Woo Chang Coupling Co.,Ltd
Mechanical Power Transmission Systems

Mechanical Power Transmission Systems

FLEXIBLE DISC COUPLING

W4-00S

W4-00D

W4-00F

W6-00S

W6-00D

W6-00F

W8-00S

W8-00D

W8-00F

FLEXIBLE DISC COUPLING

Characteristic & Advantages

1) No lubricant is required
because there is no friction; Flexible Disc Couplings are clean and there are no electric parts, so there is no noise or wear.

2) No maintenance is required
if the coupling is mounted within error limits and there is no change to the initial state when in use; with proper usage this product has a long lifespan.

3) A wide range of options
is available, including the ability to choose an aluminum alloy body to reduce weight for certain operating conditions.

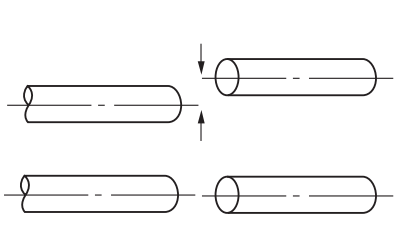
4) A high tolerance for misalignment
allows the Flexible Disc Coupling to be applied to various systems; custom designs are possible to allow for even larger mounting misalignments.

5) High torsional rigidity is possible
because Flexible Disc Couplings have no backlash which makes them perfect for machine tools and presses that require accurate shaft rotation and position control.

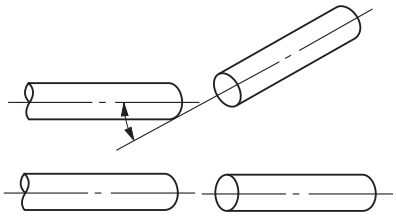
6) Tolerates unfavorable conditions
because it is not lubricated and it can be used in high temperatures with standard materials.

7) Easy to use
with few parts and reduced size and weight which makes fast and reliable assembly and disassembly possible.

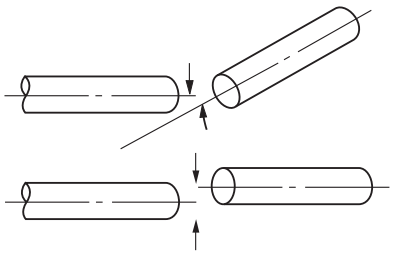
Misalignment



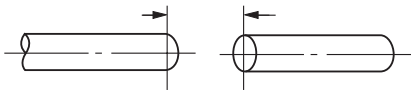
Parallel misalignment



Angular misalignment



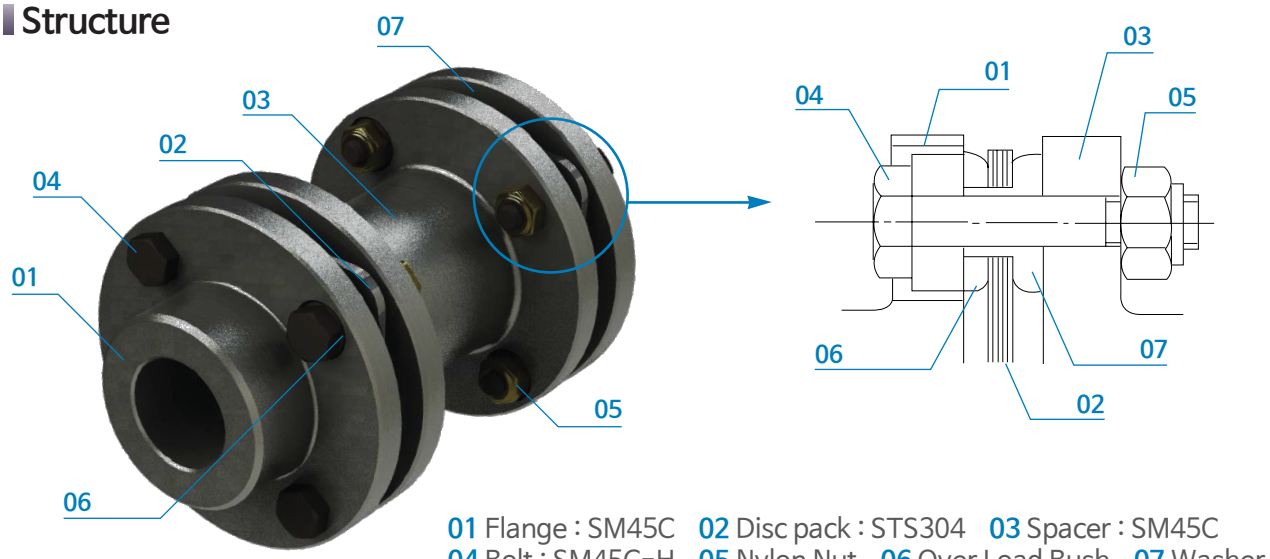
Angular & parallel misalignment



End float

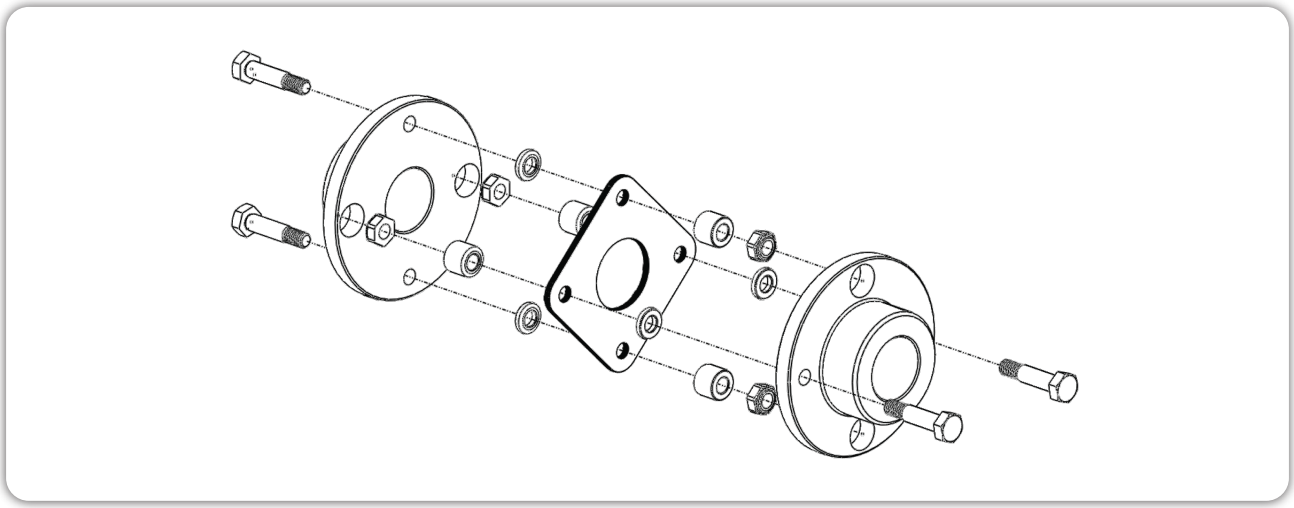
Parallel and angular misalignment of the shaft occur due to various factors such as thermal fluctuation, bearing wear, vibration, and settling of foundation work. If the first shaft alignment is inaccurate and the couplings are overloaded, there is no capacity to absorb the eccentric stress and the coupling will not have the expected operating life. The figure above shows parallel, angular, and axial misalignment. In practice, these errors occur in combination.

