ITJ®
BEARINGS



日本靜音軸受製造株式會社

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产品介绍

单向离合器俗称超载离器,也是仅能单一方向(顺时针方向或逆时针方向)传动的机械传动基础件。

当动力源驱动被动元件时只能单一方向传动，若动力源转变方向时，（如顺时针变为逆时针方向），被动元件则自动脱离不产生任何动力传送的功能。

单向离合器有两种运动方式

□**扭矩传递或称接合（楔合）**

□**空转或称超越（解脱）**

单向离合器具备以下功能

□**超越**

当单向离合器的动力输出部分（内环或外环）转速比动力源（外环或内环）还快时，离合器处于解脱状态，内外环没有任何连动关系，此谓单向离合器的单向超载功能。

□**定位（分度）**

将直线往复运动转换成旋转轴的圆周步进运动，此谓单向离合器的分度功能。

□**逆止**

将单向离合器用于物科输送设备（如皮带输送机、斗式提升机等），以防止设备在无动力源时倒退或反转。互谓单向离合器的单向逆止功能。

INTRODUCTION

Freewheels are directional couplings,which means that the driving memberrotates thd driven member in one direction,while automatically disengaging itself from the driven member.When the direction of rotation is reversed.

The two operating states are

□**Transmission of torque(engagement)**

□**Idling(overrunning)**

Freewheels may be employed as.

□**Overrunning clutch**

The freewheel dicengages automatically when the driven member rotates faster than the driving member.

□**Indexing clutch**

The freewheel allows the conversion of reciprocating motion into intermittent rotational movement.

□**Backstop clutch**

The freewheel allows rotation in one direction only.It overruns continuously during operation. The freewheel prevents reverse rotation of the drive is disconnected.

基本形式有

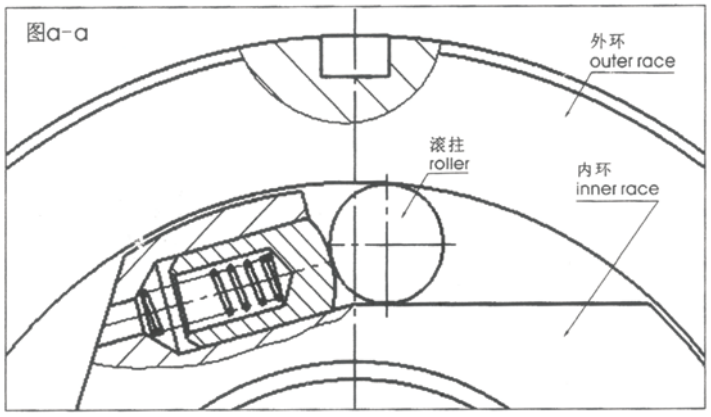
The basic version are

□滚柱式单向离合器：

滚柱式单向离合器为外环与内环之间以圆柱形滚子支撑，而内环安装有弹簧及顶销，由顶销产生一个持续的推力，将滚柱往外挤压便构成了外环、内环及滚柱的接触结构如下图，由于滚柱与内环、外环的接触为持续不间断的，故可立即的反应与传输扭矩力。此种滚柱型设计坚固耐用、可靠性高，可适用各种应用范围。例如超运转速度离合器、定位离合器或防止逆转离合器（如图a–a）。

□Roller freewheels:

These freewheels feature a cylindrical outer race and an inner consisting of ramps on which rollers are located .Springs and plungers ensure a permanent conact between the different elements for an instant torque transmission.This rugged reliable versatile design can be used as an overrunning clutch,indexing clutch or backstop(See figure a–a).

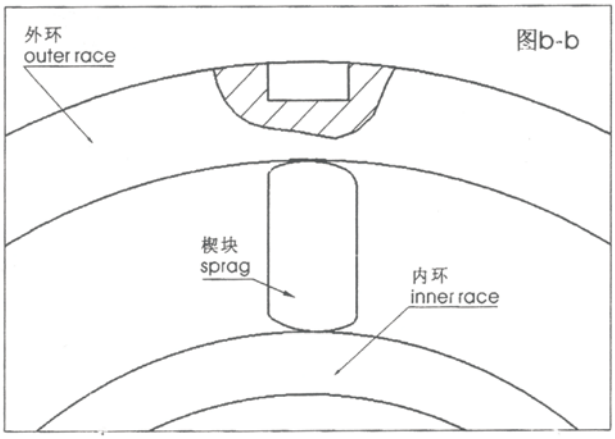


□楔块式单向离合器：

此型单向离合器的内环及外环均为圆柱形环面。楔块安置在保持器中来支撑内环与外环，依照楔块与内环、外环的相对运动来达到传递扭力或空转的功能。此种型式可设计出各种形式的楔块及保持器以满足各种不同的特性需求。其特点是传递扭矩大，作用寿命长。（如图b–b）。

□Sprag freewheels:

In this type of freewheel,the two races are cylindrical.The sprags fittes in a cage feature an active profile that ensures engagement or disengagementaccording to the relative motion of the races.It is possible to adapt the design of sprags and cage to get significantly different characteristics from one model to another(See figure b–b).

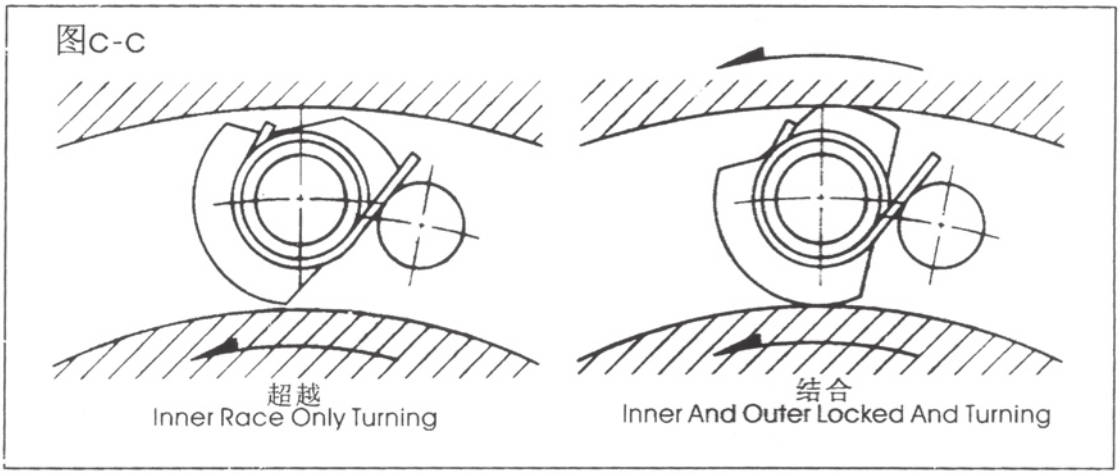


□非接触式单向离合器：

此型设计之特点为楔块固定于楔块保持架中，楔块保持架与超运转速度之环体（如内环或外环）结合。与内环或外环结合的楔块保持架及楔块转动时会产生离心力，此离心力会抵消或大于楔块弹簧的力量，从而使楔块以离心力的方向重新旋转一个角度，而使旋转之内环和外环与楔块保持一个无接触的状态，克服了离合器高速超越回转磨损较大的缺点，可使离合器的使用寿命得以延长（如图c–c）

□NON–CONTACT sprag:

freewheelsSprags in this design are fitted into a cage connected to the overrunning member The sprag configuration is such that its center of gravity is offset to its rotation axis.Centrifugal force creates a lift engaging off moment against an spring,the sprag freewheels rotates freely with absolutely no mechanical contact and overcomes wearing. The result is a greatly increased its service life compared to conventional type at high–speed.(See figure c–c).



产品选用

选用时所需要的条件如下

□超越离合器

马达规格（输入功率）
马达的起动转矩/额定转矩
额定驱动扭矩
运转速度范围
被驱动件的惯量“j”
超运转速度的范围
使用次数（寿命）
轴的直径

□定位离合器

定位运动次数/每分钟
定位运动角度
额定扭矩
被驱动件是惯量“j”
传动件的加速度
使用次数寿命
轴的直径

□防止逆转离合器

后退冲击的扭矩
最大的动态后退撞击扭矩，此扭矩的产生由于物件端点被固定，两端点间的工作产生弹性的作用而发生。
超运转速度的范围
使用次数寿命
轴的直径

SELECTION

The information for selection

□Overrunning clutch

Type of motor
Nmstart/Nmnominal of motors
Nominal driving torque
Range of driving speed
Inertia” j” of the driven masses
Range of overrunning speed
Number of start during service life
Shaft diameter

□Indexing clutch

Number of cycles/min
Index angle
Nominal torque
Inertia ” j” of the driven masses
Accelerations of the driving member
Number of indexes during service life
Shaft diameter

□Backstop clutch

Stroke reverse torque
Maximum dynamic reverse torque,due to elasticity of the locked parts.
Range of overrunning speed
Number of torque applications during service life
Shaft diameter

选用步骤

最标准的方法是按前页所提到的数据资料，使用已知的公式计算出所需的最大工作扭矩。

若无法得到某些数据资料则可使用负载安全系数的方法来计算，此方法较简单，而所求得的结果亦基本相等。

当最大的工作扭矩求得后，再依照所要求的寿命次数，对照选用图表，可得知单向离合器额定扭矩（负载安全系数“f”）。

依照应用例的不同，从防止逆转到定位离合器，其寿命年限内的运动次数均不同，故以负载安全系数“f”为纵坐标的曲线图，可以依照目录扭矩及不同的负载安全系数，求得不同比例的工作扭矩。

$$\text{额定扭矩} = \frac{\text{工作扭矩}}{\text{安全系数}}$$

如（图1）x轴表示运动次数和扭矩，目录上的额定扭矩Tn相等于1×106的运动次数寿命的扭矩。

最大的使用扭矩为额定扭矩的1.7倍，亦相等于4×105运动次数寿命，依照不同的扭矩或运动次数寿命可以从曲线中求得不同的负载安全系数“f”。

SELECTION PROCEDURE

The previously mentioned data will be used to calculate the maximum working torque using kmown mechanical formulas.This way of calculation will be the most accurate.

If some of the data is not available,it will be necessary to work from service factors,an easier method,but more approximate.

When the maximum working torque has been calculated,and kmowing the desired number of torque applications within the lifetime,the unit catalogue torque can be determined from the following curve(load factor”f”).

Depending on application type,from backstop to indexing clutch,the number of cycles within thedesired lifetime will be very different,thus adapting the selection.The ordinate of this curve is the “f” factor,ratio of the working torque over the catalogue torque.

$$Tn = \frac{\text{Working torque}}{f}$$

The x–axis shows the number of cycles or torque applications.The cataloguetorque Tn is a value corresponding to a calculated life time of 1×106torque applications.

The maximum usable torque is 1.7 times the catalogue torque and corresponds to a life time of 100000 cycles.From the desired number of torque applications,theworking factor “f” will be read on the curve.

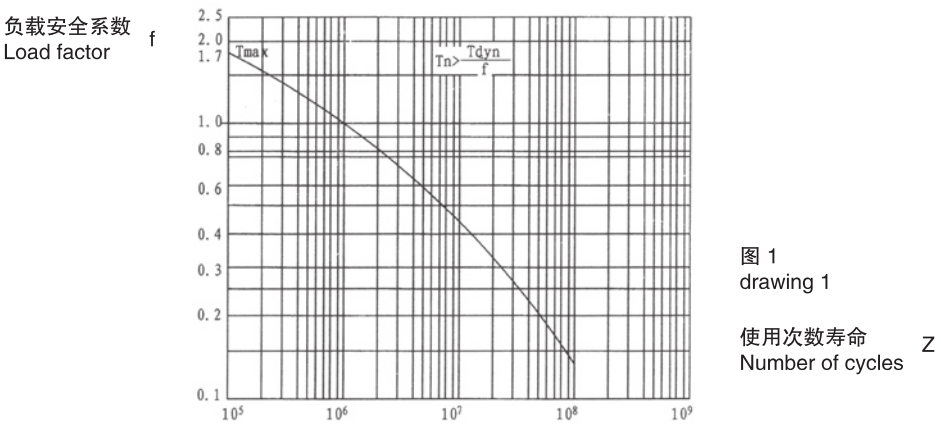


图 1
drawing 1

润滑与保养

各类型号的离合器，在出厂时已加注品质优良的油脂。所以，根据环境和使用条件的不同可在三个月到半年之内不再重新添加油脂。在此期限之后，应定期检查、清洗、更换油脂。建议，每半年更换一次油脂，恶劣环境下应三个月一次。对于直径大于ϕ200mm的离合器，应每半年更换一次油脂。

有些型号的离合器需要用润滑油润滑，对这类型号的离合器，应定期加油，且油面保持一定的高度。选用润滑剂，请注意使用范围。润滑剂中含有石墨、钼之添加剂的，请勿使用。

Lubrication & maintenance

Every type clutches have been lubricated with grease,which grease used in a long life type stability.Therefore no maintenance need from three month to six month according to different of environment and operation. Afterword grease should be checked、cleaned、changed regularly、Recommend changed grease every six month or three month in a dirtyenvironment,to a bore size above 200mm after half year of operation.

Some type clutches lubricated with oil in operation regularly and the level should be checked.Grease and oil including graphite and molybdenum should be avoid and pay attention to limits of to use.

扭矩计算

逆止器的扭矩计算

例如要停止一个带载的倾斜的传送带，电梯或者泵是一个动态的过程。其间会有一个峰值扭矩的出现。而峰值扭矩恰恰决定了逆止器的大小。当前，最有效的方法是假想在自锁过程中会有震动产生，并对该系统进行计算。计算结果取决于转动惯量和弹性系数等的设定值。然而，在很多情况下，由于需考虑的元素太多，振动系统的计算复杂而繁琐，基于我们在经验，在选择扭矩时，我们只是采用如下的经验公式：

M_A=1,75・M_L[Nm]

通常只需给出电机的额定功率，进行如下计算：

M_A=1,75・η^2・9550・P_0/n_{SP}[Nm]

在公式中：

M_A=逆止器的计算扭矩[Nm]

M_L=9550・η・P_L/n_{SP}[Nm]

=满载下的有效扭矩[Nm]

P_L=满载下的有效功率[KW]

=提升高度乘以每秒提升的重量[kN/s]

P_0=电机的额定功率[KW]

n_{SP}=逆止器所在轴的转速[min−1]

η=传动效率系数（详见附表）

在得出计算扭矩后，通过查表和对比逆止器的额定扭矩何计算扭矩，并保证：

$M_N \geq M_A$

M_N=查表所得的逆止器额定扭矩[Nm]

值得注意的是，当电机延逆止器同步动转方向起动时，会产生一个很高的扭矩峰值，该峰值有可能损坏回器。

η的近似值：

安装形式	η	η^2
传送带，倾角 6°	0,71	0,50
传送带，倾角 8°	0,78	0,61
传送带，倾角 10°	0,83	0,69
传送带，倾角 12°	0,86	0,74
传送带，倾角 15°	0,89	0,79
柱塞泵	0,93	0,87
球磨机干式滚筒	0,85	0,72
斗式输送机，升降机	0,92	0,85
锤磨机	0,93	0,87

Determination of Selection Torque

Selection torque for Backstips

Bringing a loaded inclined conveyor,an elevator or a pump to a standstill is a highly dynamic process that incurs high peak torques.Thhese peak torques are decisive for the selection of the backstop.The prior determination of the occurring torque in the case of locking is carried out most safely by using a rotational vibration analysis of the entire system. This,however,requires a knowledge of the rotating masses,the rotational rigidity and all of the excitation moments that occur on the system.In marry cases,a vibrational calculation is too time consuming or you may not have all the necessary data in the configuration phase available.In this case,the selection torque M_A of the backstop should be determined as follows:

M_A=1,75・M_L[Nm]

Often you only have the figures for the motor nominal output P_0[kW]available.Then:

M_A=1,75・η^2・9550・P_0/n_{SP}[Nm]

In these equations:

M_A=Selestion torque of the backstip[Nm]

M_L=9550・η・P_L/n_{SP}[Nm]

=Static backdriving torque of the load referring to the backstop shaft[Nm]

P_L=Lifting capacity of the conveyor system at full load[Nm]

=Lifting helght[m]multiplied by the load that is being conveyed per second[kN/s]

P_0=Nominal power of motor[Nm]

n_{SP}=Speed of backstop shaft[min−1]

η=Efficiency of installation(refer to table)

After calculating M_A the backstip size must be selected in accordance with the catalogue tables in such a way that in all cases this applies:

$M_N \geq M_A$

M_N=Nominal torque of the backstip in accordance with the table values[Nm]

It must be noted that,with a direct motor start in the locking direction of a backstop,very high peak torques can occur which in turn can destroy the backstop.

