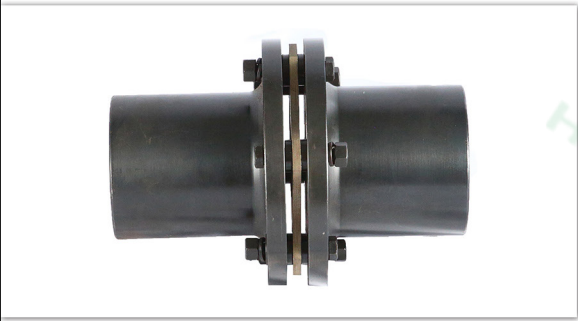




SERIES JM DIAPHRAGM COUPLINGS

JINGJIANG HUADING MACHINERY MANUFACTURING CO. LTD



HUADING

STANDARD (JB/T 9147-1999)

General

Diaphragm(disc) coupling is a new type coupling to be widely used abroad. It is applied in many. It can compensate for parallel as well as angular misalignment between prime mover and driven machine caused by Deformation due to load and temperature vary. Belonging to the flexible coupling with metallic elastic element, JM series diaphragm couplings rely on the metallic diaphragm to connect prime mover and driven machine, and to transmit the torque. It contains some advantages such as flexibly relieving shock, no noise and no lubricating needed. It is good substitute product for gear couplings and other general couplings.

The main characteristics of JM series Diaphragm Coupling:

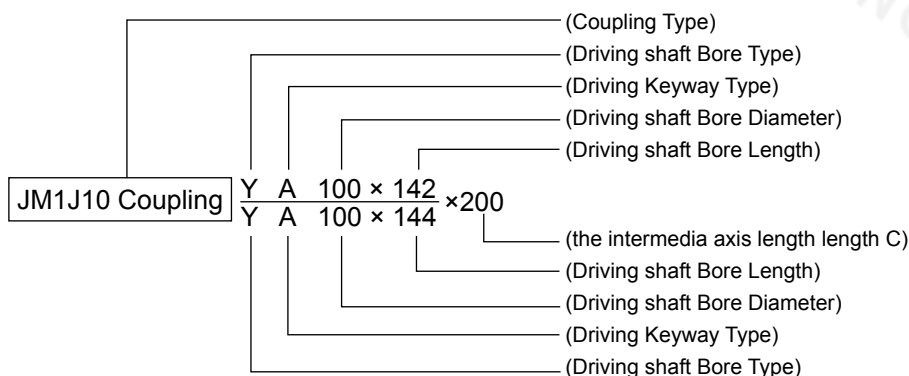
- Obvious dampen shock and no noise, no wearing. High transmitted efficiency and be available to high speed and superpower transfer motion.
- Good ability for compensating the misalignment of two axes. The allowing angular displacement is two times as much as the gear couplings. Low reaction pressure and high flexibility as the radial shifting as well as permitting some axial, angular or radial deviation.
- Operating safely under -80°C ~ 300°C and bad condition with shock and vibration.
- Simple construction, light weight and small size. Easy assembly and disassemble without moving machine. As well as No maintenance required and lubricating.
- Accurate transmitting revolution and no slipping. It can be used on precision machinery.

JM series diaphragm coupling is widely used for transmitting power in various kinds of mechanical equipments such as metallurgy, mining, petroleum, chemical industry, agricultural machinery, printing machinery, pump, blower fan and machine too, etc.

At present, hundreds of specifications in five major series diaphragm couplings are supplied by our company. The warm welcome will be given to the new and old customers for selecting them. Further more, we are sincerely in hopes of gaining your feedback information and requirements, and we will try our best to give you the best service!

The Mark Of JM Series Diaphragm Coupling

The following code should be used for ordering the specified type and size of curved tooth coupling:



Ordering example:

If a coupling of type JM1J10 is requested and the intermediate axis length is 200 and the following data are known:

Driving end:

Shaft Bore Y type,
 Key way is A type,
 $d_1 = 100\text{mm}$ $L_1 = 142\text{ mm}$,

Driven end:

Bore Y type, Key way is A type,
 $D_2 = 110\text{mm}$ and $L_2 = 144\text{mm}$.

should be labeled:

COUPLING JM1J10 $\frac{\text{YA}100 \times 142}{\text{YA}110 \times 144} \times 200$

● Please state out type, size, specifications of coupling completely when you are ordering.

Table 1 Fitting of the cylindrical bore and shaft extension (suggested)

Diameter d(mm)	Fitting code	Can also be used depending on application requirement H7/n6 H7/p6 H7/r6
> 6-30	H7/j6	
> 30-50	H7/k6	
> 50	H7/m6	

Note: If a shrink fit more heavy than that shown in the table is used the strength of the hub of coupling shall be checked.