Structure

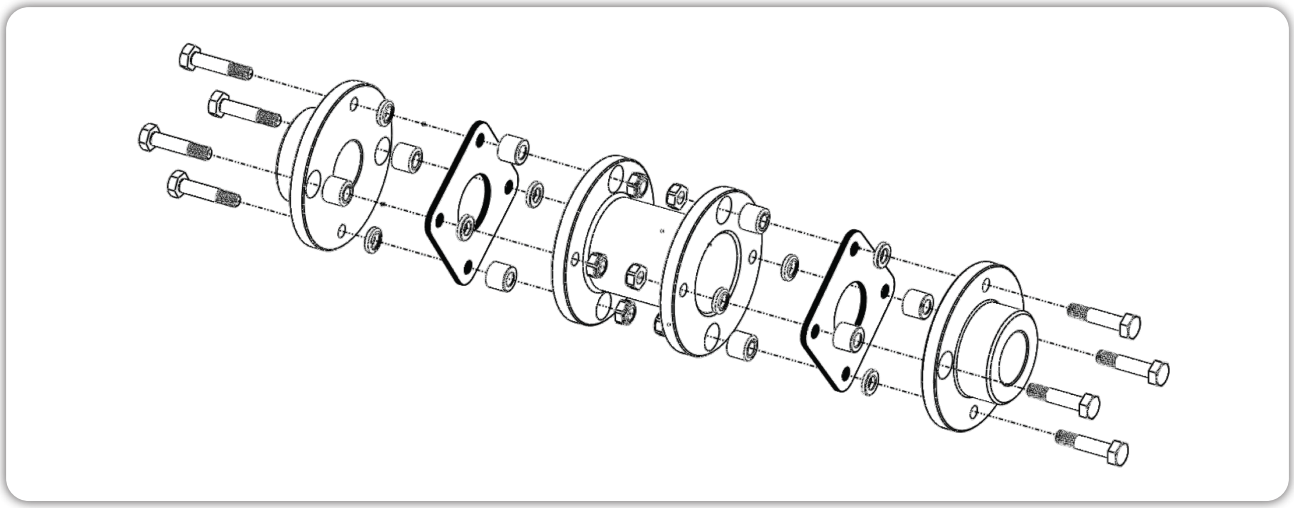


01 Flange : SM45C **02** Disc pack : STS304 **03** Spacer : SM45C
04 Bolt : SM45C-H **05** Nylon Nut **06** Over Load Bush **07** Washer

Design features of W4- 00S Coupling



Design features of W4- 00D Coupling



Instructions For Installation

When assembling, the shafts should be accurately aligned to prevent misalignments and to ensure that the optimal performance for the coupling. Correct any misalignments to ensure the long life of the Flexible Disc Coupling.

1) Check for angular misalignment (①)

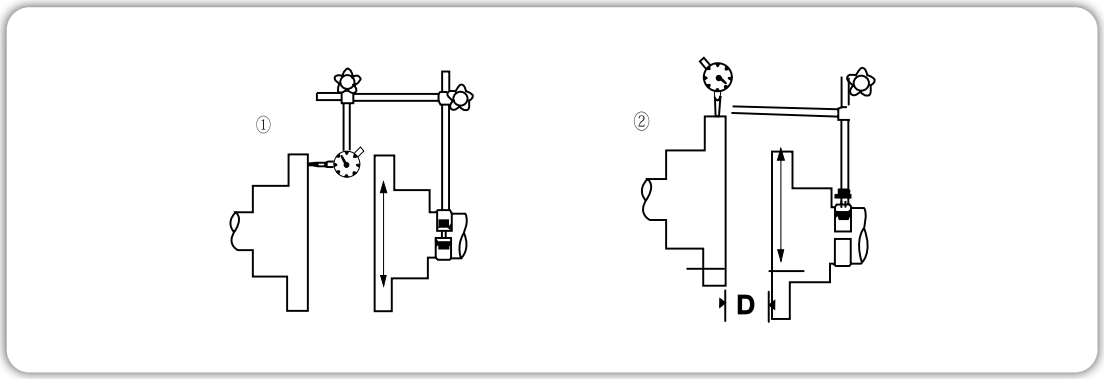
a. Fix the dial gauge to one side. Rotate the hub to check the minimum value on the dial gauge and set it to zero.
b. Rotate the dial gauge side coupling 360° and check the dial gauge again. Adjust until angular misalignment is minimized.

2) Check for parallel misalignment (②)

a. To measure any parallel misalignment of the shafts, fix the dial gauge to the drive shaft hub. While rotating the drive shaft, check the outer diameter gauge value of the driven hub.
b. By moving the equipment or using the base plate, adjust the eccentricity to a minimum.

3) Refer to the structural drawing and assemble the remaining parts

To ensure a long life of the Flexible Disc Coupling, angular and parallel misalignment should be minimized within 12 hours of commissioning. At this time, tighten the bolt nuts using the specified torque.



Selection Method

1) Selection method

$$T = \frac{974 \times KW}{N \times 100} \times S{\cdot}F \text{ or } T = \frac{716.2 \times HP}{N \times 100} \times S{\cdot}F$$

