INTRODUCTION TO TSUBAKI CAM CLUTCH - FREEWHEEL

TSUBAKI offers the most complete and versatile selection of one-way clutches in the global industry. Cam Clutches are precision devices which lock the inner- and outer races, through a wedging action of cams, to transmit torque in one direction of rotation and overrun in the opposite direction. These units are often referred to as freewheels, sprag clutches, overrunning clutches, backstops or one-way clutches, depending upon on the application for which they are used.

Design Features

Full Cam Complement
The full complement of cams provides the maximum number of load transmitting members per given diameter. The result is a higher torque capacity than other clutches.

Cam Design
Precision formed cams, made of special alloy steel assure extra long wear- and fatigue life.

High Quality Components
Outer- and inner races are made of high-quality alloy steel with high surface hardness and core toughness. The races are precision ground, providing excellent concentricity and surface finish to obtain accurate cam rotation.

BB Series
BB Series clutches have 62** ball bearing characteristics and dimensions. This provides easy handling and installation. Ideal for general applications in the light duty industry.

Bore Range: ø 15mm to 40mm
Torque Range: 29 to 260Nm

TSS Series
TSS Series clutches are designed for press fit installation. Outside dimensions are the same as 62** ball bearings. The design provides easy installation, whereas bearing support is compulsory.

Bore Range: ø 8mm to 60mm
Torque Range: 6 to 649Nm

TFS Series
TFS Series clutches are designed for press fit installation. Outside dimensions are the same as 63** ball bearings. TFS Clutches have two vertical key ways on the outer races. The usage of bearing support is compulsory.

Bore Range: ø 12mm to 80mm
Torque Range: 18 to 3924Nm

BSEU Series
BSEU Series clutches (backstops) are commonly used in backstop applications for inclined conveyors and bucket elevators at low r/min.

Bore Range: ø 20mm to 90mm
Torque Range: 216 to 4700Nm

MZEU Series
MZEU Series clutches are pre-lubricated with special grease and require no maintenance. Ideal for all applications. Can be used for overrunning, backstop and indexing applications.

Bore Range: ø 12mm to 150mm
Torque Range: 60 to 33800Nm

BREU Series
BREU Series clutches have cams with a Lift off function generated by centrifugal forces. Commonly they are used as backstops whilst the inner race overruns at high r/min.

Bore Range: ø 30mm to 150mm
Torque Range: 607 to 33908Nm

BR-HT Series
BR-HT Series clutches are High Torque version of existing BR Series. BR-HT is mainly used in backstop application for the inner race high-speed overrunning.

Bore Range: Ø 20mm to 320mm
Torque Range: 105 to 366000Nm

MDEU Series
MDEU Series clutches do not require any bearing support due to a cam/roller construction. They can replace various types of European clutches from the competition. Easy installation for sprockets, pulleys or gears making use of spiralox springs on the outer race. Commonly used in the light and middle duty industries.

Bore Range: ø 15mm to 80mm
Torque Range: 70 to 2300Nm

200 Series
200 Series clutches are designed for shaft mounted installation and pre-lubricated with special grease. Bearing support by means of two bearings is compulsory. Ideal for light-duty industry.

Bore Range: ø 16.5mm to 79.3mm
Torque Range: 39 to 1390Nm

INTRODUCTION TO TSUBAKI CAM CLUTCH - FREEWHEEL

MG Series

MG Series clutches are strictly used for low to medium speed inner race overrunning applications.

Bore Range: ø 19mm to 250mm
Torque Range: 314 to 176400Nm

LD Series

LD Series clutches are pre-lubricated with special grease and are maintenance-free. This type clutch permits easy installation and is ideal for the light-duty industry.

Bore Range: ø 10mm to 30mm
Torque Range: 5 to 49Nm

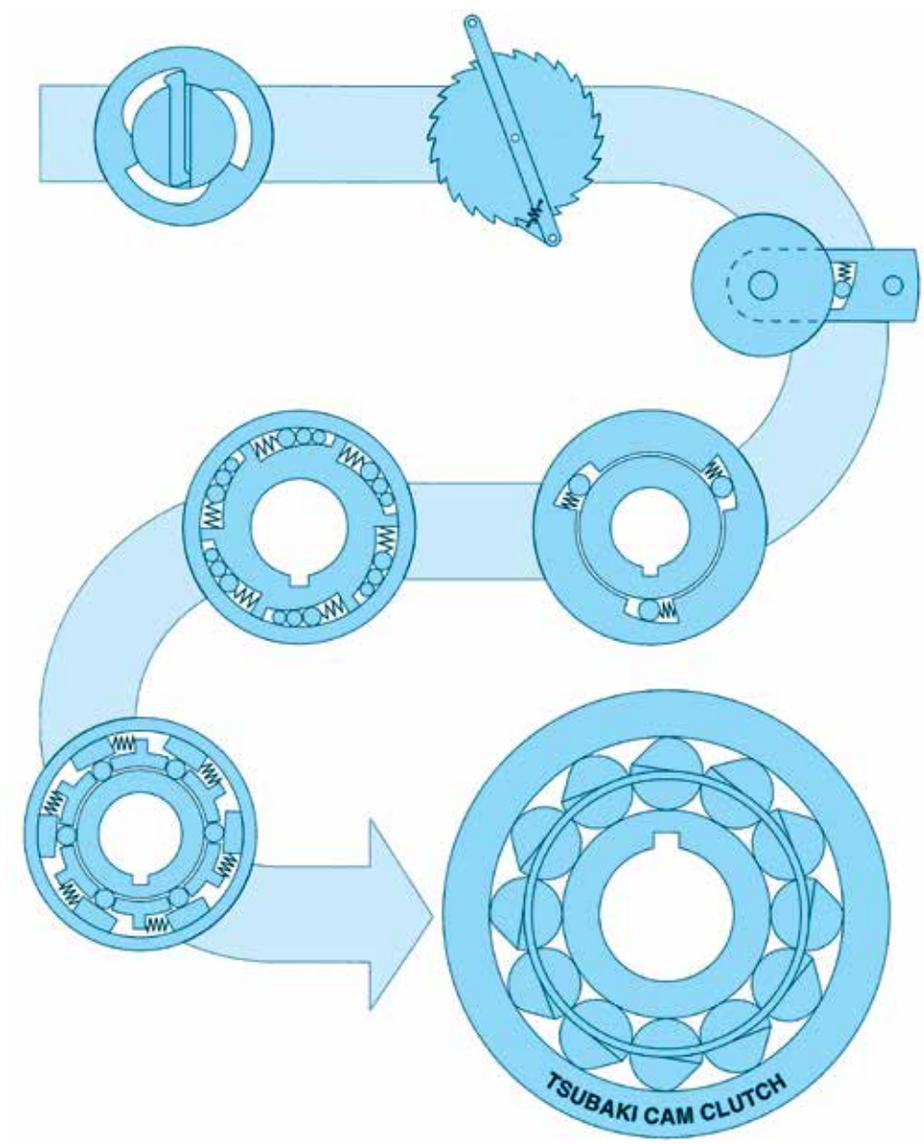
MZ/MZ-G Series

MZ Series clutches have the same features as MG Series, however can be used for any application. MZ-G Series clutches have ground outer races and are designed for "housing" installation. These clutches are pre-lubricated and therefore maintenance is not required.

Bore Range: ø 15mm to 70 mm
Torque Range: 186 to 3040Nm

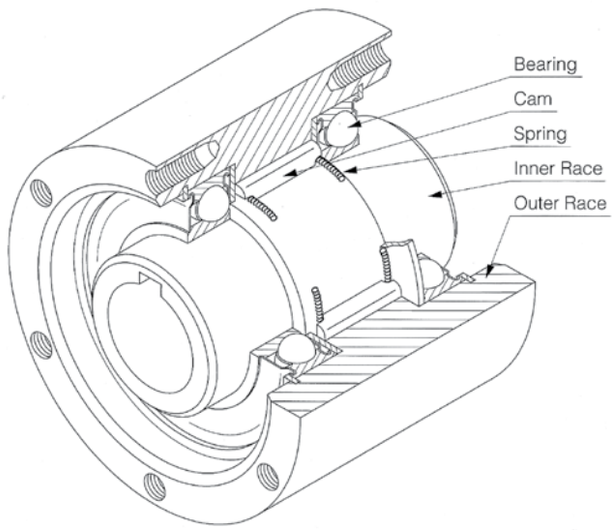
Taking Advantage of Differences in Rotating Direction and Speed

One-way clutches are efficient mechanical devices that utilize differences in axial rotating direction and the speed of rotation to prevent reverse rotation and ensure safety. In order to create a more reliable uni-directional clutch, engineers have spent many years developing and improving clutches, from the simple prop type, to the ratchet type and the roller type, and then culminating to the Cam Clutch, which has become the mainstream. The TSUBAKI Cam Clutch introduced here is a cam-type, one-way clutch that is the leading clutch of today.



INTRODUCTION TO TSUBAKI CAM CLUTCH - FREEWHEEL

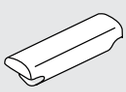
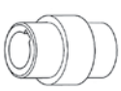
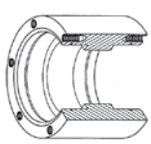
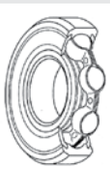
Standard Sprag Type Cam Clutch - Freewheel Construction



The figure shows a representative model from the MZ Series for explaining construction.

Major Component Parts

The major parts of the Cam Clutch are the cams, inner race, outer race, springs and bearings. Each of these parts play an important role in the function of the Cam Clutch. All parts are made of carefully selected materials, have undergone appropriate heat treatment, and have passed strict quality control checks.

Part	Appearance	Function
Cam		A number of cams set regularly in between the inner and outer races function as props or sliders depending on the relative rotating directions of the inner and outer races. This action causes engagement (clutching) and disengagement (overrunning) of the clutch inner and outer races. The cams are the vital component of a Cam Clutch, and they are available in various models and types to suit a variety of applications.
Inner Race Outer Race	 	The inner and outer sliding faces of the races are hardened and precision-ground into a perfectly round cylinder to enable them to withstand the compressive stress generated during engagement with the cam and sliding abrasion when overrunning.
Spring		Compressed springs are set at both ends of the cams to ensure that all of the cams contact the inner and outer races at all times. Thus, the cams are always ready for immediate engagement. This is extremely important so as to ensure that the load is spread evenly across all cams when they engage with the inner and outer races.
Bearing		The bearings maintain concentricity of the inner and outer races and bear the radial load for the engagement of the cams and the inner and outer races. Maintaining concentricity is particularly important to ensure that the load is spread equally and simultaneously over the cams at the time of engagement.

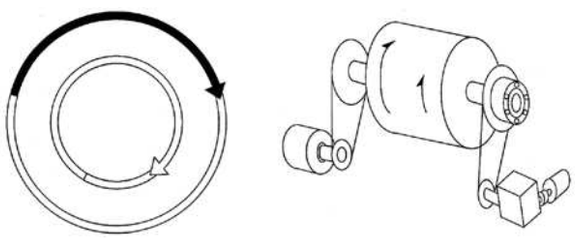
INTRODUCTION TO TSUBAKI CAM CLUTCH - FREEWHEEL

TSUBAKI Cam Clutches are precision devices which lock to transmit torque in one direction of rotation, but overrun (freewheel) in the opposite direction of rotation.
All the series of clutches utilize the same principles of operation. Since clutch applications encompass a variety of load and speed characteristics, TSUBAKI Cam Clutches are manufactured in a range of capacities and styles, which are designed to provide the best functional characteristics for performing in the following three basic modes of operation:

Modes of Operation

1. General overrunning

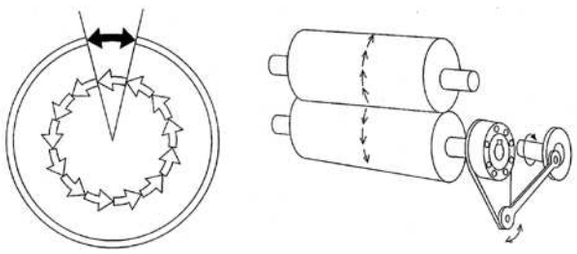
Clutches used in this type of application overrun at either the inner or outer race during the majority of the clutch operating time, and are occasionally called upon to lock up and drive. A typical application is a two-speed drive, where an electric motor and a geared motor are connected to a single driven shaft through one-way clutches. The machine can be driven by either the electric motor or geared motor. When the geared motor drives at low speed, the clutch engages. When the electric motor drives the machine, the clutch overruns. The clutch automatically switches between low speed and high speed.



General overrunning

2. Indexing

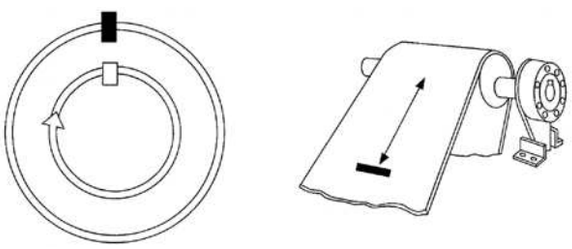
In this mode of operation, reciprocating motion applied to the driving race of the clutch is transformed into unidirectional intermittent motion, at the driven race. For example, on a feeding roller, the clutch is mounted on the roller and a torque arm is connected to the driving race of the clutch. A crank motion mechanism provides reciprocating motion to the driving race. The clutch drives in the forward stroke (index) and overruns on the return stroke, resulting in intermittent unidirectional motion of the feeding roller.



Indexing

3. Backstopping

In backstop applications, the clutches are used to prevent reverse rotation of drive shafts, which may cause damage to machinery and other expensive equipment. With the outer race of the clutch anchored stationary, the inner race can overrun freely in one direction of rotation. Reverse rotation is instantaneously prevented by the automatic engagement of the clutch. Typical backstop applications are in conveyor systems and gear reducers.



Backstopping

Typical Applications

- Air cleaning plants - Agricultural machines - Bucket elevators - Compressors - Conveyors - Cranes and hoists - Dry cleaning machinery - Duplicator equipment - Fish net machines	- Heat-treatment furnaces - Induced draft fans - Multi-state conveyors - Packaging machinery - Printing machinery - Pumps - Punch presses and feeders - Power plants	- Refinery equipment - Speed reducers - Standby power units - Textile looms - Two-speed grinders - Two-speed shiftovers - Washing machines - Wire winding machinery

INTRODUCTION TO TSUBAKI CAM CLUTCH - FREEWHEEL

Cam Clutch - Freewheel Selection Chart

Modes of Operation

Overrunning
- DUAL DRIVE
  - TWO SPEED DRIVE
    - HIGH SPEED OVERRUN, ENGAGEMENT (OVERRUNNING : More than 700 r/min; ENGAGEMENT : More than 700 r/min)
    - HIGH SPEED OVERRUN, LOW-MEDIUM SPEED ENGAGEMENT (OVERRUNNING : More than 700 r/min; ENGAGEMENT : Less than 700 r/min)
    - HIGH SPEED OVERRUN, LOW SPEED ENGAGEMENT (OVERRUNNING : More than 700 r/min; ENGAGEMENT : Less than 200 r/min)
    - LOW-MEDIUM SPEED OVERRUN, ENGAGEMENT (OVERRUNNING : Less than 700 r/min; ENGAGEMENT : Less than 700 r/min)
- ENGAGE IN ONE DIRECTION, OVERRUN IN REVERSE DIRECTION (Less than 700 r/min)
- FREE WHEELING (Less than 700 r/min)
- MANUAL DRIVE (Manual engagement)

Indexing
- HIGH SPEED, SMALL FEED ANGLE (FREQUENCY : More than 300 times/min; FEED ANGLE : Less than 90°)
- LOW-MEDIUM SPEED, SMALL FEED ANGLE (FREQUENCY : Less than 300 times/min; FEED ANGLE : More than 90°)
- LOW SPEED, LARGE FEED ANGLE (FREQUENCY : Less than 150 times/min; FEED ANGLE : More than 90°)
- BACKSTOP DEVICE FOR INDEXING (SAME FEED CLUTCHES ABOVE)
- INDEXING FURNISHED WITH STOPPER (FREQUENCY : Less than 300 times/min; FEED ANGLE : Less than 90°)
- INFINITE VARIABLE FEED (FREQUENCY : Less than 300 times/min; FEED ANGLE : Less than 90°)
- SINGLE CYCLE FEED (ENGAGEMENT : Less than 500 r/min)

Backstopping
- LOW SPEED OVERRUN (Less than 150 r/min)
- MEDIUM SPEED OVERRUN (150 to 700 r/min)
- HIGH SPEED OVERRUN (700 to 3600 r/min)

Custom Design — CUSTOM DESIGNS AVAILABLE ON REQUEST

Series Selection

o: Suitable ⊙: Most Suitable

Application \ Series	BB	TSS	TFS	BSEU	MZEU	BREU	BR-HT	MDEU	200	MG	LD	MZ/MZ-G
Overrunning												
Dual Drive — High Speed Overrun, Engage					o							o
Dual Drive — High Speed Overrun, Low Medium Speed Engage					o							⊙
Two Speed Drive — High Speed Overrun, Low Speed Engage					o	⊙						⊙
Two Speed Drive — Low Medium Speed, Engage	o	o	o	o	⊙			o	o	o	o	⊙
Engage in One-way direction, overrun in reverse direction	o	o	o	o	⊙			o	o	o	o	⊙
Free Wheeling	o	o	o		⊙			o	o	o	o	⊙
Manual Drive	o	o	o		o			o	o		⊙	o
Indexing												
High Speed, Small Feed Angle												
Low-Medium Speed, Small Feed Angle	o	o	o		o			o	o	o	o	
Low Speed, Large Feed Angle												
Backstop Device for Indexing	o	o	o		o			o	o	o	o	
Indexing Furnished with Stopper	Please contact TSUBAKI											
Infinite Variable Feed	o	o	o		o			o	o		o	
Single Cycle Feed												
Backstopping												
Low Speed Overrun	o	o	o	⊙	o			o	o	o	o	
Medium Speed Overrun	o	o	o		o		o		o	o		
High Speed Overrun	⊙	⊙	⊙		o	⊙	⊙					
Custom Design	Custom Design available on Request											

BB SERIES CAM CLUTCH

BB Series

BB-1K-K Series

BB-2K-K Series

BB-2GD Series

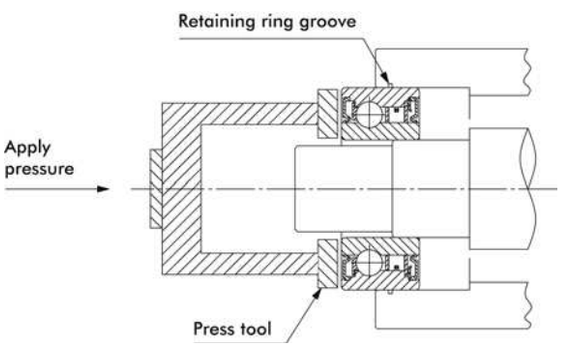
BB-2GD 1K-K Series

General Information of Installation and Usage for BB Series Cam Clutch / One-Way Bearing

1. BB Series Cam Clutches are designed for press fit installation.
2. Keyways except BB25 are manufactured according to DIN6885.3. BB40-1K-K and BB40-2GD 1K-K are manufactured according to DIN6885.1.
3. BB-2K-K Series have keyways on inner- and outer race. Inner race keys for 1K-K and 2K-K Cam Clutches are included.
4. Correct interference dimensions on shaft and housing must be maintained to obtain maximum bearing and clutch performance.
5. Refer to the table on next page for shaft- and housing tolerances.
6. BB-2GD and BB-2GD 1K-K Cam Clutches have special lip seals for the effective protection against dust and splash water.
7. The arrow on the inner race shows the direction of inner race engagement.
8. For installation of the clutch use a press tool with an appropriate diameter to ensure even pressure over the entire surface of inner and outer race.
9. Never use a hammer or apply any other shock load to the clutch.
10. Make sure that the housing has enough strength to withstand the pressure required for the press fit installation of the clutch.
11. Operating temperature range: -30°C to +100°C (Consult Tsubaki for temperatures which exceed this range).