Table 2 Type and Code of Coupling Bore and its Connection

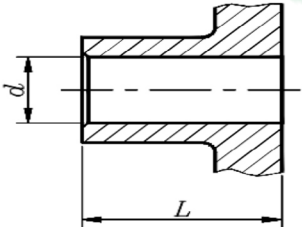
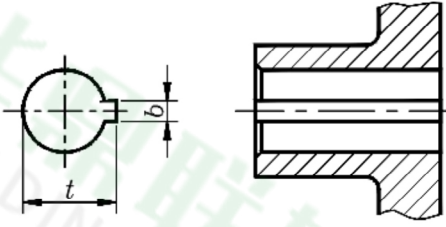
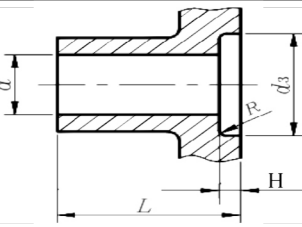
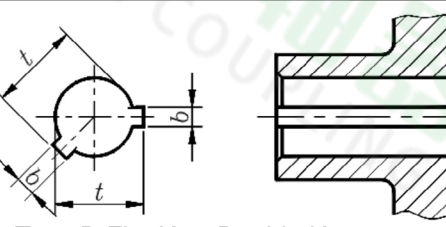
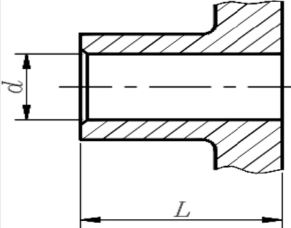
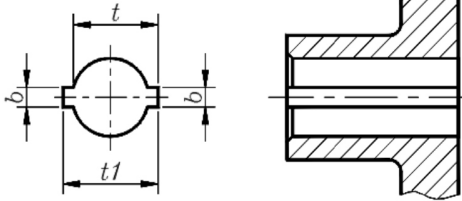
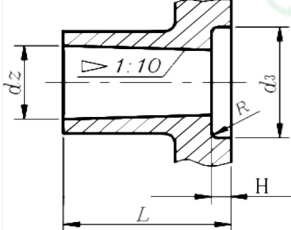
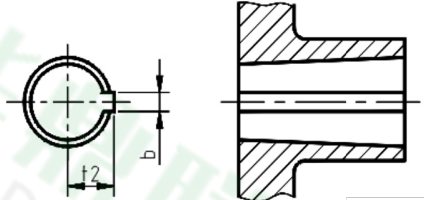
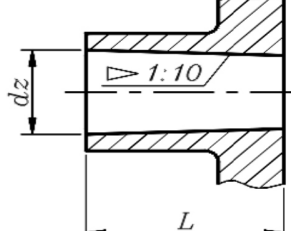
Shaft Bore Type & Code	Connection Type and Code
 <p>Type Y-Long Cylindrical Bore</p>	 <p>Type A-Flat Key, Single Keyway</p>
 <p>Type J-Short Cylindrical Bore with Counter Bore</p>	 <p>Type B-Flat Key, Double Keyways Apart from 120° Each Other</p>

Table 2 Type and Code of Coupling Bore and its Connection

 <p>Type J1-Short Cylindrical Bore without Counter Bore</p>	 <p>Type B1-Flat Key, Double Keyway Apart from 180° Each Other</p>
 <p>Type Z-Long Tapered Bore with Counter Bore</p>	 <p>Type C-Flat Key, Single Key way for Tapered Bore</p>
 <p>Type Z1-Long Tapered Bore without Counter Bore</p>	<p>Square Splined Bore in accordance with GB/T 1444. Cylindrical Evolute Spline in accordance with GB/T 3478.1</p>

Note: If there is no special indication fitting accuracy of cylindrical shaft bore is H7, the width "b" of the keyway is selected as standard value from GB1095<Section Dimensions of the key, and key way >, and the tolerance of width "b" is specified as Js9. The keyway type and dimensions of tapered bore is specified in GB/T3852-1997 <Type and Dimensions of shaft bore and connection of the coupling>. If the requested dimensions and fitting of shaft bore and keyway do not meet the above mentioned standards it must be noted when ordering

Selection Method of JM Series Diaphragms

Selection of the type of coupling refer to load case, calculated torque T_c , bore diameter and the shaft speed.