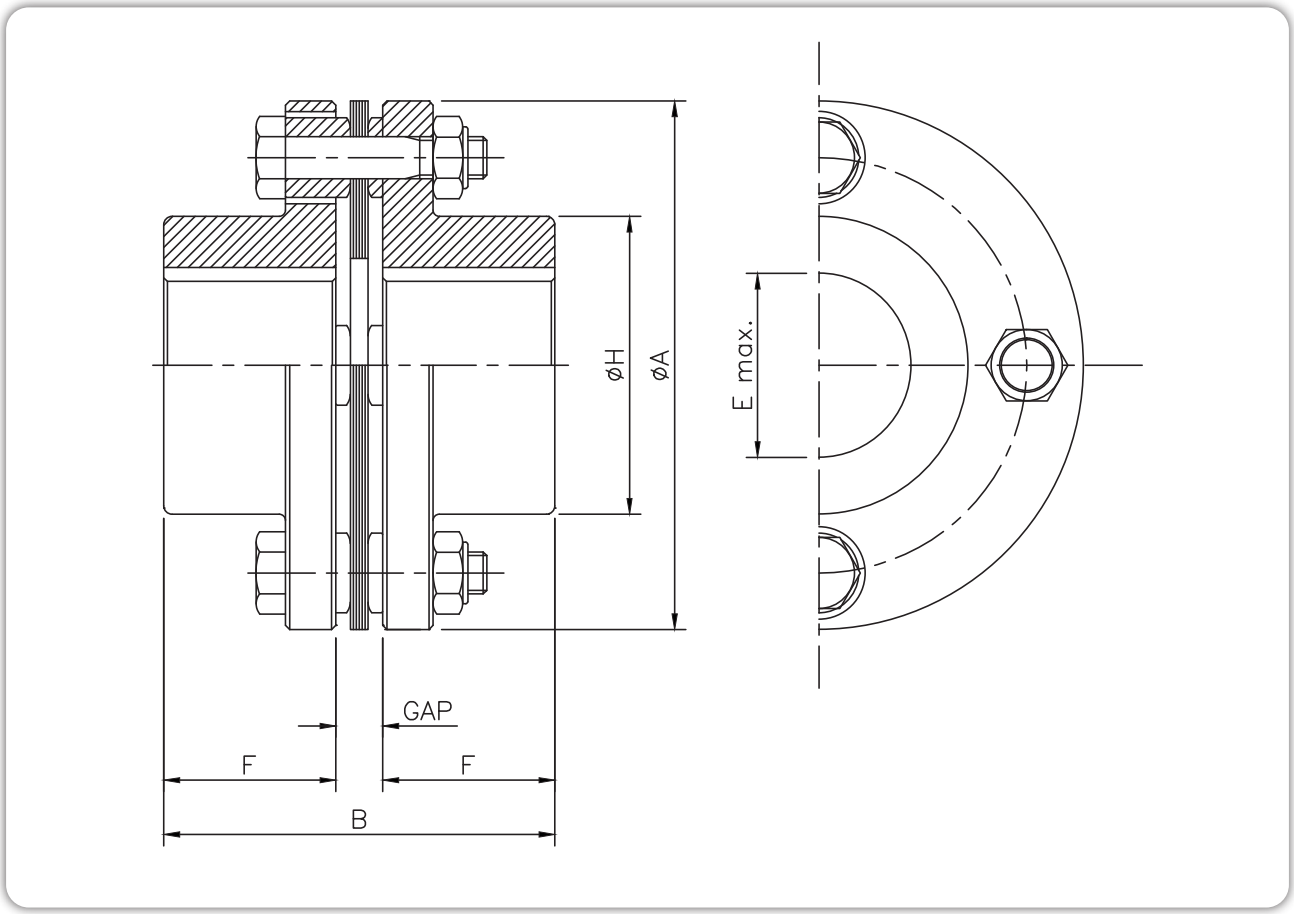
T = Design torque(kg.m) / kw = power / HP = power / N = Working revolution / S.F = Recommended Service Factor

2) Size Selection Method

a. After determining the spacer length, select the most suitable type.
b. Calculate the torque required using the equation above.
c. Select a coupling with a torque rating one size greater than the calculated torque.
d. Make sure that the bore diameter will accommodate the maximum shaft size.
e. Confirm space constraints.
f. Check end float.

3) Check if balancing is required.

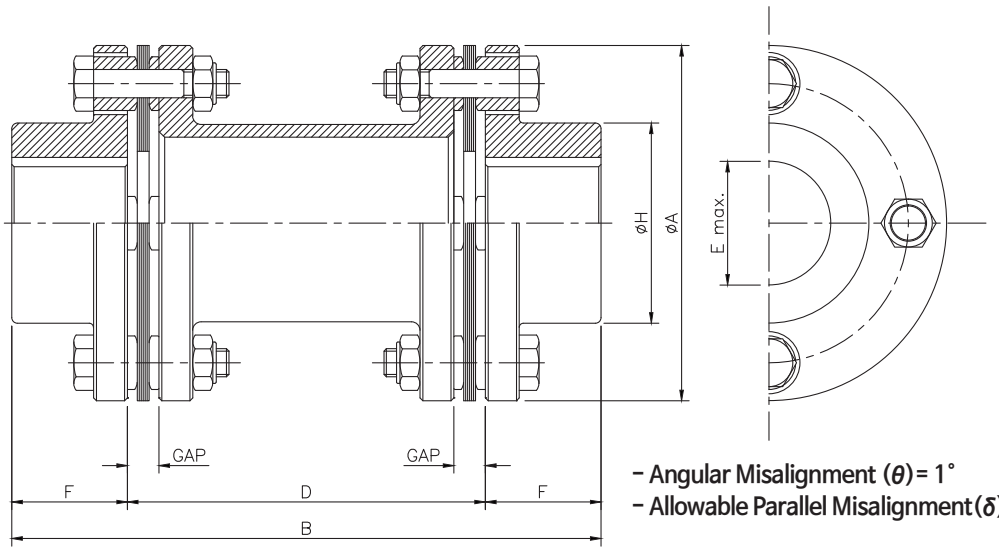
W4-00S (Single Disc Flex)



Size	Max. Speed RPM	Torque Rating		Bore dia. (㎜)	Dimensions (mm)				Gap (㎜)	Cplg wt (kg)	GD² (kg.㎠)	Bolt Tighten Torque (kg.m)
		kg.m	Nm	Emax.	A	B	F	H				
05S	10,000	3.4	33	23	67	55.8	25	33	5.8	0.6	8	0.9
10S	10,000	9.2	90	32	81	57.1	25	46	7.1	1.1	24	0.9
15S	10,000	18	177	35	93	66.4	29	51	8.4	1.7	48	2.2
20S	10,000	25	245	42	104	79.0	34	61	11.0	2.5	80	2.2
25S	8,300	43	422	50	126	93.2	41	71	11.2	4.3	224	4.2
30S	7,300	79	775	58	143	108.5	48	84	12.5	6.9	440	7.3
35S	6,200	130	1,275	74	168	130.0	57	106	16.0	11.3	1,080	7.3
40S	5,400	210	2,059	83	194	145.0	64	118	17.0	16.7	2,080	15.9
45S	4,900	340	3,334	95	214	174.8	76	137	22.8	22.7	3,520	15.9
50S	4,200	500	4,903	109	246	202.0	89	156	24.0	35.4	7,200	22.1
55S	3,800	650	6,374	118	276	230.0	102	169	26.0	52.0	12,800	55.3

