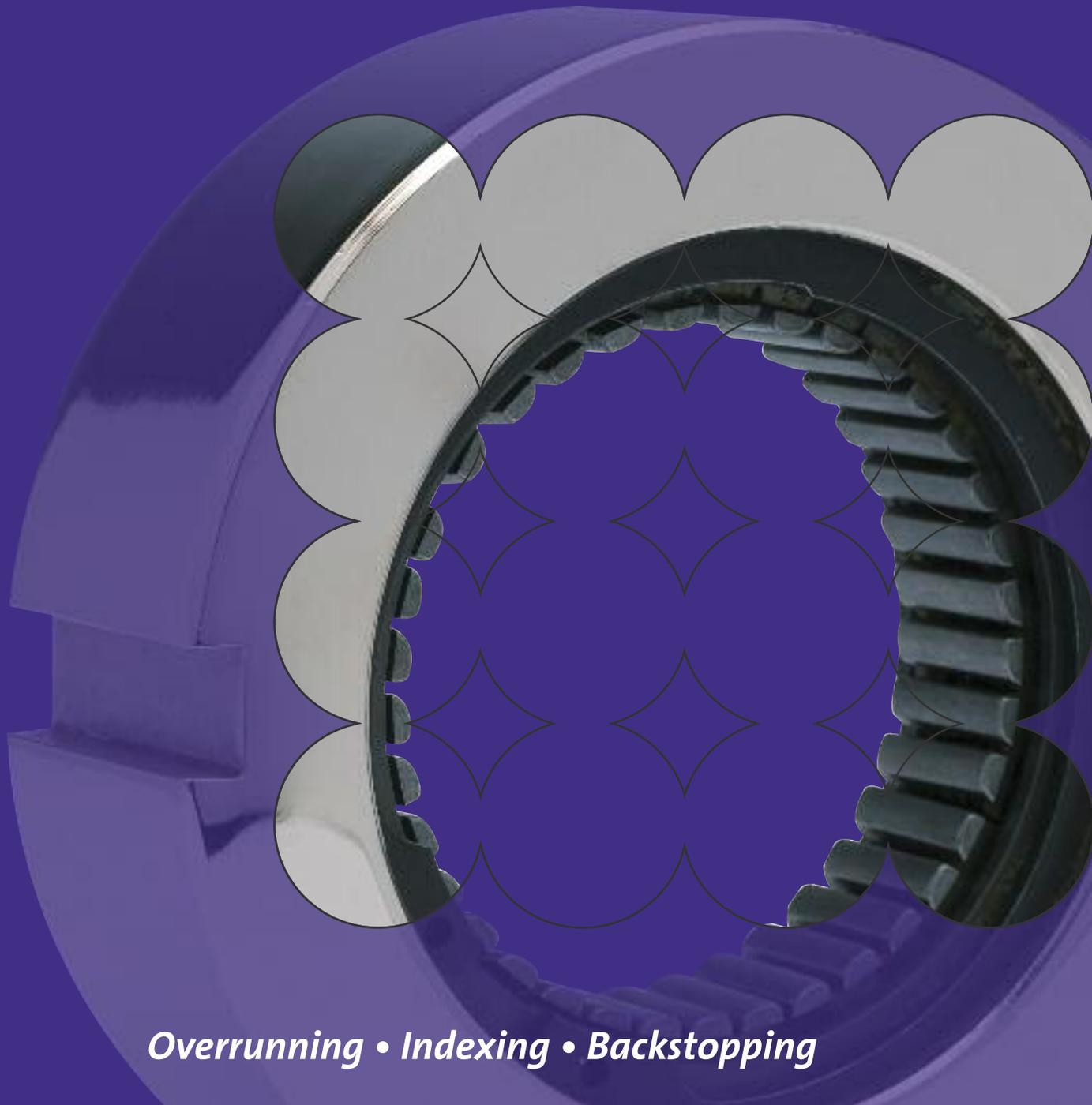


# *Freewheels*

## *Sprag and Trapped Roller Clutches*



*Overrunning • Indexing • Backstopping*

**RENOLD**  
Superior Freewheel Technology

[www.renold.com](http://www.renold.com)

# RENOLD

## Strength through Service

Renold Gears has been manufacturing high quality, high specification gear units for over 100 years and has always been at the leading edge of gear technology with innovative products and power transmission solutions.