Approximate values for η:

Type of installation	η	η^2
Conveyor belts,angle up to 6°	0,71	0,50
Conveyor belts,angle up to 8°	0,78	0,61
Conveyor belts,angle up to 10°	0,83	0,69
Conveyor belts,angle up to 12°	0,86	0,74
Conveyor belts,angle up to 15°	0,89	0,79
Screw pumps	0,93	0,87
Ball mills,drying drums	0,85	0,72
Bucket conveyors,elevators	0,92	0,85
Hammer mills	0,93	0,87

超越离合器扭矩计算

由于共振的影响,当超越离合器开始使用时,通常状况下会产生峰值扭矩,特别值得注意的是,在使用异步电动机时,装置的转动惯量非常大时,以及使用弹性联轴器时,峰值扭矩可以达到按电机额定功率计算出的扭矩的几倍.内燃机也很类似,内燃机在政党运行时,由于其工作的不均衡,其峰值扭矩也会大大超过额定扭矩。

通过对整个系统进行转动振动分析可以预先推算出可能出现的最大扭矩峰值。这当然顺先了解旋转质量、扭转刚度和所有作用在系统上的激发扭矩，才能实现。很多情况下，振动计算太过复杂或者项目化阶段时没有全部足够的数据。因此应根据下列方法计算出计算扭矩MA：

$M_A=K\cdot M_L$

在公式中：

M_A=超越离合器的计算扭矩

K=运行参数（详见附表）

ML=满载下的有效扭矩

$=9550\cdot P_0/n_{FR}$

P_0=电机的额定功率[kW]

n_{FR}=同步时，超越离合器的转速[min−1]

在得出计算扭矩后，通过查表和对比超越离合器的额定扭矩何计算扭矩计算扭矩，并保证：

$M_N\geqslant M_A$

M_N=查表所得超越离合器的额定扭矩[Nm]

运行参数K的近似值：

驱动类型	K
起动冲击较低的电机（例如，直流电电机，带滑环转子或起动离合器的异步电动机），蒸汽涡轮机，燃气轮机	0.8–2.5
起动冲击较高的电机（例如同步或异步电动机）	1.25–2.5
带超过两个缸的活塞式涡轮机，液压马达	1.25–3.15
带一个或多个缸的活塞式发动机	1.6–3.15

Selection torque for Overrunning Clutches

In many cases where overrunning clutches are being used,dynamic processes occur that cause high peak torques.In the case of overrunning clutches,the torques that occur during start up must be observed. The peak torques when starting up can,in the case of asynchronous motors–especially when accelerating large masses and when usingelastic coupling–significantly exceed the torque calculated from the motor pull–over torque,The conditions for internal com–bustion engines are similar.Even in normal operation,on account of their degree of irregu–larity,peak torques can occur that are way in excess of the nominal torque.

The prior determination of the maximum occurring torque is carried out most safely by using a rotational vibration analysis of the entire system.This,however,requires a knowledge of the rotating masses,the rotational rigidity and all of the excitation moments that occur on the system.In many cases,a vibrational calculation is too time consuming or you may not have all the necessary data in the configuration phase available.In this case,the selection torque MA of the overrunning clutch should be deter–mined as follows:

$M_A=K\cdot M_L$

In this equation:

M_A=Selection torque of the freewheel

K=Operating factor(refer to table)

M_L=Load torque for constant rotating freewheel:

$=9550\cdot P_0/n_{FR}$

P_0=Nominal power of motor[Nm]

n_{FR}=Speed of the freewheel in driving operation[min−1]

After calculating M_A the freewheel size must be selected in accordance with the catalogue tables in such a way that in all cases this applies:

$M_N\geqslant M_A$

M_N=Nominal torque of the freewheel in accordance with the table values[Nm]

Approximate values for operating factor K:

Type of driver	K
Electric motors with low start up impact(e·g·DC motors,asynchronous motors with slip rings or soft start couplings),steam turbines,gas turbines	0.8to2.5
Electric motors with considerable start up im–pact(e·g·synchronous or asynchronous motors with direct start)	1.25to2.5
Piston engines with more than two cylinders,water turbines,hydraulic motors	1.25to3.15
Piston engines with one or two cylinders	1.6to3.15

MZ系列单向超越离合器

Mz series one way clutches

■ 型号 MZ 15 ～ MZ 70
用于常规应用场合

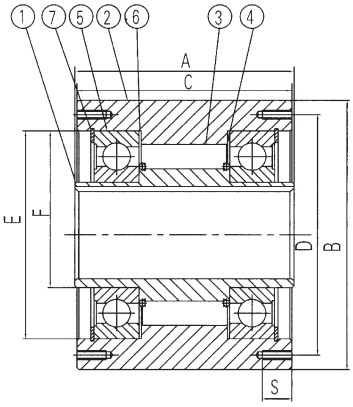
MODELS MZ 15 TO MZ 70
For General Applications

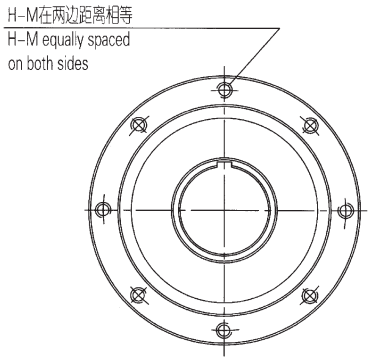
特点：

1. 用专用润滑脂预润滑
2. 不需要维护保养
3. 易于安装和使用

Features:

1. Prelubricated with special grease
2. No maintenance required.
3. Easy installation and handling.





①内座圈 ①Inner race
②外座圈 ②Outer race
③楔块 ③Cam
④弹簧 ④Spring
⑤轴承（带防尘盖） ⑤Shield Bearing
⑥侧板 ⑥Side plate
⑦卡簧 ⑦Snap ring

尺寸及容量 Dimensions and Capacities

型号 Type	最大扭矩 Max. Torque (N·m)	公称空转阻力扭矩 Nominal Overrunning Drag (N·m)	最大超越 Max. Overrunning (r/min)		最大分度(转/分) Max. Indexing (cycle/min)	盘孔尺寸 Stock Bore Size		A	B	C	D	E	F	G	H-M螺纹孔的数量×尺寸×螺矩 H-M No.of Tapped Holes ×Size×PITCH	S	重量 Weight (kg)
			内座圈 Inner Race	外座圈 Outer Race		直径 Dia (H7)	键槽 Keyway										
MZ15	186	0.20	1,800	900	150	15	5×2.3	62	68	60	58	47	25	5.5	6×M5×P0.8	10	1.4
MZ17	215	0.20	1,700	800	150	17	5×2.3	66	75	64	64	52	28	6.3	6×M5×P0.8	10	1.8
MZ20	323	0.29	1,600	700	150	20	6×2.8	67	80	65	65	55	30	7.6	6×M6×P1.0	12	2.0
MZ30-22	735	0.39	1,500	500	150	22	6×2.8	82	100	80	88	75	45	8.9	6×M8×P1.25	16	3.7
MZ30-25						25	8×3.3										
MZ30						30	10×3.3										
MZ35	1,080	0.49	1,400	300	150	35	10×3.3	87	110	85	95	80	50	8.7	6×M8×P1.25	16	4.8
MZ45-40	1,620	0.69	1,400	300	150	40	12×3.3	92	125	90	110	95	60	8.4	8×M8×P1.25	16	6.2
MZ45						45	14×3.8										
MZ60-50	2,110	0.98	1,200	250	150	50	14×3.8	102	155	100	140	125	80	9.1	8×M8×P1.25	16	10.2
MZ60-55						55	16×4.3										
MZ60						60	18×4.4										
MZ70-65	3,040	1.27	1,100	250	150	65	18×4.4	105	175	103	162	145	95	8.6	8×M8×P1.25	16	13.2
MZ70						70	20×4.9										

单向离合器

One way cluth

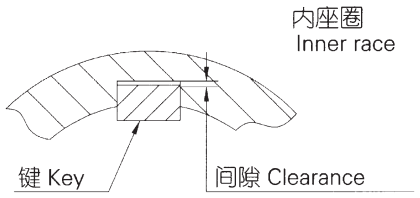
安装和使用

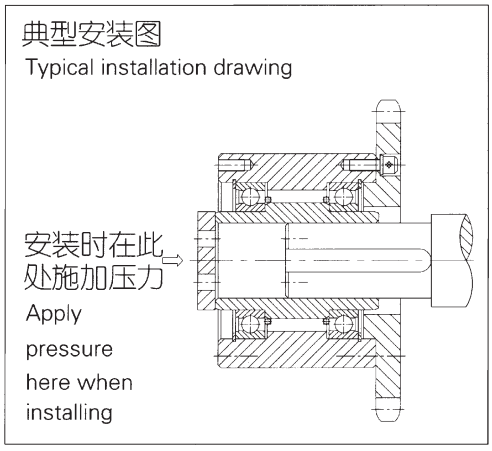
1. MZ 系列单向离合器两端都有防尘轴防护，注有一种特殊的润滑脂，随时备用，不需要另外的润滑剂。
2. 当将滑轮，齿轮或链轮齿连接到离合器上时，沿着外座圈的内表面插入轮毂并将螺栓（高张力）旋入离合器末端的螺旋栓孔中。
3. 推荐的轴公差如表左下所示。
4. 外部推力负荷应由其它装置承受，不应加在单向离合器上。
5. 用平键将离合器固定到轴上，不要使用锥键。
6. 当将离合器安装到轴上时，将力施加于内座圈，千万不可加于外圈，请参见右边的图解。
7. 对于垂直安装，请咨询仁本轴承。
8. 环境温度的范围为-5℃～40℃
9. 所用键应符合 DIN 6885.1 标准。

Installation and Usage

1. MZ series Cam Clutches are 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 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 on the lower left.
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. See the illustration on the right.
7. For vertical mounting, please consult RenBen Bearing.
8. Ambient temperature range is -5℃ to 40℃.
9. Key to be used should be in accordance with DIN 6885.1.

型号 Model	公称直径 Nominal diameter （mm）	相对轴向公差 Relative Axial Tolerance(mm)
MZ15	15	+0 to -0.018
MZ17	17	+0 to -0.018
MZ20	20	+0 to -0.021
MZ30	30	+0 to -0.021
MZ35	35	+0 to -0.025
MZ45	45	+0 to -0.025
MZ60	60	+0 to -0.030
MZ70	70	+0 to -0.030





MZ–G系列超越单向离合器

MZ-G series one way clutches

特点：

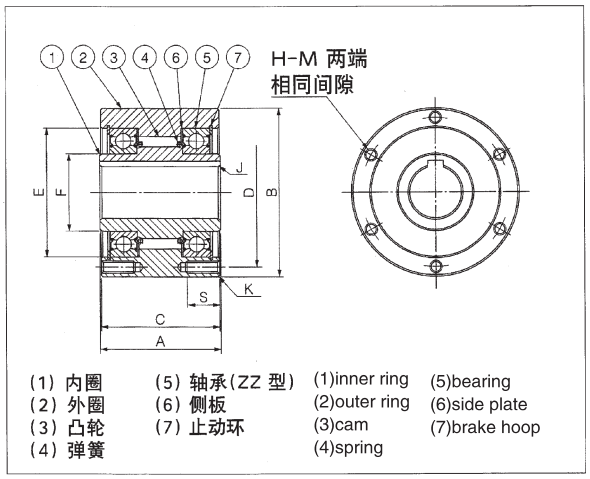
1．外圈表面精磨。

2．外圈表面定心槽精加工（参看用户手册）。

Features:

1.Outer race surface ground finish

2.Outer race surface centering groove finish
(refer to the use's manual)



（1）内圈　（5）轴承(ZZ 型）　(1)inner ring　(5)bearing
（2）外圈　（6）侧板　(2)outer ring　(6)side plate
（3）凸轮　（7）止动环　(3)cam　(7)brake hoop
（4）弹簧　(4)spring

性能

型号	最大允许扭矩 (N·m)	最高空转速度		最大分度频率（次/分）	空转摩擦扭矩 (N·m)
		内圈	外圈		
MZ15G	186	1,800	900	150	0.20
MZ17G	215	1,700	800	150	0.20
MZ20G	323	1,600	700	150	0.29
MZ30G-22					
MZ30G-25	735	1,500	500	150	0.39
MZ30G					
MZ35G	1,080	1,400	300	150	0.49
MZ45G-40	1,620	1,400	300	150	0.69
MZ45G					
MZ60G-50					
MZ60G-55	2,110	1,200	250	150	0.98
MZ60G					
MZ70G-65	3,040	1,100	250	150	1.27
MZ70G					

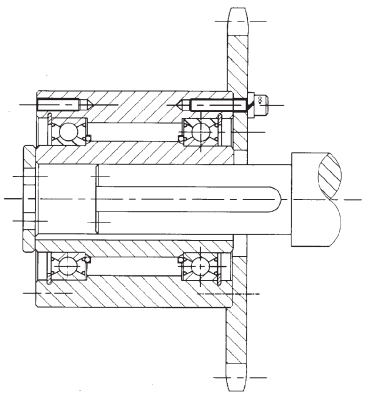
尺寸　　以 mm 为单位的尺寸

型号	轴孔			内圈宽度	外圈宽度	外径	内圈	定心槽直径	倒角	安装锥孔			重量	转动惯量
	直径 (H7)	键槽	倒角 J	A	C	B (h7)	F	E	K	PCD D	有效螺丝长度 S	尺寸（H-m）数量-直径×节距	kg	$kg·m^2$
MZ15G	15	5 × 2.3	0.8	55	53	68	25	47	1.3	58	10	6-M5 ×0.8	1.3	0.08×10^{-2}
MZ17G	17	5 × 2.3	0.8	63	61	75	28	52	1.3	64	10	6-M5 ×0.8	1.7	0.14×10^{-2}
MZ20G	20	5 × 2.3	0.8	64	62	80	30	55	1.3	68	12	6-M6 ×1.0	1.9	0.18×10^{-2}
MZ30G-22	22	8 × 3.3	1.0											
MZ30G-25	25	8 × 3.3	1.0	70	68	100	45	75	1.3	88	16	6-M8 ×1.25	3.2	0.47×10^{-2}
MZ30G	30	10 × 3.3	1.0											
MZ35G	35	10 × 3.3	1.0	78	76	110	50	80	1.3	95	16	6-M8 ×1.25	4.4	0.77×10^{-2}
MZ45G-40	40	12 × 3.3	1.3	87	85	125	60	95	1.3	110	16	8-M8 ×1.25	6.2	1.40×10^{-2}
MZ45G	45	12 × 3.3	1.3											
MZ60G-50	50	14 × 3.8	1.5											
MZ60G-55	55	16 × 4.3	1.5	90	88	155	80	125	1.3	140	16	8-M8 ×1.25	9.5	3.38×10^{-2}
MZ60G	60	18 × 4.4	1.5											
MZ70G-65	65	18 × 4.4	1.8	105	103	175	95	145	1.3	162	16	8-M8 ×1.25	13.1	6.01×10^{-2}
MZ70G	70	20 × 4.9	1.8											

安装及使用

1. 当将链轮齿或齿轮安装至外座圈时，利用外座圈的外圈尺寸（尺寸 B）将一个定心法兰装入齿轮或链轮齿。然后以 10.9 或更大的张紧力的螺栓将其固定到外座圈的螺栓孔中。
2. 使用方法和其它型号的安装请参照 MZ 系列进行。

MZ-G 系列典型的安装图
Typical installation drawing MZ-G Series

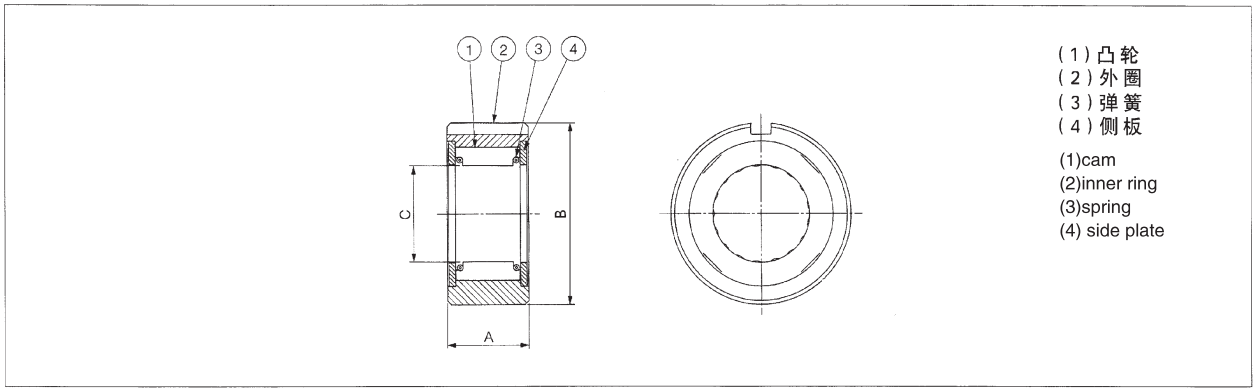


Installation and Usage

1. When mounting sprockets or gears to the outer race, use the outer race outer dimension (dimension B) to make a cemtering 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.

B200系列凸轮离合器

B200 series cam clutches



(1)凸轮
(2)外圈
(3)弹簧
(4)侧板

(1)cam
(2)inner ring
(3)spring
(4) side plate

尺寸和容量

以 mm 为单位的尺寸

型号	最大扭矩 (N·m)	空转摩擦扭矩 (N·m)	最高空转速度 (r/min)		最大分度 (频率次数/分钟)	A (+0 到 −0.06)	B	轴的直径 C (+0 到 −0.025)	键槽	与 JIS 轴承号一起使用	重量 (kg)
			Shaft	Outer Race							
B 203	39.2	0.098	2,400	500	150	25.0	40 $^{-0.014}_{-0.039}$	16.510	4 ×2.5	6203	0.23
B 204	58.8	0.098	2,400	500	150	25.0	47 $^{-0.014}_{-0.039}$	18.796	5 × 3	6204	0.34
B 205	98	0.196	1,800	400	150	25.0	52 $^{-0.017}_{-0.042}$	23.622	5 × 3	6205	0.45
B 206	235	0.196	1,800	350	150	28.0	62 $^{-0.017}_{-0.042}$	32.766	7 × 4	6206	0.68
B 207	372	0.196	1,800	300	150	28.0	72 $^{-0.017}_{-0.042}$	42.088	7 × 4	6207	0.80
B 208	549	0.196	1,800	200	150	32.0	80 $^{-0.017}_{-0.042}$	46.761	10 ×4.5	6208	0.91
B 209	549	0.196	1,800	200	150	32.0	85 $^{-0.020}_{-0.045}$	46.761	10 ×4.5	6209	0.95
B 210	784	0.294	1,200	200	150	32.0	90 $^{-0.020}_{-0.045}$	56.109	10 ×4.5	6210	1.00
B 211	784	0.294	1,200	200	150	32.0	100 $^{-0.020}_{-0.050}$	56.109	10 ×4.5	6211	1.40
B 212	1,230	0.294	1,200	180	150	42.0	110 $^{-0.020}_{-0.050}$	70.029	10 ×4.5	6212	1.80
B 213	1,230	0.294	1,200	180	150	42.0	120 $^{-0.020}_{-0.050}$	70.029	10 ×4.5	6213	2.30
B 214	1,390	0.392	1,000	180	150	42.0	125 $^{-0.024}_{-0.060}$	79.356	12 ×4.5	6214	2.40

安装和使用

1.200系列的凸轮离合器是轴安装型的，因此，安装离合器用的轴必须在磨削后进行硬化，达到Rc56-60，且硬化层深度为1.5mm。磨削达到1.5S(16micro-inch)的光洁度。此轴的锥度不得超过轴长每50mm内0.01mm。

2.安装离合器时，请在两侧安装轴承，以便使轴和离合器外圈之间同心，以承受可能作用于外圈或轴上的径向负载和轴向负载。请看安装实例。

3.应当通过使离合器沿离合器板所示箭头方向旋转的方式，把离合器安装到轴上。不要使用锤打的方式，以免在离合器上造成冲击。

4.离合器与上表中所示轴承具有相同的外径。安装离合器用的壳体孔公差，应当在下表所示的范围内。

5. 对于分度用产品，建议使用油润滑。

6. 壳体孔与轴的同心度应当在0.05mm以内。

7.键的剖面应当符合JIS B1301-19 59标准。

Installation and use

1.200 series cam clutch belongs to shaft installation type. So the shaft for clutch installation should be rigidified after grinding. Make it reach to Rc56 ~ 60. The rigidified depth will be 1.5mm. The grinding should reach to 1.5S (16micro-inch) of smooth finish. The taper of the shaft should not be more than 0.01mm in every 50 mm.