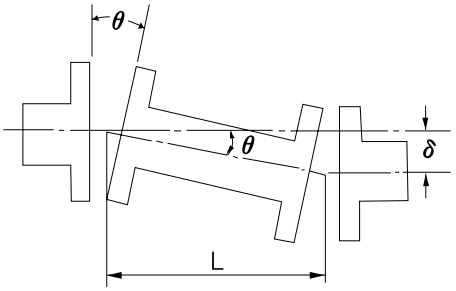
※ Coupling weight, without bore machining

W4-00D (Double Standard) / W4-OOSD (Double Short)

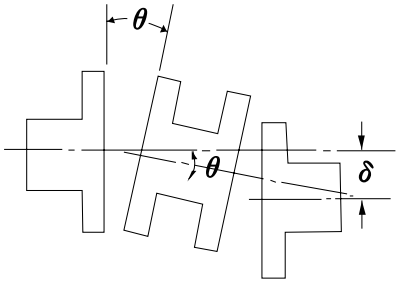


- Angular Misalignment (θ) = 1°
- Allowable Parallel Misalignment (δ) = L.tan θ

Angular Misalignment θ



Parallel Misalignment δ

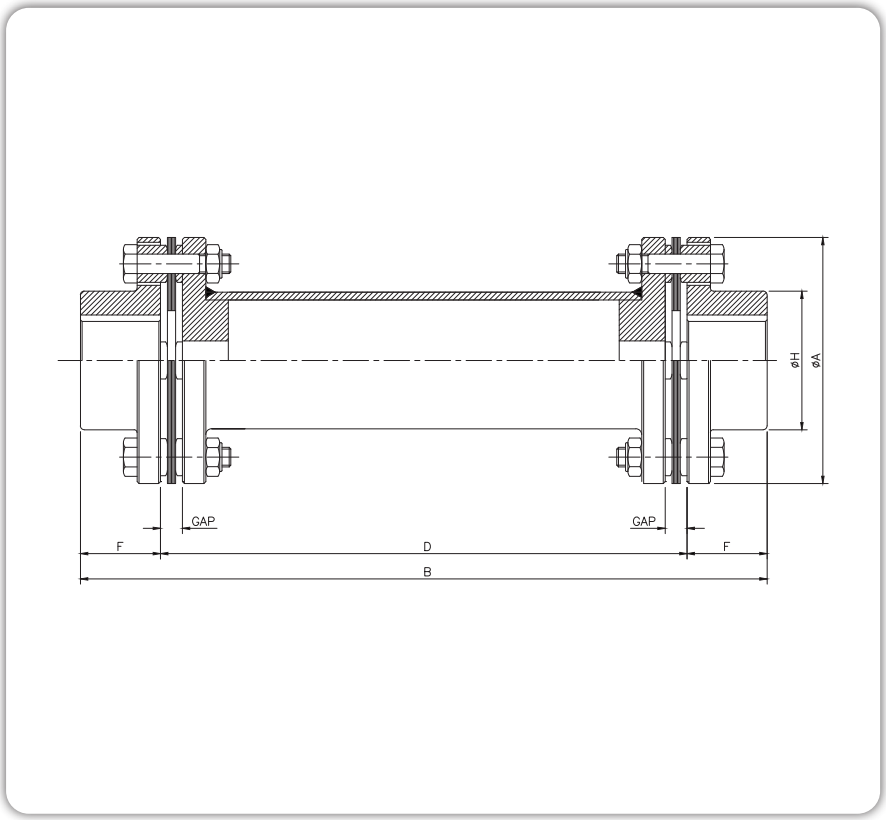


Common				W4-00D (Standard)			W4-00SD (Short)			W4-00F (Custom)		
Size	Max. Speed RPM	Torque Rating		D (㎜)	Cplg wt (kg)	GD² (kg·㎠)	D (㎜)	Cplg wt (kg)	GD² (kg·㎠)	B (㎜)	D (㎜)	D Max. (㎜)
		kg·m	Nm									
05D	10,000	3.4	33	88.9	1.2	18	38	1.1	17.8			200
10D	10,000	9.2	90	88.9	1.9	44	39	1.7	41			200
15D	10,000	18	177	101.6	2.9	84	48	2.7	79			250
20D	10,000	25	245	127.0	7.1	396	55	6.6	136			250
25D	8,300	43	422	127.0	7.1	386	62	6.6	337			300
30D	7,300	79	775	127.0	10.8	800	69	10.3	775	2F+D		300
35D	6,200	130	1,275	127.0	16.3	1,680	78	15.6	1,628			300
40D	5,400	210	2,059	139.7	24.7	3,400	89	24.0	3,317			350
45D	4,900	340	3,334	152.4	32.5	5,600	107	31.5	5,428			350
50D	4,200	500	4,903	177.8	50.0	11,200	113	48.4	10,865			350
55D	3,800	650	6,374	177.8	75.0	20,400	134	63.4	20,127			400

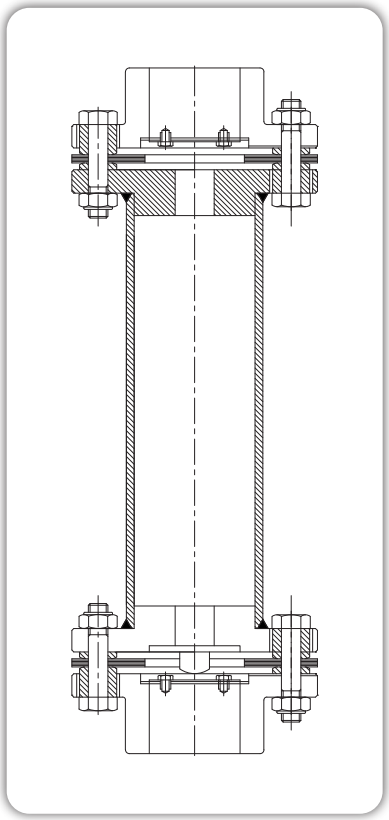
Desired distance betwwen shaft ends

※ Refer to the previous page for dimensions

W4-OOFH (Horizontal)



W4-OOFV (Vertical)