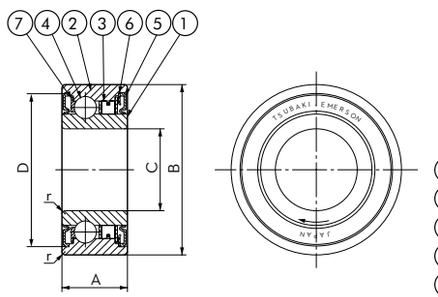
Lubrication

1. BB Series Cam Clutches are pre-lubricated with special grease and do not need any maintenance or additional grease before use.
2. If the clutch is used with an oil lubricant, the oil must be applied on the inside of the clutch as well.
3. Never use oil or any other lubricant containing EP additives.

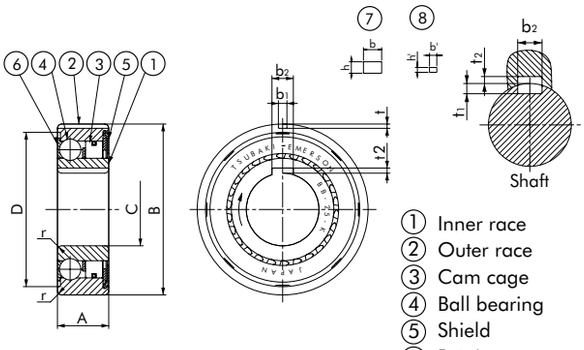


Note:
The indication "K" on the inner race of a clutch is applied for both types 1K as well as 2K

BB SERIES CAM CLUTCH



① Inner race
② Outer race
③ Cam cage
④ Ball bearing
⑤ Seal
⑥ Side plate
⑦ Retainer



① Inner race
② Outer race
③ Cam cage
④ Ball bearing
⑤ Shield
⑥ Retainer
⑦ Key for inner race
⑧ Key for outer race

BB, BB-1K-K, BB-2K-K, BB-2GD, BB-2GD 1K-K

Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed		Drag Torque Nm		A		B	C	D		r	Bearing Loads		Approx. Mass g/pc	
		Inner Race r/min	Outer Race r/min	BB BB-1K-K BB-2K-K	BB-2GD BB-2GD 1K-K	BB BB-1K-K BB-2K-K	BB-2GD BB-2GD 1K-K			BB BB-1K-K BB-2K-K	BB-2GD BB-2GD 1K-K		C N	Co N	BB BB-1K-K BB-2K-K	BB-2GD BB-2GD 1K-K
BB15	29	3600	2000	0.010	0.040	11	16	35	15	32.6	32.45	0.6	5950	3230	50	70
BB17	43	3500	1900	0.010	0.050	12	17	40	17	36.1	36.45	0.6	7000	3700	80	100
BB20	61	3000	1600	0.014	0.055	14	19	47	20	41.7	42.35	1.0	8500	4900	120	150
BB25	78	2500	1400	0.017	0.055	15	20	52	25	47.1	47.05	1.0	10700	6300	150	200
BB30	140	2000	1100	0.030	0.058	16	21	62	30	56.6	55.60	1.0	11900	7900	230	280
BB35	173	1800	1000	0.034	0.060	17	22	72	35	64.0	64.60	1.1	13500	9700	320	410
BB40	260	1800	900	0.040	0.080	22	27	80	40	71.0	71.60	1.1	14500	11700	400	600

Model		Shaft Diameter	Housing Diameter
BB15	BB15-2GD	15 +0.023 +0.012	35 -0.012 -0.028
BB17	BB17-2GD	17 +0.023 +0.012	40 -0.012 -0.028
BB20	BB20-2GD	20 +0.028 +0.015	47 -0.012 -0.028
BB25	BB25-2GD	25 +0.028 +0.015	52 -0.014 -0.033
BB30	BB30-2GD	30 +0.028 +0.015	62 -0.014 -0.033
BB35	BB35-2GD	35 +0.033 +0.017	72 -0.014 -0.033
BB40	BB40-2GD	40 +0.033 +0.017	80 -0.014 -0.033

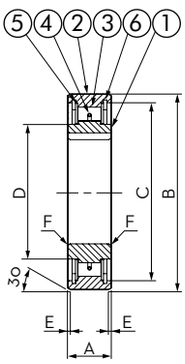
Model		Shaft Diameter	Housing Diameter
BB15-1K-K	BB15-2GD 1K-K	15 -0.008 -0.028	35 -0.012 -0.028
BB17-1K-K	BB17-2GD 1K-K	17 -0.008 -0.028	40 -0.012 -0.028
BB20-1K-K	BB20-2GD 1K-K	20 -0.010 -0.031	47 -0.012 -0.028
BB25-1K-K	BB25-2GD 1K-K	25 -0.010 -0.031	52 -0.014 -0.033
BB30-1K-K	BB30-2GD 1K-K	30 -0.010 -0.031	62 -0.014 -0.033
BB35-1K-K	BB35-2GD 1K-K	35 -0.012 -0.037	72 -0.014 -0.033
BB40-1K-K	BB40-2GD 1K-K	40 -0.012 -0.037	80 -0.014 -0.033

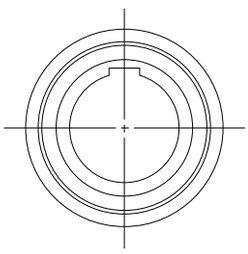
Model	Shaft Diameter	Housing Diameter
BB15-2K-K	15 -0.008 -0.028	35 -0.002 -0.018
BB17-2K-K	17 -0.008 -0.028	40 -0.002 -0.018
BB20-2K-K	20 -0.010 -0.031	47 -0.003 -0.022
BB25-2K-K	25 -0.010 -0.031	52 -0.003 -0.022
BB30-2K-K	30 -0.010 -0.031	62 -0.003 -0.022
BB35-2K-K	35 -0.012 -0.037	72 -0.006 -0.025
BB40-2K-K	40 -0.012 -0.037	80 -0.006 -0.025

Model		Keyway					Inner Race Key b x h x length	Outer Race Key b' x h' x length
		b_2 js10	t_1	t_2	b_1 js9	t		
BB15-1K-K	BB15-2GD 1K-K	5.0	1.9	1.2	-	-	5 x 3 x 11	-
BB15-2K-K	-				2.0	0.6		2 x 2 x 11
BB17-1K-K	BB17-2GD 1K-K	5.0	1.9	1.2	-	-	5 x 3 x 12	-
BB17-2K-K	-				2.0	1.0		2 x 2 x 12
BB20-1K-K	BB20-2GD 1K-K	6.0	2.5	1.6	-	-	6 x 4 x 14	-
BB20-2K-K	-				3.0	1.5		3 x 3 x 14
BB25-1K-K	BB25-2GD 1K-K	8.0	3.6	1.5	-	-	8 x 5 x 15	-
BB25-2K-K	-				6.0	2.0		6 x 4 x 15
BB30-1K-K	BB30-2GD 1K-K	8.0	3.1	2.0	-	-	8 x 5 x 16	-
BB30-2K-K	-				6.0	2.0		6 x 4 x 16
BB35-1K-K	BB35-2GD 1K-K	10.0	3.7	2.4	-	-	10 x 6 x 17	-
BB35-2K-K	-				8.0	2.5		8 x 5 x 17
BB40-1K-K	BB40-2GD 1K-K	12.0	5.0	3.3	-	-	12 x 8 x 22	-
BB40-2K-K	-				10.0	3.0		10 x 6 x 22

Note:
For BB25-1K-K, BB25-2K-K and BB25-2GD 1K-K the dimension of t2 is 0.5 mm shallower than DIN 6885.3. To use a DIN standard key, process the keyway 0.5 mm deeper on the shaft than according to DIN standard. All other models are dimensionally interchangeable.

TSS SERIES CAM CLUTCH





① Inner race
② Outer race
③ Cam
④ Spring
⑤ Plate
⑥ Snap ring

TSS

Dimensions in mm

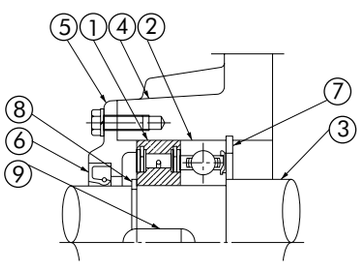
Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B	C	D	E	F	Approx. Mass g/pc
TSS8	6.7	6000	3000	0.005	8	2 x 1.0	8	24	22.2	11.4	0.6	0.6	14
TSS10	12	4500	2300	0.007	10	3 x 1.4	9	30	27	15.6	0.6	0.6	27
TSS12	17	4000	2000	0.009	12	4 x 1.8	10	32	29.5	18	0.6	0.6	31
TSS15	22	3500	1800	0.01	15	5 x 1.2	11	35	32	20.6	0.6	0.6	39
TSS20	41	2600	1300	0.01	20	6 x 1.6	14	47	40	26.7	0.8	0.8	115
TSS25	56	2200	1100	0.02	25	8 x 2.0	15	52	45	32	0.8	0.8	140
TSS30	105	1800	900	0.03	30	8 x 2.0	16	62	55	40	0.8	1.0	215
TSS35	136	1600	800	0.03	35	10 x 2.4	17	72	63	45	0.8	1.0	300
TSS40	296	1400	700	0.18	40	12 x 2.2	18	80	72	50	0.8	1.0	425
TSS45	347	1300	650	0.21	45	14 x 2.1	19	85	75.5	57	1.2	1.0	495
TSS50	403	1200	600	0.22	50	14 x 2.1	20	90	82	62	1.2	1.0	545
TSS60	649	910	460	0.33	60	18 x 2.3	22	110	100	80	1.2	1.5	950

Installation and Usage

1. TSS Series Cam Clutches are designed for press fit installation. Correct interference dimensions must be maintained to obtain maximum clutch performance. The internal diameter of the housing should meet a H7 tolerance.
2. To avoid any radial force and when installing the clutch, the usage of a type 62** bearing is compulsory, since this clutch type does not have any bearing support.
3. Confirm the direction of rotation before installing.
4. The recommended shaft tolerance is h7 and the key profile should be in accordance with the following standards:
   TSS 8 ~ 12 DIN6885.1
   TSS 15 ~ 60 DIN6885.3
5. Suitable surface pressure of the key should be selected according to your company design standards.

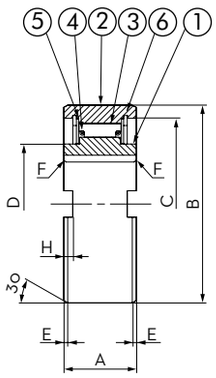
Lubrication

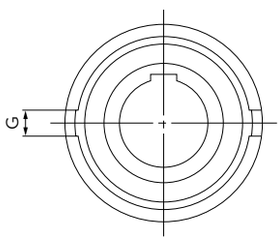
1. Oil lubrication is recommendable.
2. Never use oil or any other lubricant containing EP additives.



① TSS Cam Clutch
② Bearing
③ Shaft
④ Housing
⑤ Cover
⑥ Oil Seal
⑦ Snap ring (Hole)
⑧ Snap ring (Shaft)
⑨ Key

TFS SERIES CAM CLUTCH





① Inner race
② Outer race
③ Cam
④ Spring
⑤ Plate
⑥ Snap ring

TFS

Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B	C	D	E	F	G	H	Approx. Mass g/pc
TFS12	18	4500	2300	0.04	12	4 x 1.8	13	35	30	18	0.6	0.3	4	1.4	68
TFS15	28	3500	1800	0.06	15	5 x 1.2	18	42	36	22	0.8	0.3	5	1.8	120
TFS17	50	3200	1600	0.11	17	5 x 1.2	19	47	38	22	1.2	0.8	5	2.3	150
TFS20	84	2500	1300	0.18	20	6 x 1.6	21	52	45	27	1.2	0.8	6	2.3	220
TFS25	128	2000	1000	0.19	25	8 x 2.0	24	62	52	35	1.2	0.8	8	2.8	360
TFS30	200	1600	800	0.21	30	8 x 2.0	27	72	62	40	1.8	1.0	10	2.5	530
TFS35	475	1400	700	0.42	35	10 x 2.4	31	80	70	48	1.8	1.0	12	3.5	790
TFS40	607	1300	650	0.46	40	12 x 2.2	33	90	78	54.5	1.8	1.0	12	4.1	1050
TFS45	756	1100	550	0.56	45	14 x 2.1	36	100	85.3	59	1.8	1.0	14	4.6	1370
TFS50	1124	1000	500	0.60	50	14 x 2.1	40	110	92	65	1.8	1.0	14	5.6	1900
TFS60	1975	840	420	0.87	60	18 x 2.3	46	130	110	84	2.6	1.5	18	5.5	3110
TFS70*	2514	750	380	0.91	70	20 x 2.7	51	150	125	91	2.6	1.5	20	6.9	4390
TFS80*	3924	670	340	1.22	80	22 x 3.1	58	170	140	100	2.6	1.5	20	7.5	6440

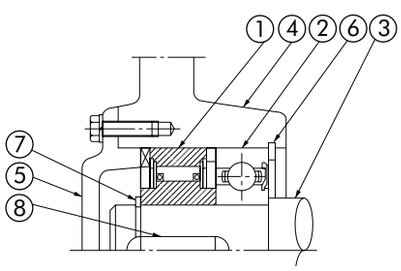
*= Non-stock item

Installation and Usage

1. TSS Series Cam Clutches are designed for press fit installation. Correct interference dimensions must be maintained to obtain maximum clutch performance. The internal diameter of the housing should meet a H7 tolerance. Keyways should be made in the end faces of the clutch for proper installation.
2. To avoid any radial force and when installing the clutch, the usage of a type 63** bearing is compulsory, since this clutch type does not have any bearing support.
3. Confirm the direction of rotation before installing. Clutch rotation is indicated by the arrow shown on the clutch plate.
4. The recommended shaft tolerance is h7 and the key profile should be in accordance with the following standards:
   TFS 12 DIN6885.1
   TFS 15 to 80 DIN6885.3
5. Suitable surface pressure of the key should be selected according to your company design standards.

Lubrication

1. Oil lubrication is recommendable.
2. Never use oil or any other lubricant containing EP additives.



① TFS Cam Clutch
② Bearing
③ Shaft
④ Housing
⑤ Cover
⑥ Snap ring (Hole)
⑦ Snap ring (Shaft)
⑧ Key

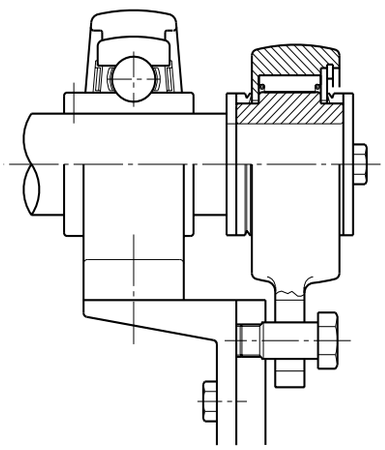
BSEU SERIES CAM CLUTCH

General Information

The Tsubaki Backstop Cam Clutch, a one-way clutch with the safest reverse rotation prevention qualities available, is manufactured mainly for installation on the low speed shaft of inclined conveyors or bucket elevators.

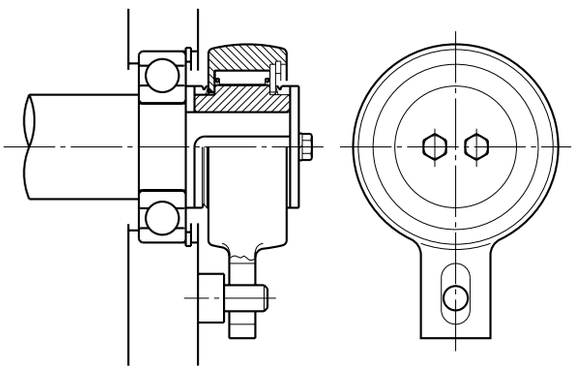
Compared to other one-way clutches (ratchet or roller ramp clutch) similar in size, overheating during times when the motor is idling is significantly lower. This helps maintain superb lubrication qualities thereby improving the wear life of the clutch. Extended fatigue life is also obtainable due to the clutch's large torque capacity.

European style BSEU Series can be used as reverse rotation prevention for an array of conveyor sizes. Applicable shaft sizes range from ø20 ~ ø90mm and torque range from 216 ~ 4700Nm.



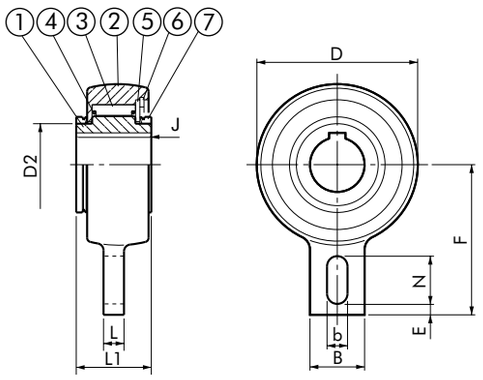
Installation example 1

Other Possible Applications:
BSEU Series Cam Clutches may also be used for low frequency indexing applications. A maximum indexing frequency of no more than 50 cycles/min. and a safety ratio of 2.5 times higher than the working torque are required. Be sure that the stress applied to the torque arm functions at a right angle in relation to the shaft direction. If the stress that is applied to the torque arm is set diagonally, the inner parts of the clutch will entangle causing damage and drastically reduce the operational life of the Cam Clutch.