2.When install clutch, please install bearings at both sides in order to make concentric between the shaft and outer ring of clutch and bear radial load and axial load which may act to outer ring and shaft possibly. Please see the example of installation.

3.Install clutch onto shaft in accordance with rotary mode indicated by arrow direction of clutch along with clutch plate. Don't use hammering mode in order to avoid leading impact at the clutch.

4.The clutch possesses same outer diameter with bearings listed in above table. The tolerance of casing hole for installing clutch should be within the range indicated at below table.

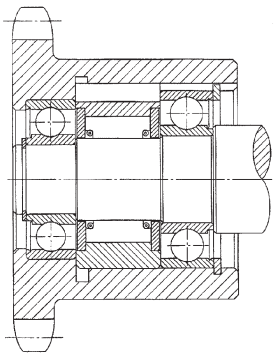
5.For indexing product, it is suggested to use lubricating oil.

6.The concentricity between casing and shaft should be within 0.05mm.

7.The section plane of key should be in conformity with JIS B1301-1959.

典型安装图

Typical installation drawing



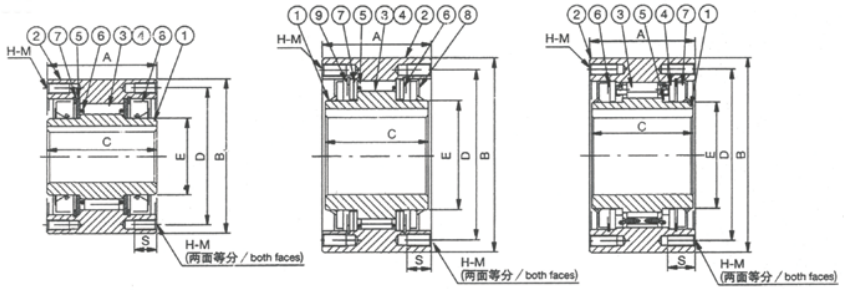
型号 Type	壳体孔的公差 Tolerance of casing hole (mm)
B 203, B 204	+0 ~ +0.025
B 205, B 206, B 207, B 208	+0 ~ +0.030
B 210, B 211, B 212, B 213	+0 ~ +0.035
B 214	+0 ~ +0.040

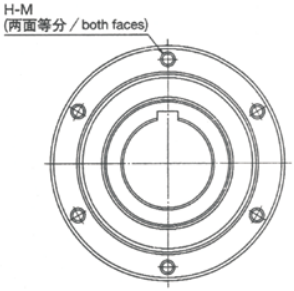
BS 系列凸轮离合器用于防止低速输送机主轴发生反向旋转（止逆）。

The BS series Cam Clutches are intended for applications where reverse rotation of the slow speed conveyor head shaft is to be prevented (backstopping).

■ 型号 BS30 至 BS135 用于防止输送机反向旋转

BS30~135





BS30 至 BS50

① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮 / Cam
④ 滚柱 / Roller
⑤ 板 / Plate
⑥ 弹簧 / Spring
⑦ 挡圈 / Spirolox
⑧ 油封 / Oil seal

BS65 至 BS75

① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮 / Cam
④ 滚柱 / Roller
⑤ 弹簧 / Spring
⑥ 板 / Plate
⑦ 止推金属板 / Thrust metal
⑧ 油封 / Oil seal
⑨ 挡圈 / Spirolox

BS85 至 BS135

① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮保持架 / Cam cage
④ 板 / Plate
⑤ 止推金属板 / Thrust metal
⑥ 挡圈 / Spirolox
⑦ 油封 / Oil seal

孔端面倒角

轴径	倒角
小于 50 mm	C1.5
50 至 125 mm	C2.0
125 至 285 mm	C3.0

Chamfer of the bore end faces

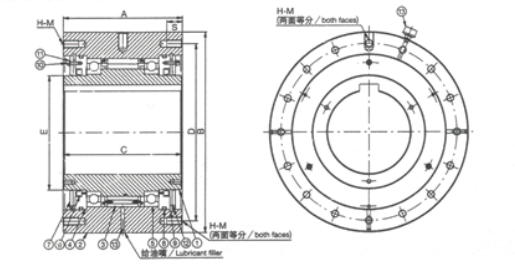
Shaft Diameter	Chamfer
Under 50 mm	C1.5
50 to 125 mm	C2.0
125 to 285 mm	C3.0

BS–HS 系列凸轮离合器

BS–HS 系列能够获得常规型号产品所没有的更高的扭矩和转速。

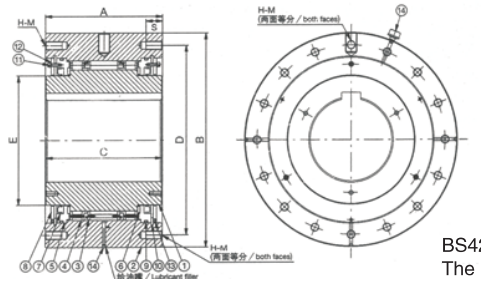
The BS–HS series offer higher torque and speed not found in conventional models.

BS160HS~BS270HS



① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮保持架 / Cam cage
④ 密封支撑件 / Seal supporter
⑤ 轴承 / Bearing
⑥ 油封 / Oil seal
⑦ 油脂嘴 / Grease fitting
⑧ O 形环 / O–ring
⑨ 止动环 / Snap ring
⑩ 沉头螺栓 / Socket bolt
⑪ 密封垫圈 / Seal washer
⑫ 固定螺丝 / Set screw
⑬ 通气孔 / Air breather

BS300HS~BS350HS・BS425HS~BS450HS



① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮保持架 / Cam cage
④ 滚柱保持架 / Roller cage
⑤ 密封支撑件 / Seal supporter
⑥ 止推轴承 / Thrust bearing
⑦ 油封 / Oil seal
⑧ 油脂嘴 / Grease fitting
⑨ O 形环 / O–ring
⑩ 止动环 / Snap ring
⑪ 沉头螺栓 / Socket bolt
⑫ 密封垫圈 / Seal washer
⑬ 固定螺丝 / Set screw
⑭ 通气孔 / Air breather

BS425HS 与 BS450HS 使用双凸轮保持架。
The double cam cage is used in BS425HS, BS450HS.

BS & BS–HS系列凸轮离合器　　BS & BS–HS SERIES CAM CLUTCHES

传动能力和孔径
Dimension and Capacities

型号	T.C. (N・m) { kgf・m }	M.O.S (r/min)	N.O.D.T. (N・m)	A	B	C	PCD:D	E	S	H–M T.H.S.XP–Q'ty	G.F.H. (Size)	Q. of G. (kg)
BS 30	294 { 30 }	350	0.588	64	90	64	80	45	13	M6 × P1.0–4	–	–
BS 50	784 { 80 }	300	0.38	67	125	67	110	70	16	M8 × P1.25–4	–	–
BS 65	1,570 { 160 }	340	3.92	90	160	85	140	90	20	M10 × P1.5–6	–	–
BS 75	2,450 { 250 }	300	5.88	90	170	85	150	100	20	M10 × P1.5–6	–	–
BS 85	5,880 { 600 }	300	7.84	115	210	110	185	115	30	M12 × P1.75–6	–	–
BS 95	7,840 { 800 }	250	9.8	115	230	110	200	130	30	M14 × P2.0–6	–	–
BS 110	10,800 { 1,100 }	250	14.7	115	270	110	220	150	30	M16 × P2.0–6	–	–
BS 135	15,700 { 1,600 }	200	19.6	135	320	130	280	180	30	M16 × P2.0–8	–	–
BS 160HS	39,200 { 4,000 }	350	34.3	180	360	175	315	220	40	M20 × P2.5–10	PT 1/4	0.23
BS 200HS	61,700 { 6,300 }	250	44.1	205	430	200	380	260	40	M22 × P2.5–8	PT 1/4	0.31
BS 220HS	102,000 { 10,400 }	200	73.5	330	500	325	420	290	40	M20 × P2.5–16	PT 1/4	1.3
BS 250HS	147,000 { 15,000 }	170	93.1	370	600	365	530	330	50	M24 × P3.0–16	PT 1/4	1.7
BS 270HS	204,000 { 20,800 }	160	98.0	385	650	380	575	370	50	M24 × P3.0–16	PT 1/4	2.0
BS 300HS	294,000 { 30,000 }	150	108.0	425	780	420	690	470	60	M30 × P3.5–16	PT 1/4	3.6
BS 350HS	392,000 { 40,000 }	110	157.0	440	930	480	815	535	70	M36 × P4.0–16	PT 1/4	4.1
BS 425HS	735,000 { 75,000 }	85	216.0	570	1,030	580	940	635	70	M36 × P4.0–18	PT 1/4	6.9
BS 450HS	980,000 { 100,000 }	80	245.0	570	1,090	600	990	645	80	M42 × P4.5–18	PT 1/4	7.2

T.C.	扭矩容量	Torque Capacity
M.O.S.	内圈最大空转速度	Inner Race Maximum Overrunning Speed
N.O.D.T.	空转摩擦扭矩	Nominal Overrunning Drag Torque
T.H.S.XP–Q'ty	锥孔尺寸 X 节距 – 数量	Tapped Hole Size X Pitch–Quantity
G.F.H.	润滑脂注入孔	Grease Filler Hole
Q. of G.	润滑脂量	Quantity of Grease

标准轴孔键槽与重量
Bore Keyway and Mass

商品代码	S.F.B. (mm) Keyway JISB1301–1996 ISO R773	商品代码	D.S.B. (mm) Keyway JISB1301–1996	B.D.R. (mm)	M. Min (kg)	M. Max (kg)
R310963	**BS 30–30J**	310953	BS 30–30E	20 至 30	2.3	2.1
R310974	**BS 50–45J**	310964	BS 50–45E	30 至 50	4.7	4.0
R310975	**BS 50–50J**	310965	BS 50–50E			
R311101	**BS 65–40J**	311001	BS 65–40E	40 至 65	13.0	11.5
R311102	**BS 65–45J**	311002	BS 65–45E			
R311103	**BS 65–50J**	311003	BS 65–50E			
R311104	**BS 65–55J**	311004	BS 65–55E			
R311105	**BS 65–60J**	311005	BS 65–60E			
R311106	**BS 65–65J**	311006	BS 65–65E			
R311111	**BS 75–60J**	311011	BS 75–60E	50 至 75	14.7	13.1
R311112	**BS 75–65J**	311012	BS 75–65E			
R311113	**BS 75–70J**	311013	BS 75–70E			
R311114	**BS 75–75J**	311014	BS 75–75E			
R311121	**BS 85–70J**	311021	BS 85–70E	60 至 85	27.2	24.7
R311122	**BS 85–75J**	311022	BS 85–75E			
R311123	**BS 85–80J**	311023	BS 85–80E			
R311124	**BS 85–85J**	311024	BS 85–85E			
R311131	**BS 95–80J**	311031	BS 95–80E	70 至 95	32.2	29.4
R311132	**BS 95–85J**	311032	BS 95–85E			
R311133	**BS 95–90J**	311033	BS 95–90E			
R311134	**BS 95–95J**	311034	BS 95–95E			
R311141	**BS 110–85J**	311041	BS 110–85E	80 至 110	38.6	34.2
R311142	**BS 110–95J**	311042	BS 110–95E			
R311143	**BS 110–100J**	311043	BS 110–100E			
R311144	**BS 110–105J**	311044	BS 110–105E			
R311145	**BS 110–110J**	311045	BS 110–110E			
R311146	BS 135	311046	BS 135	90 至 135	76.1	68.0
—	BS 160HS	—	BS 160HS	100 至 160	120	103
—	BS 200HS	—	BS 200HS	100 至 200	200	163
—	BS 220HS	—	BS 220HS	150 至 220	390	338
—	BS 250HS	—	BS 250HS	175 至 250	760	689
—	BS 270HS	—	BS 270HS	200 至 270	850	774
—	BS 300HS	—	BS 300HS	230 至 300	1,400	1,300
—	BS 350HS	—	BS 350HS	250 至 350	2,300	2,120
—	BS 425HS	—	BS 425HS	325 至 425	3,300	2,960
—	BS 450HS	—	BS 450HS	350 至 450	3,700	3,400

B.D.R.	轴孔径范围	Bore Diameter Range
S.F.B.	标准库存孔径	Stock Finished Bore
D.S.B.	设计库存孔径	Design Stock Bore
M.Min	最小轴孔时重量	Mass at Minimum Bore
M.Max	最大轴孔时重量	Mass at Maximum Bore

注：

1. 标准库存孔径公差为 H7。
2. 粗体字项目为库存产品，其他 项目为订单生产品。
3. BS 系列凸轮离合器轴可根据您的性能参数进行钻孔，但是请说明孔的直径及公差，以及键槽尺寸。请务必指明轴孔径。

Notes:

1. The tolerance of Stock Finished Bore is H7.
2. Items hilighted in Bold type are stock items, the are built to order.
3. BS Cam Clutch can be bored according to your specification. Specify the bore diameter with tolerance and keyway dimensions. Please be sure to specify.

BS & BS–HS系列凸轮离合器

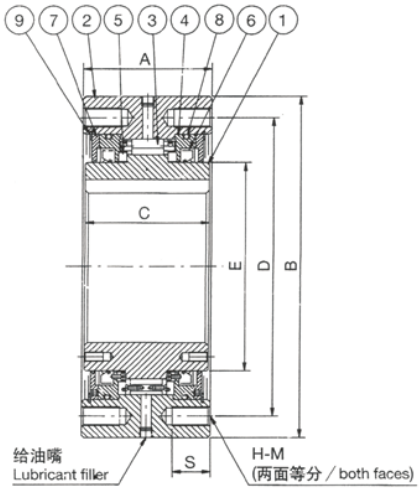
BS 系列凸轮离合器用于防止低速输送机主轴发生反向旋转（止逆）。

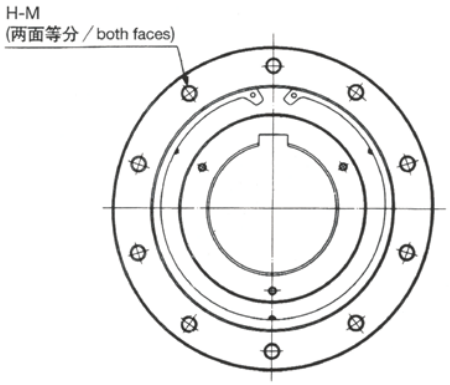
BS & BS–HS SERIES CAM CLUTCHES

The BS series Cam Clutches are intended for applications where reverse rotation of the slow speed conveyor head shaft is to be prevented (backstopping).