Formula for finding T_c list below: $T_c = K_1 K_2 K_3 T = K_1 K_2 K_3 9550 \frac{P_w}{n} = K_1 K_2 K_3 7020 \frac{P_H}{n} \leq T_n$

Where

- T ——— Theoretical torque, in $n \cdot m$;
- P_w ——— Driving power, in kw;
- n ——— Running speed, in r/min;
- T_c ——— Calculating torque, $n \cdot m$;
- T_n ——— Nominal torque, $n \cdot m$;
- P_H ——— Driving Power, HP;
- K_1 ——— Working condition coefficient considering transmission the effect coefficient of coupling transferring torque by loading verify, striking loading, working conditions;
- K_2 ——— Starting coefficient, attachment loading produced by starting frequency.
- K_3 ——— Installing deviation coefficient, considering the effect of the deviation of axial and angular to torque, see page 9 .

If the maximum allowable bore of the selected coupling with refer to the max Tc cannot meet the shaft length required, the type of coupling should be adjusted to meet the both requirements of the torque and shaft size.

Working condition coefficient K_1

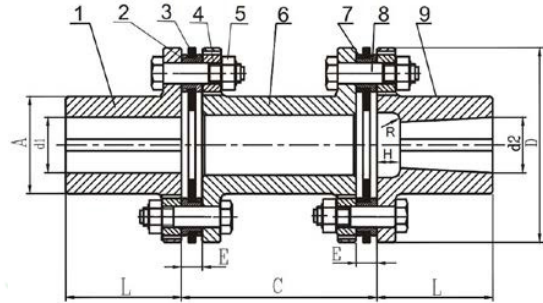
Kind of prime mover	Driven machine			
	1	2	3	4
Motor Or Turbine	1.3	1.5	2	3
Engine (Cylinders:4 Or More)	1.5	2	2.5	3.5
Engine(Cylinders:3 Or Less)	3	3.5	4.5	5

Starting (braking, commutation) coefficient K_2

starting times every hour	<120	120~240	>240
K_2	1.0	1.3	1.6

Classification of driven machine

- Kind 1: Slight variable for torque:
e.g: pump, small generator, belt conveyor, ventilation, liquid mixer.
- kind 2: Medial variable for torque:
e.g: Machine tool, axial blower fan, chain conveyor, water pump for boiler, rotary compressor.
- kind 3: Variable torque and large shock loads:
e.g: reciprocating pump, capstan machine, piston compressor (with more than 4 cylinders), crane excavator, cement mixer.
- kind 4: Large variable torque and strong shock loads:
e.g: Driving device for mill, shearing machine, punch, marine propeller, crusher.

Type JM1J diaphragm coupling's construction, basic parameters and dimensions

**Structure for Type
 JM1J Diaphragm couplings**

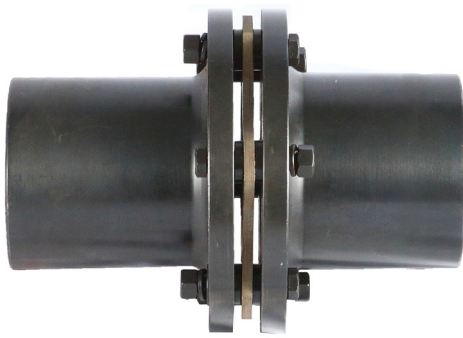
 1.haft-coupling 2.clamp 3.diaphragm 4.washers 5.nut
 6.intermediary shaft 7.clamp ring 8.bolt 9. haft-coupling

Table3 (mm)