Installation example 2

BSEU SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam
4. Spring
5. Plate
6. Snap ring
7. V-ring

BSEU

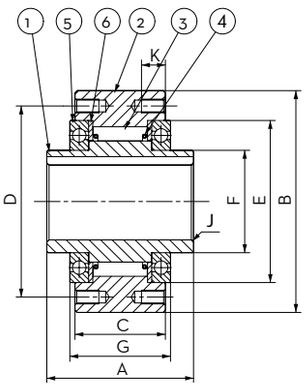
Dimensions in mm

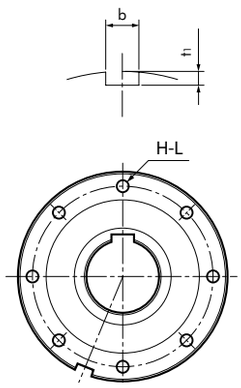
Model	Torque Capacity Nm	Max. Overrun. r/min	Bore Size H7	Inner Race Keyway	D	D2	L1	L	B	F	b	N	E	J	Approx. Mass kg/pc
BSEU25-20	216	500	20	6 x 2.8	83	42	35	12	40	90	15	35	5	1.5	1.00
BSEU25-25	216	500	25	8 x 3.3	83	42	35	12	40	90	15	35	5	1.5	0.95
BSEU40-20	1440	450	20	6 x 2.8	118	60	55	15	40	110	15	35	8	1.5	3.73
BSEU40-25	1440	450	25	8 x 3.3	118	60	55	15	40	110	15	35	8	1.5	3.65
BSEU40-30	1440	450	30	8 x 3.3	118	60	55	15	40	110	15	35	8	1.5	3.56
BSEU40-35	1440	450	35	10 x 3.3	118	60	55	15	40	110	15	35	8	1.5	3.45
BSEU40-40	1440	450	40	12 x 3.3	118	60	55	15	40	110	15	35	8	1.5	3.32
BSEU70-45	3140	350	45	14 x 3.8	165	90	59	20	80	140	18	35	10	1.5	7.44
BSEU70-50	3140	350	50	14 x 3.8	165	90	59	20	80	140	18	35	10	1.5	7.28
BSEU70-55	3140	350	55	16 x 4.3	165	90	59	20	80	140	18	35	10	2.0	7.09
BSEU70-60	3140	350	60	18 x 4.4	165	90	59	20	80	140	18	35	10	2.0	6.88
BSEU70-65	3140	350	65	18 x 4.4	165	90	59	20	80	140	18	35	10	2.0	6.68
BSEU70-70	3140	350	70	20 x 4.9	165	90	59	20	80	140	18	35	10	2.0	6.43
BSEU90-75	4700	250	75	20 x 4.9	190	120	63	20	80	165	20	40	15	2.0	10.10
BSEU90-80	4700	250	80	22 x 5.4	190	120	63	20	80	165	20	40	15	2.0	9.82
BSEU90-85	4700	250	85	22 x 5.4	190	120	63	20	80	165	20	40	15	2.0	9.57
BSEU90-90	4700	250	90	25 x 5.4	190	120	63	20	80	165	20	40	15	2.0	9.23

Installation and Usage

1. We recommend using a shaft tolerance of h7 or h8 for Cam Clutch installation.
2. ISO R773 (DIN6885.1) keyway is standard.
3. Before installation, verify that the direction of rotation of the inner race of the Cam Clutch (shown by the arrow on the inner race) is the same as the direction of rotation of the conveyor shaft.
4. When installing the Cam Clutch on the shaft, apply pressure only on the surface of the inner race with a soft hammer. Never strike the Cam Clutch with a steel hammer or apply unnecessary impact loads.
5. Always use a parallel key for installation onto the shaft and then fix the Cam Clutch with an end plate. Never use a tapered key. Allow for a clearance between the top of the clutch keyway and the top of the key for pressure ventilation. A pressure ventilation hole is provided on the keyway of the clutch's inner race.
6. Use the frame or a pin to eliminate outer race rotation.
7. Set a 0.5 mm degree clearance between the torque arm and the frame (torque arm stopper) or the long slit in the torque arm and the pin. If the torque arm is rigidly mounted, it will apply a load to the Cam Clutch which may damage it.
8. The Cam Clutch is pre-greased with low temperature grease before shipment and is ready for installation and operation. No lubrication maintenance is required. The ambient operational temperature range is -40°C to +50°C. However, the maximum temperature should be determined depending on the number of shaft revolutions. Further, if the number of shaft revolutions is low, a higher ambient operational temperature range is allowable. Consult Tsubaki for more details.

MZEU-K SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate

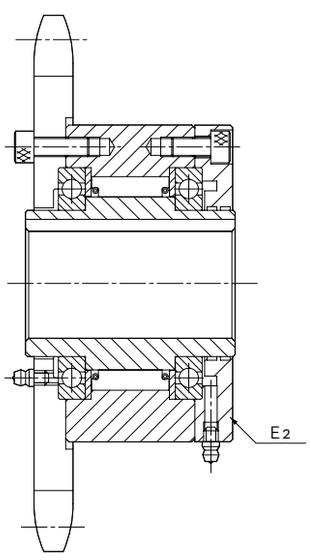
MZEU-K

Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B h7	C	D	E	F	G	H-L	K	J	Outer Race Keyway b P10	Outer Race Keyway t1	Approx. Mass kg/pc
MZEU12-K	60	2000	1000	0.20	12	4 x 1.8	42	62	20	51	42	20	27	3 - ø5.5	-	0.8	4 x	2.5	0.5
MZEU15-K	100	1800	900	0.20	15	5 x 2.3	52	68	28	56	47	25	32	3 - M5	8	0.8	5 x	3.0	0.8
MZEU20-K	245	1600	700	0.29	20	6 x 2.8	57	75	34	64	55	30	39	4 - M5	8	0.8	6 x	3.5	1.2
MZEU25-K	425	1600	600	0.33	25	8 x 3.3	60	90	35	78	68	40	40	4 - M6	10	0.8	8 x	4.0	1.8
MZEU30-K	735	1500	500	0.39	30	8 x 3.3	68	100	43	87	75	45	48	6 - M6	10	1.0	8 x	4.0	2.6
MZEU35-K	1015	1400	300	0.49	35	10 x 3.3	74	110	45	96	80	50	51	6 - M6	12	1.0	10 x	5.0	3.2
MZEU40-K	1350	1400	300	0.59	40	12 x 3.3	86	125	53	108	90	55	59	6 - M8	14	1.3	12 x	5.0	4.8
MZEU45-K	1620	1400	300	0.69	45	14 x 3.8	86	130	53	112	95	60	59	8 - M8	14	1.3	14 x	5.5	6.2
MZEU50-K	2070	1300	250	0.79	50	14 x 3.8	94	150	64	132	110	70	72	8 - M8	14	1.3	14 x	5.5	8.2
MZEU55-K	2400	1300	250	0.88	55	16 x 4.3	104	160	66	138	115	75	72	8 - M10	16	1.5	16 x	6.0	9.5
MZEU60-K	2950	1200	250	0.98	60	18 x 4.4	114	170	78	150	125	80	89	10 - M10	16	1.5	18 x	7.0	12.3
MZEU70-K	4210	1100	250	1.27	70	20 x 4.9	134	190	95	165	140	90	108	10 - M10	16	1.8	20 x	7.5	18.1
MZEU80-K	5170	800	200	1.38	80	22 x 5.4	144	210	100	185	160	105	108	10 - M10	16	1.8	22 x	9.0	23.1
MZEU90-K	12000	450	150	4.70	90	25 x 5.4	158	230	115	206	180	120	125	10 - M12	20	2.0	25 x	9.0	28.1
MZEU100-K	17600	400	130	5.39	100	28 x 6.4	182	270	120	240	210	140	131	10 - M16	24	2.0	28 x	10.0	46.3
MZEU130-K	24500	320	110	6.76	130	32 x 7.4	212	310	152	278	240	160	168	12 - M16	24	2.5	32 x	11.0	70.2
MZEU150-K	33800	240	80	8.13	150	36 x 8.4	246	400	180	360	310	200	194	12 - M20	32	2.5	36 x	12.0	146.3

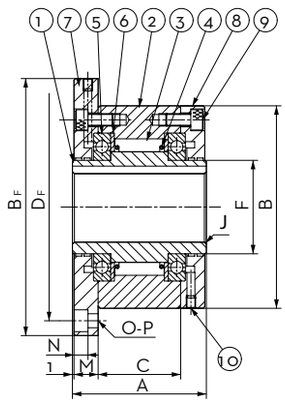
Installation and Usage

1. The sizes MZEU12-K up to MZEU 80-K are supplied pre-greased ex-works and do not need any further lubrication except some light maintenance as shown on page 24, to ensure an appropriate function of the lateral roller bearings.
2. The ambient temperature range is -40°C to +40°C. For higher range temperatures please consult Tsubaki.
3. The sizes MZEU90-K up to MZEU 150-K require oil lubrication.
4. We recommend a shaft tolerance of h7 with a standard key. Our keyways are standardized according to DIN 6885.1.
5. We recommend applying tolerance H7 or H8 to re-work sprockets, pulley, gears or other parts to be fitted. Before installation of the clutch, it's recommended to clean both ends of the outer race and contact surface of the flange(s), torque arm, cover or fitted part.
6. For the sizes MZEU90-K up to MZEU150-K, apply seal adhesive (supplied with each optional part) to prevent oil leakage.
7. Before assembly of the optional or fitted part(s) check the rotation direction of the clutch, indicated by an arrow on the inner race side surface. When installing sprocket, gear, pulley or other items to the clutch, always use bolts to assemble them.
8. Size and quantity are mentioned under H-L in the above mentioned table.
9. By installing any type of optional or fitted part in the opposite way the clutch's direction of rotation can be changed.
10. Fix a grease nipple to each optional or fitted part.
11. When mounting the clutch onto the shaft, apply pressure to the inner race, but **never** to the outer race.
12. For high speed indexing applications (over 50 cycle/min) strong springs are recommendable and can be supplied accordingly.



Installation example 1

MZEU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate
7. E1 Flange
8. E2 Flange
9. Socket bolt
10. Set screw

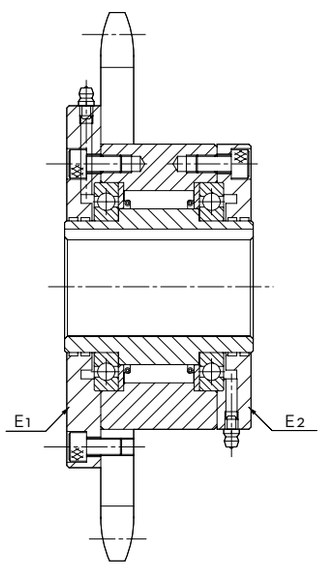
E1 Flange + E2 Flange

Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	B_F	C	D_F	F	J	M	N	O-P	Approx. Mass kg/pc
MZEU12-K E1+E2	12	4 x 1.8	42	62	85	20	72	20	0.8	10.0	5.7	3 – ø5.5	1.1
MZEU15-K E1+E2	15	5 x 2.3	52	68	92	28	78	25	0.8	11.0	5.7	3 – ø5.5	1.5
MZEU20-K E1+E2	20	6 x 2.8	57	75	98	34	85	30	0.8	10.5	5.7	4 – ø5.5	1.9
MZEU25-K E1+E2	25	8 x 3.3	60	90	118	35	104	40	0.8	11.5	6.8	4 – ø6.6	2.9
MZEU30-K E1+E2	30	8 x 3.3	68	100	128	43	114	45	1.0	11.5	6.8	6 – ø6.6	4.0
MZEU35-K E1+E2	35	10 x 3.3	74	110	140	45	124	50	1.0	13.5	6.8	6 – ø6.6	5.2
MZEU40-K E1+E2	40	12 x 3.3	86	125	160	53	142	55	1.3	15.5	9.0	6 – ø9.0	7.9
MZEU45-K E1+E2	45	14 x 3.8	86	130	165	53	146	60	1.3	15.5	9.0	8 – ø9.0	9.3
MZEU50-K E1+E2	50	14 x 3.8	94	150	185	64	166	70	1.3	14.0	9.0	8 – ø9.0	11.7
MZEU55-K E1+E2	55	16 x 4.3	104	160	204	66	182	75	1.5	18.0	11.0	8 – ø11.0	15.3
MZEU60-K E1+E2	60	18 x 4.4	114	170	214	78	192	80	1.5	17.0	11.0	10 – ø11.0	17.7
MZEU70-K E1+E2	70	20 x 4.9	134	190	234	95	212	90	1.8	18.5	11.0	10 – ø11.0	25.5
MZEU80-K E1+E2	80	22 x 5.4	144	210	254	100	232	105	1.8	21.0	11.0	10 – ø11.0	33.2
MZEU90-K E1+E2	90	25 x 5.4	158	230	278	115	254	120	2.0	20.5	13.0	10 – ø14.0	38.3
MZEU100-K E1+E2	100	28 x 6.4	182	270	335	120	305	140	2.0	30.0	17.5	10 – ø18.0	68.8
MZEU130-K E1+E2	130	32 x 7.4	212	310	380	152	345	160	2.5	29.0	17.5	12 – ø18.0	98.2
MZEU150-K E1+E2	150	36 x 8.4	246	400	485	180	445	200	2.5	32.0	21.5	12 – ø22.0	198.2

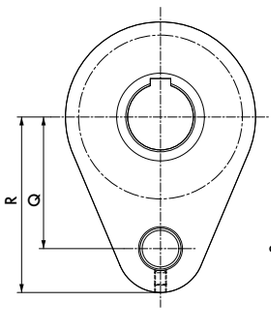
Installation and Usage

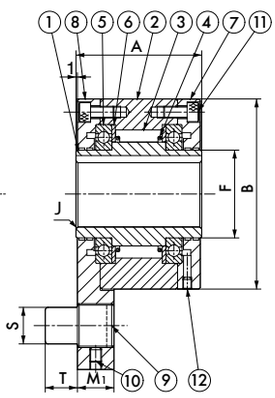
1. The Cam Clutch is delivered as a combination of a basic type clutch, an E1 flange and an E2 flange, each one packed and supplied as an individual part set.
   Each flange set comes with a complete flange kit, containing a number of bolts, a grease nipple, a locker set screw and a seal plug.
2. Check the direction of rotation before assembling, then mount both flanges making use of the flange kits.
3. Before mounting the sizes MZEU90-K to MZEU150-K apply the sealing adhesive, which comes along with the part sets, between body (outer race surface) and the optional part, to prevent leakage of oil during operation.
4. When installing sprocket, gear, pulley or other items to the clutch, always use bolts to assemble them. Size and quantity are mentioned under H-L, page 17. Lengths and shape are determined by the thickness of the fitted part.
5. When installing any type of optional or fitted part in the opposite way the direction of the clutch's rotation can be changed.
6. For high speed indexing applications (over 50 cycle/min) strong springs are recommended and can be supplied accordingly.



Installation example 2

MZEU-K SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate
7. E2 Flange
8. E3 Torque arn
9. Pin
10. Set screw
11. Socket bolt
12. Set screw

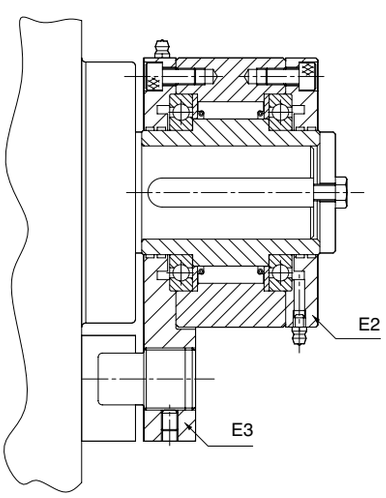
E2 Flange + E3 Torque Arm

Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	F	J	M1	Q	R	S	T	Approx. Mass kg/pc
MZEU12-K E2+E3	12	4 x 1.8	42	62	20	0.8	13.5	44	59	10	10	1.0
MZEU15-K E2+E3	15	5 x 2.3	52	68	25	0.8	13.5	47	62	10	10	1.4
MZEU20-K E2+E3	20	6 x 2.8	57	75	30	0.8	15.0	54	72	12	11	1.8
MZEU25-K E2+E3	25	8 x 3.3	60	90	40	0.8	19.0	62	84	16	14	2.7
MZEU30-K E2+E3	30	8 x 3.3	68	100	45	1.0	19.0	68	92	16	14	4.1
MZEU35-K E2+E3	35	10 x 3.3	74	110	50	1.0	22.0	76	102	20	18	5.1
MZEU40-K E2+E3	40	12 x 3.3	86	125	55	1.3	22.0	85	112	20	18	7.4
MZEU45-K E2+E3	45	14 x 3.8	86	130	60	1.3	25.0	90	120	25	22	9.1
MZEU50-K E2+E3	50	14 x 3.8	94	150	70	1.3	25.0	102	135	25	22	11.6
MZEU55-K E2+E3	55	16 x 4.3	104	160	75	1.5	30.0	108	142	32	25	14.6
MZEU60-K E2+E3	60	18 x 4.4	114	170	80	1.5	30.0	112	145	32	25	17.0
MZEU70-K E2+E3	70	20 x 4.9	134	190	90	1.8	35.0	135	175	38	30	25.4
MZEU80-K E2+E3	80	22 x 5.4	144	210	105	1.8	35.0	145	185	38	30	32.6
MZEU90-K E2+E3	90	25 x 5.4	158	230	120	2.0	45.0	155	205	50	40	38.9
MZEU100-K E2+E3	100	28 x 6.4	182	270	140	2.0	45.0	180	230	50	40	65.2
MZEU130-K E2+E3	130	32 x 7.4	212	310	160	2.5	60.0	205	268	68	55	97.3
MZEU150-K E2+E3	150	36 x 8.4	246	400	200	2.5	60.0	255	325	68	55	191.4

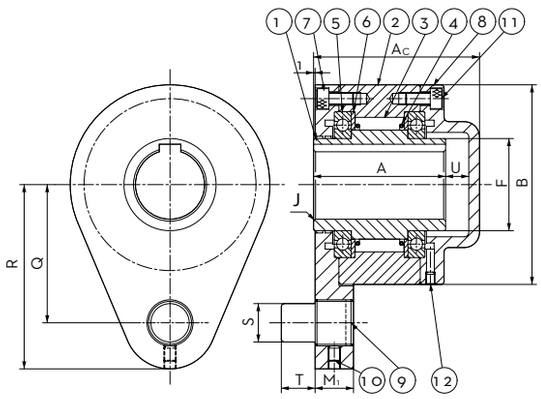
Installation and Usage

1. The Cam Clutch is delivered as a combination of a basic type clutch, an E3 torque arm and an E2 flange, each one packed and supplied as an individual part set. The flange set comes with a complete mounting kit, containing a number of bolts, a grease nipple, a locker set screw and a seal plug. The torque arm comes with an extra pin and set screw.
2. Check the direction of rotation before assembling, then mount both optional parts making use of the flange kits.
3. Before mounting the sizes MZEU90-K to MZEU150-K apply the sealing adhesive, included with the part sets, between body (outer race surface) and the optional part, to prevent leakage of oil during operation.
4. When installing the optional parts in the opposite way the direction of the clutch's rotation can be changed.