■ 型号 BS160 至 BS450

BS160 至 BS220





① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮保持架 / Cam cage
④ 密封支撑件 / Seal supporter
⑤ 止推金属板 / Thrust metal
⑥ 油封 / Oil seal
⑦ 油脂嘴 / Grease fitting
⑧ O 形环 / O–ring
⑨ 止动环 / Snap ring

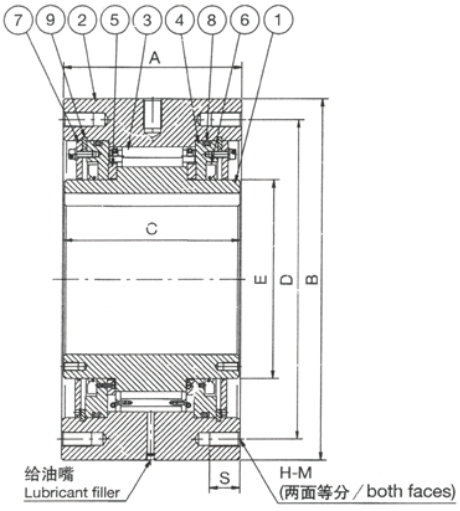
孔端面倒角

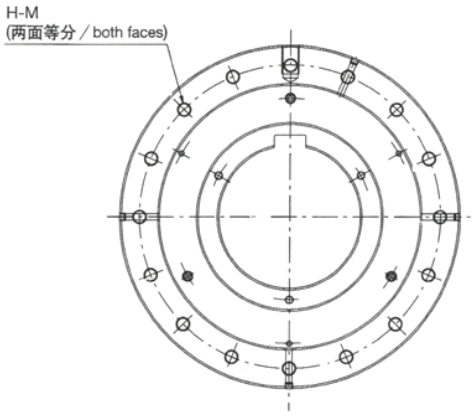
轴径	倒角
50 至 125 mm	C2.0
125 至 285 mm	C3.0

Chamfer of the bore end faces

Shaft Diameter	Chamfer
50 to 125 mm	C2.0
125 to 285 mm	C3.0

BS250 至 BS450





① 内圈 / Inner race
② 外圈 / Outer race
③ 凸轮保持架 / Cam cage
④ 密封支撑件 / Seal supporter
⑤ 止推金属板 / Thrust metal
⑥ 油封 / Oil seal
⑦ 油脂嘴 / Grease fitting
⑧ O 形环 / O–ring
⑨ 止动环 / Snap ring

孔端面倒角

轴径	倒角
125 至 285 mm	C3.0
超过 285 mm	C5.0

Chamfer of the bore end faces

Shaft Diameter	Chamfer
125 to 285 mm	3.0C
Over 285 mm	5.0C

BS & BS–HS系列凸轮离合器　　BS & BS–HS SERIES CAM CLUTCHES

传动能力和孔径
Dimension and Capacities

型号	T.C. (N・m) { kgf・m }	M.O.S (r/min)	N.O.D.T. (N・m)	A	B	C	PCD:D	E	S	H–M T.H.S.XP–Q'ty	G.F.H. (Size)	Q. of G. (kg)
BS 160	24,500 { 2,500 }	100	34.3	135	360	130	315	220	40	M20 × P2.5–10	PT 1/4	0.12
BS 200	37,200 { 3,800 }	100	44.1	150	430	145	380	265	40	M22 × P2.5– 8	PT 1/4	0.14
BS 220	49,000 { 5,000 }	80	73.5	235	500	230	420	290	40	M20 × P2.5–16	PT 1/4	0.8
BS 250	88,200 { 9,000 }	50	93.1	295	600	290	530	330	50	M24 × P3.0–16	PT 1/4	1.1
BS 270	123,000 { 12,500 }	50	98	295	650	290	575	370	50	M24 × P3.0–16	PT 1/4	1.2
BS 300	176,000 { 16,000 }	50	108	295	780	290	690	470	60	M30 × P3.5–16	PT 1/4	1.3
BS 335	265,000 { 27,000 }	50	137	305	850	320	750	495	70	M36 × P4.0–16	PT 1/4	1.4
BS 350	314,000 { 32,000 }	50	157	320	930	360	815	535	70	M36 × P4.0–16	PT 1/4	1.5
BS 425	510,000 { 52,000 }	50	216	440	1,030	450	940	635	70	M36 × P4.0–18	–	Oil 6,000ml
BS 450	686,000 { 70,000 }	50	245	450	1,090	480	990	645	80	M42 × P4.5–18	–	Oil 7,000ml

T.C.	扭矩容量	Torque Capacity
M.O.S.	内圈最大空转速度	Inner Race Maximum Overrunning Speed
N.O.D.T.	空转摩擦扭矩	Nominal Overrunning Drag Torque
T.H.S.XP–Q'ty	锥孔尺寸 X 节距 – 数量	Tapped Hole Size X Pitch–Quantity
G.F.H.	润滑脂注入孔	Grease Filler Hole
Q. of G.	润滑脂量	Quantity of Grease

标准轴孔键槽与重量
Bore Keyway and Mass

商品代码	S.F.B. (mm) Keyway JISB1301–1996 ISO R773	商品代码	D.S.B. (mm) Keyway JISB1301–1996	B.D.R. (mm)	M. Min (kg)	M. Max (kg)
311147	BS 160	311047	BS 160	100 to 160	98.1	85.6
311148	BS 200	311048	BS 200	100 to 200	167	140
311149	BS 220	311049	BS 220	150 to 220	301	264
311150	BS 250	311050	BS 250	175 to 250	580	523
311151	BS 270	311051	BS 270	200 to 270	620	562
311152	BS 300	311052	BS 300	230 to 300	952	885
—	BS 335	—	BS 335	250 to 335	1,140	1,040
—	BS 350	—	BS 350	250 to 350	1,600	1,470
—	BS 425	—	BS 425	325 to 425	2,450	2,240
—	BS 450	—	BS 450	350 to 450	2,820	2,580

B.D.R.	轴孔径范围	Bore Diameter Range
S.F.B.	标准库存孔径	Stock Finished Bore
D.S.B.	设计库存孔径	Design Stock Bore
M.Min	最小轴孔时重量	Mass at Minimum Bore
M.Max	最大轴孔时重量	Mass at Maximum Bore

格式　Format

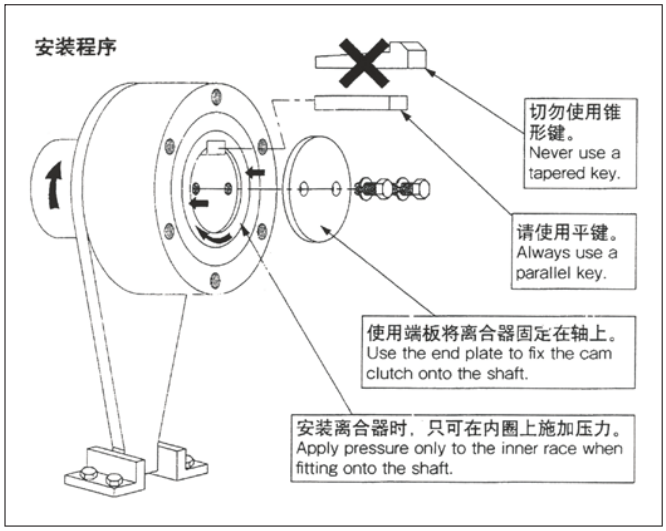
BS85 – 85 J

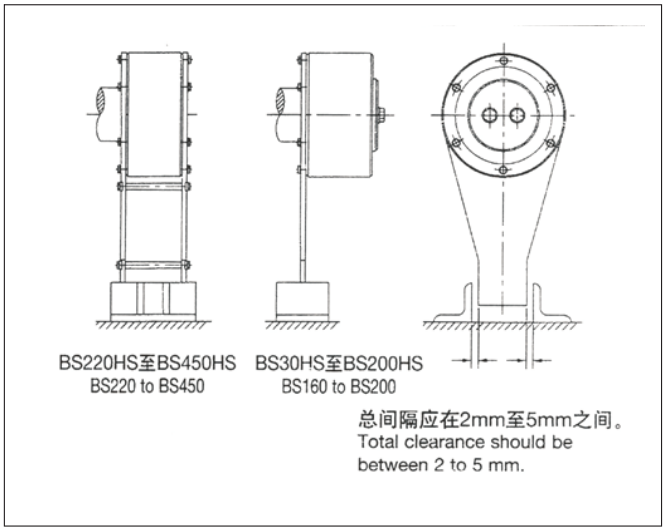
- 键槽 / Keyway
  J= 新 JIS / New JIS
  (JIS B1301–1996, ISO R773)
  E= 旧 JIS / Old JIS
  (JIS B1301–1959)
- 轴孔径 / Bore size
- 型号名 / Model Name
  BS= 止逆

BS250HS – 250 J

- 键槽 / Keyway
  J= 新 JIS / New JIS
  (JIS B1301–1996, ISO R773)
  E= 旧 JIS / Old JIS
  (JIS B1301–1959)
- 轴孔径 / Bore size
- 型号名 / Model Name
  BS= 止逆
  HS= 高速

■ 安装与使用 / INSTALLATION AND USAGE





安装与使用

1. 建议使用公差为 h7 和 h8 的轴。
2. 安装之前，校验凸轮离合器内圈的旋转方向（内圈端板上箭头所示方向）是否与输送机的旋转方向相同。
3. 使用强度为 10.9 或更高的螺栓，牢固地将扭矩臂安装至凸轮离合器上。确保扭矩臂与外圈端面接触的表面平滑无尘，以获得足够的摩擦力。
4. 在往轴上插入 BS 凸轮离合器的时候，只可在内圈表面施加压力。切勿使用锤子直接敲击内圈，或对外圈、油封及油脂嘴施加压力。
5. 使用平键将 BS 离合器安装到轴上，然后使用端板将其固定在轴上。切勿使用锥键，锥键会对凸轮离合器造成损坏。
6. 安装 BS160HS 或 BS160 以及更高型号离合器时（润滑脂润滑的型号），将四个润滑脂塞子中的一个设置在凸轮离合器下方。这样可以方便在维修时排出润滑脂。
7. 在输送机运转时，扭矩臂末端一定程度上会有所摆动。只要在旋转方向对扭矩臂末端进行支撑，务必要允许末端能够自由地进行一定的轴向运动（参考安装图表）。如果扭矩臂末端被牢牢固定，则凸轮离合器会因此受损。
8. 一个扭矩臂对于 BS30 至 BS220 以及 BS160HS 和 BS200HS 型号的产品来说已经足够了。BS220HS 至 BS450HS 以及 BS220 至 BS450 型号的产品要求两侧各有一个扭矩臂，通过两个扭矩臂来阻止旋转，从而使作用在扭矩臂上的反向负载能够均衡。建议为 BS 凸轮离合器选择使用标准扭矩臂和保护罩。

Installation and Usage

1. Recommended shaft tolerance is h7 or h8.
2. Before installation, verify that the direction of the rotation of the inner race of the BS Cam Clutch (shown by the arrow on the end face of the inner race) is the same as the direction of the rotation of the conveyor.
3. Securely install the torque arm to the BS Cam Clutch using bolts with a strength class of 10.9 grade or higher. Make sure the surface of the torque arm that contacts the end face of the outer race is flat and free of dust in order to get enough frictional force.
4. Apply pressure only on the end face of the inner race when inserting the BS Cam Clutch on to the shaft. Do not hit the inner race directly with a hammer or apply pressure on the outer race, oil seal, or grease fitting.
5. Always use a parallel key for installation onto the shaft and then fix the BS Cam Clutch on to the shaft. Do not hit the inner race directly with a hammer or apply pressure on the outer race, oil seal, or grease fitting.
6. When installing models BS160HS or BS160 and above (grease lubrication types), place one of the four socket plugs underneath the Cam Clutch. This will allow for easy drainage of the grease during maintenance.
7. The end tip of the torque arm will swing to some extent while the conveyor is operating. Support the torque arm end tip only in the direction of rotation, but be sure to allow it a certain amount of free movement axially. (Refer to installation diagram.) The Cam Clutch will sustain damage if the torque arm end tip is fixed securely.
8. A single torque arm is sufficient for models from BS30 to BS220, BS160HS and BS200HS. One torque arm on each side is required for models from BS220HS to BS450HS and from BS220 to BS450, and to stop the rotation by both torque arms so that the reverse load operates on the torque arms evenly. It is recommended to use the standardized torque arm and safety cover for the BS Cam Clutch.

GFR和GFRN系列滚柱式单向离合器　GFR and GFRN series miler overrunning clutch



GFR和GFRN系列为星轮滚柱式结构。这些装置为R&B模块化系统的组成部分。它们由两个160系列的轴承支撑，并且需要加注润滑油。可在设计时使用这些装置，以提供润滑油和密封，如下页样品所示。轴承不得受到轴向压力。

通常GFR和GFRN系列与F系列的外端盖一起使用，该外盖的设计可传递力矩，并提供润滑油和密封。通常这些外盖根据以下几页所示的组合成对使用。GFR系列的平面外座圈可接收任意带孔部件，并在H7公差范围内为其定中心。

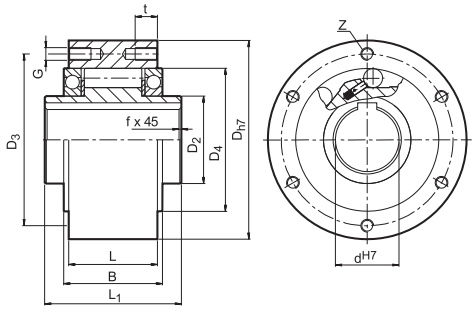
力矩由螺栓通过轴承箱内的盖板传递。GFR和GFRN系列是相同的，不同之处在于GFRN系列的外径有个键槽，用于传递力矩。每个装置交付时，外座圈和盖板之间配有两个纸密封。

Types GFR, GFRN are roller type freewheels. These units are part of the R&B modular system. They are bearing supported, using two 160···series bearings, and require oil lubrication. These units may be used in designs providing oil lubrication and sealing as on the example overleaf. The bearings must not be axially stressed.

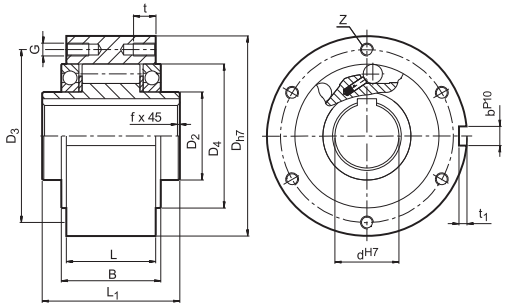
Typically, types GFR, GFRN are used with the F series covers that are designed to transmit torque, and provide oil lubrication and sealing. Usually these covers are used in pairs according to combinations shown on the following pages. The outer race of the GFR model is plain to receive and center any component bored to H7 tolerance.

Torque is transmitted by bolts through the cover plate in this case. Types GFR. GFRN are identical except that type GFRN has a keyway on the outside diameter to transmit the torque. Two paper seals are delivered with each unit to be placed between the outer race and cover plates.

GFR和GFRN系列滚柱式单向离合器　GFR and GFRN series miler overrunning clutch



GFR



GFRN

型号 Type	尺寸 Size		极限转速 Overrunning speeds								数量 Number							重量 Weight
	d^{H7} [mm]	T_{KN} 1) [Nm]	n_{imax} 2) [min^{-1}]	n_{amax} 3) [min^{-1}]	D_{h7} [mm]	D_2 [mm]	D_4 [mm]	D_3 [mm]	G	t [mm]	z	L_1 [mm]	L [mm]	B [mm]	t_1 [mm]	b^{P10} [mm]	f [mm]	[kg]
GFR GFRN	12*	55	4000	7200	62	20	42	51	?5.5	-	3	42	20	27	2.5	4	0.5	0.5
	15	125	3600	6500	68	25	47	56	M5	8	3	52	28	32	3	5	0.8	0.8
	20	181	2700	5600	75	30	55	64	M5	8	4	57	34	39	3.5	6	0.8	1.0
	25	288	2100	4500	90	40	68	78	M6	10	4	60	35	40	4	8	1.0	1.5
	30	500	1700	4100	100	45	75	87	M6	10	6	68	43	48	4	8	1.0	2.2
	35	725	1550	3800	110	50	80	96	M6	12	6	74	45	51	5	10	1.0	3.0
	40	1025	1150	3400	125	55	90	108	M8	14	6	86	53	59	5	12	1.5	4.6
	45	1125	1000	3200	130	60	95	112	M8	14	8	86	53	59	5.5	14	1.5	4.7
	50	2125	800	2800	150	70	110	132	M8	14	8	94	64	72	5.5	14	1.5	7.2
	55	2625	750	2650	160	75	115	138	M10	16	8	104	66	72	6	16	2.0	8.6
	60	3500	650	2450	170	80	125	150	M10	16	10	114	78	89	7	18	2.0	10.5
	70	5750	550	2150	190	90	140	165	M10	16	10	134	95	108	7.5	20	2.5	13.5
	80	8500	500	1900	210	105	160	185	M10	16	10	144	100	108	9	22	2.5	18.2
	90	14500	450	1700	230	120	180	206	M12	20	10	158	115	125	9	25	3.0	28.5
	100	20000	350	1450	270	140	210	240	M16	24	10	182	120	131	10	28	3.0	42.5
	130	31250	250	1250	310	160	240	278	M16	24	12	212	152	168	11	32	3.0	65.0
	150	70000	200	980	400	200	310	360	M20	32	12	246	180	194	12	36	4.0	138.0

备注

1）$T_{最大} = 2 \times T_{KN}$

2）内座圈超限运动。无径向唇形密封的值

3）外座圈超限运动。无径向唇形密封的值
键槽符合DIN 6885.1

*) GFR12的外座圈具有通孔

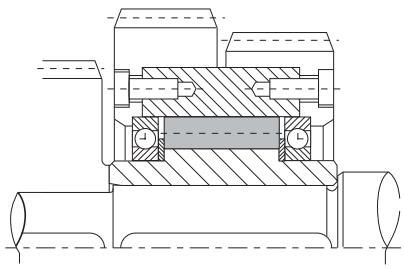
NOTES

1) $T_{max} = 2 \times T_{KN}$

2) Inner race overruns. Values without radial lip seals

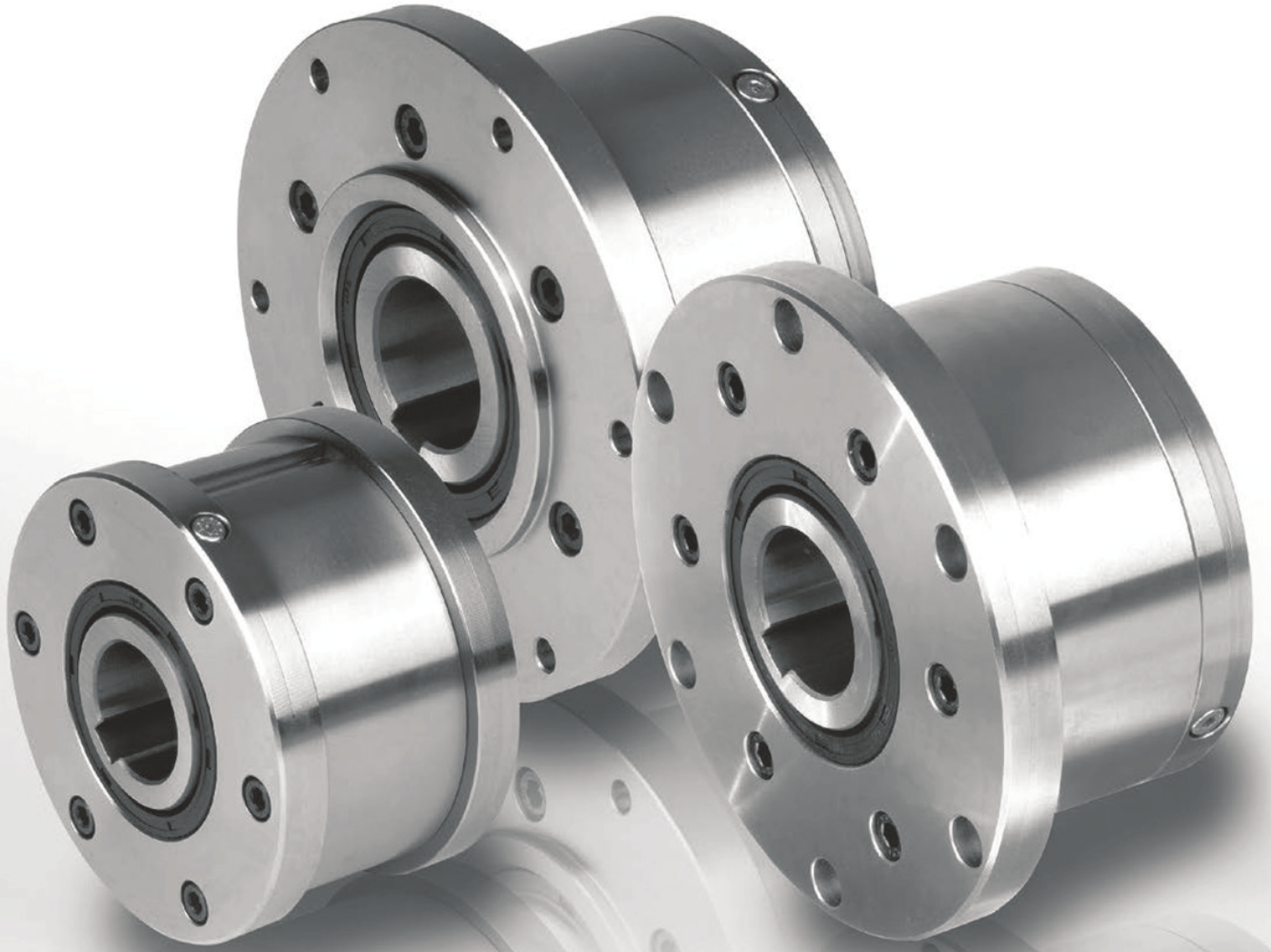
3) Outer race overruns. Values without radial lip seals
Keyway to DIN 6885.1