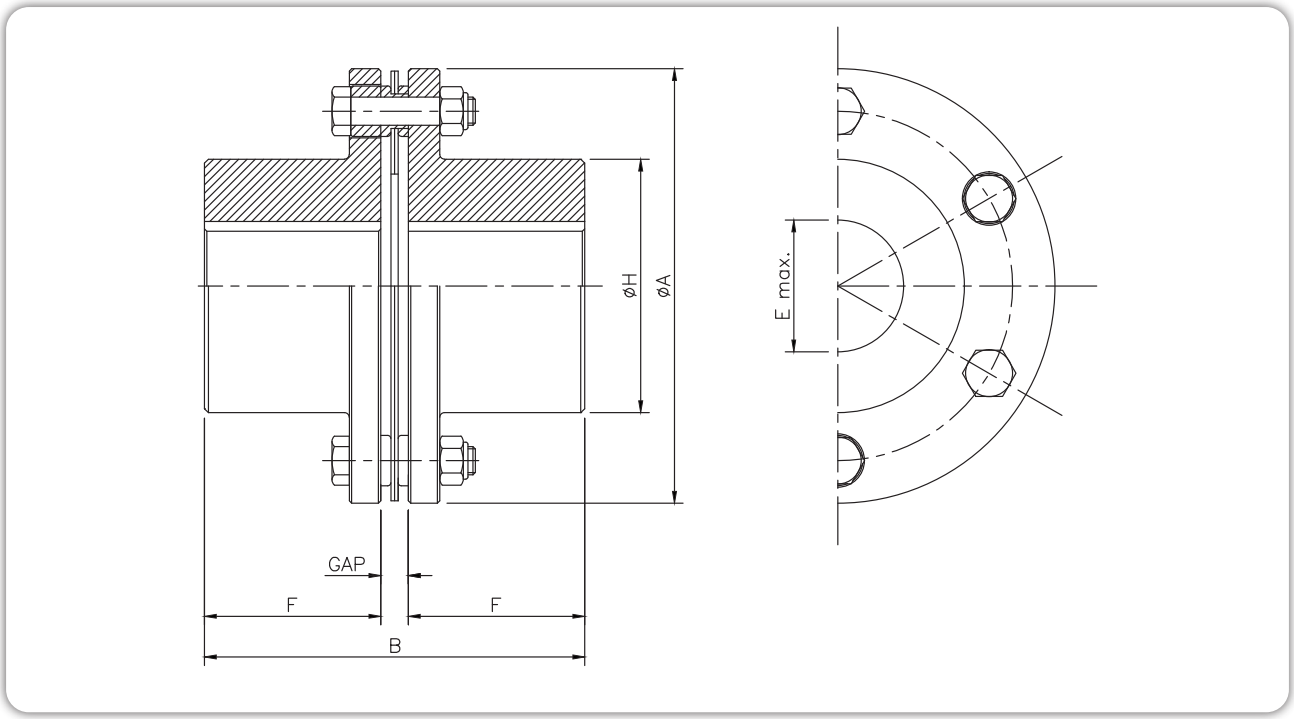
Size	Torque Rating		Dimensions(mm)				Cplg wt(kg)		Moment of Inertia GD(kg·cm²)	
	kg·m	Nm	A	D min	F	H	W1ⓐ D min	W2 Addition	GD1ⓑ D min	GD2 Addition
10F	9.2	90	81	72.2	25	46	1.9	0.029	50	0.44
15F	18	177	93	75.8	29	51	3.0	0.032	98	0.59
20F	25	245	104	88.4	34	61	4.3	0.039	168	1.10
25F	43	422	126	99.4	41	71	7.5	0.075	442	2.82
30F	79	775	143	111.4	48	84	11.7	0.110	922	6.03
35F	130	1,275	168	141.6	57	106	18.7	0.139	2,032	12.33
40F	210	2,059	194	154.0	64	118	28.3	0.161	3,839	19.21
45F	340	3,334	214	183.2	76	137	38.3	0.186	6,857	29.65
50F	500	4,903	246	211.8	89	156	58.2	0.250	13,639	52.73
55F	650	6,374	276	234.4	102	169	73.2	0.310	25,552	76.53

(1) Total weight(kg) should be calculated using the following equation:
W=W1 ⓐ D min+L× (W2 Addition)
L:D - D min(cm)

(2) Total moment of inertia GD(kg • cm2) should be calculated using the following equation:
GD= GD1ⓑ Dmin+L× (GD2 Addition)

※ D= user - specified

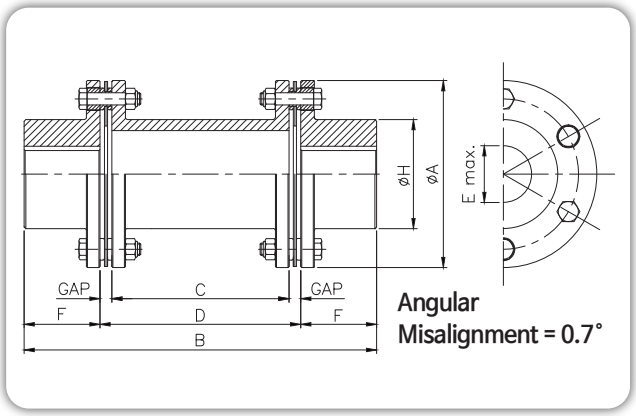
W6 - 00S (Single Disc Flex)



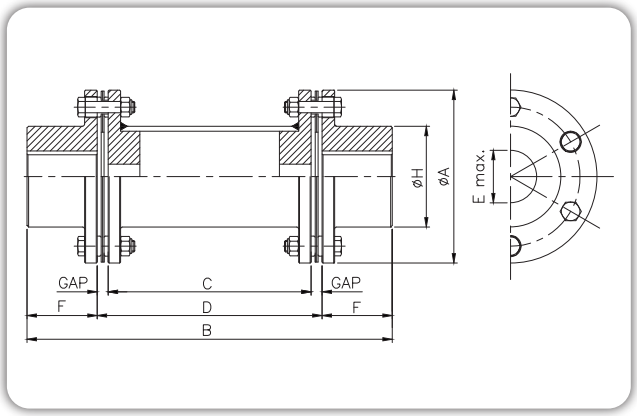
Size	Max. Speed RPM	Torque Rating		Bore (mm) Emax.	Dimensions(mm)				Gap (mm)	Cplg Wt (kg)	Bolt tighten Torque (kg.m)
		kg·m	Nm		A	B	F	H			
00S	8,300	58	570	51	119	118.3	54	74	10.3	6.0	2.2
01S	7,300	94	922	55	137	137.0	63	81	11.0	9.1	4.2
02S	6,200	174	1,710	67	161	160.0	74	97	12.0	16.9	7.3
03S	5,400	341	3,345	72	180	174.0	80	104	14.0	22.6	15.9
04S	4,900	499	4,900	85	212	207.0	95	124	17.0	35.1	22.1
05S	3,800	620	6,080	111	276	241.5	112	161	17.5	65.1	22.1
10S	3,800	840	8,240	111	276	243.0	112	161	19.0	66.1	22.1
15S	3,400	1,090	10,690	133	308	287.0	134	193	19.0	107.8	45
20S	3,000	1,820	17,850	152	346	328.5	153	218	22.5	156.1	58
25S	2,800	2,692	26,400	165	375	358.0	165	240	28.0	211.8	110
30S	2,500	3,410	33,450	178	410	387.0	178	258	31.0	274.5	150
35S	2,300	4,071	39,930	187	445	407.0	188	272	31.0	333.3	170
40S	2,200	4,721	46,300	205	470	446.0	206	297	34.0	399.2	170
45S	2,000	6,101	59,840	231	511	497.5	231	334	35.5	525.3	170
50S	2,000	7,622	74,750	254	556	545.0	256	364	37.0	676.3	310
55S	2,000	9,442	92,600	263	587	565.5	264	382	37.5	803.4	360