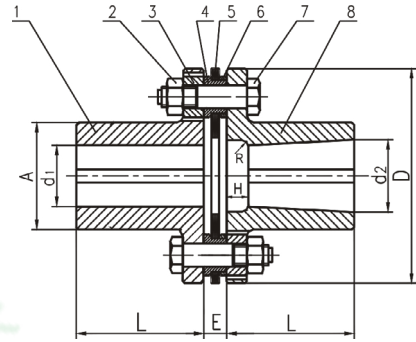
Type	Torque Tn N·m	Speed [n] r/min	Bore d1,d2 Max	Length of bore L Ref.	Primary Dimension						Rotary Inertia I ≈kg·m ²	Mass m ≈kg
					D	A	C (min)	E	H	R		
JM1J1	25	6000	28	52	84	42	80	9	25	1.5	0.001	3
JM1J2	63	5000	38	52	94	53	80	9	25	1.5	0.0015	4
JM1J3	160	4500	45	62	126	65	105	13	30	2	0.0056	8
JM1J4	315	4000	55	62	145	80	115	13	30	2	0.0204	12
JM1J5	500	3800	65	82	162	90	115	13	35	2.5	0.0585	17
JM1J6	800	3600	70	82	174	100	117	14	35	2.5	0.0945	20
JM1J7	1250	3400	75	112	194	110	125	14	40	2.5	0.1545	30
JM1J8	2000	3000	85	112	210	125	136	14	40	3	0.3675	39
JM1J9	2500	2800	90	112	230	140	150	16	45	3	0.4455	50
JM1J10	4000	2500	110	142	260	160	162	18	50	3	0.717	73
JM1J11	6300	2000	120	142	280	175	178	18	50	3	1.209	92
JM1J12	8000	1800	130	142	300	190	195	21	55	4	2.25	112
JM1J13	12500	1700	140	172	330	205	210	23	55	4	3.345	156
JM1J14	16000	1600	160	172	355	230	225	25	60	4	4.02	198
JM1J15	25000	1500	190	172	390	265	248	28	70	5	7.23	257
JM1J16	40000	1400	220	212	440	305	294	28	80	5	14.145	386
JM1J17	50000	1300	240	212	465	330	330	48	90	5	20.415	457
JM1J18	63000	1200	250	212	485	345	345	52	90	5	27.6	578
JM1J19	80000	1100	260	252	505	360	385	60	100	5	34.725	672
JM1J20	100000	1000	280	252	550	400	395	64	100	6	42.3	818
JM1J21	160000	950	320	302	600	450	435	70	110	6	99.87	1182
JM1J22	200000	900	360	302	670	500	470	76	110	6	113.58	1506
JM1J23	250000	840	370	352	732	520	520	76	120	6	128.4	1680
JM1J24	315000	780	380	352	796	560	600	80	120	8	165.45	2150
JM1J25	400000	740	400	410	875	600	630	80	130	8	228.15	2445
JM1J26	500000	700	420	410	915	640	700	86	130	8	420.75	3130
JM1J27	630000	660	450	470	965	710	750	86	140	8	514.05	3680
JM1J28	800000	630	480	470	1020	750	780	90	140	10	570.15	4754
JM1J29	1000000	600	500	550	1170	800	800	90	150	10	645.6	5529
JM1J30	1250000	570	530	550	1240	860	836	90	150	10	679.5	6800

Note: 1. If custom requires the different size of bore keyway and fitting length we will be pleasure to do it. But make description clearly in purchasing specification.
 2. Notice All details subject to parameter alterations without notice adaption to new standard or new scientific knowledge.

Type JM diaphragm coupling's construction, basic parameters and dimensions



**Structure for Type
 JM Diaphragm couplings**



1.haft-coupling 2.nut 3.washers 4.clamp
 5.diaphragm 6.clamp ring 7.bolt 8. haft-coupling

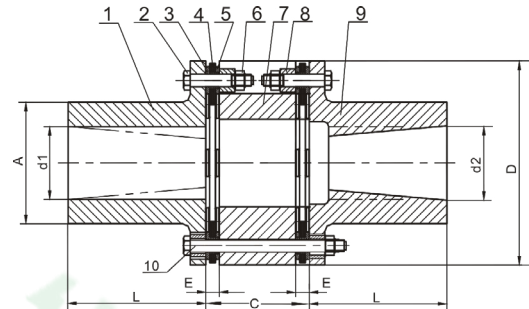
Table4 (mm)

Type	Torque Tn N·m	Speed [n] r/min	Bore d1,d2 Max	Length of bore L Ref.	Primary Dimension					Rotary Inertia I ≈kg·m ²	Mass m ≈kg
					D	A	E	H	R		
JM1	25	6000	28	52	84	42	9	25	1.5	0.0007	2
JM2	63	5000	38	52	94	53	9	25	1.5	0.001	3
JM3	160	4500	45	62	126	65	13	30	2	0.0037	5
JM4	315	4000	55	62	145	80	13	30	2	0.0136	8
JM5	500	3800	65	82	162	90	13	35	2.5	0.039	12
JM6	800	3600	70	82	174	100	14	35	2.5	0.063	14
JM7	1250	3400	75	112	194	110	14	40	2.5	0.103	22
JM8	2000	3000	85	112	210	125	14	40	3	0.245	29
JM9	2500	2800	90	112	230	140	16	45	3	0.297	36
JM10	4000	2500	110	142	260	160	18	50	3	0.478	57
JM11	6300	2000	120	142	280	175	18	50	3	0.806	70
JM12	8000	1800	130	142	300	190	21	55	4	1.5	82
JM13	12500	1700	140	172	330	205	23	55	4	2.23	114
JM14	16000	1600	160	172	355	230	25	60	4	2.68	144
JM15	25000	1500	190	172	390	265	28	70	5	4.82	188
JM16	40000	1400	220	212	440	305	28	80	5	9.43	299
JM17	50000	1300	240	212	465	330	48	90	5	13.61	353
JM18	63000	1200	250	212	485	345	52	90	5	18.4	445
JM19	80000	1100	260	252	505	360	60	100	5	23.15	495
JM20	100000	1000	280	252	550	400	64	100	6	28.2	605
JM21	160000	950	320	302	600	450	70	110	6	66.58	889
JM22	200000	900	360	302	670	500	76	110	6	75.72	1115
JM23	250000	840	370	352	732	520	76	120	6	85.6	1291
JM24	315000	780	380	352	796	560	80	120	8	110.3	1656
JM25	400000	740	400	410	875	600	80	130	8	152.1	1881
JM26	500000	700	420	410	915	640	86	130	8	280.5	2410
JM27	630000	660	450	470	965	710	86	140	8	342.7	2831
JM28	800000	630	480	470	1020	750	90	140	10	380.1	3657
JM29	1000000	600	500	550	1170	800	90	150	10	430.4	4253
JM30	1250000	570	530	550	1240	860	90	150	10	465	5231