*) GFR12 has through holes in outer race



GFR..F_1F_2 GFR..F_2F_7 GFRN..F_5F_6系列滚柱式单向离合器

GFR..F_1F_2 GFR..F_2F_7 GFRN..F_5F_6 series miler overrunning clutch



型号GFR..F1F2/F2F7以及GFRN..F5F6都是星轮滚柱式结构，带两个密封卷及2套1600系列深沟球轴承作为支撑。

它们是在GFR以及GFRN的基础上组成的。在GFR 和GFRN有说明。如果它们拆开发运，按装使用必须加装润滑油。最初被用作超越和分度功能。盖板的组合取决于驱动器种类选择。参见GFR和GFRN页面。F2和F6盖板通常被用于密封。在F2和F6盖板上有3个螺纹孔和塞子，便于加注油脂，以及放出长期使用的油脂。轴的密封为唇式接触式密封，盖板可以被有经验的使用者轻易的拆装，调整轴的使用方向。另外，整体装配好了以后注入润滑脂（GFR、GFRN除外）。

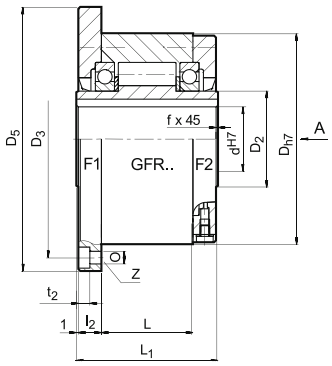
Types GFR..F1F2/F2F7 and GFRN..F5F6 are roller type freewheels, self–contained, sealed and bearing supported, using two 160.. series bearings.

They use the GFR, GFRN base modules described on previous pages. Units must be oil lubricated before use if they are delivered disassembled. Primarily used as overrunning or indexing clutches. The cover combination is chosen according to the type of drive, as shown overleaf. F2 and F6 covers are used to close the unit. They are equipped with 3 screws for oil filling, drain and level.

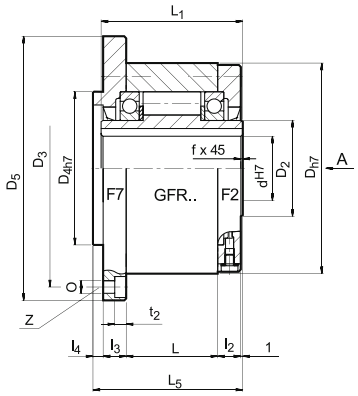
The shaft seal is a standard lip seal. Covers may be easily assembled by a qualified user, allowing direction of rotation to be selected on site. Alternatively, units can be delivered assembled and lubricated (except GFRN.. F5F6).

GFR..F_1F_2 GFR..F_2F_7 GFRN..F_5F_6系列滚柱式单向离合器

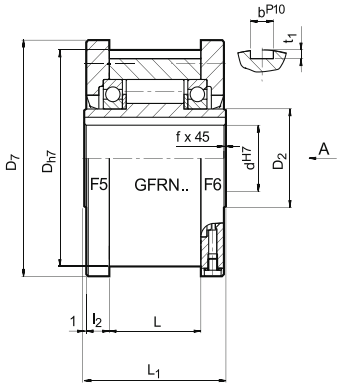
GFR..F_1F_2 GFR..F_2F_7 GFRN..F_5F_6 series miler overrunning clutch



GFR...F1F2



GFR...F2F7



GFRN...F5F6

型号 Type	尺寸 Size		极限转速 Overrunning speeds									数量 Number	键槽外圈 Keyway outer race									重量 Weight
	d^{H7}	T_{KN} 1)	n_{imax} 2)	n_{amax} 3)	D_{h7}	D_5	D_7	D_3	D_{4h7}	O	t_2	z	L_1	L_5	L	l_2	l_3	l_4	t_1	b^{P10}	f	
	[mm]	[Nm]	[min⁻¹]	[min⁻¹]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
GFR..F1F2, GFR..F2F7, GFRN.. F5F6	12	55	3100	4700	62	85	70	72	42	5,5	5,7	3	42	44	20	10	10	3	2,5	4	0,5	1,2
	15	125	2800	4400	68	92	76	78	47	5,5	5,7	3	52	54	28	11	11	3	3	5	0,8	1,6
	20	181	2400	4100	75	98	84	85	55	5,5	5,7	4	57	59	34	10,5	10,5	3	3,5	6	0,8	1,9
	25	288	1600	3800	90	118	99	104	68	6,6	6,8	4	60	62	35	11,5	11,5	3	4	8	1,0	2,9
	30	500	1300	2800	100	128	109	114	75	6,6	6,8	6	68	70	43	11,5	11,5	3	4	8	1,0	3,9
	35	725	1200	2600	110	140	119	124	80	6,6	6,8	6	74	76	45	13,5	13	3,5	5	10	1,0	4,9
	40	1025	850	2300	125	160	135	142	90	9	9	6	86	88	53	15,5	15	3,5	5	12	1,5	7,5
	45	1125	740	2200	130	165	140	146	95	9	9	8	86	88	53	15,5	15	3,5	5,5	14	1,5	7,8
	50	2125	580	1950	150	185	160	166	110	9	9	8	94	96	64	14	13	4	5,5	14	1,5	10,8
	55	2625	550	1800	160	204	170	182	115	11	11	8	104	106	66	18	17	4	6	16	2,0	14,0
	60	3500	530	1700	170	214	182	192	125	11	11	10	114	116	78	17	16	4	7	18	2,0	16,8
	70	5750	500	1600	190	234	202	212	140	11	11	10	134	136	95	18,5	17,5	4	7,5	20	2,5	20,8
	80	8500	480	1500	210	254	222	232	160	11	11	10	144	146	100	21	20	4	9	22	2,5	27,0
	90	14500	420	1300	230	278	242	254	180	14	13	10	158	160	115	20,5	19	4,5	9	25	3,0	40,0
	100	20000	310	1100	270	335	282	305	210	18	17,5	10	182	184	120	30	28	5	10	28	3,0	67,0
	130	31250	220	900	310	380	322	345	240	18	17,5	12	212	214	152	29	27	5	11	32	3,0	94,0
	150	70000	170	700	400	485	412	445	310	22	21,5	12	246	248	180	32	30	5	12	36	4,0	187,0

备注

1）$T_{最大} = 2 \times T_{KN}$

2）内圈超载。

3）键槽符合DIN 6885.1

*）订购产品时请明确方向，从箭头A向看，R表示内圈顺时针旋转，L表示内圈逆时针旋转。

NOTES

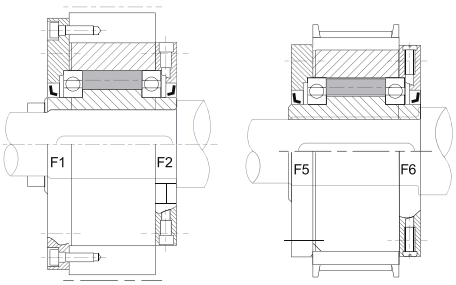
1) $T_{max} = 2 \times T_{KN}$

2) Inner race overruns

3) Outer race overruns Keyway to DIN 6885.1

*) When ordered assembled, please specify direction of rotation seen from arrow ,,A “: ,,R “ Inner race overruns in clockwise direction ,,L “ Inner race overruns in counterclockwise direction

按装参考范例 MOUNTING EXAMPLES



GFR..F_2F_3 GFR..F_3F_4系列滚柱式单向离合器

GFR..F_2F_3 GFR..F_3F_4 series miler overrunning clutch



型号GFR..F2F3/F3F4为星轮滚柱式单向离合器。内含两套1600系列的球轴承作支撑以及两个密封圈。

它们使用GFR系列作为基础，如果它们拆开发运，在F3F4组合情况，组装时必须加装润滑油。这些盖板组件是用支撑作用，如下页图示，F3盖板功能同扭力臂、扭力臂上按装一只止动动螺栓。该止动螺栓按装在机器槽孔上。止动螺栓必经与机器的按装孔存在该直径1%~3%的间隙，该扭力臂不能承载任何其它力。F2和F4盖板通常用于密封单元，盖板上有3个螺纹孔和塞子，用于注油和排油等。

如果使用F4型盖板，轴和盖板以及键槽孔处必经密封，避免通过键槽泄漏。盖板可以不用紧按装，便于选择方向，F3和F4组合可整体发运提前预润滑。

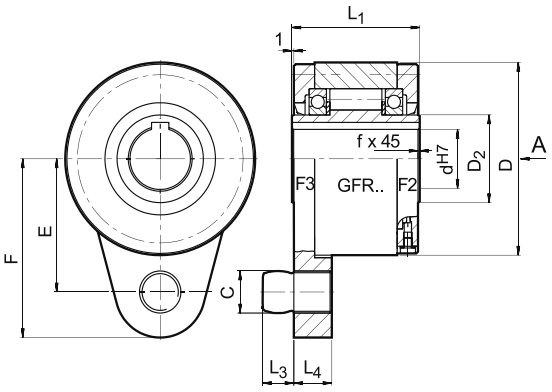
Types GFR..F2F3/F3F4 are roller type freewheels, self–contained, sealed and bearing supported, using two 160.. series bearings.

They use the GFR base module. Units must be oil lubricated before use if they are delivered disassembled and in any case for the F3F4 combination. These cover combinations are primarily used as backstops, as shown overleaf. The F3 cover acts as a torque arm and has an integrated stop bolt. The stop bolt should go into a slot in a fixed part of the machine. The stop bolt must have a radial clearance of 1–3 % of the bolt ‘s diameter. The torque arm and bearings must not be prestressed in any way. F2 and F4 covers are used to close the unit. They are equipped with 3 screws for oil filling, drain and level.

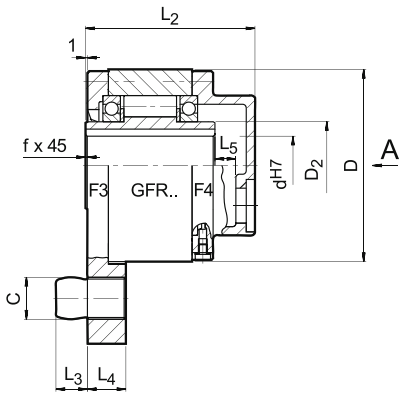
If using cover type F4, shaft end plate and its screw must be sealed to avoid oil leakage through the keyway. Covers are easily fitted, allowing on site selection of rotation direction. If requested units can be delivered assembled and lubricated for the F2F3 combination.

GFR..F_2F_3 GFR..F_3F_4系列滚柱式单向离合器

GFR..F_2F_3 GFR..F_3F_4 series miler overrunning clutch



GFR...F2F3



GFR...F3F4

型号 Type	尺寸 Size		极限转速 Overrunning speed													重量 Weight
	d^{H7} [mm]	T_{KN} 1) [Nm]	n_{imax} 2) [min^{-1}]	D [mm]	D_2 [mm]	C [mm]	L_1 [mm]	L_2 [mm]	L_3 [mm]	L_4 [mm]	F [mm]	E [mm]	L_5 [mm]	f [mm]	[kg]
GFR..F2-F3 GFR..F3-F4	12	55	3100	62	20	10	42	64	10	13	59	44	6	0,5	1,4
	15	125	2800	68	25	10	52	78	10	13	62	47	10	0,8	1,8
	20	181	2400	75	30	12	57	82	11	15	72	54	10	0,8	2,3
	25	288	1600	90	40	16	60	85	14	18	84	62	10	1,0	3,4
	30	500	1300	100	45	16	68	95	14	18	92	68	10	1,0	4,5
	35	725	1200	110	50	20	74	102	18	25	102	76	12	1,0	5,6
	40	1025	850	125	55	20	86	115	18	25	112	85	12	1,5	8,5
	45	1125	740	130	60	25	86	115	22	25	120	90	12	1,5	8,9
	50	2125	580	150	70	25	94	123	22	25	135	102	12	1,5	12,8
	55	2625	550	160	75	32	104	138	25	30	142	108	15	2,0	16,2
	60	3500	530	170	80	32	114	147	25	30	145	112	15	2,0	19,3
	70	5750	500	190	90	38	134	168	30	35	175	135	16	2,5	23,5
	80	8500	480	210	105	38	144	178	30	35	185	145	16	2,5	32
	90	14500	420	230	120	50	158	192	40	45	205	155	16	3,0	47,2
	100	20000	310	270	140	50	182	217	40	45	230	180	16	3,0	76
	130	31250	220	310	160	68	212	250	55	60	268	205	18	3,0	110
	150	70000	170	400	200	68	246	286	55	60	325	255	20	4,0	214

备注

1）$T_{最大} = 2 \times T_{KN}$

2）内圈超越，键槽符合DIN 6885.1。

*）订购产品时请明确方向，从箭头A向看，R表示内圈顺时针旋转，L表示内圈逆时针旋转。

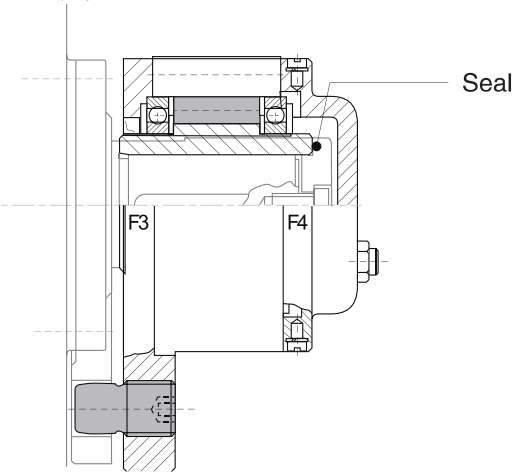
NOTES

1) $T_{max} = 2 \times T_{KN}$

2) Inner race overrunsKeyway to DIN 6885.1

*) When ordered assembled, please specify direction of rotation seen from arrow ,,A “: ,,R “ Inner race overruns in clockwise direction, ,,L “ Inner race overruns in counterclockwise direction

按装参考范例 MOUNTING EXAMPLES



AL和ALP系列星轮滚柱式单向离合器

AL and ALP series star wheel miler overrunning clutch



型号AL、ALP是星轮滚柱单向离合器，它们使用两个1600系列球轴承作为支撑，为该单元设计油润滑和密封在下节描述是一致的。

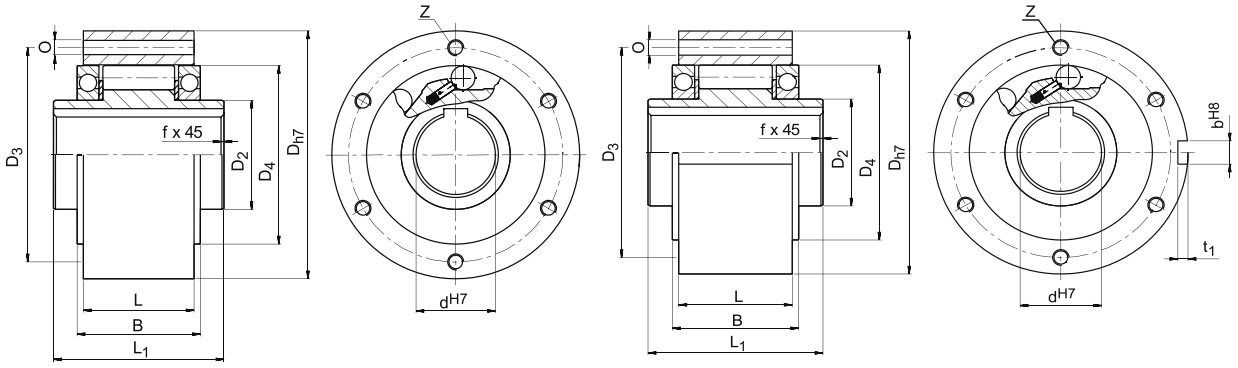
轴承不能承受轴向力，通常AL、ALP类型被设计带有两端盖板及密封圈进行油润滑来传送扭矩，这些盖板将根据下页所示的组合成对使用。AL型号外径可以接受和其它零件的H7公差配合，扭矩通过螺栓穿过两端盖板而传递。AL、ALP外型尺寸相同，ALP是通过外径键槽传递扭矩。发运时工厂在外圈端面配两张纸质密封件。

Types AL, ALP are roller type freewheels. These units are part of the R&B modular system. They are bearing supported, using two 160.. series bearings, and require oil lubrication. These units may be used in designs providing oil lubrication and sealing as on the example overleaf.