※ Coupling weight, without bore machining

W6-00D (Double Standard Spacer)
W6-00F (Double Custom Spacer)



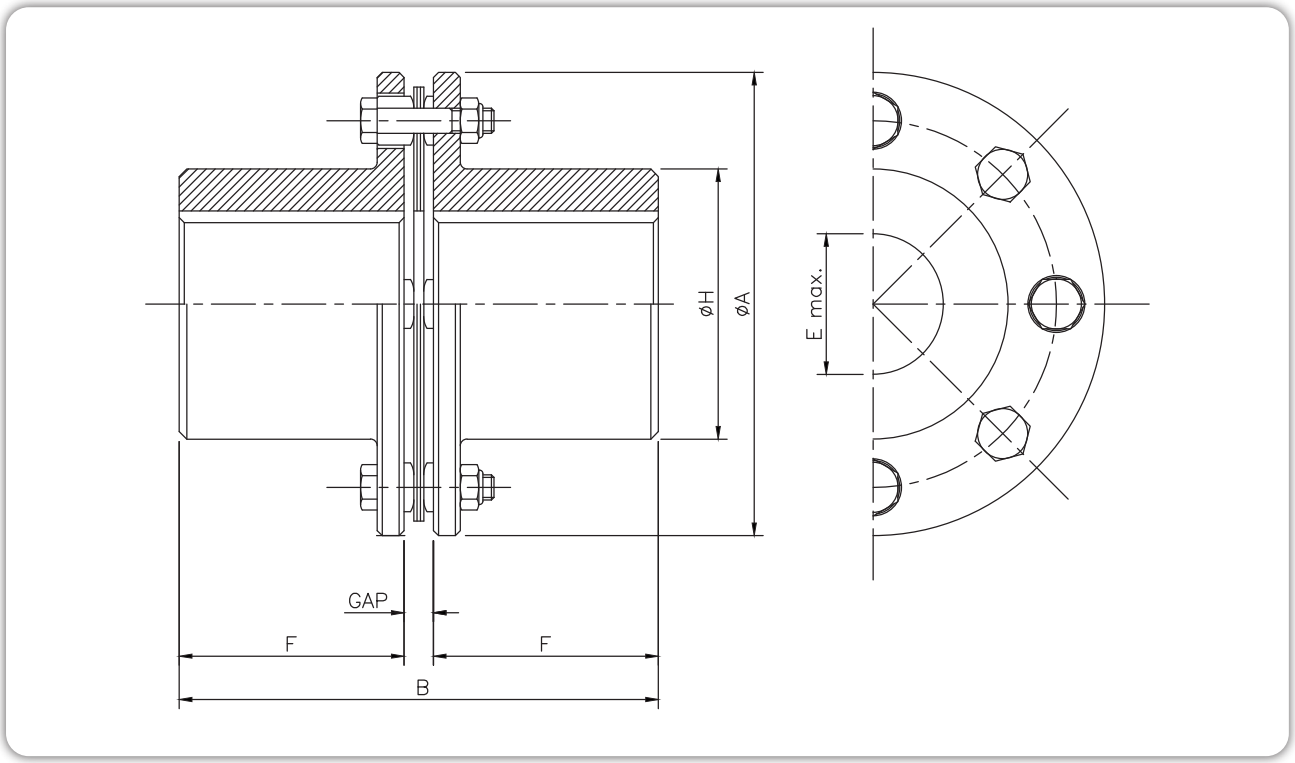
W6-00FH (Floating Horizontal)
W6-00FV (Floating Vertical)



Size	Max. Speed RPM	Torque Rating		Bore Dia (mm) Emax.	Dimensions (mm)							GAP (mm)	Moment of Inertia GD² (kg·m²)	Max. Axial Misalign. (±mm)	Bolt tighten Torque (kg·m)
					A	B	C	D		F	H				
		kg·m	Nm					Max	Min						
00D	8,300	58	570	51	119	168	39.4	97	60	54	74	10.3	0.03	3.0	2.2
01D	7,300	94	922	55	137	198	50.0	110	72	63	81	11.0	0.065	3.4	4.2
02D	6,200	174	1,710	67	161	238	66.0	129	90	74	97	12.0	0.14	3.6	7.3
03D	5,400	341	3,345	72	180	269	81.0	141	109	80	104	14.0	0.26	4.2	15.9
04D	4,900	499	4,900	85	212	308	84.0	150	118	95	124	17.0	0.59	4.5	22.1
05D	3,800	620	6,080	111	276	377	118.0	255	153	112	161	17.5	1.8	3.9	22.1
10D	3,800	840	8,240	111	276	377	115.0	258	153	112	161	19.0	1.9	3.9	22.1
15D	3,400	1,090	10,690	133	308	440	134.0	278	172	134	193	19.0	3.7	4.2	45
20D	3,000	1,820	17,850	152	346	497	146.0	283	191	153	218	22.5	6.7	4.8	58
25D	2,800	2,692	26,400	165	375	553	167.0	308	223	165	240	28.0	10.6	5.2	110
30D	2,500	3,410	33,450	178	410	610	192.0	319	254	178	258	31.0	16.5	5.4	150
35D	2,300	4,071	39,930	187	445	646	208.0	349	270	188	272	31.0	23.9	5.6	170
40D	2,200	4,721	46,300	205	470	686	206.0	342	274	206	297	34.0	30.7	6.3	170
45D	2,000	6,101	59,840	231	511	749	221.0	364	287	231	334	35.5	48.0	6.7	170
50D	2,000	7,622	74,750	254	556	800	218.0	365	292	254	364	37.0	72.9	7.3	310
55D	2,000	9,442	92,600	263	587	839	236.0	408	311	264	382	37.5	100.6	7.8	360

※ Dimension " D" can be adjusted on order.
※ Please consult with us for the distance between shaft ends according to the number of revolutions.