Note: 1. The radial and angle compensation of series JM coupling is small, they are general suit for fine machinery transmission.

2. If customers require the different size of bore keyway and fitting length we will be pleasure to do it. But make description clearly in purchasing specification.

Type JMB diaphragm coupling's construction, basic parameters and dimensions



**Structure for Type
 JM1J Diaphragm couplings**

1. shaft-coupling 2. bolt 3. clamp 4. diaphragm 5. clamp ring 6. nut
 7. intermediary shaft 8. washers 9. shaft-coupling 10. Long bolt

Table5 (mm)

Type	Torque Tn N·m	Speed [n] r/min	Bore d1,d2 Max	Length of bore L Ref.	Primary Dimension						Rotary Inertia I ≈kg·m ²	Mass m ≈kg
					D	A	C (min)	E	H	R		
JMB 5	500	3800	65	82	162	90	64	13	35	2.5	0.039	12
JMB 6	800	3600	70	82	174	100	64	14	35	2.5	0.063	14
JMB 7	1250	3400	75	112	194	110	70	14	40	2.5	0.103	22
JMB 8	2000	3000	85	112	210	125	70	14	40	3	0.245	29
JMB 9	2500	2800	90	112	230	140	80	16	45	3	0.297	36
JMB 10	4000	2500	110	142	260	160	80	18	50	3	0.478	57
JMB 11	6300	2000	120	142	280	175	94	18	50	3	0.806	70
JMB 12	8000	1800	130	142	300	190	100	21	55	4	1.5	82
JMB 13	12500	1700	140	172	330	205	100	23	55	4	2.33	114
JMB 14	16000	1600	160	172	355	230	125	25	60	4	2.68	144
JMB 15	25000	1500	190	172	390	265	135	28	70	5	4.82	188
JMB 16	40000	1300	220	212	440	305	135	28	80	5	9.43	299
JMB 17	50000	1200	240	212	465	330	175	48	90	5	13.61	353
JMB 18	63000	1100	250	212	485	345	180	52	90	5	18.4	445
JMB 19	80000	1000	260	252	500	360	200	60	100	5	23.15	495
JMB 20	100000	940	280	252	550	400	205	64	100	6	28.2	605
JMB 21	160000	850	320	302	600	450	220	70	110	6	66.58	889
JMB 22	200000	800	360	302	670	500	230	76	110	6	75.72	1115
JMB 23	250000	760	370	352	732	520	240	76	120	6	85.6	1291
JMB 24	315000	740	380	352	796	560	250	80	120	8	110.3	1656
JMB 25	400000	700	400	410	875	600	250	80	130	8	152.1	1881
JMB 26	500000	660	420	410	915	640	260	86	130	8	280.5	2410
JMB 27	630000	620	450	470	965	710	265	86	140	8	342.7	2831
JMB 28	800000	600	480	470	1020	750	275	90	140	10	380.1	3657
JMB 29	1000000	560	500	550	1170	800	280	90	150	10	430.4	4253
JMB 30	1250000	540	530	550	1240	860	280	90	150	10	465	5231

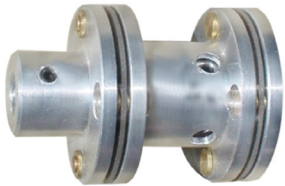
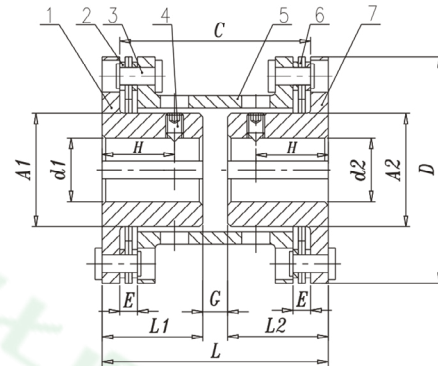
Note: 1. If custom requires the different size of bore keyway and fitting length we will be pleasure to do it. But make description clearly in purchasing specification.