Installation example 3

MZEU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate
7. E3 Torque arm
8. E4 Cover
9. Pin
10. Set screw
11. Hollow hex bolt
12. Set screw

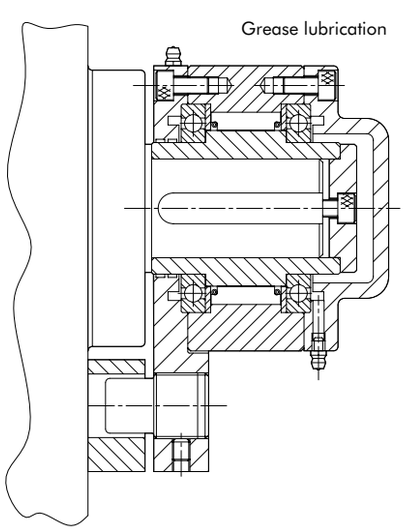
E3 Torque Arm + E4 Cover

Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	Ac	B h7	F	J	M1	Q	R	S	T	U	Approx. Mass kg/pc
MZEU12-K E3+E4	12	4 x 1.8	42	53	62	20	0.8	13.5	44	59	10	10	6	1.0
MZEU15-K E3+E4	15	5 x 2.3	52	68	68	25	0.8	13.5	47	62	10	10	10	1.5
MZEU20-K E3+E4	20	6 x 2.8	57	73	75	30	0.8	15.0	54	72	12	11	10	2.0
MZEU25-K E3+E4	25	8 x 3.3	60	76	90	40	0.8	19.0	62	84	16	14	10	2.9
MZEU30-K E3+E4	30	8 x 3.3	68	84	100	45	1.0	19.0	68	92	16	14	10	4.3
MZEU35-K E3+E4	35	10 x 3.3	74	92	110	50	1.0	22.0	76	102	20	18	12	5.3
MZEU40-K E3+E4	40	12 x 3.3	86	105	125	55	1.3	22.0	85	112	20	18	12	7.8
MZEU45-K E3+E4	45	14 x 3.8	86	108	130	60	1.3	25.0	90	120	25	22	15	9.6
MZEU50-K E3+E4	50	14 x 3.8	94	113	150	70	1.3	25.0	102	135	25	22	12	12.1
MZEU55-K E3+E4	55	16 x 4.3	104	126	160	75	1.5	30.0	108	142	32	25	15	15.2
MZEU60-K E3+E4	60	18 x 4.4	114	137	170	80	1.5	30.0	112	145	32	25	15	17.7
MZEU70-K E3+E4	70	20 x 4.9	134	164.5	190	90	1.8	35.0	135	175	38	30	22.5	26.5
MZEU80-K E3+E4	80	22 x 5.4	144	168	210	105	1.8	35.0	145	185	38	30	16	33.6
MZEU90-K E3+E4	90	25 x 5.4	158	192	230	120	2.0	45.0	155	205	50	40	27	39.0
MZEU100-K E3+E4	100	28 x 6.4	182	217	270	140	2.0	45.0	180	230	50	40	28	67.4
MZEU130-K E3+E4	130	32 x 7.4	212	250	310	160	2.5	60.0	205	268	68	55	30	100.2
MZEU150-K E3+E4	150	36 x 8.4	246	286	400	200	2.5	60.0	255	325	68	55	32	194.8

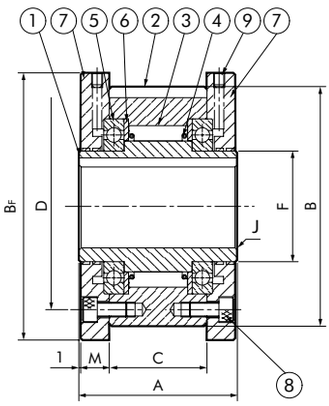
Installation and Usage

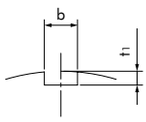
1. This version of the MZEU-K Cam Clutch comes as a combination of a basic type clutch, an E3 torque arm and an E4 cover, each one packed and supplied as an individual part set. Each part set is delivered with a flange kit consisting of bolts, grease nipple, locker set screw and seal plug. The E3 kit comes with a an extra pin and set screw.
2. Check the direction of rotation before assembling, then mount both flanges making use of the flange kit.
3. Before mounting the sizes MZEU90-K to MZEU150-K apply the sealing adhesive, included with the part sets, between body (outer race surface) and the optional part, to prevent leakage of oil during operation.
4. For the sizes MZEU12-K up to MZEU80-K assemble the shaft end plate onto the shaft before closing with the E4 cover. Refer to installation example 4.
5. Before mounting the E4 cover on Model MZEU90-K up to MZEU150-K, packing should be fitted between the end surface of the inner race and the surface of the end plate, using sealing, washer and bolt(s). Refer to installation example 4.
6. When installing the optional parts in the opposite way the direction of the clutch's rotation can be changed.



Installation example 4

MZEU-K SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate
7. E5 Flange
8. Hex socket cap bolt
9. Set screw

E5 Flange + E5 Flange

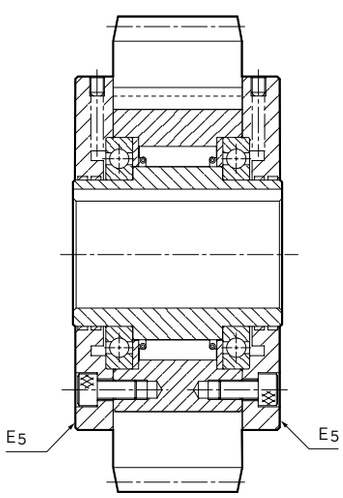
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	B_F	C	D	F	J	M	Outer Race Keyway b P10	Outer Race Keyway t_1	Approx. Mass kg/pc
MZEU12-K E5+E5	12	4 x 1.8	42	62	70	20	51	20	0.8	10.0	4 x	2.5	0.5
MZEU15-K E5+E5	15	5 x 2.3	52	68	76	28	56	25	0.8	11.0	5 x	3.0	0.8
MZEU20-K E5+E5	20	6 x 2.8	57	75	84	34	64	30	0.8	10.5	6 x	3.5	1.2
MZEU25-K E5+E5	25	8 x 3.3	60	90	99	35	78	40	0.8	11.5	8 x	4.0	1.8
MZEU30-K E5+E5	30	8 x 3.3	68	100	109	43	87	45	1.0	11.5	8 x	4.0	2.6
MZEU35-K E5+E5	35	10 x 3.3	74	110	119	45	96	50	1.0	13.5	10 x	5.0	3.2
MZEU40-K E5+E5	40	12 x 3.3	86	125	135	53	108	55	1.3	15.5	12 x	5.0	4.8
MZEU45-K E5+E5	45	14 x 3.8	86	130	140	53	112	60	1.3	15.5	14 x	5.5	6.2
MZEU50-K E5+E5	50	14 x 3.8	94	150	160	64	132	70	1.3	14.0	14 x	5.5	8.2
MZEU55-K E5+E5	55	16 x 4.3	104	160	170	66	138	75	1.5	18.0	16 x	6.0	9.5
MZEU60-K E5+E5	60	18 x 4.4	114	170	182	78	150	80	1.5	17.0	18 x	7.0	12.3
MZEU70-K E5+E5	70	20 x 4.9	134	190	202	95	165	90	1.8	18.5	20 x	7.5	18.1
MZEU80-K E5+E5	80	22 x 5.4	144	210	222	100	185	105	1.8	21.0	22 x	9.0	23.1
MZEU90-K E5+E5*	90	25 x 5.4	158	230	242	115	206	120	2.0	20.5	25 x	9.0	28.1
MZEU100-K E5+E5*	100	28 x 6.4	182	270	282	120	240	140	2.0	30.0	28 x	10.0	46.3
MZEU130-K E5+E5*	130	32 x 7.4	212	310	322	152	278	160	2.5	29.0	32 x	11.0	70.2
MZEU150-K E5+E5*	150	36 x 8.4	246	400	412	180	360	200	2.5	32.0	36 x	12.0	146.3

*= Non-stock item

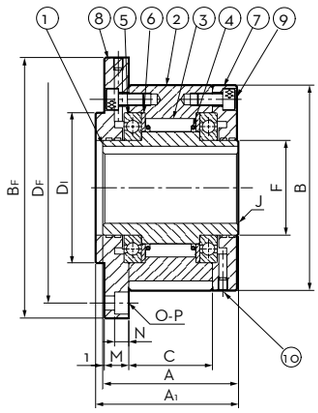
Installation and Usage

1. This version of the MZEU-K Cam Clutch comes as a combination of a basic type clutch, and two E5 flanges, each one packed and supplied as an individual part set. Each part set comes with a complete flange kit, containing a number of bolts, a grease nipple, a locker set screw and a seal plug.
2. Check the direction of rotation before assembling, then mount both flanges making use of the flange kit.
3. Before mounting the sizes MZEU90-K to MZEU150-K apply the sealing adhesive, which comes along with the part sets, between body (outer race surface) and the optional part, to prevent leakage of oil during operation.
4. Insert the Cam Clutch into the appropriate unit (gear, sprocket, pulley etc.). We recommend a tolerance of H7 for the bore size. Fix the key and close the unit with the second E5 flange, making use of the flange kit.
5. MZEU-K clutches with E5 and E5 flanges can be used in both rotation directions.
6. For high speed indexing applications (over 50 cycle/min) strong springs are recommended and can be supplied accordingly.



Installation example 5

MZEU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing
6. Side plate
7. E2 Flange
8. E7 Flange
9. Hex socket cap bolt
10. Set screw

E2 Flange + E7 Flange

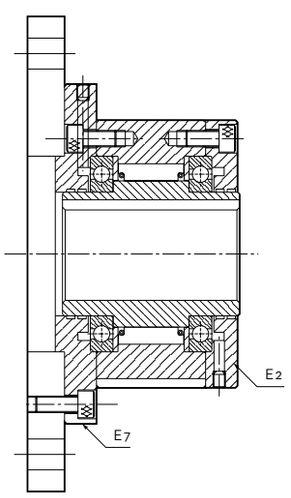
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	A1	B h7	BF	C	D1 h7	DF	F	J	M	N	O-P	Approx. Mass kg/pc
MZEU12-K E2+E7	12	4 x 1.8	42	44	62	85	20	42	72	20	0.8	10.0	5.7	3 - ø5.5	0.5
MZEU15-K E2+E7	15	5 x 2.3	52	54	68	92	28	47	78	25	0.8	11.0	5.7	3 - ø5.5	0.8
MZEU20-K E2+E7	20	6 x 2.8	57	59	75	98	34	55	85	30	0.8	10.5	5.7	4 - ø5.5	1.2
MZEU25-K E2+E7	25	8 x 3.3	60	62	90	118	35	68	104	40	0.8	11.5	6.8	4 - ø6.6	1.8
MZEU30-K E2+E7	30	8 x 3.3	68	70	100	128	43	75	114	45	1.0	11.5	6.8	6 - ø6.6	2.6
MZEU35-K E2+E7	35	10 x 3.3	74	76	110	140	45	80	124	50	1.0	13.0	6.8	6 - ø6.6	3.2
MZEU40-K E2+E7	40	12 x 3.3	86	88	125	160	53	90	142	55	1.3	15.0	9.0	6 - ø9.0	4.8
MZEU45-K E2+E7	45	14 x 3.8	86	88	130	165	53	95	146	60	1.3	15.0	9.0	8 - ø9.0	6.2
MZEU50-K E2+E7	50	14 x 3.8	94	96	150	185	64	110	166	70	1.3	13.0	9.0	8 - ø9.0	8.2
MZEU55-K E2+E7	55	16 x 4.3	104	106	160	204	66	115	182	75	1.5	17.0	11.0	8 - ø11.0	9.5
MZEU60-K E2+E7	60	18 x 4.4	114	116	170	214	78	125	192	80	1.5	16.0	11.0	10 - ø11.0	12.3
MZEU70-K E2+E7	70	20 x 4.9	134	136	190	234	95	140	212	90	1.8	17.5	11.0	10 - ø11.0	18.1
MZEU80-K E2+E7	80	22 x 5.4	144	146	210	254	100	160	232	105	1.8	20.0	11.0	10 - ø11.0	23.1
MZEU90-K E2+E7*	90	25 x 5.4	158	160	230	278	115	180	254	120	2.0	19.0	13.0	10 - ø14.0	28.1
MZEU100-K E2+E7*	100	28 x 6.4	182	184	270	335	120	210	305	140	2.0	28.0	17.5	10 - ø18.0	46.3
MZEU130-K E2+E7*	130	32 x 7.4	212	214	310	380	152	240	345	160	2.5	27.0	17.5	12 - ø18.0	70.2
MZEU150-K E2+E7*	150	36 x 8.4	246	248	400	485	180	310	445	200	2.5	30.0	21.5	12 - ø22.0	146.3

*= Non-stock item

Installation and Usage

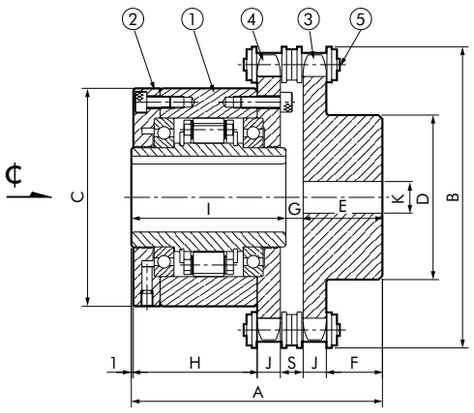
1. This version of the MZEU-K Cam Clutch comes as a combination of a basic type clutch, an E2 flange and an E7 flange, each one packed and supplied as an individual part set.
2. Each flange set come with a complete mounting kit, containing a number of bolts, a grease nipple, a locker set screw and a seal plug.
3. Check the direction of rotation before assembling, then mount both flanges making use of the flange kit.
4. Before mounting the sizes MZEU90-K to MZEU150-K apply the sealing adhesive, which comes along with the part sets, between body (outer race surface) and the optional part, to prevent leakage of oil during operation.
5. Always use bolts for installing a sprocket, a gear, pulley or other options to the clutch. Size and quantity of the bolts needed are mentioned under H-L on page 17. Length and shape of the bolts is determined by the thickness of the fitted part.
6. When installing any type of optional or fitted part in the opposite way the direction of the clutch's rotation can be changed.
7. For high speed indexing applications (over 50 cycle/min) strong springs are recommended and can be supplied accordingly.



Installation example 6

Note:
Do not apply a large overhung load to the outer race by using E7 flange to keep the centerline between the inner and outer race.

MZEU-K SERIES CAM CLUTCH



① MZEU-K Cam Clutch
② E2 Flange
③ Sprocket B
④ Sprocket A
⑤ Roller chain

¢ Specify Specify right hand (RH) or Left hand (LH) drive viewed from this end inner race driving.

Coupling

Dimensions in mm

Model	Torque Capacity Nm	Max.Overrunning Speed		Drag Torque Nm	Bore Size H7	Inner Race Keyway	Bore Diameter Range K		A	B	C h7	D	E	F	G	H	I	J	L	S
		Inner Race r/min	Outer Race r/min				min.	max.												
MZEU12-K-C	60	2000	1000	0.20	12	4×1.8	14	45	70.6	93	62	67	25	17.8	3.6	30.0	42	7.2	1	7.4
MZEU15-K-C	100	1800	900	0.20	15	5×2.3	14	50	79.6	101	68	75	25	17.8	2.6	39.0	52	7.2	1	7.4
MZEU20-K-C	245	1600	700	0.29	20	6×2.8	14	42	85.1	109	75	63	25	17.8	3.1	44.5	57	7.2	1	7.4
MZEU25-K-C	425	1600	600	0.33	25	8×3.3	18	47	93.9	127	90	73	28	19.3	5.9	46.5	60	8.7	1	9.7
MZEU30-K-C	735	1500	500	0.39	30	8×3.3	18	47	101.9	137	100	73	28	19.3	5.9	54.5	68	8.7	1	9.7
MZEU35-K-C	1015	1400	300	0.49	35	10×3.3	18	55	122.7	152	110	83	40	28.3	8.7	58.5	74	11.7	1	11.5
MZEU40-K-C	1350	1400	300	0.59	40	12×3.3	20	55	132.7	164	125	83	40	28.3	6.7	68.5	86	11.7	1	11.5
MZEU45-K-C	1620	1400	300	0.69	45	14×3.8	20	55	132.7	176	130	83	40	28.3	6.7	68.5	86	11.7	1	11.5
MZEU50-K-C	2070	1300	250	0.79	50	14×3.8	20	55	142.2	200	150	83	40	28.3	8.2	78.0	94	11.7	1	11.5
MZEU55-K-C	2400	1300	250	0.88	55	16×4.3	30	75	159.8	219	160	107	45	30.4	10.8	84.0	104	14.6	1	15.2
MZEU60-K-C	2950	1200	250	0.98	60	18×4.4	30	75	170.8	235	170	107	45	30.4	11.8	95.0	114	14.6	1	15.2
MZEU70-K-C	4210	1100	250	1.27	70	20×4.9	30	75	189.3	251	190	107	45	30.4	10.3	113.5	134	14.6	1	15.2
MZEU80-K-C	5170	800	200	1.38	80	22×5.4	30	75	196.8	267	210	107	45	30.4	7.8	121.0	144	14.6	1	15.2

Installation and Usage

1. MZEU-K C Series Cam Clutch couplings make use of MZEU-K Series Cam Clutch and CR type couplings without cover.
2. Mount the Cam Clutch part loosely onto the highspeed shaft.
3. Accurately align both sprockets by checking with a straight edge on the teeth of both sprockets.
4. Check whether the clearance (S) between both sprockets is correct, then wrap the chain around the sprockets and close it properly with the connecting link.
5. Specify right hand (RH) or left hand (LH) as inner race over-running direction from the view of Cam Clutch side(¢) when ordering. See the above drawing.
6. The same lubrication as for Tsubaki roller chain is necessary for the coupling chain.
7. Ensure that the closed side of the spring clip is situated in the same direction as the rotation of the outer race.