The bearings must not be axially stressed. Typically, types AL, ALP are used with standard covers that are designed to transmit torque, and provide oil lubrication and sealing. Usually these covers are used in pairs according to combinations shown on the following pages. The outer race of the AL model is plain to receive and center any component bored to H7 tolerance. Torque is transmitted by bolts through the cover plate in this case. Types AL, ALP are identical except that type ALP has a keyway on the outside diameter to transmit the torque.Two paper seals are delivered with each unit to be placed between the outer race and cover plates.

AL和ALP系列星轮滚柱式单向离合器

AL and ALP series star wheel miler overrunning clutch



AL　　ALP

型号 Type	尺寸 Size		极限转速 Overrunning speeds							数量 Number								重量 Weight	摩擦阻力 Drag torque
	d^{H7}	T_{KN} 1)	n_{imax} 2)	n_{amax} 3)	D_{h7}	D_2	D_4	D_3	O	z	L^1	L^4	B	t_1	b^{H8}	f		T_R
	[mm]	[Nm]	[min⁻¹]	[min⁻¹]	[mm]	[mm]	[mm]	[mm]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[Ncm]
AL ALP	12	55	4000	7200	62	20	42	51	5,5	3	42	20,3	27	2,4	4	0,5	0,5	3,4
	15	125	3600	6500	68	25	47	56	5,5	3	52	30,3	34,1	2,9	5	0,8	0,8	4,1
	20	181	2700	5600	75	30	55	64	5,5	4	57	34,3	39,1	3,5	6	0,8	1,0	8
	25	288	2100	4500	90	40	68	78	5,5	6	60	37,3	42,1	4,1	8	1,0	1,5	14
	30	500	1700	4100	100	45	75	87	6,6	6	68	44,3	49,1	4,1	8	1,0	2,2	23
	35	725	1550	3800	110	50	80	96	6,6	6	74	48,3	54,1	4,7	10	1,0	3,0	60
	40	1025	1150	3400	125	55	90	108	9	6	86	56,3	62,1	4,9	12	1,5	4,6	72
	45	1125	1000	3200	130	60	95	112	9	8	86	56,3	62,1	5,5	14	1,5	4,7	140
	50	2125	800	2800	150	70	110	132	9	8	92	63,3	69,1	5,5	14	1,5	7,2	180
	55	2625	750	2650	160	75	115	138	11	8	104	67	73,1	6,2	16	2,0	8,6	190
	60	3500	650	2450	170	80	125	150	11	10	114	78	84	6,8	18	2,0	10,5	240
	70	5750	550	2150	190	90	140	165	11	10	134	95	103	7,4	20	2,5	13,5	320
	80	8500	500	1900	210	105	160	185	11	10	144	100	108	8,5	22	2,5	18,2	330
	90	14500	450	1700	230	120	180	206	14	10	158	115	125	8,7	25	3,0	28,5	650
	100	20000	350	1450	270	140	210	240	18	10	182	120	131	9,9	28	3,0	42,5	830
	120	31250	250	1250	310	160	240	278	18	12	202	140	152	11,1	32	3,0	65,0	1080
	150	70000	200	980	400	200	310	360	22	12	246	180	196	12,3	36	4,0	138,0	1240
	200	175000	150	750	520	260	400	460	26	18	326	240	265	15	45	5,0	315,0	3800
	250	287500	120	620	610	320	480	545	33	20	396	300	330	15	45	5,0	512,0	6100
ALM	25	388	2100	2800	90	40	68	78	5,5	6	60	37,3	42,1	4,1	8	1,0	1,7	22
	30	588	1700	2500	100	45	75	87	6,6	6	68	44,3	49,1	4,1	8	1,0	2,5	37
	35	838	1550	2400	110	50	80	96	6,6	6	74	48,3	54,1	4,7	10	1,0	3,2	66

备注

1）$T_{最大} = 2 \times T_{KN}$

2）内圈超越误差取决于密封圈接触。

3）外圈超越误差取决于标准键槽DIN 6885.1

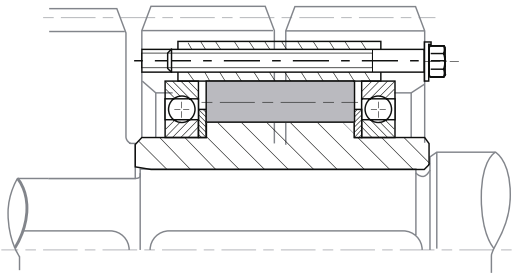
NOTES

1) $T_{max} = 2 \times T_{KN}$

2) Inner race overruns, values without lip seals

3) Outer race overruns Keyway to DIN 6885.1

按装参考范例　MOUNTING EXAMPLES



FSO和HPI系列楔块式单向离合器

FSO and HPI SERIES CAM CLUTCHES



型号FSO，FSO–GR，和HPI 300到700都是楔块式单向离合器，内部按装2套球轴承为支撑和2套唇式密封圈。产品根据使用型号出厂前可选用油润滑和脂润滑、设计类型以及特点为密排楔块结构，以达到在有限的空间提供最大的扭矩传输。任何过载使用都会破坏一个楔块，从而破坏相邻的楔块，使离合器失效。

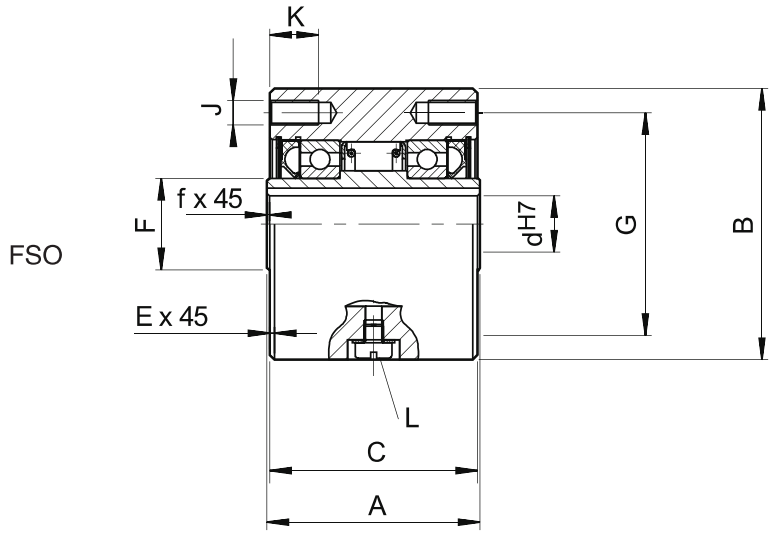
型号FSO和HPI为油润滑，使用标准的轴用唇式接触密封。型号FSO–GR是脂润滑方式，可以使用压入式迷宫式密封。型号HPI是针对高频次定位送料而设计的。

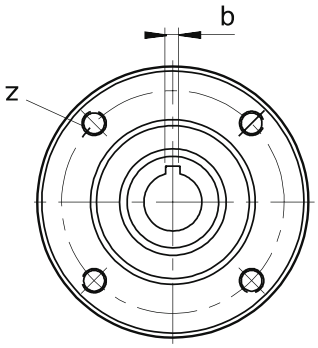
Types FSO, FSO–GR, and HPI 300 to 700 are sprag type freewheels self–contained, sealed and bearing supported, using two ball bearings.

Units are delivered oil or grease lubricated according to the type. It is R&B design with a full sprag complement that gives a very high torque for a given diameter. Any overload is resisted by a sprag to sprag abutment, avoiding a sprag tilt over. Types FSO and HPI are oil lubricated and use standard shaft lip seals. Type FSO–GR is grease lubricated and can be equipped with contact free labyrinth seals. Type HPI is specially designed for high speed indexing applications.

FSO和HPI系列楔块式单向离合器

FSO and HPI SERIES CAM CLUTCHES





型号 Type	尺寸 Size		极限转速 Overrunning speeds										数量 Number					润滑油 Lubricant			重量 Weight	摩擦阻力 Drag torque
		T_{KN} 1) [Nm]	FSO n_{max} 2) [min⁻¹]	FSO-GR n_{max} 3) [min⁻¹]	d^{H7}-bxh [mm]	$d^{4)}$ min-max [mm]	A [mm]	B -0,05 [mm]	C [mm]	E [mm]	F [mm]	G [mm]	z	J	K [mm]	L	f [mm]	FSO [ml]	FSO..GR [ml]	HPI [ml]	[kg]	T_R [Ncm]
FSO FSO-GR HPI	300	379	3000/900	3600/900	15-5x5	12... 19	63,50	76,20	60,45	1,6	28,58	66,67	4	M8	13	M6	0,8	7	10	14	1,6	18
	400	407	2800/850	3600/850	18-6x6	12... 22	69,85	88,90	68,07	1,6	30	73	4	M8	13	M6	0,8	10	20	20	2,7	27
	500	1621	2500/800	3000/800	30-8x7	19... 33	88,90	107,95	85,73	1,6	45	92	4	M8	16	M6	1,5	22	35	35	4,8	31
	600	3105	2200/750	2400/750	40-12x8	24... 57	95,25	136,525	92,2	1,6	63,5	120,6	6	M8	16	M6	1,6	52	84	84	8,6	62
					45-14x9																	
					50-14x6																	
					50-14x9																	
	700	6900	1600/450	2000/450	60-18x11	48... 82	127,00	180,975	123,85	1,6	90	158,75	8*	M10*	20	M6	1,6	168	280	280	19	156
					65-18x11																	
					70-20x12						101,6[5)]											

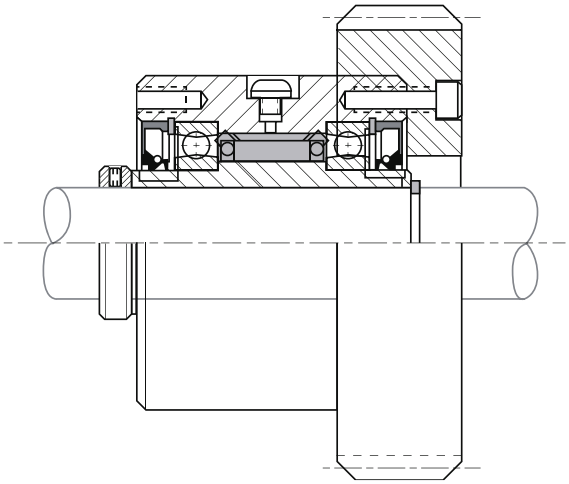
备注

1）$T_{最大} = 1.2 \times T_{KN}$
2）内圈/外圈
3）内圈/外圈迷宫式密封
4）可选择英制尺寸内孔。
5）仅提供大型孔径
尺寸600>50mm　尺寸700>75mm

NOTES

1) $T_{max} = 1.2 \times T_{KN}$
2) Inner race/outer race
3) Inner race/outer race labyrinth seal
4) Inch bore available on request
5) Only for oversize bore
Size 600 > 50 mm　Size 700 > 75 mm

按装参考范例
MOUNTING EXAMPLES



RSCI系列非接触式楔块式单向离合器

RSCI SERIES NON CONTACT TYPE CAM CLUTCHES



型号RSCI为非接触式楔块式单向离合器，内圈旋转，仅有内圈被设计用於单向功能，无轴承支撑。

使用时必需安装轴承以确保内圈与外圈之同心度，轴承支撑轴向与径向的负载，请参考按装范例。

同心度及跳动限制必须依照规格遵守。

主要用於防止逆转，此型号亦可用於高速转运离合器之双动力源慢速启动应用，此种应用虽然超越运转速度很高，但启动速度很低并不会超越，如下页中的最高启动速度。

当用於防止逆转，此型号要检查超越转速度不可低於超越转速最低容许值，如下页规格表中。

Type RSCI is a centrifugal lift of spray type free–wheel with the inner race rotating. Only the inner race is designed for freewheeling. It is non selfsupported type. Bearings must be provided to ensure concenticity of the inner and outer races and support axixl and radia! loads, as shown overleaf.

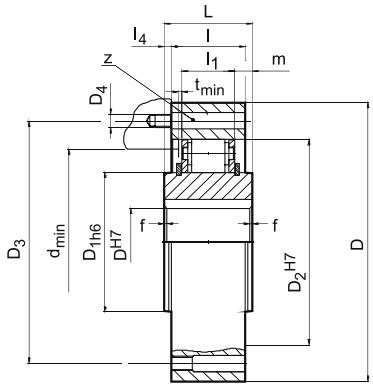
Concentricity and run–out limits must be obeserved.

Primarily designed as a backstop, this type can be also used as an ocerrunning clutch in crawl drives, where the overrunning speed is low and does not exceed the maximum driving speed shown in the table.

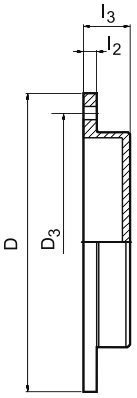
When used as a backstop, it must be checked that the overrunning speed will not go below the minimum speed giver in the caracteristics table.

RSCI系列非接触式楔块式单向离合器

RSCI SERIES NON CONTACT TYPE CAM CLUTCHESRSCI



RSCI



F8

型号 Type	尺寸 Size		速度 Speeds									数量 Number											重量 Weight	
RSCI	d^{H7} [mm]	T_{KN} 1) [Nm]	n_{max} 2) [min⁻¹]	n_{imin} 3) [min⁻¹]	n_{imax} 4) [min⁻¹]	D 5) [mm]	D_{1h6} [mm]	D_2^{H7} [mm]	D_3 [mm]	D_4	z	L [mm]	l [mm]	l_1 [mm]	l_4 [mm]	f×45° [mm]	d_{min} [mm]	m [mm]	t_{min} [mm]	l_2 [mm]	l_3 [mm]	RSCI [kg]	F8 [kg]
	20	212	315	750	15000	90	36	66	78	M6	6	35	35	25	0	0,8	52	5	1	8	16	1,5	0,3
	25	319	300	725	14000	95	40	70	82	M6	6	35	35	25	0	1,0	56	5	1	8	16	1,6	0,4
	30	375	290	700	11000	100	45	75	87	M6	6	35	35	25	0	1,5	62	5	1	8	16	1,8	0,4
	35	550	280	670	11000	110	50	80	96	M6	8	35	35	25	0	1,5	66	5	1	8	16	2,1	0,5
	40	800	260	630	8000	125	60	90	108	M8	8	35	35	25	0	1,5	76	5	1	10	21	2,7	0,7
	45	912	255	610	7000	130	65	95	112	M8	8	35	35	25	0	1,5	82	5	1	10	21	2,9	0,9
	50	1400	235	560	6000	150	80	110	132	M8	8	40	40	25	0	1,5	100	7,5	1	10	21	4,3	1
	60	2350	210	510	6000	175	85	125	155	M10	8	60	50	36	5	2,0	110	12	2	12	35	6,5	1,8
	70	3050	195	470	4000	190	100	140	165	M10	12	60	50	36	5	2,0	120	12	2	12	35	8,6	1,9
	80	4500	180	440	4000	210	120	160	185	M10	12	70	60	36	5	2,0	140	17	3	12	35	12,5	2,6
	80M	5800	155	375	4000	210	120	160	185	M10	12	70	60	46	5	2,0	140	12	2	12	35	13,1	2,6
	90	5600	170	410	3000	230	140	180	206	M12	12	80	70	36	5	2,5	165	22	3	12	35	17,4	3,0
	90M	8700	145	350	3000	245	140	180	206	M12	12	80	70	46	5	2,5	160	17	2	12	35	18,3	3,0
	100	10500	145	355	3000	290	140	210	258	M16	12	90	80	52,6	5	2,5	180	18,6	3	15	37	28	5,0
	100M	16000	140	340	2400	290	170	210	258	M16	12	90	80	63	5	2,5	200	13,5	2	12	35	30	5,0
	130	15750	135	330	2400	322	170	240	278	M16	12	90	80	52,6	5	3,0	210	18,6	3	15	37	35	6,0

备注 NOTES

1）$T_{最大} = 1.2 \times T_{KN}$

2）最大阻力传输时n_{max}不得超过此速度。

3）超越速度最低许值n_{imin}，在连续运转时绝对不得低于此速度。

4）内圈超越，键槽标准 DIN 6885.1。

NOTES

1) $T_{max} = 1.2 \times T_{KN}$

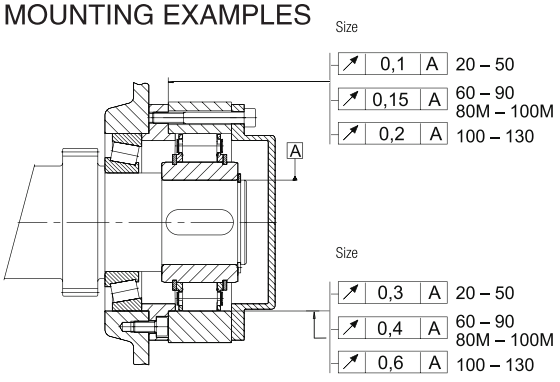
2)This maximum allowable torque transmission speed n_{max} must not be exceeded when transmitting torque

3) This minimum allowable overrunning speed n_{imin} should not be reduced under continuous operation. Possible reduction of this minimum speed on request

4) Inner race overruns Keyway to DIN 6885.1

按装参考范例

MOUNTING EXAMPLES



NFR系列滚柱式单向离合器

NFR series miler overrunning clutch



NFR系列为无任何密封的轴承支承的星轮式单向离合器。安装时，必须提供润滑和密封。标准润滑为润滑油润滑。

型号8–20装置需重新配置滑动轴承。25以上型号，使用两个160系列的滚珠轴承，可提供更高的超限速度容量。典型配置如下页所示。

通过键将内座圈固定在轴上。外座圈公差n6，可根据H7公差压配合入外壳。其他的侧面凹口用于力矩的传递。外壳必须足够坚硬，不会在装配后膨胀。

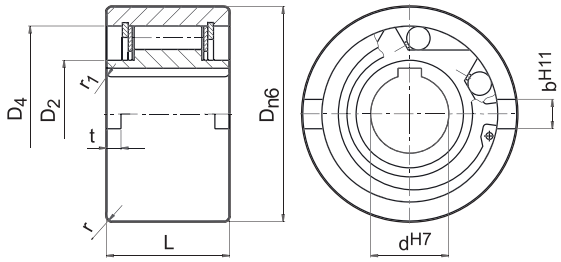
Type NFR is a bearing supported roller type freewheel without any sealing. Lubrication and sealing must be provided by the installation. Standard lubrication is oil.