2. Notice All details subject to parameter alterations without notice adaption to new standard or new scientific knowledge.

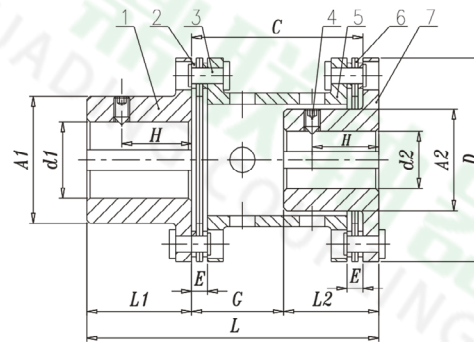
Type JMC, JMD, JMK diaphragm coupling and its construction, basic parameters and dimensions

Structure for Type JMC Diaphragm couplings

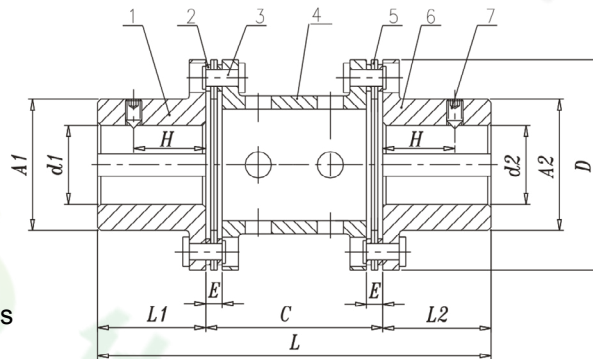
1.haft-coupling 2. washers 3.rivet 4.bolt 5.intermediary shaft 6.diaphragm 7.haft-coupling


Structure for Type JMD couplings

1.haft-coupling 2. bolt 3.maoding 4.washers 5.intermediary shaft 6.diaphragm 7.haft-coupling

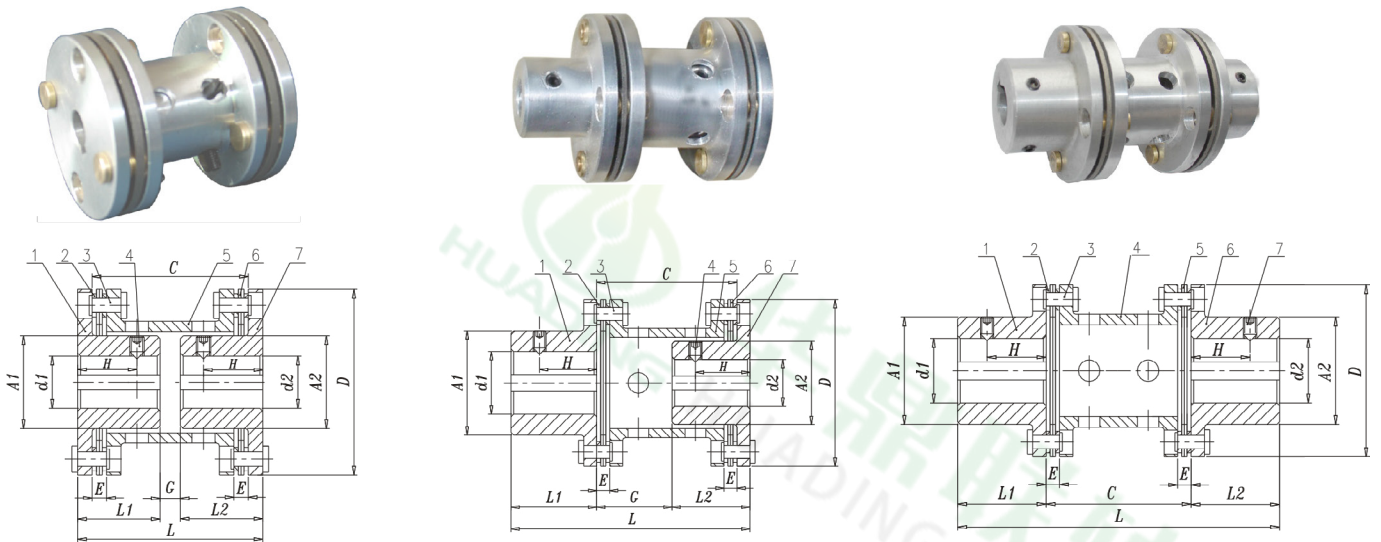

Structure for Type JMK couplings

1.haft-coupling 2. bolt 3.maoding 4.washers 5.intermediary shaft 6.diaphragm 7.haft-coupling