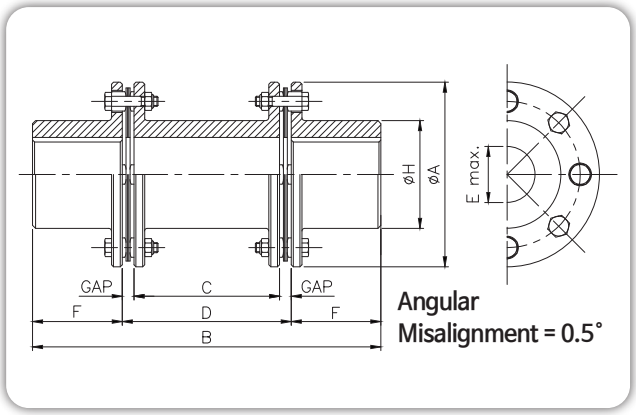
W8-00S (Single Disc Flex)



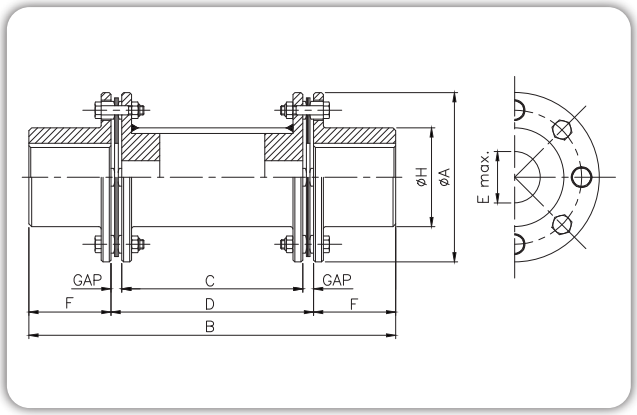
Size	Max. Speed RPM	Torque Rating		Bore (mm) Emax.	Dimensions (mm)				Gap (mm)	Cplg Wt (kg)	Bolt tighten Torque (kg.m)
		kg·m	Nm		A	B	F	H			
01S	4,900	391	3,842	95	214	228.2	108	137	12.2	38.0	7.3
03S	4,200	725	7,115	108	246	255.7	121	156	13.7	55.5	15.9
05S	3,800	914	8,967	111	276	285.5	134	161	17.5	72.2	22.1
10S	3,800	1,099	10,780	111	276	287.0	134	161	19.0	73.3	22.1
15S	3,400	1,568	15,380	133	308	339.0	160	193	19.0	119.7	45
20S	3,000	2,608	25,580	152	346	388.5	183	218	22.5	174.3	58
25S	2,800	3,847	37,730	165	375	424.0	198	240	28.0	233.8	110
30S	2,500	4,806	47,140	178	410	459.0	214	258	31.0	305.3	150
35S	2,300	5,815	57,030	187	445	481.0	225	272	31.0	367.4	170
40S	2,200	6,564	64,380	205	470	528.0	247	297	34.0	447.5	170
45S	2,000	8,523	83,590	231	511	591.5	278	334	35.5	591.6	170
50S	2,000	10,522	103,190	254	556	647.0	305	364	37.0	761.4	310
55S	2,000	13,060	128,080	263	587	671.5	317	382	37.5	901.9	360

※ Coupling weight, without bore machining

W8-00D (Double Standard Spacer)
W8-00F (Double Custom Spacer)



W8-00FH (Floating Horizontal)
W8-00FV (Floating Vertical)



Size	Max. Speed RPM	Torque Rating		Bore Dia (mm) Emax.	Dimensions (mm)							GAP (mm)	Moment of Inertia GD² (kg·m²)	Max. Axial Misalign. (±mm)	Bolt tighten Torque (kg·m)
					A	B	C	D		F	H				
		kg·m	Nm					Max	Min						
01D	4,900	391	3,842	95	214	333	92.6	240	117	108	137	12.2	0.65	2.1	7.3
03D	4,200	725	7,115	108	246	369	99.6	269	127	121	156	13.7	1.24	2.1	15.9
05D	3,800	914	8,967	111	276	421	118.0	255	153	134	161	17.5	1.80	2.1	22.1
10D	3,800	1,099	10,780	111	276	421	115.0	258	153	134	161	19.0	1.80	2.1	22.1
15D	3,400	1,568	15,380	133	308	492	134.0	278	172	160	193	19.0	3.70	2.4	45
20D	3,000	2,608	25,580	152	346	557	146.0	283	191	183	218	22.5	6.80	2.9	58
25D	2,800	3,847	37,730	165	375	619	167.0	308	223	198	240	28.0	10.8	3.1	110
30D	2,500	4,806	47,140	178	410	682	192.0	319	254	214	258	31.0	16.7	3.3	150
35D	2,300	5,815	57,030	187	445	720	208.0	339	270	225	272	31.0	25.0	3.6	170
40D	2,200	6,564	64,380	205	470	768	206.0	342	274	247	297	34.0	31.1	4.0	170
45D	2,000	8,523	83,590	231	511	843	221.0	364	287	278	334	35.5	48.0	4.5	170
50D	2,000	10,522	103,190	254	556	902	218.0	365	292	305	364	37.0	74.7	5.0	310
55D	2,000	13,060	128,080	263	587	945	236.0	408	311	317	382	37.5	101.6	5.2	360

※ Dimension "D" can be adjusted on order.
※ Rotating speed limits shown in above table are based on standard pipe. For rotation speed is over this limits,please contact us.

Service Factor and Reference

Service Factor

The service factors listed are the typical values used for normal operation of drive systems.
If the applications use repetitive high peak loads, choose a factor by using the provided instructions or formulas.