MZEU-K SERIES CAM CLUTCH

Lubrication and Maintenance of MZEU-K Series

The basic models MZEU12-K to MZEU80-K are pre-greased and require no further lubrication. However, the lateral bearings need to be greased periodically. See the tables below for the recommended grease and frequency.
The operational temperature range is -40°C to +40°C.

For higher range temperatures please consult Tsubaki. The basic models MZEU90-K to MZEU150-K and optional parts such as flanges, torque arm or cover need to be lubricated with oil at scheduled maintenance. See the tables below for the recommended oil and frequency.

Recommended grease for Cam Clutches MZEU12-K to MZEU80-K

	Ambient Temperature	
Oil Company	-5°C to +40°C	-40°C to +40°C
Esso	-	Beacon 325
Mobil	-	Mobil Temp SHC 100
Shell	Alvania Grease S2	Alvania Grease RA
BP	Energrease LS2	Energrease LT2
Total	Multis 2	Aerogrease 22

Note: Do not use grease containing EP additives when selecting any other brand or make.

Recommended oil for Cam Clutches MZEU90-K to MZEU150-K

	Ambient Temperature	
Oil Company	-10°C to +30°C	+30°C to +50°C
Esso	Teresso 32, Essolub D-3 10W, ATF Dexron	Essolub D-3 30
Mobil	ATF 220, Delvac 1310, DTE Oil light	
Shell	Dexron II, Rimulla CT Oil 10W, Shell Clavus Oil 17, Rotella S Oil 10W	Rimulla CT Oil 20W/20, 30 Rotella S Oil 20W/20, 30
BP	BP Energol THB32	-
Total	Harmony 32	-

Note: Do not use oil containing EP additives when selecting any other brand or make.

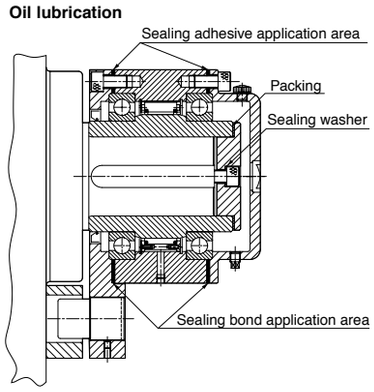
Instructions for Lubrication of MZEU90-K to MZEU150-K

1. Apply a suitable amount of oil before use.
2. As a general rule, the amount of lubricant should be level with the center of the shaft for overrunning or backstopping.
3. The E2 flange has three plugs. The E4 cover has a large plug for adding oil and two small plugs for checking and draining.
4. Place the plugs, so that one is at the top and one is at the bottom. The center one should be level with the center of the shaft.
5. Pour oil into the clutch until it overflows from check plug. After a few minutes, pour in more oil and check that it overflows again.

Maintenance

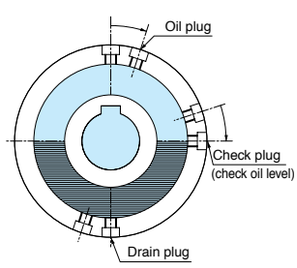
Model	Lubricant	Maintenance
MZEU12-K to MZEU80-K	Grease	Every 3 months by the grease nipple on the flange, the torque arm and/or cover.
MZEU90-K to MZEU150-K	Oil	Replace the oil 10 hours after the first installation. Then refresh the oil every 3 months. For dirty environments we recommend refreshment every month.

Oil lubrication

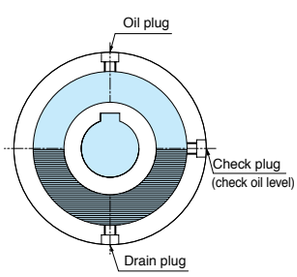


MZEU90-K to MZEU150-K

Oil level



MZEU90-K to MZEU100-K



MZEU130-K to MZEU150-K

BREU-K SERIES CAM CLUTCH

General Information Lift-off

BREU Series are modular type Cam Clutches with lift-off style special cams delivered as BREU-K Series with option parts (E1, E2, E5, E7 flanges, E3 Torque arm and E4 cover) which are required as separate parts.

The operational temperature range is -40°C to +40°C.
All models are pre-greased at assembly. Injection of an excessive quantity of grease to the bearings during maintenance will cause problems to the function of the Cam Clutch. It's springs cannot function properly any longer.
Tsubaki recommends a shaft tolerance of h7 with a standard key. The keyways of all Tsubaki Cam Clutches are standardized according to DIN6885.1 Tsubaki recommends an H7 or H8 tolerance for dimensions B and E to rework sprockets, gears, pulleys or other parts to be fitted.

1. Before assembly clean both surfaces of the outer race as well as the surface of the flange, cover, torque arm or other fitted part.
2. Verify the direction of rotation indicated with an arrow before fitting the optional parts.
3. When installing a sprocket, gear or other part, fix them with a hexagonal socket cap bolt.
4. When assembling optional parts in opposite position, the direction of rotation of the Cam Clutch can be changed.
5. Fix grease nipple and set screw to each operational part.
6. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
7. Do not use grease that contains EP additives.

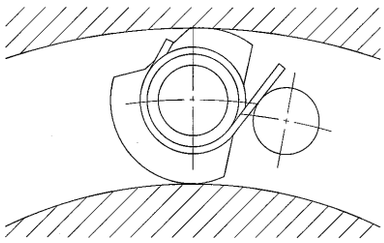


Figure 1: Entire Cam Clutch is stationary

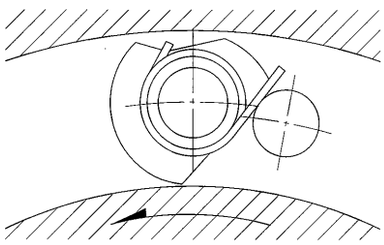


Figure 2: Inner race only turning

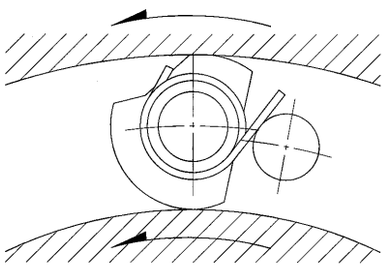
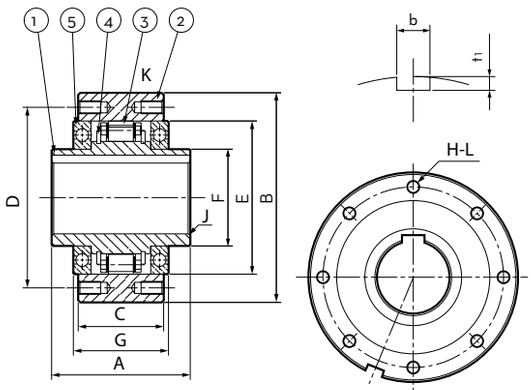


Figure 3: Inner and outterrace locked and turning

BREU-K SERIES CAM CLUTCH



① Inner race
② Outer race
③ Cam cage
④ Snap ring
⑤ Bearing

BREU-K

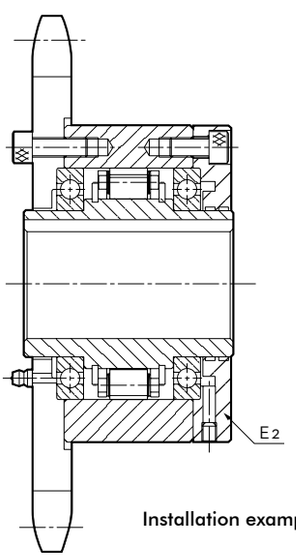
Dimensions in mm

Model	Torque Capacity Nm	Inner Race Overrunning Speed Min. r/min	Inner Race Overrunning Speed Max. r/min	Max. Engagement Speed r/min	Bore Size H7	Inner Race Keyway	A	B h7	C	D	E	F	G	H-L	K	J	Outer Race Keyway b P10	Outer Race Keyway t1	Approx. Mass kg/pc
BREU30-K	607	880	3600	350	30	8 x 3.3	76	100	51	87	75	45	56	6-M6	10	1.0	8 x	4.0	2.7
BREU35-K	686	780	3600	300	35	10 x 3.3	79	110	50	96	80	50	56	6-M6	12	1.0	10 x	5.0	3.2
BREU40-K	980	720	3600	300	40	12 x 3.3	86	125	53	108	90	55	59	6-M8	14	1.3	12 x	5.0	4.4
BREU45-K	1078	670	3600	280	45	14 x 3.8	86	130	53	112	95	60	59	8-M8	14	1.3	14 x	5.5	4.7
BREU50-K	1715	610	3600	240	50	14 x 3.8	94	150	64	132	110	70	72	8-M8	14	1.3	14 x	5.5	7.6
BREU55-K	1960	580	3600	220	55	16 x 4.3	104	160	66	138	115	75	72	8-M10	16	1.5	16 x	6.0	8.9
BREU60-K	3479	490	3600	200	60	18 x 4.4	120	170	84	150	125	80	95	10-M10	16	1.5	18 x	7.0	12.5
BREU70-K*	4735	480	3600	200	70	20 x 4.9	134	190	95	165	140	90	108	10-M10	16	1.8	20 x	7.5	17.2
BREU80-K*	6517	450	3600	190	80	22 x 5.4	144	210	100	185	160	105	108	10-M10	16	1.8	22 x	9.0	22.4
BREU90-K*	8526	420	3000	180	90	25 x 5.4	158	230	115	206	180	120	125	10-M12	20	2.0	25 x	9.0	30.3
BREU100-K*	14210	460	2500	180	100	28 x 6.4	186	270	124	240	210	140	135	10-M16	24	2.0	28 x	10.0	45.5
BREU130-K*	20384	420	2200	180	130	32 x 7.4	212	310	152	278	240	160	168	12-M16	24	2.5	32 x	11.0	67.0
BREU150-K*	33908	370	1300	180	150	36 x 8.4	246	400	180	360	310	200	194	12-M20	32	2.5	36 x	12.0	145.0

*= Non-stock item

Installation and Usage

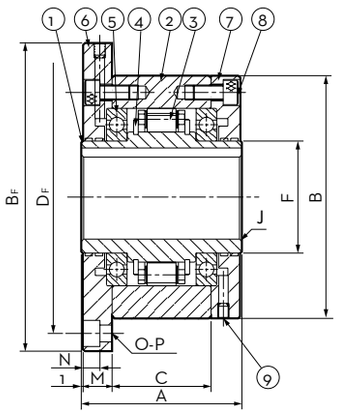
1. By installing both parts on the opposite side, the direction of rotation can be changed.
2. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
3. All models are pre-greased. The ambient temperature range is -40°C to +40°C. Too much additional grease to both bearing inhibits the basic Cam Clutch function.



Installation example 1

Note:
Current stock items are basic BREU type clutches without keyway on outer race. Please note that Basic BREU type clutches will gradually be replaced by BREU-K type clutches.

BREU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam cage
4. Snap ring
5. Bearing
6. E1 Flange
7. E2 Flange
8. Hex socket cap bolt
9. Set screw

E1 Flange + E2 Flange

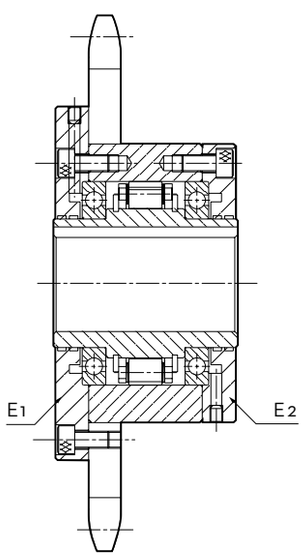
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	B_F	C	D_F	F	J	M	N	O-P	Approx. Mass kg/pc
BREU30-K E1+E2	30	8 x 3.3	76	100	128	51	114	45	1.0	11.5	6.8	6-ø 6.6	4.1
BREU35-K E1+E2	35	10 x 3.3	79	110	140	50	124	50	1.0	13.5	6.8	6-ø 6.6	5.2
BREU40-K E1+E2	40	12 x 3.3	86	125	160	53	142	55	1.3	15.5	9.0	6-ø 9.0	7.5
BREU45-K E1+E2	45	14 x 3.8	86	130	165	53	146	60	1.3	15.5	9.0	8-ø 9.0	7.9
BREU50-K E1+E2	50	14 x 3.8	94	150	185	64	166	70	1.3	14.0	9.0	8-ø 9.0	11.1
BREU55-K E1+E2	55	16 x 4.3	104	160	204	66	182	75	1.5	18.0	11.0	8-ø11.0	14.7
BREU60-K E1+E2	60	18 x 4.4	120	170	214	84	192	80	1.5	17.0	11.0	10-ø11.0	17.9
BREU70-K E1+E2*	70	20 x 4.9	134	190	234	95	212	90	1.8	18.5	11.0	10-ø11.0	24.5
BREU80-K E1+E2*	80	22 x 5.4	144	210	254	100	232	105	1.8	21.0	11.0	10-ø11.0	32.5
BREU90-K E1+E2*	90	25 x 5.4	158	230	278	115	254	120	2.0	20.5	13.0	10-ø14.0	40.5
BREU100-K E1+E2*	100	28 x 6.4	186	270	335	124	305	140	2.0	30.0	17.5	10-ø18.0	68.0
BREU130-K E1+E2*	130	32 x 7.4	212	310	380	152	345	160	2.5	29.0	17.5	12-ø18.0	95.0
BREU150-K E1+E2*	150	36 x 8.4	246	400	485	180	445	200	2.5	32.0	21.5	12-ø22.0	197.0

*= Non-stock item

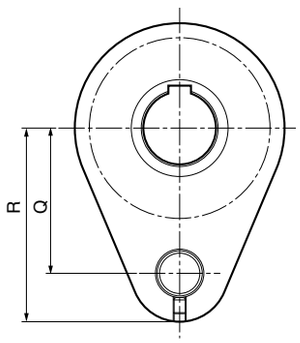
Installation and Usage

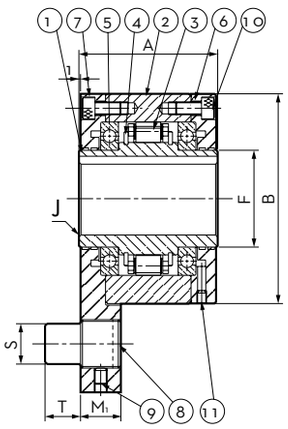
1. By installing E1 flange and E2 flange on the opposite side, the direction of rotation can be changed.
2. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
3. All models are pre-greased. The ambient temperature range is -40°C to +40°C.
4. Too much additional greasing of the bearings will cause malfunction of the Cam Clutch mechanism.



Installation example 2

BREU-K SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam cage
4. Snap ring
5. Bearing
6. E2 Flange
7. E3 Torque arm
8. Pin
9. Set screw
10. Hex socket cap bolt
11. Set screw

E2 Flange + E3 Torque arm

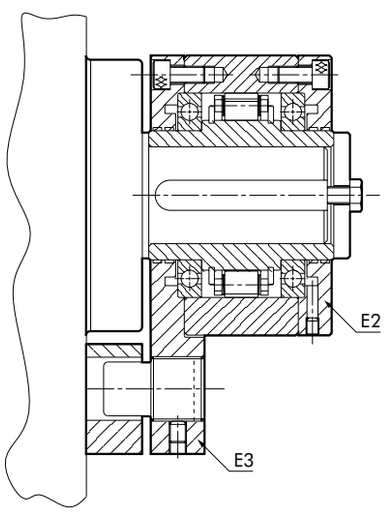
Dimensions are in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	F	J	M1	Q	R	S	T	Approx. Mass kg/pc
BREU30-K E2+E3	30	8 x 3.3	76	100	45	1.0	19	68	92	16	14	4.2
BREU35-K E2+E3	35	10 x 3.3	79	110	50	1.0	22	76	102	20	18	5.0
BREU40-K E2+E3	40	12 x 3.3	86	125	55	1.3	22	85	112	20	18	7.0
BREU45-K E2+E3	45	14 x 3.8	86	130	60	1.3	25	90	120	25	22	7.7
BREU50-K E2+E3	50	14 x 3.8	94	150	70	1.3	25	102	135	25	22	11.0
BREU55-K E2+E3	55	16 x 4.3	104	160	75	1.5	30	108	142	32	25	14.0
BREU60-K E2+E3	60	18 x 4.4	120	170	80	1.5	30	112	145	32	25	17.2
BREU70-K E2+E3*	70	20 x 4.9	134	190	90	1.8	35	135	175	38	30	24.5
BREU80-K E2+E3*	80	22 x 5.4	144	210	105	1.8	35	145	185	38	30	31.9
BREU90-K E2+E3*	90	25 x 5.4	158	230	120	2.0	45	155	205	50	40	41.1
BREU100-K E2+E3*	100	28 x 6.4	186	270	140	2.0	45	180	230	50	40	65.0
BREU130-K E2+E3*	130	32 x 7.4	212	310	160	2.5	60	205	268	68	55	94.0
BREU150-K E2+E3*	150	36 x 8.4	246	400	200	2.5	60	255	325	68	55	190.0

*= Non-stock item

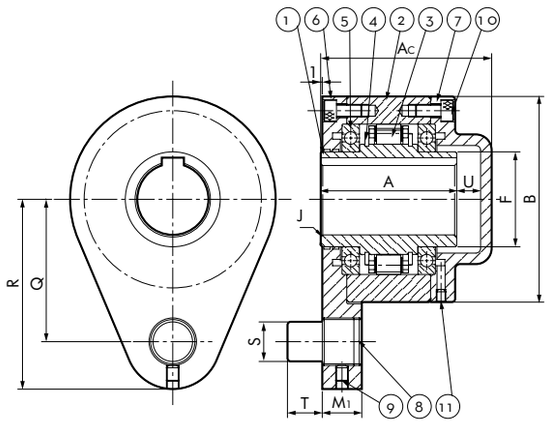
Installation and Usage

1. By installing the E2 flange and E3 torque arm on the opposite side, the direction of rotation can be changed.
2. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
3. All models are pre-greased. The ambient temperature range is -40°C to +40°C.
4. Too much additional greasing of the bearings will cause malfunction of the Cam Clutch mechanism.