Size 8 to 20 units use steel on steel bearing support from the inner race. Above size 25, two 160···series ball bearing are used, giving a higher overrunning speed capacity. A typical arrangement is shown overleaf.

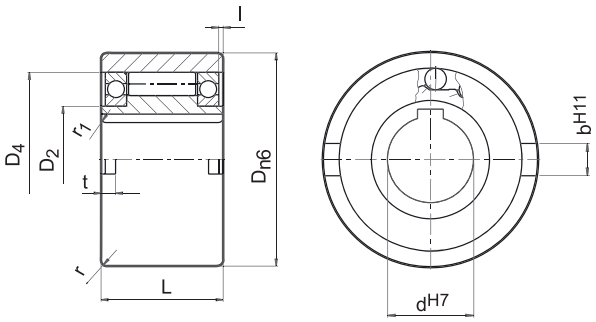
The inner race is keyed to the shaft. The outer race has a positive n6 tolerance to give a press fit in a housing to H7. Additional side notches provide for positive torque transmission. The housing must be strong enough to not expand after assembly.

NFR系列滚柱式单向离合器

NFR series miler overrunning clutch



NFR 8–20*



NFR 25–130**

型号 Type	尺寸 Size		极限转速 Overrunning speeds		轴承 Bearing									重量 Weight
	d^{H7} [mm]	T_{KN} 1) [Nm]	n_{imax} 2) [min⁻¹]	n_{amax} 3) [min⁻¹]		D_{n6} [mm]	D_2 [mm]	D_4 [mm]	L [mm]	l [mm]	t [mm]	b^{H11} [mm]	r [mm]	r_1 [mm]	[kg]
NFR (ANR–ANG)	8	20	1000	1000	*	37	20	30	20		3	6	1	1.5	0.1
	12	20	1000	1000	*	37	20	30	20		3	6	1	1.5	0.1
	15	78	850	850	*	47	26	37	30		3.5	7	1.5	1.5	0.3
	20	188	650	650	*	62	37	52	36		3.5	8	2	2	0.6
	25	250	2100	3600	16008**	80	40	68	40	0.2	4	9	2.5	2	1.2
	30	500	1700	3200	16009**	90	45	75	48	0.2	5	12	2.5	2	1.8
	35	663	1550	3000	16010**	100	50	80	53	1.2	6	13	2.5	2.5	2.4
	40	1100	1150	2600	16011**	110	55	90	63	2.2	7	15	3	2.5	3.3
	45	1500	1000	2400	16012**	120	60	95	63	2.2	7	16	3	2.5	4.0
	50	2375	800	2150	16014**	130	70	110	80	2.7	8.8	17	3.5	3	5.7
	55	2550	750	2000	16015**	140	75	115	80	4.2	9	18	3.5	3	6.5
	60	4250	650	1900	16016**	150	80	125	95	3.2	9	18	3.5	3.5	8.9
	70	5875	550	1750	16018**	170	90	140	110	1.1	9	20	3.5	3.5	13.5
	80	10000	500	1600	16021**	190	105	160	125	0	9	20	4	3.5	19.0
	90	17250	450	1450	16024**	215	120	180	140	0.6	11.5	24	4	4	27.2
	100	19625	350	1250	16028**	260	140	210	150	2.6	14.5	28	4	4	44.5
	130	34750	250	1000	16032**	300	160	240	180	2	17.5	32	5	5	68.0

备注

1）$T_{最大} = 2 \times T_{KN}$

2）内座圈超限运动。

3）外座圈超限运动。键槽符合DIN 6885.1

*) 带滑动轴承

**) 带两个160系列的球轴承

NOTES

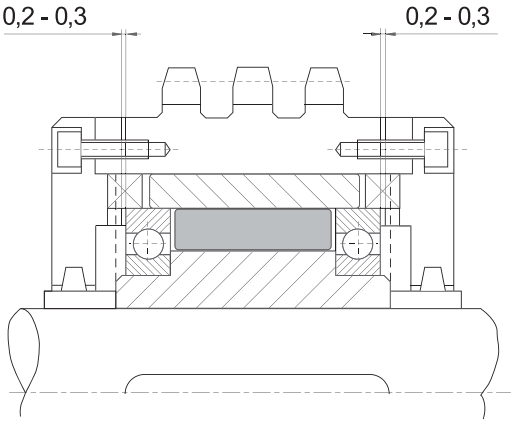
1) $T_{max} = 2 \times T_{KN}$

2) Inner race overruns

3) Outer race overruns.Keyway to DIN 6885.1

*) with plain bearing steel on steel

**) with 2 ball bearing series 160.



KI系列滚柱式单向离合器

KI series miler overrunning clutch



KI系列是一种星轮滚柱式单向离合器，由内座圈和辊子压入一个聚酰胺保持架组成。该系列装置不得拆卸，可用于办公设备，或打包机的小机构中，安装于齿轮或进料辊内。

齿轮或进料辊内径用作外座圈。需要使用额外的轴承架，并且离合器不得受到轴向载荷：安装示例见下页。外座圈不需要硬化处理；最小强度：700 N/mm2。

表面粗糙度不超过22 CLA。安装于轴上时，可压配合至r6公差，或使用胶水安装，间隙为0.02 至 0.05毫米。

8毫米及以上的型号可配备键槽。温度范围：–40℃ 至 + 100℃（连续操作）。+120℃的最高温度在短时期内能够承受。

Type KI is a roller type freewheel. It is an assembly comprising of an inner race and rollers fitted into a polyamide cage. This type of unit can not be dismantled. It is designed for small mechanisms in office equipment, or packaging machines to be mounted inside gears or feed rollers.

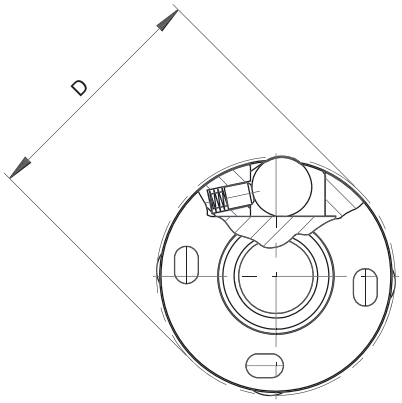
The gear or feed roller inner diameter is used as the outer race. Additional bearing support is required, and the freewheel must not subjected to axial loading: mounting examples are shown on the following page. The outer race does not need to be hardened; min. strength: 700 N/mm2.

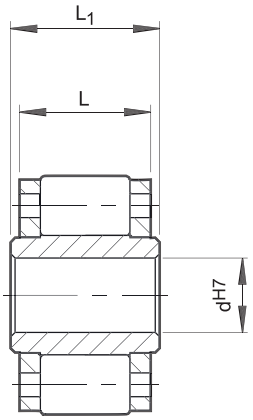
The surface roughness will not exceed 22 CLA. Mounting onto the shaft can be press fit to r6 tolerance or a glue fit with a clearance of 0.02 to 0.05mm.

Sizes 8 mm and above can be supplied with a keyway. Temperature range: –40℃ to + 100℃ (continuous operation).Peak temperatures of +120℃ are acceptable for short periods of the time.

KI系列滚柱式单向离合器

KI series miler overrunning clutch





Ki

型号 Type	尺寸 Size			极限转速 Overrunning speeds					重量 Weight
		d^{H7} [mm]	T_{KN} 1) [Nm]	n_{imax} 2) [min^{-1}]	n_{amax} 3) [min^{-1}]	D^{H7} [mm]	L_1 [mm]	L [mm]	[kg]
Ki	164	4	0.8	8000	10000	16	10	9	0.008
	165	5	0.8	8000	10000	16	10	9	0.007
	194	4	0.9	7000	9000	19	10	9	0.012
	195	5	0.9	7000	9000	19	10	9	0.011
	196	6	0.9	7000	9000	19	10	9	0.010
	268*	8	2.9	5000	6000	26	14	13	0.023
	269*	9	2.9	5000	6000	26	14	13	0.021
	2610*	10	2.9	5000	6000	26	14	13	0.019

备注

1) $T_{最大} = 2 \times T_{KN}$

*) 也可配有符合DIN 6885.1的键槽

2) 内座圈超限运动

3) 外座圈超限运动

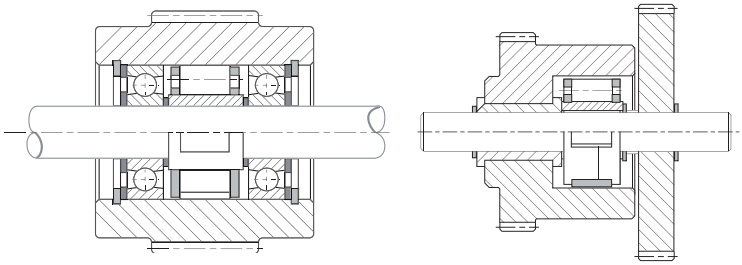
NOTES

1) $T_{max} = 2 \times T_{KN}$

*) Can be also supplied with a Keyway to DIN 6885.1

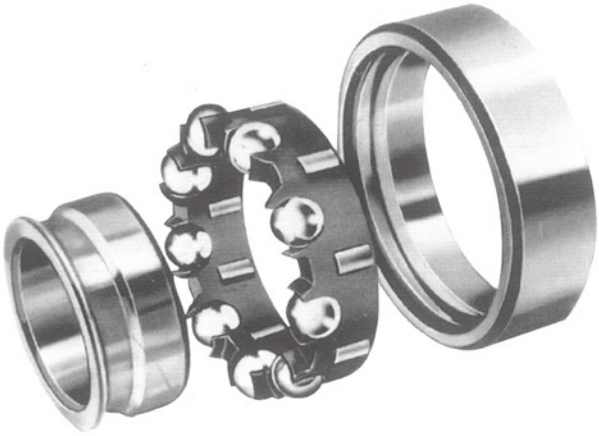
2) Inner race overruns

3) Outer race overruns.



楔块式单向离合器CSK，CSK...2RS系列

Sprag freewheels CSK,CSK...2RS series





特性

CSK 型式为楔块式单向离合器.外型尺寸与 6200、600、6300 系列轴承相同〈尺寸 8 号 40 号除外〉,内含球轴承支撑用黄油润滑，二边封盖可防止 0.3mm 以上的尘灰铁屑进入内部,若工作温度超过 50℃及防止微污物进入内部，可自行购买簧片式密封盖"nylos"

若要得到较好润滑效果而使用浸入油中的润滑方式，可以使用适当的方法，去除内含的黄油，再安装入油池中使用。

扭力之传输为藉由"紧配"方式，以 n6 公差将外圈与刚性足够的机壁压合,以 N6 公差将内圈与工作轴心压合，轴承起始游隙为 C5 级，故紧配时所产生的内部缩小变形，可使扭力及轴承达到预期的最好效果，安装时要注意，不可敲打内圈压迫外圈进入机壁，及不可敲打外圈压迫内圈挤入轴心的方式安装。

内圈或外圈之一边可采用粘胶方式固定，若内外圈二边皆用粘胶固定，会使功能降低。若不想使用紧配方式安装,可采用 CSK－PP 系列 C3 级轴承方式安装以得到最佳效果。

操作温度范围－40℃～＋130℃瞬间高温可达 150℃。

CSK-2RS 型式比标准 CSK 型式宽 5mm，但含油封可得到较好的预防水喷洒的密封效果。

Description

Type CSK is sprag type freewheel integrated into a 6200、600、6300 series ball bearing (except sizes 8 and 40). It is bearing supported, delivered grease lubricated and protected against dust of more than 0.3mm. The use of additional "nylos" type seals is recommended especially when the working temperature exceeds 50℃。

Oil bath lubrication is also possible if the original grease is first flushed out using a suitable solvent.

Torque transmission is ensured by a press fit assembly into a rigid outer housing with N6 tolerance. and onto a shaft with n6 tolerance. The initial bearing radial clearance is set at C5, and is reduced if using the press fit as specified.

One race may be glued. If both races are to be glued, performance will be reduced or a C3 bearing clearance will be necessary.

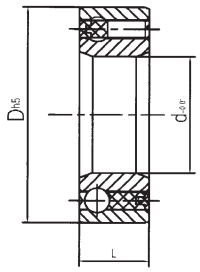
Operating temperature range:-40℃to+130℃. peaks up to+150℃ are acceptable for short periods.

CSK..2RS is 5mm wider but is equipped with lip seals to be water splash resistant.

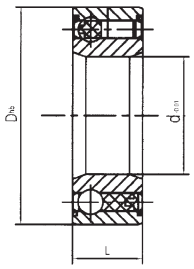
单向离合器

One way clutch

CSK



CSK..2RS



型号 Type	尺寸 Size	轴承系列 Bearing series					轴承负载 Bearing loads dyn.	Stat.	重量 Weight	摩擦阻力 Friction Resistance
	d [mm]		TKN[1]) [Nm]	nmax. [min^{-1}]	D [mm]	L [mm]	C [kN]	Co [kN]	[kg]	TR [Ncm]
CSK (KK)	8*	-	2.5	15,000	22	9	3.28	0.86	0.015	0.5
	12	6201	9.3	10,000	32	10	6.1	2.77	0.04	0.7
	15	6202	17	8,400	35	11	7.4	3.42	0.06	0.9
	17	6203	30	7,350	40	12	7.9	3.8	0.070	1.1
	20	6204	50	6,000	47	14	9.4	4.46	0.110	1.3
	25	6205	85	5,200	52	15	10.7	5.46	0.140	2.0
	30	6206	138	4,200	62	16	11.7	6.45	0.210	4.4
	35	6207	175	3,600	72	17	12.6	7.28	0.300	5.8
	40	-	325	3,000	80	22	15.54	12.25	0.5	7.0
CSK..2RS	8**		2.5	15,000	22	9	3.28	0.86	0.015	0.8
	12	-	9.3	10,000	32	14	6.1	2.77	0.05	3.0
	15		17	8,400	35	16	7.4	3.42	0.070	4.0
	17		30	7,350	40	17	7.9	3.8	0.09	5.6
	20		50	6,000	47	19	9.4	4.46	0.145	6.0
	25		83	5,200	52	20	10.7	5.46	0.175	6.0
	30		138	4,200	62	21	11.7	6.45	0.270	7.5
	35		175	3,600	72	22	12.6	7.28	0.400	8.2
	40	-	325	3,000	80	27	15.54	12.25	0.6	10
CSK6003	17	6003	15	8,400	35	10	7.4	3.42	0.055	0.9
CSK6004	20	6004	28	7,350	42	12	7.9	3.8	0.065	1.1
CSK6005	25	6005	78	6,200	47	14	10.7	5.46	0.10	1.3
CSK6304	20	6304	85	5,300	52	15	12.3	7.88	0.18	2.2
CSK6305	25	6305	145	4,400	62	17	17.3	11.51	0.26	4.4
CSK6306	30	6306	205	3,800	72	19	21.73	15.82	0.415	5.8

备注事项

1) $T_{max}=2.5\times T_{KN}$

*) 星号注解者，仅一只 Z 型封盖在轴承端，从此封盖端看外环逆时针转动为自由空转状态。

**) 仅有一只 RS 密封盖在轴承端，从此封盖端看外圈逆时针转动为自由空转状态。

Notes

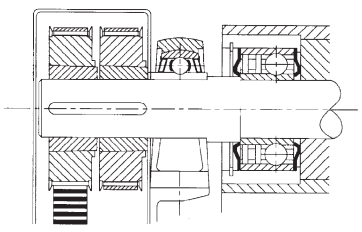
2) $T_{max}=2.5\times T_{KN}$

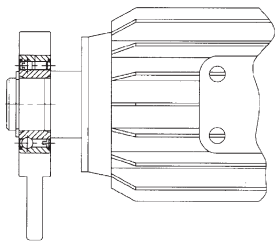
*) One Z seal on the bearing side only. Looking from this side, the outer race runs free in the counterclockwise direction.

**) Only one RS seal on the ball bearing side. Looking from this side, the outer race runs free in the counterclockwise direction.