Table6 (mm)

Type	Torque Tn N·m	Speed [n] r/min	Diameter of Bore d1,d2		Length of bore L1,L2		Primary Dimension						Rotary Inertia I ≈kg·m ²	Mass m ≈kg	permissible axial tolerance	permissible angle tolerance		
							D	L	A1	A2	C	E					G	H
JMC01	6.3	5000	10		23		50	52	20	20	44	4	6	16	0.4	0.20	0.2	1°
JMC02	10	4500	14		27		58	60	24	24	50	5	6	19	1	0.32	0.2	1°
JMC03	16	4000	20		30		64	66	32	32	56	5	6	19	1.8	0.42	0.2	1°
JMD01	6.3	5000	14	10	27	23	50	75	24	20	44	4	25	16	0.4	0.21	0.2	1°
JMD02	10	4500	20	14	30	27	58	85	32	24	50	5	28	19	1	0.34	0.2	1°
JMD03	16	4000	26	20	33	30	64	94	40	32	56	5	31	19	1.8	0.45	0.2	1°
JMK01	6.3	5000	14		27		50	98	24	24	44	4		16	0.4	0.22	0.2	1°
JMK02	10	4500	20		30		58	110	32	32	50	5		19	1	0.36	0.2	1°
JMK03	16	4000	26		33		64	122	40	40	56	5		19	1.8	0.48	0.2	1°

Type JMC,JMD,JMK diaphragm coupling's construction, basic parameters and dimensions



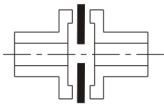
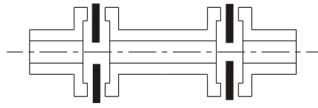
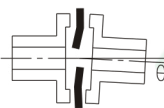
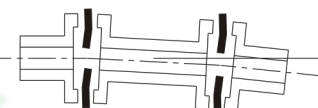
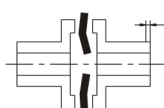
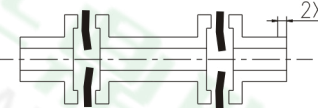
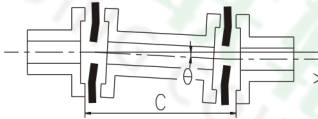
Structure for Type JMC Diaphragm couplings Structure for Type JMD couplings Structure for Type JMK couplings
 1.haft-coupling 2. washers 3.rivet 4.bolt 5.intermediary shaft 6.diaphragm 7.haft-coupling

Table6 (mm)

Type	Torque Tn N·m	Speed [n] r/min	Diameter of Bore d1,d2		Length of bore L1,L2		Primary Dimension						Rotary Inertia I ≈kg·m ²	Mass m ≈kg		
							D	L	A1	A2	C	E			G	H
JMC01	6.3	5000	10		23		50	52	20	20	44	4	6	16	0.4	0.20
JMC02	10	4500	14		27		58	60	24	24	50	5	6	19	1	0.32
JMC03	16	4000	20		30		64	66	32	32	56	5	6	19	1.8	0.42
JMD01	6.3	5000	14	10	27	23	50	75	24	20	44	4	25	16	0.4	0.21
JMD02	10	4500	20	14	30	27	58	85	32	24	50	5	28	19	1	0.34
JMD03	16	4000	26	20	33	30	64	94	40	32	56	5	31	19	1.8	0.45
JMK01	6.3	5000	14		27		50	98	24	24	44	4		16	0.4	0.22
JMK02	10	4500	20		30		58	110	32	32	50	5		19	1	0.36
JMK03	16	4000	26		33		64	122	40	40	56	5		19	1.8	0.48

- 1.This series coupling is suit for light torque load, no transmission rotary tolerance. It is generally used in place which getting control signal from mechanism.
- 2.Both of two half couplings are having screw, keyway, It is easy to install.