Installation example 3

BREU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam cage
4. Snap ring
5. Bearing
6. E3 Torque arm
7. E4 Cover
8. Pin
9. Set screw
10. Hex socket cap bolt
11. Set screw

E3 Torque arm + E4 Cover

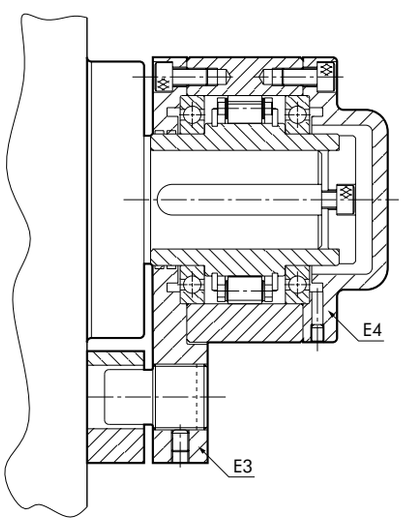
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	Ac	B h7	F	J	M1	Q	R	S	T	U	Approx. Mass kg/pc
BREU30-K E3+E4	30	8 x 3.3	76	92	100	45	1.0	19	68	92	16	14	10	4.5
BREU35-K E3+E4	35	10 x 3.3	79	97	110	50	1.0	22	76	102	20	18	12	5.3
BREU40-K E3+E4	40	12 x 3.3	86	105	125	55	1.3	22	85	112	20	18	12	7.4
BREU45-K E3+E4	45	14 x 3.8	86	108	130	60	1.3	25	90	120	25	22	15	8.1
BREU50-K E3+E4	50	14 x 3.8	94	113	150	70	1.3	25	102	135	25	22	12	11.5
BREU55-K E3+E4	55	16 x 4.3	104	126	160	75	1.5	30	108	142	32	25	15	15.6
BREU60-K E3+E4	60	18 x 4.4	120	143	170	80	1.5	30	112	145	32	25	15	18.0
BREU70-K E3+E4*	70	20 x 4.9	134	164.5	190	90	1.8	35	135	175	38	30	22.5	25.5
BREU80-K E3+E4*	80	22 x 5.4	144	168	210	105	1.8	35	145	185	38	30	16	32.9
BREU90-K E3+E4*	90	25 x 5.4	158	192	230	120	2.0	45	155	205	50	40	27	43.4
BREU100-K E3+E4*	100	28 x 6.4	186	221	270	140	2.0	45	180	230	50	40	28	67.0
BREU130-K E3+E4*	130	32 x 7.4	212	250	310	160	2.5	60	205	268	68	55	30	97.0
BREU150-K E3+E4*	150	36 x 8.4	246	286	400	200	2.5	60	255	325	68	55	32	193.0

*= Non-stock item

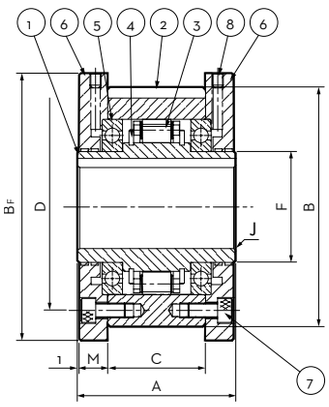
Installation and Usage

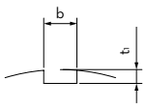
1. By installing the E3 torque arm and the E4 cover in the opposite way, the direction of rotation can be changed.
2. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
3. All models are pre-greased.
4. Fix grease nipples to optional parts.
5. The ambient temperature range is -40°C to +40°C.
6. Too much additional greasing of the bearings will cause malfunction of the Cam Clutch mechanism.



Installation example 4

BREU-K SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam cage
4. Snap ring
5. Bearing
6. E5 Flange
7. Hex socket cap bolt
8. Set screw

E5 Flange + E5 Flange

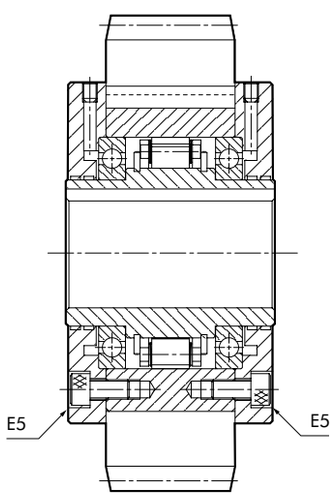
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B h7	B_F	C	D	F	J	M	Outer Race Keyway b P10	Outer Race Keyway t_1	Approx. Mass kg/pc
BREU30-K E5+E5	30	8 x 3.3	76	100	109	51	87	45	1.0	11.5	8 x	4.0	3.9
BREU35-K E5+E5	35	10 x 3.3	79	110	119	50	96	50	1.0	13.5	10 x	5.0	4.9
BREU40-K E5+E5	40	12 x 3.3	86	125	135	53	108	55	1.3	15.5	12 x	5.0	7.0
BREU45-K E5+E5	45	14 x 3.8	86	130	140	53	112	60	1.3	15.5	14 x	5.5	7.4
BREU50-K E5+E5	50	14 x 3.8	94	150	160	64	132	70	1.3	14.0	14 x	5.5	10.7
BREU55-K E5+E5	55	16 x 4.3	104	160	170	66	138	75	1.5	18.0	16 x	6.0	13.6
BREU60-K E5+E5	60	18 x 4.4	120	170	182	84	150	80	1.5	17.0	18 x	7.0	17.3
BREU70-K E5+E5*	70	20 x 4.9	134	190	202	95	165	90	1.8	18.5	20 x	7.5	23.5
BREU80-K E5+E5*	80	22 x 5.4	144	210	222	100	185	105	1.8	21.0	22 x	9.0	31.3
BREU90-K E5+E5*	90	25 x 5.4	158	230	242	115	206	120	2.0	20.5	25 x	9.0	38.4
BREU100-K E5+E5*	100	28 x 6.4	186	270	282	124	240	140	2.0	30.0	28 x	10.0	63.0
BREU130-K E5+E5*	130	32 x 7.4	212	310	322	152	278	160	2.5	29.0	32 x	11.0	88.0
BREU150-K E5+E5*	150	36 x 8.4	246	400	412	180	360	200	2.5	32.0	36 x	12.0	184.0

*= Non-stock item

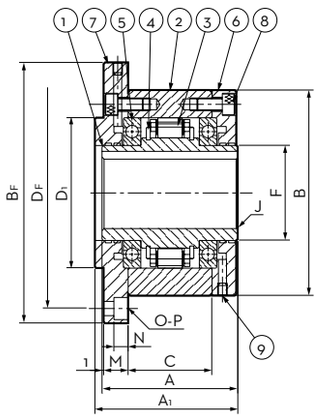
Installation and Usage

1. By turning the Cam Clutch on the opposite side, the direction of rotation can be changed.
2. Fix the grease nipple to the option parts.
3. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft.
4. All models are pre-greased. The ambient temperature range is -40°C to +40°C.
5. Too much additional greasing of the bearings will cause malfunction of the Cam Clutch mechanism.
6. Ensure that the closed side of the spring clip is situated in the same direction as the rotation of the outer race.



Installation example 5

BREU-K SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam cage
4. Snap ring
5. Bearing
6. E2 Flange
7. E7 Flange
8. Hex socket cap bolt
9. Set screw

E2 Flange + E7 Flange

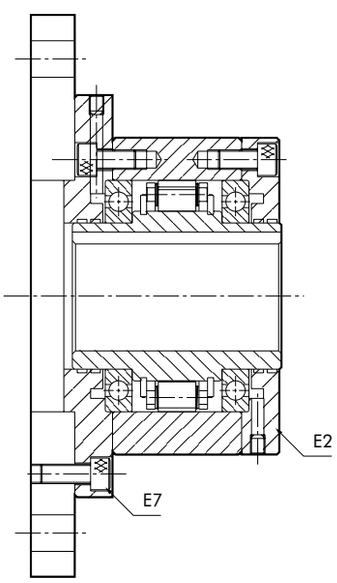
Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	A1	B h7	B_F	C	D1 h7	D_F	F	J	M	N	O-P	Approx. Mass kg/pc
BREU30-K E2+E7	30	8 x 3.3	76	78	100	128	51	75	114	45	1.0	11.5	6.8	6- ø6.6	4.2
BREU35-K E2+E7	35	10 x 3.3	79	81	110	140	50	80	124	50	1.0	13.0	6.8	6- ø6.6	5.3
BREU40-K E2+E7	40	12 x 3.3	86	88	125	160	53	90	142	55	1.3	15.0	9.0	6- ø9.0	7.6
BREU45-K E2+E7	45	14 x 3.8	86	88	130	165	53	95	146	60	1.3	15.0	9.0	8- ø9.0	8.0
BREU50-K E2+E7	50	14 x 3.8	94	96	150	185	64	110	166	70	1.3	13.0	9.0	8- ø9.0	11.3
BREU55-K E2+E7	55	16 x 4.3	104	106	160	204	66	115	182	75	1.5	17.0	11.0	8-ø11.0	14.8
BREU60-K E2+E7	60	18 x 4.4	120	122	170	214	84	125	192	80	1.5	16.0	11.0	10-ø11.0	18.2
BREU70-K E2+E7*	70	20 x 4.9	134	136	190	234	95	140	212	90	1.8	17.5	11.0	10-ø11.0	24.8
BREU80-K E2+E7*	80	22 x 5.4	144	146	210	254	100	160	232	105	1.8	20.0	11.0	10-ø11.0	32.9
BREU90-K E2+E7*	90	25 x 5.4	158	160	230	278	115	180	254	120	2.0	19.0	13.0	10-ø14.0	40.8
BEEU100-K E2+E7*	100	28 x 6.4	186	188	270	335	124	210	305	140	2.0	28.0	17.5	10-ø18.0	69.0
BREU130-K E2+E7*	130	32 x 7.4	212	214	310	380	152	240	345	160	2.5	27.0	17.5	12-ø18.0	96.0
BREU150-K E2+E7*	150	36 x 8.4	246	248	400	485	180	310	445	200	2.5	30.0	21.5	12-ø22.0	198.0

*= Non-stock item

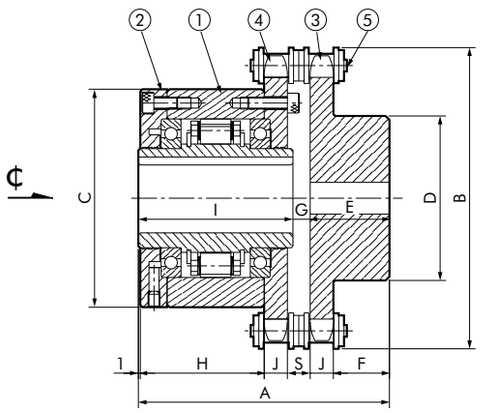
Installation and Usage

1. By installing the E2 flange and E7 flange on the opposite side, the direction of rotation can be changed.
2. Fix the grease nipple to the option parts.
3. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race. Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly.
4. All models are pre-greased. The ambient temperature range is -40°C to +40°C.
5. Too much additional greasing of the bearings will cause malfunction of the Cam Clutch mechanism.



Installation example 6

BREU-K SERIES CAM CLUTCH



① BREU-K Cam Clutch
② E2 Flange
③ Sprocket B
④ Sprocket A
⑤ Roller chain

¢ Specify right hand (RH) or Left hand (LH) drive viewed from this end inner race driving.

Coupling

Dimensions in mm

Model	Bore Size H7	Inner Race Keyway	A	B	C h7	D	E	F	G	H	I	J	S	Approx. Mass kg/pc
BREU30-K-C	30	8 x 3.3	109.9	137	100	73	28	19.3	5.9	62.5	76	8.7	9.7	5.9
BREU35-K-C	35	10 x 3.3	127.7	152	110	83	40	28.3	8.7	63.5	79	11.7	11.5	8.5
BREU40-K-C	40	12 x 3.3	132.7	164	125	83	40	28.3	6.7	68.5	86	11.7	11.5	10.5
BREU45-K-C	45	14 x 3.8	132.7	176	130	83	40	28.3	6.7	68.5	86	11.7	11.5	11.2
BREU50-K-C	50	14 x 3.8	142.2	200	150	83	40	28.3	8.2	78.0	94	11.7	11.5	15.6
BREU55-K-C	55	16 x 4.3	159.8	219	160	107	45	30.4	10.8	84.0	104	14.6	15.2	21.8
BREU60-K-C	60	18 x 4.4	176.8	235	170	107	45	30.4	11.8	101.0	120	14.6	15.2	26.4
BREU70-K-C*	70	20 x 4.9	189.3	251	190	107	45	30.4	10.3	113.5	134	14.6	15.2	33.0
BREU80-K-C*	80	22 x 5.4	196.8	267	210	107	45	30.4	7.8	121.0	144	14.6	15.2	41.0

*= Non-stock item

Installation and Usage

1. BREU-K C Series Cam Clutch couplings make use of BREU-K Series Cam Clutch and CR type couplings without cover.
2. Mount the clutch loosely on the high-speed shaft at first.
3. Accurately align both sprockets by checking with a straight edge on the teeth of both sprockets.
4. Check whether the clearance (S) between the two sprockets is correct, then wrap the chain around the sprockets.
5. Specify right hand (RH) or left hand (LH) as inner race over-running direction from the view of Cam Clutch side(¢) when ordering. See the above drawing.
6. The same lubrication as for Tsubaki roller chain is necessary for the coupling chain.
7. Ensure that the closed side of the spring clip is situated in the same direction as the rotation of the outer race.

BREU-K SERIES CAM CLUTCH

Lubrication and Maintenance of BREU-K Series

BREU-K Series Cam Clutches need periodic maintenance and lubrication to both bearings providing the maximum performance throughout the Cam Clutch's service life.

The Cam Mechanism DOES NOT require any maintenance therefore never use an excessive quantity of grease, yet lack of prescribed maintenance and lubrication will shorten the Service Life of the Cam Clutch and may cause unnecessary mechanical damage.

Recommended grease for Cam Clutches BREU-K Series

Oil Company	Ambient Temperature	
	-5°C to +40°C	-40°C to +40°C
Esso	-	Beacon 325
Mobil	-	Mobil Temp SHC 100
Shell	Alvania Grease S2	Alvania Grease RA
BP	Energrease LS2	Energrease LT2
Total	Multis 2	Aerogrease 22

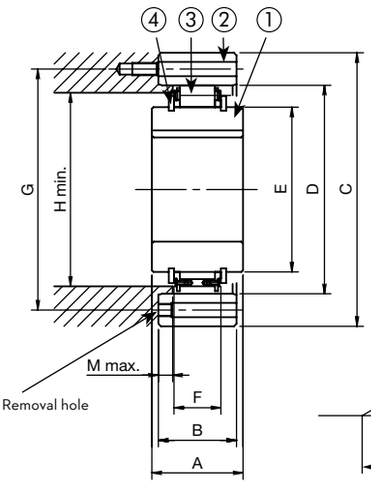
Note: Do not use grease containing EP additives when selecting any other brand or make.

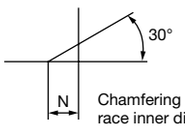
Maintenance

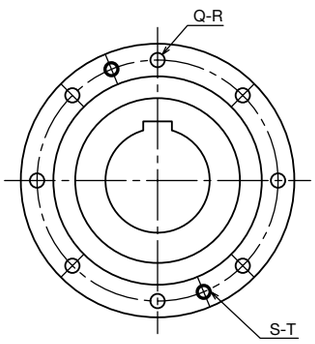
BREU-K Series Cam Clutches are pre-greased at the factory and the integrated bearings should be re-greased every three month after installation. Follow the procedures below.
Remove the setscrew at the flange, torque arm, cover or fitted part. Inject equal amounts of grease into both bearings via the grease nipples. Refer to the grease volume table for the correct amount. Run the Cam Clutch disengaged for 20 to 30 minutes with setscrew removed. Excessive grease in the clutch area will flow out of the tapped holes. Wipe off excessive grease and re-install the set screw.

Model	Each Bearing (g)	Model	Each Bearing (g)
BREU30-K	10	BREU70-K	50
BREU35-K	10	BREU80-K	80
BREU40-K	15	BREU90-K	90
BREU45-K	20	BREU100-K	160
BREU50-K	30	BREU130-K	260
BREU55-K	30	BREU150-K	460
BREU60-K	40		