Table 1

Aiphabetical listing of applications	
AERATOR	2.5
AGITATORS	
Vertical and Horizontal screw,propeller,Paddle	1.5
BARGE HAUL PULLER	3.0
BLOWERS	
Centrifugal	1.5
Lobe or Vane	1.75
CAR DUMPERS	4.0
CAR PULLERS	2.5
CLARIFIER OR CLASSIFIER	1.5
COMPRESSORS	
Centrifugal	1.1
Rotary,Lobe or Vane	2.0
Rotary,Screw	2.0
Reciprocation	
Direct Connected ★	
With out Flywheels ★	
*With flywheel and Gear between Compressor and Prime Mover	
1 cylinder,single acting	5.0
1 cylinder,double acting	5.0
2 cylinders,single acting	5.0
2 cylinders,double acting	5.0
3 cylinder,single acting	5.0
3 cylinder,double acting	3.0
4 or more cyl.. single act	3.5
4 or more cyl.. double act	3.5
CONVEYORS	
Apron,Assembly,Belt,Chain	
Flight,Screw	1.5
Bucket	2.0
Live Roll,Shaker and Reciprocatio	3.5
▲★CRANES AND HOIST	
Main Hoist	.5
Skip Hoist	2.5
Slope	2.25
Bridge,Travel or Trolley	.5
DYNAMOMETER	1.5
ELEVATORS	
Bucket,Centrifugal Discharge	2.0
Freight or Passenger(Not Approved)	
Gravity discharge	2.0
ESCALATORS(Not Approved)	
EXCITER GENERATOR	1.75
EXTRUDER, PLASTICI	2.25
FANS	
Centrifugal	1.1
Cooling Tower	3.0
Forced Draft-Across the Line start	2.0
Forced Draft Motro Driven thru fluid or electric slip clutch	1.5
Gas Recirculating	2.5
Induced Draft with damper control or blade cleaner	2.0
Induced Draft without controls	3.0
FEEDERS	3.0
Apron,Belt,Disc,Screw	2.0
Reciprocation	3.5
GENERATORS	
Even Load	1.1
Hoist or Railway Service	2.0
Welder Load	3.0
HAMMERMUILL	2.5
LAUNDRY WASHER OR TUMBLER	3.0
LINE SHAFTS	
Any processing Machinery	2.0
MACHINE TOOLS	
Auxiliary and Traverse Drive	1.5
Bending Roll,Notching press. Punch Press, Planer, Plate Reversing	2.5
Main Drive	2.0
MAN LIFTS(Not Approved)	
METAL FORMING MACHINES	
Draw Bench Carriage and Main Drive	3.0
Extrude	3.0
Forming Machine and Forming Mills	3.0
Slitters	1.5
Wire Drawing or Flattening	2.5
Wire Winder	2.25
Coilers and Uncoilers	2.25
MIXERS(see Agitators)	
Concrete	2.5
Muller	2.5
PRESS,PRINTING	2.25
PUG MILL	2.5
PULVERIZERS	
Hammermill and Hog	2.5
Roller	2.0
PUMPS	
Centrifugal Constant Speend 1.1	
Frequent Speed Changes under Load	2.0
Descakling,with accumlators	2.0
Gear,Rotary, or Vane	1.75
Reciprocating	
1 cyl..single or double act.	3.0
2 cyl..single acting	3.0
2 cyl..double acting	2.5
3 or more cyliders	2.0
SCREENS	
Air Washing	1.5
Grizzly	3.0
Rotary Coal or Sand	2.0
Vibrating	3.5
Water	1.5
SKI TOWS & LIFTS(Not Approved)	
STEERING GEAR	1.5
STOKER	1.5
TUMBLING BARREL	1.5
WINCH,MANEUVERING Dredge,Marine	2.5
WINDLASS	2.0
WOODWDORKING	2.0
MACHINERY	1.5
WORK LIFT PLATFORMS(Not approved)	
Aiphabetical listing of industries	
AGGREGATE PROCESSING, CEMENT, MINING KILNS; TUBE,ROD AND BALL MILLS Direct or on L.S. shaft of Reducer, with final drive Machined Spur Gears	3.0
Single Helical or Herringbone Gears	2.25
Conveyors,Feeders,Screens, Elevators,See General Listing	
Crushers,Ore or Stone	3.5
Dryer, Rotary	2.0
Grizzly	3.0
Hammermill or Hog	2.5
Tumbling Mill or Barrel	2.5
BREWING AND DISTILLING	
Bottle and Can Filling Machines	1.5
Brew Kettle	1.5
Cookers,Continuous Duty	1.75
Lauter Tub	2.25
Mash Tub	1.75
Scale Hopper,Frequent Peaks	2.25
CLAY WORKING INDUSTRY	
Brick Press, Briquette Machine, Clay Working Machine, Plug Mill	.25

a. In case of a slide coupling that axial movement occurs more than five times per hour, add 0.5 to the service factor. When electric motors, generators, engines, compressors and other machines are assembled with sleeves or straight roller bearings, axial end float couplings should be used to protect the bearings. When ordering, also order limited end float discs with the coupling.
b. *Contact us for a balanced opposed design.
c. ▲When using in a place with risk to human safety, for safety reasons, consult us before using.
d. ★ Contact us for high peak load applications (such as Metal Rolling Mills)
e. Non-reversing safety factor: The required coupling torque is the same as the peak torque.
f. Reversing safety factor: The required coupling torque is twice the peak torque.

Engine Drive Service Factors

It is necessary to use a service factor for engine drives when the application involves good flywheel regulation to prevent torque fluctuations that are greater than ± 20%. If the torque fluctuation is greater, or if operation is close to serious critical or torsional vibration, a mass elastic study will be required.
To use Table 2, begin by selecting an application service factor from Table 1. Use that service factor to choose the appropriate engine service factor from Table 2. If the service factor from Table 1 is more than 2.5, please submit the complete application details to the factory for an engineering review.

Table 2. Engine Drive Service Factors

Number of cylinders	4 or 5					6 or more				
Service Factor	1.5	1.75	2.0	2.25	2.5	1.5	1.75	2.0	2.25	2.5
Engine Service Factor	2.5	2.75	3.0	3.25	3.5	2.5	2.75	3.0	3.25	3.5

For best results, measure the system characteristics with a torque meter. The service factors provided here are only a guide based on the usual ratio between the coupling catalogue rating and general system characteristics.

Torque Demands Driven Machine	Typical applications for Driven Equipment	Typical Service Factor
	Constant torque such as Centrifugal Pumps, Blowers and Compressors.	1.0
	Continuous duty with some torque variations including Plastic Extruders, Forced Draft Fans.	1.5
	Light shock loads from Metal Extruders, Cooling Towers, Cane Knife, Log Haul.	2.0
	Moderate shock loading as expected from a Car Dumper, Stone Crusher, Vibrating Screen.	2.5
	Heavy shock load with some negative torques from Roughing Mills, Reciprocating Pumps, Compressors, Reversing Runout Talbes.	3.0
	Applications like Reciprocating Compressors with frequent torque reversals, which do not necessarily cause reverse rotations.	Refer to WCC

Shrink Heating

1. Introduction

Heat shrinking is necessary and practical in industries that require more power and precision than is possible with other fitting methods.

2. Interference

1/1,000 to 15/10,000 (mm) of the shaft diameter d

3. Methods and Procedures for Fitting

A) If you use a key, put the key on the shaft first and lubricate it. If there is no key, do not apply lubricant.
B) Before fitting the hub on to the shaft, with the steel flexible coupling insert the tv cover and oil seal first. In case of the gear coupling, insert the sleeve, side cover first.
C) To heat, choose one of the following methods and heat to 135˚C:

① Oxy-acetylene or blow-torch heating	Mark near the surface of the hub with a crayon that melts at 135˚C. Then pass the flame through the inner diameter to heat it. Do not put heat directly on the tooth surface during heating, or heat only one side.
② Heating in a furnace	Set the thermometer to 135˚C and heat for at least three minutes per 1mm thickness. Avoid direct contact with heat sources during heating.
③ Oil bath heating	Put the hub in oil with a boiling point of 177℃ or higher and heat it for six minutes per 1mm thickness. Do not let the surface of the hub touch the bottom of the container during heating.

4. Mount the hub as soon as possible to prevent heat loss.