050T	12	118	254x6.4	50	13	138.0	60.3	66.7	59.9	79.5	60.5	3	0.07
1060T	21	209	305x6.4	56	20	150.0	63.5	76.2	88.6	92.0	88.1	3	0.09
1070T	33	331	305x6.4	67	20	162.0	76.2	87.3	88.6	96.0	88.1	3	0.11
1080T	64	637	305x6.4	80	27	194.0	88.9	104.8	88.6	116.0	88.1	3	0.17
1090T	110	1,084	407x12.7	95	27	213.0	98.4	123.8	87.9	122.0	88.1	3	0.25
1100T	193	1,897	407x12.7	110	42	250.0	120.6	142.0	119.1	155.5	119.1	4.5	0.43
1110T	290	2,846	458x12.7	120	42	270.0	127.0	160.3	146.0	161.5	146.0	4.5	0.51
1120T	442	4,336	509x12.7	140	61	308.0	149.2	179.4	150.1	191.5	149.4	6	0.73
1130T	622	6,098	559x12.7	170	67	346.0	161.9	217.5	153.4	195.0	152.4	6	0.91
1140T	898	8,808	610x12.7	200	67	384.0	184.1	254.0	159.8	201.0	158.8	6	1.13
1150T	1,243	12,195	763x12.7	215	108	454.0	183.0	269.0	179.8	273.0	182.9	6	1.91
1160T	1,727	16,938	915x12.7	240	121	501.0	198.0	305.0	195.1	279.0	198.1	6	2.81

※ When manufacturing the TBW type, determine the size of the brake disc to be used and set 'E' and 'F' according to the above chart. Please contact us for the parts that do not have specifications in chart

Type TFLS (Floating Shaft)



Size	Torque Rating		Bore(㎜)		Pilot HUB Bore	Dimensions(㎜)												Lube wt (㎏)
	㎏·m	Nm	Max.	Min.		A	BE Min.	C	D	DD	F	J	M	P	SB	SD	GAP	
1030T	15.2	149	35	13	27	115.9	162.0	47.5	49.2	83.7	80.8	50.3	77.7	26.8	27.0	28.6	3.0	0.05
1050T	44	435	50	13	37	157.5	195.0	60.3	66.7	105.2	104.8	59.2	94.0	36.2	36.5	38.1	3.0	0.07
1070T	101	994	67	20	49	182.9	213.0	76.2	87.3	126.5	129.0	65.9	103.1	49.8	49.2	50.8	3.0	0.12
1080T	209	2,050	80	27	62	218.4	275.0	88.9	104.8	154.9	156.2	85.9	134.1	52.1	61.9	63.5	3.0	0.18
1090T	380	3,730	95	27	75	244.9	294.0	98.4	123.8	180.3	175.8	92.2	143.8	58.5	74.6	76.2	3.0	0.26
1100T	640	6,280	110	42	92	286.0	372.0	120.6	142.0	211.3	208.3	117.3	181.4	69.3	92.1	95.2	5.0	0.43
1110T	950	9,320	120	42	102	324.1	391.0	127.0	160.3	245.4	228.6	122.2	190.5	73.9	101.6	104.8	5.0	0.51
1120T	1,397	13,700	140	61	118	327.2	453.0	149.2	179.4	179.4	257.0	146.3	220.0	83.6	117.5	120.6	6.0	0.74
1130T	2,029	19,900	170	67	133	365.3	463.0	161.9	217.5	217.5	295.1	149.5	225.0	94.8	133.4	136.5	6.0	0.91
1140T	2,916	28,600	200	67	143	419.1	482.0	184.1	254.0	254.0	335.8	155.8	234.7	113.8	142.9	146.0	6.0	1.13
1150T	4,058	39,800	215	108	162	477.5	549.0	183.0	269.0	269.0	391.2	177.4	268.2	101.7	161.9	165.1	6.0	1.95
1160T	5,700	55,900	240	121	200	548.6	587.0	198.0	305.0	305.0	442.0	189.4	287.0	111.9	200.0	203.2	6.0	2.81
1170T	7,607	74,600	280	134	200	604.5	622.0	216.0	356.0	356.0	494.3	201.0	304.8	124.6	200.0	203.2	6.0	3.49
1180T	10,503	103,000	300	153	225	665.5	673.0	239.0	394.0	394.0	556.3	226.9	330.2	141.4	225.4	228.6	6.0	3.76
1190T	13,970	137,000	335	153	251	708.7	711.0	259.0	437.0	437.0	599.4	241.7	349.5	157.6	250.8	254.0	6.0	4.40
1200T	18,966	186,000	360	178	276	782.3	744.0	279.0	498.0	498.0	622.9	251.8	365.8	172.8	276.2	279.4	6.0	5.62