安装参考范例

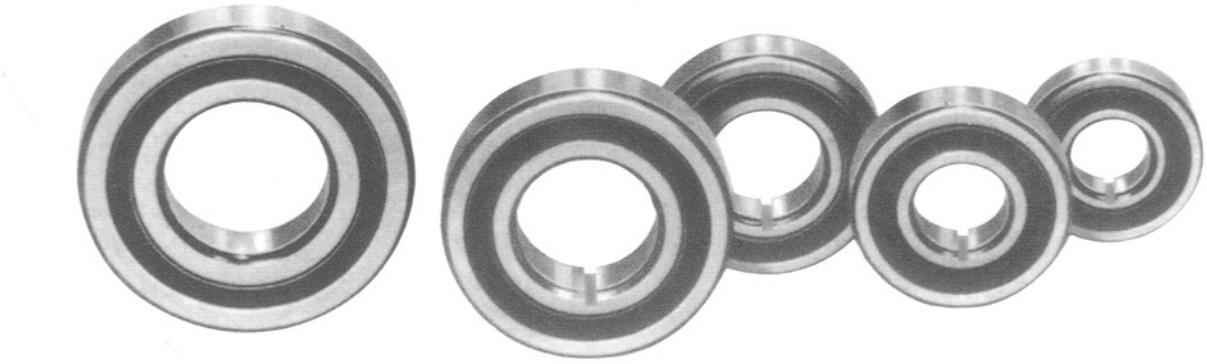
Mounting example





楔块式单向离合器CSK...P,CSK...PP,CSKP...2RS系列

Sprag freewheels CSK...P,CSK...PP,CSKP...2RS series



特性

CSK..P,CSKP2RS及CSK..PP型为楔块式单向离合器。外型尺寸与62系列轴承相同(规格40号除外),内含滚珠轴承支撑及黄油润滑，二边封盖可防止0.3mm以上的尘灰铁屑进入内部，若工作温度超过50℃及防止微污物进入内部，可自行购买簧片式密封盖"NYLOS"。

若要得到较好润滑效果而使用浸入油中的润滑方式，可以使用适当的方法，去除内含的黄油，再安装入油池中使用。

CSK...P,CSKP...2RS系列与CSK系列之不同点为内圈有加工键槽，故内圈与工作轴可使用K6公差，外圈依然使用N6公差紧配压入刚性足够的机壁。

CSK...PP系列为内圈与外圈皆有一个键槽，原厂建议公差为内圈与工件轴心为K6公差，外圈与工作壁为K6公差，若要采用滑配方式安装，内圈与工件轴h6之公差或外圈与机壁H6之公差或外圈与机壁H6之公差亦可接受。

工作温度范围-40℃～+100℃，瞬间高温可达+120℃ 若欲使用于更高温之范围请联络原厂。

Description

Types CSK..P,CSKP...2RS and CSK..PP are sprag type free wheels integrated into 62..series ball bearing (except size 40). They are bearing supported, delivered grease lubricated and protected against dust of more than 0.3mm. The use of additional "nylos" type seals is recommended especially when the working temperature exceeds 50.

Oil bath lubrication is also possible if the original grease is first flushed out using a suitable solvent.

In addition to the basic CSK model, type CSK..P CSKP...2RS features a keyway On the inner race. For this reason it can be keyed to a shaft to k6 tolerance. The outer race must still be pressed into a rigid housing to N6tolerance.

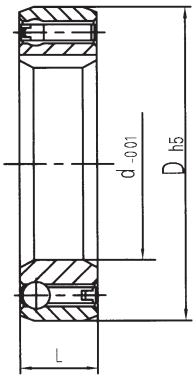
CSK..PP features a keyway On both the inner and outer race. The recommended mounting tolerances are k6 on the shaft and K6 in a rigid housing. A h6 tolerance on the shaft or H6 in the housing are also acceptable for a slight fit assembly.

Operating temperature range: -40℃ to +100℃ Peaks up to +120℃ are acceptable for short periods Please contact us for higher temperatures.

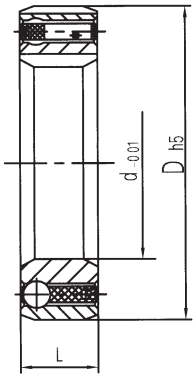
单向离合器

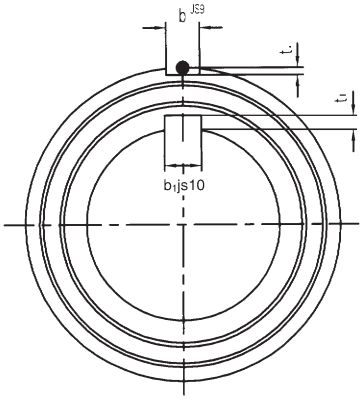
One way clutch

CSK..P



CSK..PP



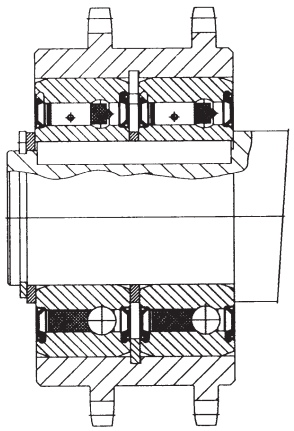


型号 Type	尺寸 Size	轴承系列 Bearing series									轴承负载 Bearing loads dynamic	static	重量 Weight	摩擦阻力 Drag torque
			T_{KN} [Nm]	N_{max} [min^{-1}]	D [mm]	L [mm]	b [mm]	t [mm]	b_1 [mm]	t_1 [mm]	C [KN]	C_0 [KN]	[kg]	T_R [Ncm]
CSK...P	12	6201	9.3	10000	32	10			4	1.2	6.1	2.77	0.04	0.7
	15	6202	17	8400	35	11			5	1.2	7.4	3.42	0.06	0.9
	17	6203	30	7350	40	12			5	1.2	7.9	3.8	0.070	1.1
	20	6204	50	6000	47	14			6	1.6	9.4	4.46	0.110	1.3
	25	6205	85	5200	52	15			8	2	10.7	5.46	0.140	2.0
	30	6206	138	4200	62	16			8	2	11.7	6.45	0.210	4.4
	35	6207	175	3600	72	17			10	2.4	12.6	7.28	0.300	5.8
	40	–	325	3000	80	22			12	3.3	15.54	12.25	0.5	7.0
CSK...PP	15	6202	17	8400	35	11	2	0.6	5	1.2	7.4	3.42	0.06	0.9
	17	6203	30	7350	40	12	2	1.0	5	1.2	7.9	3.8	0.070	1.1
	20	6204	50	6000	47	14	3	1.5	6	1.6	9.4	4.46	0.110	1.3
	25	6205	85	5200	52	15	6	2.0	8	2	10.7	5.46	0.140	2.0
	30	6206	138	4200	62	16	6	2.0	8	2	11.7	6.45	0.210	4.4
	35	6207	175	3600	72	17	8	2.5	10	2.4	12.6	7.28	0.300	5.8
	40	–	325	3000	80	22	10	3.0	12	3.3	15.54	12.25	0.5	7.0
CSK...P-2RS	12	–	9.3	10000	32	14			4	1.2	6.1	2.77	0.05	3
	15	–	17	8400	35	16			5	1.2	7.4	3.42	0.07	4
	17	–	30	7350	40	17			5	1.2	7.9	3.8	0.09	5.6
	20	–	50	6000	47	19			6	1.6	9.4	4.46	0.145	6.0
	25	–	85	5200	52	20			8	2	10.7	5.46	0.175	6.0
	30	–	138	4200	62	21			8	2	11.7	6.45	0.270	7.5
	35	–	175	3600	72	22			10	2.4	12.6	7.28	0.4	8.2
	40	–	325	3000	80	27			12	3.3	15.54	12.25	0.6	10

备注事项

$T_{max}=2.5\times T_{KN}$

安装参考范例



Notes

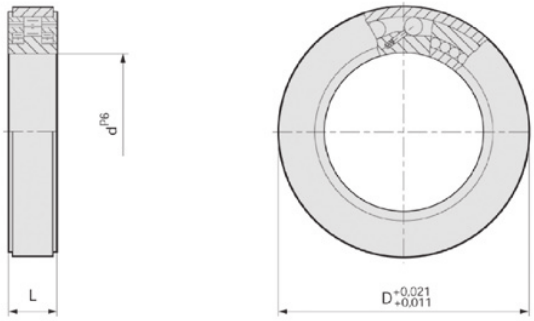
$T_{max}=2.5\times T_{KN}$

Mounting example

ASK系列滚柱式单向离合器

ASK series miler overrunning clutch





ASK系列的型号是星轮滚柱式单向离合器，有两行满装滚子轴承作为支撑，它是自带防尘保护，自带润滑油。

通常外形尺寸和60系列的轴承尺寸一致，必须确保内外圈两边压入式安装才能实现扭矩传输作用。因为这个压入式安装，标准的径向防游隙是C4。单向离合器尺寸上存在一个干扰公差，允许直接安装在一个标准60系列轴承定位上，轴公差必须是H6或J6，按照K6公差外圈必须压进一个固定座圈。径向轴承负载能力显示在表格里。

ASK系单身离合器不可以接受轴向载荷，一但达类似情况，需要配合一个平面轴承。

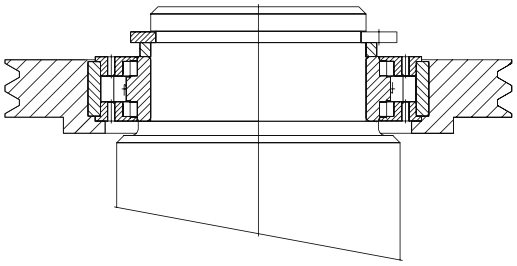
Type ASK is a roller type freewheel bearing supported by two rows of roller bearings. It is a self–contained dust protected unit, delivered grease lubricated.
Nominal outside dimensions are the same as a 60.. series bearing. Torque transmission must be ensured by a press fit on both the inner and outer race. Because of this press fit, the standard radial clearance is C4. The interference tolerances are on the freewheel dimensions, allowing a direct mounting in a standard series 60.. bearing location: Shaft tolerance should be h6 or j6 The outer race should be pressed into a rigid housing to K6 tolerance.
Radial bearing load capacities are given in the table. Type ASK freewheels can not accept axial loading. In cases of such loads, thrust bearings must be provided.

型号 Type	尺寸 Size	轴承系列 Bearing series					轴承系列 Bearing loads dynamic	static	重量 Weight	摩擦阻力 Drag torque
	d^{P6} [mm]		T_{KN} 1) [Nm]	n_{max} [min^{-1}]	D [mm]	L [mm]	C [kN]	C_0 [kN]	[kg]	TR [Ncm]
ASK	40	6008	72	3500	68	15	16	20,6	0,25	15
	50	6010	125	2200	80	16	19,6	23,5	0,34	20
	60	6012	250	1800	95	18	25,3	35,1	0,5	25

备注 NOTES

1) $T_{max} = 2 \times T_{KN}$
1) $T_{最大} = 2 \times T_{KN}$

按装参考范例 MOUNTING EXAMPLES

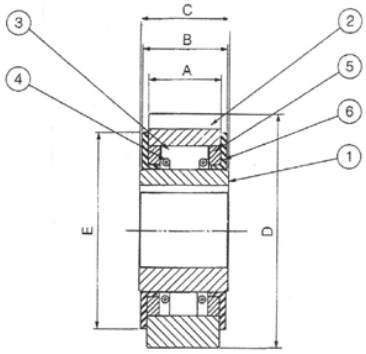


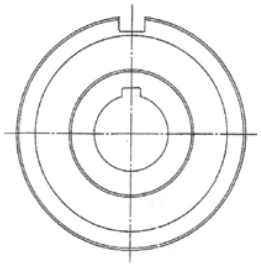
LD系凸轮离合器　　LD SERIES CAM CLUTCH

型号LD 04到LD 08　　MODELS LD 04 TO LD 08

用于低速载的场合　　For Light Duty at Low Speed







(1) 内圈
(2) 外圈
(3) 凸轮和滚子
(4) 弹簧
(5) 侧板
(6) 止推板

① Inner race
② Outer race
③ Cam and roller
④ Spring
⑤ Side plate
⑥ Thrust metal

尺寸和容量　Dimensions and Capacities

以mm为单位的尺寸　Dimensions in mm

型号	最大扭矩 (N.m)	空转摩擦扭矩 (N.m)	最大空转速度 (r/min)	最大分度频率（循环次数 / 分钟）	最大超越径向载荷 (kgf)	孔轴		A	B	C	D	E	外围键槽	重量 (kg)
						直径 (H7)	键槽							
LD 04	5.88	0.20	300	100	20	10	4*1.5	19.5	23.9	24	47 −0.014 −0.039	40	5*3	0.25
LD 05	9.8	0.29	300	100	30	14	5*2	19.5	23.9	24	52 −0.017 −0.042	45	5*3	0.30
LD 06	19.6	0.29	200	100	50	20	5*2	19.5	23.9	24	62 −0.017 −0.042	52	7*4	0.40
LD 07	29.4	0.39	200	100	70	25	7*3	19.5	23.9	24	72 −0.017 −0.042	62	7*4	0.55
LD 08	49	0.49	200	100	80	30	7*3	19.5	23.9	24	82 −0.017 −0.042	72	10*4.5	0.65

注意：根据要求可以提供弱力型弹簧LD−−WS。

Note:Weaker Spring type "LD−WS"is available upon request.

安装和使用

1.LD系列离合器已经用专用润滑脂进行了预润滑，准备使用。不需要其它的润滑剂。

2.在往轴上安装离合器的时候，用一把软锤轻轻按压离合器内圈，以防止离合器外圈上滑走。

3.一定要安装板。它能防止外圈从内圈滑走。见右边列出的、推荐使用的板尺寸。

4.为了进行润滑，把润滑脂涂在该板和止推板上。

5.决不可在离合器上施加轴向载荷。应该提供其它装置，来承担施加到离合器上的轴向载荷。

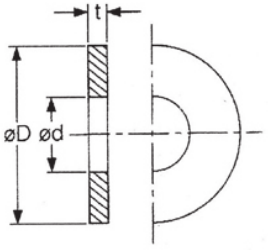
6.键应当符合JIS B1301−1959 标准。

7.带轮、链轮等的孔，应当具有H6或H7的公差。

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 metal 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 B 1301−1959.
7. The bores of the pulley,sprocket,etc.,should have a tolerance of H6 or H7.

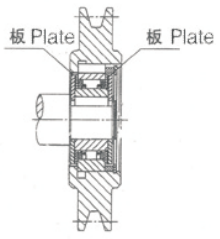
推荐使用的板尺寸
Recommended Plate Dimensions

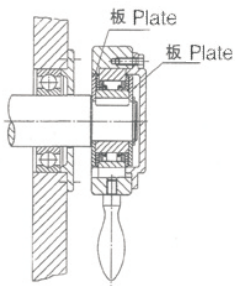


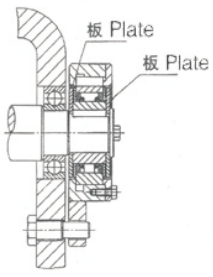
以mm为单位的尺寸
Dimensions in mm

型号	t	ϕd	ϕD
LD 04	2	10	40
LD 05	2	14	45
LD 06	3	20	52
LD 07	3	25	62
LD 08	3	30	70

典型安装图　Typical installation





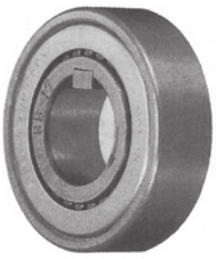


BB系列凸轮离合器

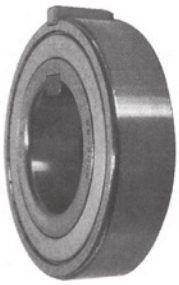
BB series cam clvtches



BB 系列



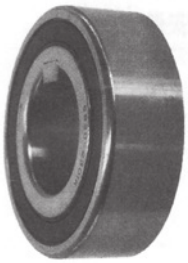
BB -1K-K 系列



BB -2K-K 系列



BB -2GD 系列



BB -2GD 1K-K 系列

关于安装和使用BB系列凸轮离合器的通用信息

1. BB系列凸轮离合器设计用于压配安装。
2. BB-1K-K和BB-2GD 1K-K系列在内圈上有一个键槽。除了尺寸25以外的离合器的键槽标准是DIN 6885.3 BB2K-K1, BB40-1K-K和 BB40-2GD 1K-K的标准是DIN 6885.1。
3. 系列产品在内圈和外圈上都有一个键槽。
   “-K”是指发货时，键与凸轮离合器一起发货。
4. 必须在轴和壳体上保持正确的干涉尺寸，以获得最大的轴承和离合器性能。
5. 关于每个系列产品的轴和壳体公差，请参看下一页上的表格。
6. BB-2GD和BB-2GD 1K-K系列产品都带有专用的唇型密封圈，用于有效地防止灰尘。
7. 内圈上的箭头表示的是内圈的啮合方向。
8. 要安装离合器，请使用一个适当直径的冲压工具，以便在内圈和外圈的整个表面上，施加均匀的压力。
9. 不要锤打，或者在离合器上施加其它的冲击力。
10. 一定要保持壳体具有足够的强度，以承受离合器压配安装所需要的压力。
11. 工作温度范围: -30°C到+100°C （关于超过此范围的温度，请向我们咨询）。

润滑：

1. 由于在发货之前已经使用了润滑脂，因此在使用之前,不需要再加润滑脂。
2. 如果离合器与油润滑剂一起使用，油面保持在轴心以上。
3. 不要使用带有EP添加剂的润滑脂。

General information about installation and use of BB series cam clutch

1.The design of BB series cam clutch is used for press-fit installation.

2.There is a key slot at inner ring of BB-1K and BB-2GD 1KK series. The standard of key slot for 25 size of clutch OF BB 2K-K1, BB40-1K-K and BB40-2GD 1K-K is DIN 6885.3, the standard of other size will be DIN 6885.1.

3.There is a key slot at inner and outer ring of the series product.
“-K” means that when deliver goods, key and cam clutch will be delivered together.

4.Correct interfere size must be kept at shaft and casing in order to get maximum bearing and clutch property.

5.About shaft and casing tolerance of every series product, please refer to the table on next page.

6.BB2GD and BB-2GD 1K-K series product possesses special lip type seal ring which is used for prevent from dust effectively.

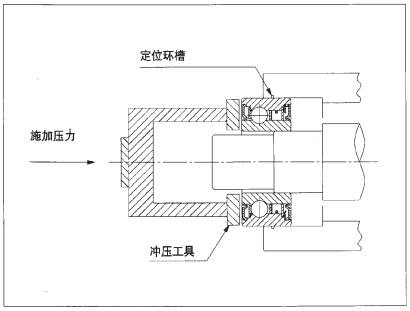
7.The arrow at inner ring indicates engaging direction of inner ring.

8.When install clutch, please use a impact tool with proper diameter in order to exert uniform pressure to full surface of inner and outer ring.

9.Don’t impact or exert other impact force onto clutch.

10.Enough strength of casing should be kept in order to make the clutch can bear the needed installation pressure of press-fit installation.

11.Range of working temperature: -30℃ ~ +100℃(about temperature over the range, please consult us).



Lubrication:

1.Before deliver, the lubricating grease has been used, it is not necessary to add lubricating grease before use.

2.If clutch and lubricating agent are used together, oil surface should be kept above shaft core.

3.Don’t use lubricating grease added EP additive.