Installing deviations of series JM JM1J coupling

Free case		
Angular deviation θ		
Axial deviation X		
Radial deviation Y		

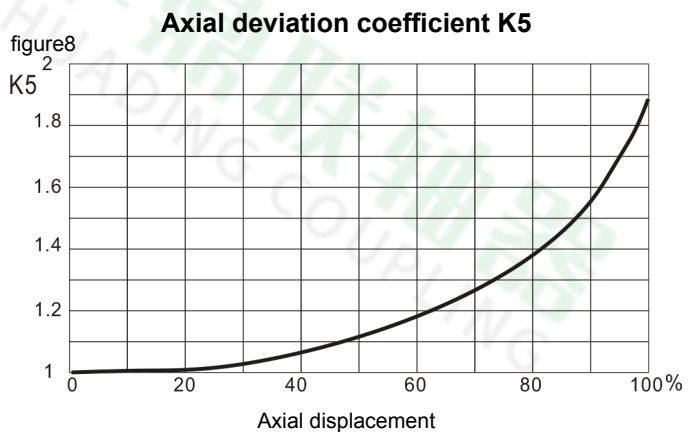
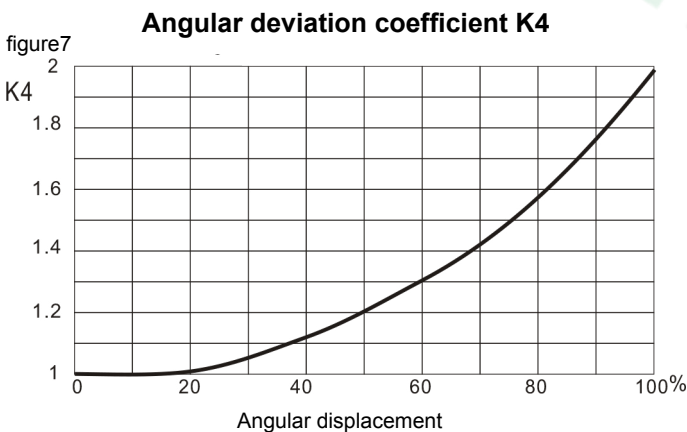
Note:

For all kinds of coupling in this manual, the permissible axial displacement see appendices A.table1~A.table4; the permissible angular displacement see A.table5~ A. table7. the installing displacement must be less than the permissible value.

the relation between angular displacement to permissible radial displacement is the function as:
 $Y=C\times\theta$

When selecting the coupling, the deviations have to be considered. when calculating torque T_c (page3) , the install deviation coefficient need to be considering: **$K3=K4\times K5$**

K4--angular deviation coefficient, see fig7;
 K5--Axial deviation coefficient, see fig8.



To series JM1J coupling, when the diameter of intermediate sleeve is more than ten times of the diameter of the shaft bore, the working rotatory speed has to be less than the permissible speed. for detail please contact the company's technical department.

Installation of and maintenance

For installation of and maintenance of JM couplings please refer to the JM couplings installation and maintenance manual which is provided in the package boxes with the products.

Appendices

Tab. 1 Axial compensating value of the Couplings Type JM

Type	Axial compensating value[X]
JM1~JM3	1.0
JM4~JM6	1.2
JM7~JM9	1.5
JM10~JM12	1.7
JM13~JM15	2.0
JM16~JM18	2.2
JM19~JM24	2.5
JM25~JM30	3.0

Tab. 2 Axial compensating value of the Couplings Type JM1J

Type	Axial compensating value[2X]
JM1J1 ~ JM1J3	2.0
JM1J4 ~ JM1J6	2.5
JM1J7 ~ JM1J9	3.0
JM1J10~ JM1J12	3.5
JM1J13 ~ JM1J15	4.0
JM1J16 ~ JM1J18	4.5
JM1J19 ~ JM1J22	5.0
JM1J23 ~ JM1J26	5.5
JM1J27 ~ JM1J30	6.0

Tab. 3 Axial compensating value of the Couplings Type JMB

Type	Axial compensating value[2X]
JMB5 ~ JMB6	2.5
JMB7 ~ JMB9	3.0
JMB10 ~ JMB12	3.5
JMB13~ JMB15	4.0
JMB16~ JMB18	4.5
JMB19 ~ JMB22	5.0
JMB23 ~ JMB26	5.5
JMB27 ~ JMB30	6.0

Tab. 4 Axial compensating value of the Couplings Type JMD,JMC

Type	JMD01~JMD03	JMC01~JMC03
Axial compensating value[2X]	2.0	2.0

Tab. 5 Angle compensating value of the Couplings Type JM

Type	JM1~JM6	JM7~JM10	JM11~JM30
Axial compensating value(°)	1°	45'	30'

Tab. 6 Angle compensating value of the Couplings Type JM1J JMB

Type	Axial compensating value(°)
JM1J1 ~ JM1J5、JMB5	2°
JM1J6 ~ JM1J9、JMB6 ~ JMB9	1.5°
JM1J10 ~ JM1J30、JMB10 ~ JMB30	1°

Tab. 7 Angle compensating value of the Couplings Type JMD JMC

Type	Axial compensating value(°)
JMD01 ~ JMD03	2°
JMC01 ~ JMC03	2°