BR-HT SERIES CAM CLUTCH







① Inner race
② Outer race
③ Cam cage
④ Snap ring

BR-HT

Dimensions in mm

Model	Bore Size H7	Torque Capacity Nm	Inner Race Overrunning Speed r/min Min.	Inner Race Overrunning Speed r/min Max.	Max. Engage-ment r/min	A	B	C	D H7	E	Mounting Holes PCD G	Mounting Holes Q'ty-Size Q-R	Removal Holes Q'ty-Size S-T	F	Mass kg/pc	H min.	M max.	Chamfer N
BR15HT-R31A	#20	105	880	3,600	550	24	25	85	55	30	70	6-M6	2-M6	17.0	0.8	45	3	1
BR18HT-R38A	#25	155	850	3,600	500	24	25	90	62	37	75	6-M6	2-M6	17.0	0.9	50	3	1
BR20HT-S20B	20	225	850	3,600	400	35	35	90	66	41	78	6-M6	2-M6	25.0	1.3	53	4	1
BR25HT-B46B	25 30	400	800	3,600	380	35	35	95	70	45	82	6-M6	2-M6	25.0	1.4	58	4	1
BR30HT-S30B	30	500	740	3,600	360	35	35	100	75	50	87	6-M6	2-M6	25.0	1.5	64	4	1
BR30HT-R51B	25 30 35 36	500	740	3,600	360	35	35	105	75	50	90	6-M6	2-M6	25.0	1.8	64	4	1
BR35HT-B56B	35 40	600	710	3,600	340	35	35	110	80	55	96	8-M6	2-M6	25.0	1.9	70	4	1
BR38HT-R61A	30 35 40 #45	425	740	3,600	400	25	25	120	85	60	105	6-M8	2-M8	19.0	1.8	74	3	1
BR40HT-S40B	40	850	670	3,600	320	35	35	125	90	65	108	8-M8	2-M8	25.0	2.4	82	4	1
BR40HT-R66B	35 40 45 #48	850	670	3,600	320	35	35	132	90	65	115	8-M8	2-M8	25.0	2.9	82	4	1
BR45HT-S45B	45	950	640	3,600	310	35	35	130	95	70	112	8-M8	2-M8	25.0	2.6	86	4	1
BR48HT-R76B	45 50 55 #60	1,100	620	3,600	300	35	35	140	100	75	125	8-M8	2-M8	25.0	3.3	92	4	1
BR50HT-B86B	40 45 50 55 60 65 #70	1,450	590	3,600	280	40	40	150	110	85	132	8-M8	2-M8	25.0	4.3	103	6.5	1
BR58HT-R101B	55 70 #80	1,800	550	3,600	260	50	50	175	125	100	155	8-M10	2-M10	25.0	6.7	117	11.5	1
BR60HT-B85A	45 50 60 65	2,400	420	3,600	230	60	50	175	125	92	155	8-M10	2-M10	36.0	7.6	110	6	1
BR70HT-B100A	45 50 55 60 70 75 #80	3,150	390	3,600	220	60	50	190	140	107	165	12-M10	2-M10	36.0	9.2	125	6	1.5
BR80HT-S80A	80	5,000	440	3,600	200	70	60	210	160	127	185	12-M10	2-M10	36.0	12	148	11	1.5
BR80HT-B120B	60 65 70 75 80 95	7,000	310	3,600	160	70	60	210	160	127	185	12-M10	2-M10	50.0	13	148	4	1.5
BR90HT-S90A	90	6,000	410	3,000	190	80	70	230	180	147	206	12-M12	2-M12	36.0	16	170	16	2
BR90HT-B140B	65 90 100 110	9,000	300	3,000	150	70	70	245	180	147	218	12-M12	2-M12	50.0	20	170	9	2
BR95HT-S100C	100	20,500	240	2,700	130	90	80	290	210	177	258	12-M16	2-M16	63.0	33	200	7.5	2
BR95HT-R170C	70 85 90 100 120 130	20,500	240	2,700	130	80	80	290	210	177	258	12-M16	2-M16	63.0	35	200	7.5	2
BR98HT-R200C	130 155	27,000	230	2,100	110	80	80	310	240	207	278	12-M16	2-M16	63.0	33	230	7.5	2
BR100HT-S100A	100	11,000	440	2,700	210	90	80	290	210	143	258	12-M16	2-M16	52.6	28	200	11.5	2
BR130HT-S130A	130	16,000	400	2,400	190	80	80	322	240	173	278	12-M16	2-M16	52.6	33	210	11.5	2
BR180HT-S180A	180	32,000	300	1,300	160	90	80	412	310	243	360	12-M20	2-M20	53	56	280	11.5	2
BR180HT-S180C	180	53,000	250	1,300	120	120	120	422	310	243	370	16-M20	2-M20	83	85	280	16.5	2
BR180HT-S180WA	180	64,000	300	1,300	160	160	160	412	310	243	360	12-M20	2-M20	106	107	280	30	2
BR180HT-S180WC	180	106,000	250	1,300	120	240	240	425	310	243	370	16-M20	2-M20	166	174	280	35	2
BR180HT-R240A	185	32,000	220	1,300	110	90	80	400	310	243	360	12-M20	2-M20	53	50	280	11.5	2
BR180HT-R240D	185	64,000	210	1,300	100	120	125	420	310	243	370	16-M24	2-M24	96	84	280	12.5	2
BR180HT-R240WB	185	70,000	220	1,300	110	160	160	412	310	243	360	24-M20	2-M20	140	100	280	8	2
BR180HT-R240WD	185	128,000	210	1,300	100	240	240	425	310	243	370	24-M24	2-M24	192	163	280	22	2
BR190HT-R260A	205	39,000	200	1,300	95	105	80	430	330	263	380	16-M20	2-M20	53	60	300	11.5	2
BR220HT-S220A	220	45,000	280	1,100	140	105	80	470	360	293	410	16-M20	2-M20	53	74	330	11.5	2
BR220HT-S220C	220	70,000	230	1,100	110	120	120	470	360	293	410	24-M20	2-M20	83	100	330	16.5	2
BR220HT-S220WA	220	90,000	280	1,100	140	160	160	480	360	293	410	18-M24	2-M24	106	141	330	25	2
BR220HT-S220WC	220	140,000	230	1,100	110	240	240	490	360	293	410	20-M30	2-M30	166	215	330	35	2
BR220HT-R290B	230	60,000	195	1,100	115	105	80	460	360	293	410	16-M20	2-M20	70	87	330	3	2
BR220HT-R290D	230	92,000	190	1,100	95	120	110	460	360	293	410	16-M20	2-M20	96	146	330	5	2

BR-HT SERIES CAM CLUTCH

Dimensions in mm

Model	Bore Size H7	Torque Capacity Nm	Inner Race Overrunning Speed r/min		Max. Engage-ment r/min	A	B	C	D H7	E	Mounting Holes		Removal Holes	F	Mass kg/pc	H min.	M max.	Chamfer N
			Min.	Max.							PCD G	Q'ty-Size Q-R	Q'ty-Size S-T					
BR220HT-R290WB	230	120,000	195	1,100	115	160	160	480	360	293	410	18-M24	2-M24	140	120	330	8	2
BR220HT-R290WD	230	184,000	190	1,100	95	240	240	490	360	293	425	20-M30	2-M30	192	206	330	22	2
BR230HT-R310B	240	70,000	190	1,100	90	110	125	497	380	313	450	24-M20	2-M20	70	110	350	25.5	3
BR230HT-R310D	240	110,000	185	1,100	80	120	125	497	380	313	450	24-M20	2-M20	96	116	350	12.5	3
BR240HT-S240A	240	54,000	220	1,100	120	105	90	500	390	323	440	16-M20	2-M20	53	91	360	16.5	3
BR240HT-S240C	240	88,000	185	1,100	110	120	120	520	390	323	440	16-M24	2-M24	83	129	360	16.5	3
BR240HT-S240WA	240	108,000	220	1,100	120	180	180	505	390	323	440	24-M24	2-M24	106	161	360	35	3
BR240HT-S240WC	240	176,000	185	1,100	110	240	240	530	390	323	440	24-M30	2-M30	166	249	360	35	3
BR240HT-R320B	250	77,000	190	1,100	115	105	80	490	390	323	440	16-M24	2-M24	70	78	360	3	3
BR240HT-R320D	250	113,000	180	1,100	105	120	120	520	390	323	440	16-M24	2-M24	96	128	360	10	3
BR240HT-R320WB	250	154,000	190	1,100	115	180	180	505	390	323	440	24-M24	2-M24	140	173	360	18	3
BR240HT-R320WD	250	226,000	180	1,100	105	240	240	530	390	323	460	24-M30	2-M30	192	259	360	22	3
BR260HT-S260A	260	66,000	250	1,000	130	105	105	550	430	363	500	16-M24	2-M24	57	122	400	22	3
BR260HT-S260C	260	110,000	190	1,000	100	125	125	580	430	363	500	24-M24	2-M24	87	170	400	17	3
BR260HT-S260WA	260	132,000	250	1,000	130	210	210	550	430	363	500	24-M24	2-M24	114	235	400	46	3
BR260HT-S260WC	260	220,000	190	1,000	100	250	250	580	430	363	500	24-M30	2-M30	174	323	400	36	3
BR260HT-R360D	280	150,000	170	1,000	90	125	120	540	430	363	500	24-M24	2-M24	100	127	400	8	3
BR260HT-R360WB	280	196,000	175	1,000	95	210	210	550	430	363	500	24-M24	2-M24	148	227	400	29	3
BR260HT-R360WD	280	300,000	170	1,000	90	250	250	580	430	363	500	24-M30	2-M30	200	311	400	23	3
BR300HT-S300A	300	82,000	230	1,000	120	105	105	630	480	413	560	24-M24	2-M24	53	163	460	22	3
BR300HT-S300C	300	140,000	200	1,000	95	125	125	630	480	413	560	24-M24	2-M24	83	198	460	17	3
BR300HT-S300WA	300	164,000	230	1,000	120	210	210	630	480	413	560	24-M24	2-M24	106	324	460	46	3
BR300HT-R410D	320	195,000	165	1,000	85	125	120	630	480	413	560	24-M24	2-M24	100	186	460	8	3
BR300HT-R410WB	320	250,000	165	1,000	85	210	210	630	480	413	560	24-M24	2-M24	148	314	460	29	3
BR300HT-R410WD	320	366,000	165	1,000	85	220	220	630	480	413	560	24-M30	2-M30	200	324	460	8	3

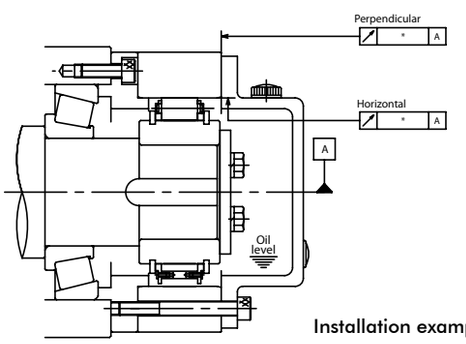
BR60HT~BR300HT: Non-stock item

Notes:

1. The maximum transmissible torque is twice the Torque Capacity.
2. Keyway No Mark on Bore Size: ISOR773/DIN6885.1 #Mark on Bore Size: DIN6885.3
3. Min. overrunning speed of inner race should not be below under continuous operation.
4. Max. engagement speed must not be exceeded when transmitting torque.

Installation and Usage

1. We recommend using shaft tolerances of h6 or h7 for Cam Clutch installation.
2. Use ISO R773/DIN 6885.1 Parallel key or DIN6885.3 Parallel key for models marked# on page 34. Ensure that the key does not move in the keyway. A loose key will damage the Cam Clutch.
3. When installing the Cam Clutch over a shaft, please follow the procedure outlined below. Never strike the clutch with a steel hammer or apply unnecessary impact loads.
   1) Verify Cam Clutch direction of rotation. The arrow on the inner race shows the free running (cam disengaged) direction. Make sure that the direction of cam engagement matches the intended application.
   2) Tap the inner race lightly with a soft hammer moving around the race circumference so the Cam Clutch moves slowly and uniformly onto the end of the shaft. Make sure that the outer race does not become dislodged.
   3) Place an end plate over the inner race and use the mounting bolts to pull the Cam Clutch onto the shaft as shown in Installation Method at right.
   4) Fix the end plate securely.
4. If you are installing the outer race first, check the precision of the fit. The tolerances for outer race mounting are shown in the tables at right. Verify that the correct tolerances can be obtained. Out of spec installation could damage the Cam Clutch.
5. Non-lubricated when shipping please lubricate before use. To lubricate the Cam Clutch, apply lubricant at the outer circumference of the inner race (see Installation example). Avoid over lubrication, as it will cause the Cam Clutch to generate excessive heat.
6. BR-HT Series accept lubricant generally used in gear reducer. It is possible to mount BR-HT directly in gearbox without separate lubrication.
7. When installing a cover or seal support over the outer race, use bolts with a tensile rating of 10.9 or greater. Use a sealing agent or packing material between the mating services to prevent leakage.



Installation example

Parallel Tolerances

Dimensions in mm

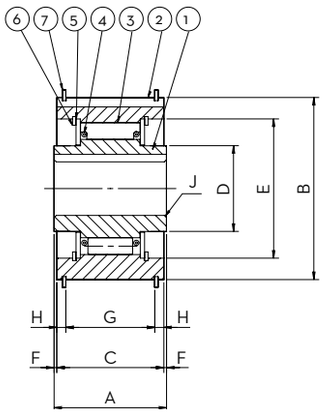
Model	Parallelism
BR15HT to BR58HT	0.10
BR60HT to BR98HT	0.15
BR100HT and above	0.25

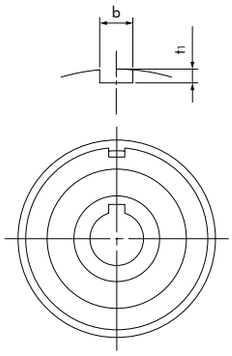
Right Angle Tolerances

Dimensions in mm

Model	Angularity
BR15HT to BR58HT	0.04
BR60HT to BR98HT	0.06
BR100HT and above	0.08

MDEU SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam, Roller
4. Spring
5. Plate
6. Spirolox (hole)
7. Spirolox (shaft)

MDEU

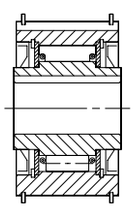
Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Indexing cycle/min	Max. Radial Load When Overrunning N	Bore Size H7	Inner Race Keyway	A	B h7	C	D	E	F	G	H	J	Outer Race Keyway b P10	Outer Race Keyway t_1	Approx. Mass kg/pc
MDEU15	70	600	100	610	15	5 x 2.3	39	55	37	25	42	1	30	3.5	0.5	5 x 3.0		0.52
MDEU20	150	500	100	910	20	6 x 2.8	42	68	40	32	52	1	33	3.5	0.5	6 x 3.5		0.88
MDEU25	230	450	100	1060	25	8 x 3.3	42	80	40	40	65	1	33	3.5	0.5	8 x 4.0		1.1
MDEU30	390	400	100	1400	30	8 x 3.3	50	90	48	45	72	1	36	6.0	1.0	8 x 4.0		1.7
MDEU35	460	350	100	1500	35	10 x 3.3	50	100	48	50	80	1	36	6.0	1.0	10 x 5.0		2.1
MDEU40	530	350	100	1580	40	12 x 3.3	50	110	48	55	78	1	36	6.0	1.0	12 x 5.0		2.7
MDEU45	690	300	100	1770	45	14 x 3.8	50	120	48	65	88	1	36	6.0	1.0	14 x 5.5		3.2
MDEU50	870	300	100	1880	50	14 x 3.8	50	130	48	70	95	1	36	6.0	1.0	14 x 5.5		3.8
MDEU55	1100	250	100	2850	55	16 x 4.3	60	140	58	80	105	1	46	6.0	1.0	16 x 6.0		5.3
MDEU60	1500	250	100	3060	60	18 ×4.4	60	150	58	90	115	1	46	6.0	1.0	18 x 7.0		6.1
MDEU70	1900	200	100	3470	70	20 x 4.9	60	170	58	100	125	1	46	6.0	1.0	20 x 7.5		7.9
MDEU80	2300	200	100	3600	80	22 x 5.4	60	190	58	110	140	1	46	6.0	1.0	22 x 9.0		9.7

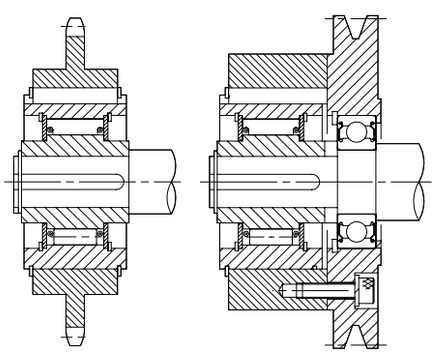
Installation and Usage

1. The tolerance of the sprocket, gear or pulley bore shall be H6 or H7. The recommendable tolerance of shaft is h6 or h7.
2. Usage of parallel keyways between outer race and sprocket, gear or pulley as well as clutch and shaft, is compulsory.
3. When installing the clutch on the shaft, apply pressure only on the inner race.
4. If thrust loads are encountered, other devices which release loads should be applied.
5. When installing a pulley where the radial load is larger than the max. given load of the clutch, we recommend the use of lateral bearings.
6. In arduous environments it is recommended to use MDEU-2GD Series, which have dust seals, in order to prevent contamination. The maximum overrunning speed of 2GD Series is 80% of the standard MDEU Series.

Option

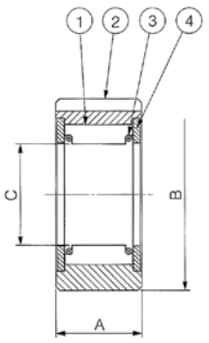


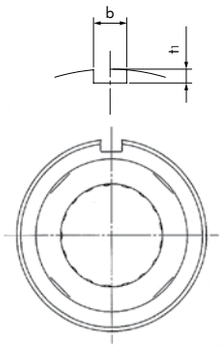
MDEU-2GD



Installation example

200 SERIES CAM CLUTCH





① Cam
② Outer race
③ Spring
④ Side plate

Dimensions in mm

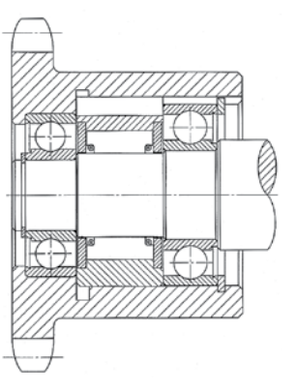
Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Drag Torque Nm	Max. Indexing cycle/min	A (-0.06 to +0)	B	C (-0.025 to +0)	Outer Race Keyway b P10	Outer Race Keyway t1	Use with JIS Bearing Number	Approx. Mass kg/pc
B 203	39.2	2400	500	0.098	150	25.0	40 $^{-0.014}_{-0.039}$	16.510	4	2.5	6203	0.23
B 204	58.8	2400	500	0.098	150	25.0	47 $^{-0.014}_{-0.039}$	18.796	5	3.0	6204	0.34
B 205	98	1800	400	0.196	150	25.0	52 $^{-0.017}_{-0.042}$	23.622	5	3.0	6205	0.45
B 206	235	1800	350	0.196	150	28.0	62 $^{-0.017}_{-0.042}$	32.766	7	4.0	6206	0.68
B 207	372	1800	300	0.196	150	28.0	72 $^{-0.017}_{-0.042}$	42.088	7	4.0	6207	0.80
B 208	549	1800	200	0.196	150	32.0	80 $^{-0.017}_{-0.042}$	46.761	10	4.5	6208	0.91
B 209	549	1800	200	0.196	150	32.0	85 $^{-0.020}_{-0.045}$	46.761	10	4.5	6209	0.95
B 210	784	1200	200	0.294	150	32.0	90 $^{-0.020}_{-0.045}$	56.109	10	4.5	6210	1.00
B 211*	784	1200	200	0.294	150	32.0	100 $^{-0.020}_{-0.050}$	56.109	10	4.5	6211	1.40
B 212*	1230	1200	180	0.294	150	42.0	110 $^{-0.020}_{-0.050}$	70.029	10	4.5	6212	1.80
B 213*	1230	1200	180	0.294	150	42.0	120 $^{-0.020}_{-0.050}$	70.029	10	4.5	6213	2.30
B 214*	1390	1000	180	0.392	150	42.0	125 $^{-0.024}_{-0.060}$	79.356	12	4.5	6214	2.40

*= Non-stock item

Installation and Usage

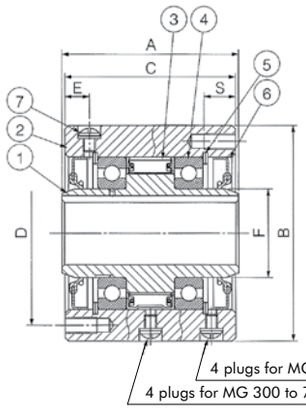
1. 200 Series Cam Clutch is shaft mounted, so the shaft on which the clutch is mounted must be hardened to HRC 56-60 and 1.5 mm case depth after grinding. Grind to 1.5S (16micro-inch) finish. The taper of this shaft should not exceed 0.01 mm per 50 mm.
2. For installation of the clutch, mount the clutch with bearings at both sides or on one side in order to obtain concentricity between the shaft and the clutch outer race and to take up radial or thrust loads which may work on the outer race or the shaft. See the installation example.
3. The clutch should be mounted on the shaft by rotating it in the direction marked by the arrow shown on the clutch plate. Do not apply shock to the clutch by hammering.
4. The clutches have the same outside diameters as the bearings shown in the table above. Bore tolerance of the housing in which the clutch is assembled should be within the range shown in the table.
5. For indexing, oil lubrication is recommended.
6. Concentricity of the housing bore and shaft should be within 0.05 mm.
7. Key profile should be in accordance with JIS B1301-1959.

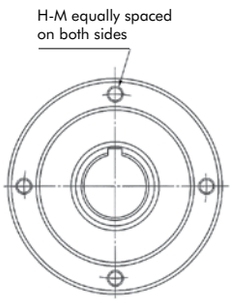
Model	Tolerance of housing bore (mm)
B 203, B 204	+0 to +0.025
B 205, B 206, B 207, B 208	+0 to +0.030
B 210, B 211, B 212, B 213	+0 to +0.035
B 214	+0 to +0.040



Installation example

MG SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam cage assembly
4. Bearing
5. Spirolox
6. Oil seal
7. Lubrication filler plug

MG

Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B h7	C	D	E	F	S	H-M No. of Tapped Holes x Size x Pitch	Lubrication Filter Plug Size x Pitch	Oil cc	Approx. Mass kg/pc
MG300	314	2800	900	0.225	19	5 x 2	63	77	60	66	10.4	28.5	13	4 x M 6 x P1.00	M 6 x P1.0	25	1.8
MG400	539	2600	800	0.284	22	5 x 2	70	88	67	73	10.7	31.7	16	4 x M 8 x P1.25	M 6 x P1.0	30	2.7
MG500	1620	2400	800	0.510	31.5	7 x 3	89	108	86	92	12.3	44.4	16	4 x M 8 x P1.25	M 6 x P1.0	50	5.0
MG600	3140	2100	700	0.843	50	12 x 3.5	95	136	92	120	12.8	69.8	16	6 x M 8 x P1.25	M 6 x P1.0	80	8.6
MG700*	5880	1500	500	1.70	70	18 x 6	127	180	124	160	19.8	101.5	20	6 x M10 x P1.5	M 6 x P1.0	135	19.5
MG750*	9510	1800	600	3.43	85	24 x 6	153	200	150	175	75	110	25	8 x M14 x P2.0	M 8 x P1.25	400	37.0
MG800*	17600	1300	475	5.39	110	28 x 7	158	250	155	220	77.5	140	25	8 x M16 x P2.0	M 8 x P1.25	500	46.5
MG900*	24500	1200	400	6.76	135	35 x 9	165	300	160	265	80	170	32	10 x M16 x P2.0	M 8 x P1.25	620	70.5
MG1000*	33800	1200	325	8.13	160	38 x 10	188	370	180	325	90	200	32	12 x M16 x P2.0	M 8 x P1.25	850	108.5
MG1100*	78400	350	-	5.19	185	45 x 14	260	470	250	415	125	260	40	12 x M20 x P2.5	M12 x P1.75	2900	250
MG1200*	95100	300	-	17.6	200	45 x 14	260	500	250	440	125	280	45	12 x M24 x P3.0	M12 x P1.75	3000	280
MG1300*	176400	250	-	18.7	250	56 x 17.5	280	600	260	530	130	340	50	12 x M30 x P3.5	M12 x P1.75	3800	410

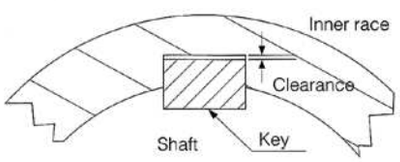
*= Non-stock item

Installation and Usage

1. MG Series Cam Clutch is used for high speed inner race overrunning applications.
2. For attaching a pulley, a gear, or sprocket to the clutch, insert the clutch into the hub of the device, and screw the bolts (high tension) into the tapped holes on the clutch end. The tolerance bore of the hub should be H6 or H7 or JIS standard.
3. Recommended shaft tolerances are as follows:

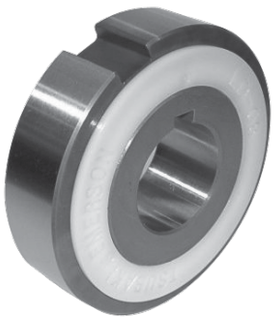
Model	Tolerance of housing bore (mm)
MG300, MG400	+0 to +0.021
MG500, MG600	+0 to +0.025
MG700	+0 to +0.030
MG750, MG800	+0 to +0.035
MG900	+0 to +0.040

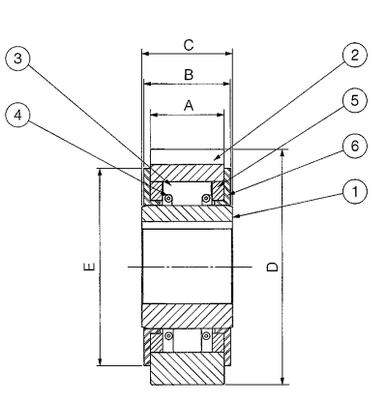
4. The key should be in accordance with JIS B1301-1959. However, for MG750 and above models, a key is attached.
5. Use only a parallel key to secure the clutch. Never use a tapered key.
6. If the clutch receives shock loads or is designed for use at full torque capacity, it is better to use a hardened key and shaft.
7. Allow for a clearance between the top of the clutch keyway and the top of the key for pressure ventilation. In case of MG Series a pressure ventilation hole is provided on the keyway of the clutch inner race.
8. When mounting the clutch on a shaft, apply pressure to the inner race, but never to the outer race.

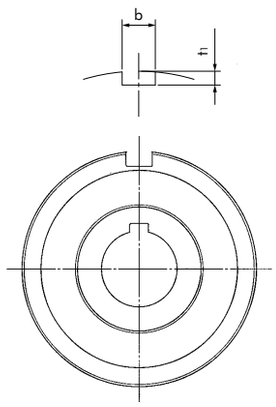


9. Thrust load should be taken up by other devices, not by the Cam Clutch.
10. When using MG Series at medium and high speeds, pay attention to heating. Longevity is shortened if the temperature of Cam Clutch outer race rises to over 70°C. In this case, use a different model or provide an oil bath or forced lubrication.
11. Oil is not sealed in at the time of shipment. Supply an appropriate amount of oil before use.
12. When placing an order for MG Series Cam Clutch model MG750 and above, please inform TSUBAKI of the overrunning speed you use.

LD SERIES CAM CLUTCH







1. Inner race
2. Outer race
3. Cam, Roller
4. Spring
5. Side plate
6. Thrust metal

LD

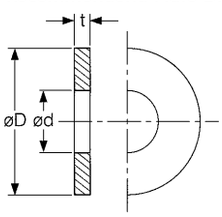
Dimensions in mm

Model	Torque Capacity Nm	Max. Overrunning Speed r/min	Max. Indexing cycle/min	Max. Radial Load When Overrunning N	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B	C	D	E	Outer Race Keyway b P10	Outer Race Keyway t1	Approx. Mass kg/pc
LD04	5.88	300	100	200	0.196	10	4 x 1.5	19.5	23.9	24	47 -0.014 -0.039	40	5 x 3		0.25
LD05	9.80	300	100	300	0.294	14	5 x 2	19.5	23.9	24	52 -0.017 -0.042	45	5 x 3		0.30
LD06	19.6	200	100	500	0.294	20	5 x 2	19.5	23.9	24	62 -0.017 -0.042	52	7 x 4		0.40
LD07	29.4	200	100	700	0.392	25	7 x 3	19.5	23.9	24	72 -0.017 -0.042	62	7 x 4		0.55
LD08	49.0	200	100	800	0.490	30	7 x 3	19.5	23.9	24	82 -0.017 -0.042	70	10 x 4.5		0.65

Installation and Usage

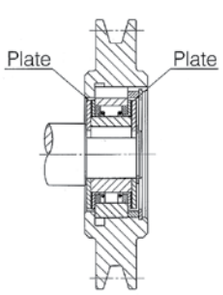
1. LD Series Cam Clutch is prelubricated with special grease and are ready for use. No additional lubricant is required.
2. When installing the clutch on the shaft, press the clutch inner race slightly with a soft hammer to prevent the clutch outer race from slipping away from the inner race.
3. Be sure to attach the plate. This prevents the outer race from slipping away from the inner race. See recommended dimensions of the plate listed on the right.
4. For lubrication, coat the plate and thrust plate with grease.
5. Never apply thrust loads to the clutch. Other devices should be provided to take up thrust loads applied to the clutch.
6. Key should be in accordance with JIS B1301-1959.
7. The bores of the pulley, sprocket, etc., should have a tolerance of H6 or H7.

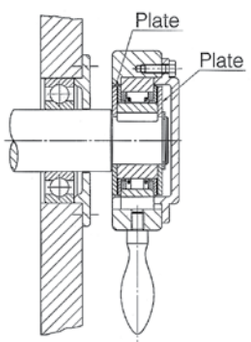
Recommendend Plate Dimensions

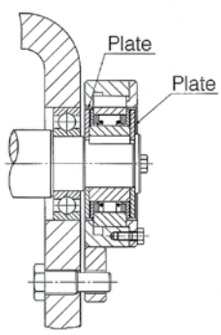


Model	t	ød	øD
LD04	2	10	40
LD05	2	14	45
LD06	3	20	52
LD07	3	25	62
LD08	3	30	70

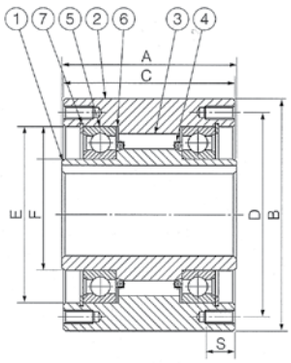
Installation example

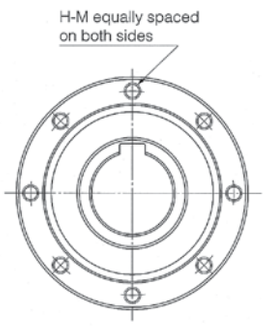






MZ SERIES CAM CLUTCH





1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing (ZZ type)
6. Side plate
7. Spirolox

MZ

Dimensions in mm

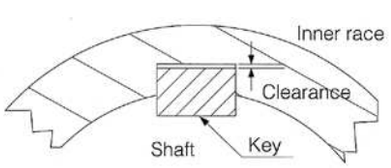
Model	Torque Capacity Nm	Max. Overrunning Speed Inner Race r/min	Max. Overrunning Speed Outer Race r/min	Max. Indexing cycle/min	Drag Torque Nm	Bore Size H7	Inner Race Keyway	A	B	C	D	E M6	F	G	H-M No. of Tapped Holes x Size x Pitch	S	Approx. Mass kg/pc
MZ15*	186	1800	900	150	0.20	15	5 x 2.3	62	68	60	58	47	25	5.5	6 x M5 x P 0.8	10	1.4
MZ17*	215	1700	800	150	0.20	17	5 x 2.3	66	75	64	64	52	28	6.3	6 x M5 x P 0.8	10	1.8
MZ20	323	1600	700	150	0.29	20	6 x 2.8	67	80	65	68	55	30	7.6	6 x M6 x P 1.0	12	2.0
MZ30-22*	735	1500	500	150	0.39	22	6 x 2.8	82	100	80	88	75	45	8.9	6 x M8 x P1.25	16	3.7
MZ30-25*						25	8 x 3.3										
MZ30						30	10 x 3.3										
MZ35	1080	1400	300	150	0.49	35	10 x 3.3	87	110	85	95	80	50	8.7	6 x M8 x P1.25	16	4.8
MZ45-40*	1620	1400	300	150	0.69	40	12 x 3.3	92	125	90	110	95	60	8.4	8 x M8 x P1.25	16	6.2
MZ45						45	14 x 3.8										
MZ60-50*	2110	1200	250	150	0.98	50	14 x 3.8	102	155	100	140	125	80	9.1	8 x M8 x P1.25	16	10.2
MZ60-55*						55	16 x 4.3										
MZ60						60	18 x 4.4										
MZ70-65*	3040	1100	250	150	1.27	65	18 x 4.4	105	175	103	162	145	95	8.6	8 x M8 x P1.25	16	13.2
MZ70						70	20 x 4.9										

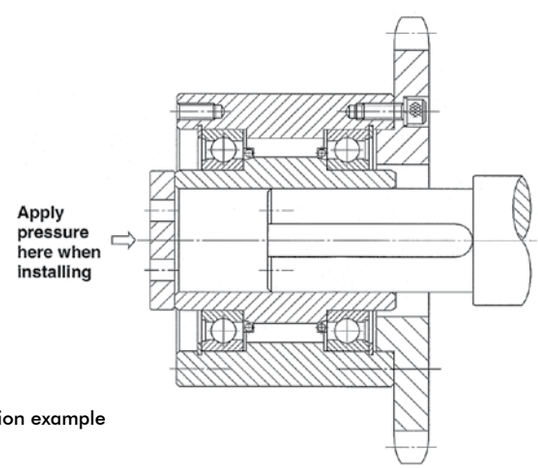
*= Non-stock item

Installation and Usage

1. MZ Series Cam Clutch is shielded by shield bearings on both ends, packed with a special grease, and are ready for use. No additional lubricant is required.
2. For attaching pulleys, gears or sprockets to the clutches, insert hubs (with f7 tolerance of ISO R773) along the inner surface of the outer race and screw the bolts (high tension) into the tapped holes on the clutch end.
3. Recommended shaft tolerances are shown in the table.
4. External thrust load should be supported by other devices, not by the Cam Clutch.
5. Use only a parallel key to secure the clutch to the shaft. Do not use a tapered Key.
6. When mounting the clutch onto the shaft, apply pressure to the inner race but never to the outer race.
7. For vertical mounting, please consult TSUBAKI.
8. Ambient temperature range is -5°C to +40°C.
9. Key to be used should be in accordance with ISO R773. (DIN 6885.1)

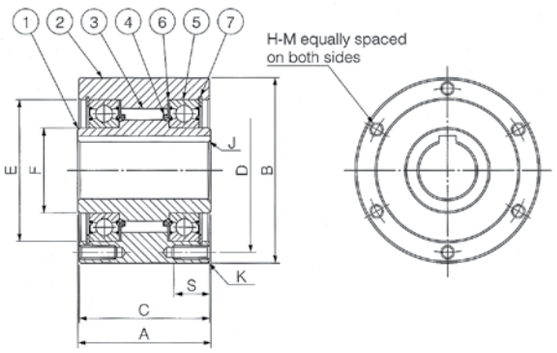
Model	Nominal diameter (mm)	Relative shaft tolerance (mm)
MZ15	15	-0.018 to +0
MZ17	17	-0.018 to +0
MZ20	20	-0.021 to +0
MZ30	30	-0.021 to +0
MZ35	35	-0.025 to +0
MZ45	45	-0.025 to +0
MZ60	60	-0.030 to +0
MZ70	70	-0.030 to +0





Installation example

MZ-G SERIES CAM CLUTCH



1. Inner race
2. Outer race
3. Cam
4. Spring
5. Bearing (ZZ type)
6. Side plate
7. Spirolox

MZ-G

Dimensions in mm

Model	Bore size H7	Inner Race Keyway	J	Inner Race Width A	Outer Race Width C	B h7	F	E	K	D	S	H-M No. of Tapped Holes x Size x Pitch	Approx. Mass kg/pc
MZ15G*	15	5 x 2.3	0.8	55	53	68	25	47	1.3	58	10	6 x M5 x P0.8	1.3
MZ17G*	17	5 x 2.3	0.8	63	61	75	28	52	1.3	64	10	6 x M5 x P0.8	1.7
MZ20G*	20	5 x 2.3	0.8	64	62	80	30	55	1.3	68	12	6 x M6 x P1.0	1.9
MZ30G-22	22	8 x 3.3	1.0	70	68	100	45	75	1.3	88	16	6 x M8 x P1.25	3.2
MZ30G-25*	25	8 x 3.3	1.0										
MZ30G	30	10 x 3.3	1.0										
MZ35G	35	10 x 3.3	1.0	78	76	110	50	80	1.3	95	16	6 x M8 x P1.25	4.4
MZ45G-40*	40	12 x 3.3	1.3	87	85	125	60	95	1.3	110	16	8 x M8 x P1.25	6.2
MZ45G*	45	12 x 3.3	1.3										
MZ60G-50*	50	14 x 3.8	1.5	90	88	155	80	125	1.3	140	16	8 x M8 x P1.25	9.5
MZ60G-55*	55	16 x 4.3	1.5										
MZ60G*	60	18 x 4.4	1.5										
MZ70G-65*	65	18 x 4.4	1.8	105	103	175	95	145	1.3	162	16	8 x M8 x P1.25	13.1
MZ70G*	70	20 x 4.9	1.8										

*= Non-stock item

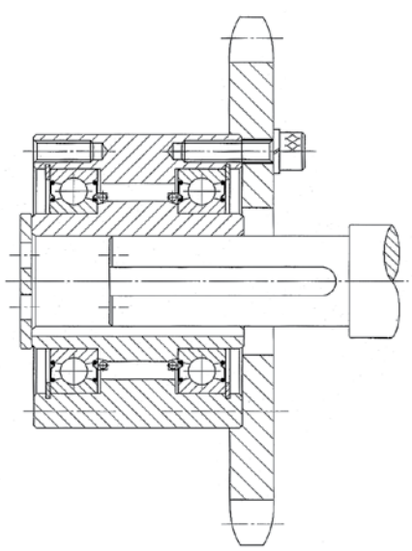
Capacities

Model	Torque Capacity Nm	Max. Overrunning Speed		Max. Indexing cycle/min	Drag Torque Nm
		Inner Race r/min	Outer Race r/min		
MZ15G*	186	1800	900	150	0.20
MZ17G*	215	1700	800	150	0.20
MZ20G*	323	1600	700	150	0.29
MZ30G-22	735	1500	500	150	0.39
MZ30G-25*					
MZ30G					
MZ35G	1080	1400	300	150	0.49
MZ45G-40*	1620	1400	300	150	0.69
MZ45G*					
MZ60G-50*	2110	1200	250	150	0.98
MZ60G-55*					
MZ60G*					
MZ70G-65*	3040	1100	250	150	1.27
MZ70G*					

*= Non-stock item

Installation and Usage

1. When mounting sprockets or gears to the outer race, use the outer race outer dimension (dimension B) to make a centering flange in the gear or sprocket. Then attach firmly with bolts of tensile strength 10.9 or greater to the tapped holes in the outer race.
2. Please refer to MZ Series for usage and other types of installations.



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