## Interchangeability

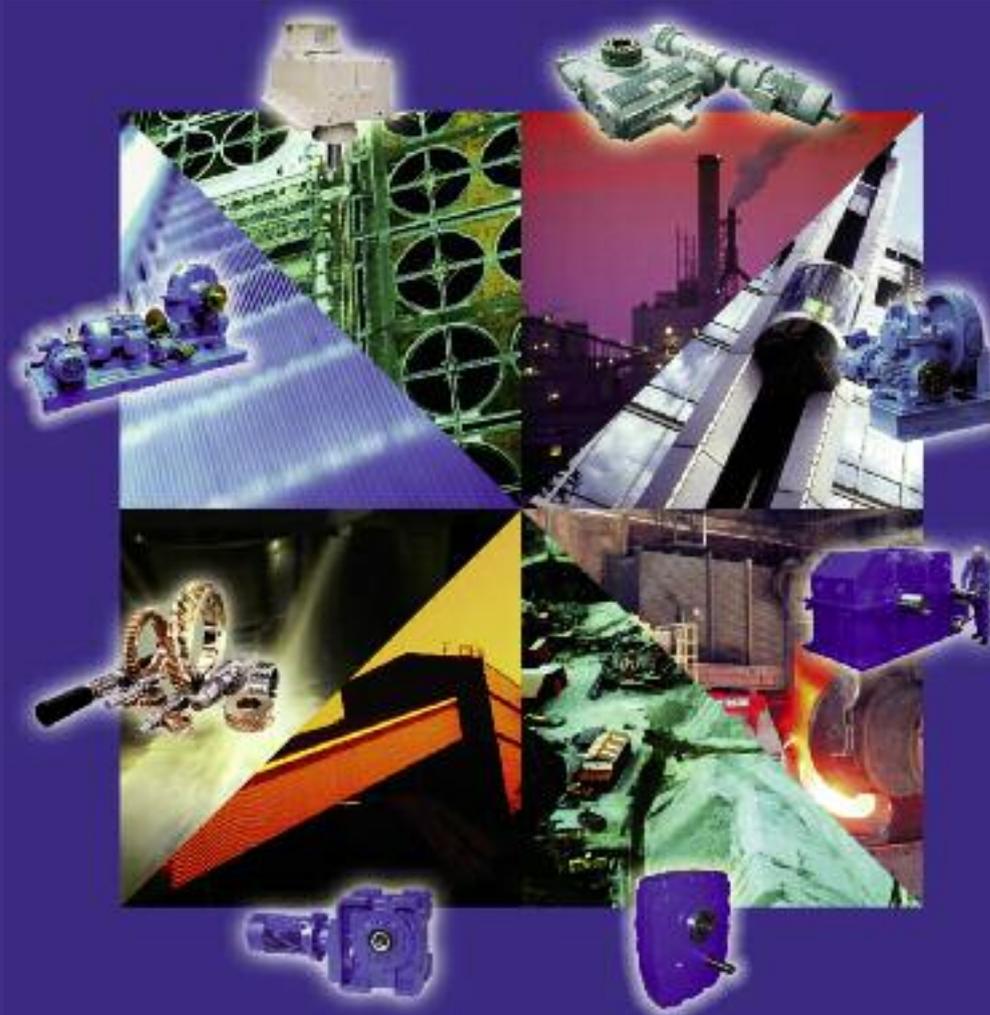
Many of the products from Renold Gears are dimensionally interchangeable with other manufacturers gear units, allowing a trouble free replacement of gearboxes, in most cases upgrading the capacity through state of the art technology and materials.

## Custom Made

Renold Gears is unique in it's ability to offer custom made products designed to meet customers exacting requirements without compromise on availability and cost. From complete package solutions to individual precision replacement gears, all can be tailor made to meet specific applicational requirements.

## Available

The most popular ranges of gearboxes are available from local distribution stock, backed up by extensive stocks from our manufacturing plant in the UK.



**RENOLD**  
*Superior Gear Technology*

[www.renold.com](http://www.renold.com)

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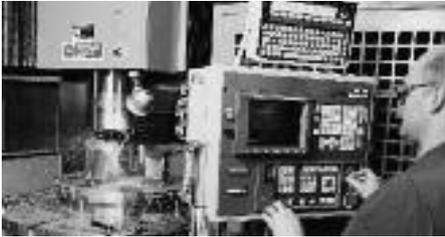
## Renold Clutches & Couplings

Renold have been manufacturing Flexible and Rigid Couplings, Sprag and Air Clutches for over 50 years. The Renold Couplings factories are based in three locations, Cardiff and Halifax in the UK and Westfield, NY, USA.



### **RENOLD** Clutches & Couplings - Cardiff

In 1991 the company moved to a purpose-built factory in Wentloog, Cardiff, in which state-of-the-art machining and inspection facilities are to be found, all supporting a high level of personal customer care.



### **RENOLD** Hi-Tec Couplings - Halifax

The Halifax factory (formerly Holset Engineering Ltd.) became a member of Renold plc in 1996. The operation also includes the latest machining and tooling technology with integrated cellular manufacturing and complete testing and balancing capabilities.



All Renold Couplings are manufactured in the UK to Renold exacting standards.

### Service Excellence & Care

Renold offers a unique level of service excellence and customer care. Our experienced applications engineers will select the optimum solution, with the aid of the latest computer and design technology.



The **RENOLD** organization stretches worldwide

- 16 National Sales Companies
- Over 70 Overseas Distributors

Offering the comprehensive **RENOLD** range of power transmission products directly or through local distributor networks



### Special Solutions and Innovations

Renold is recognized throughout the industry for its capability to create specific solutions to customers unique requirements. International companies and industries, from steel to food processing to escalators to textile machinery, have chosen Renold to solve their problems.



### Leading Edge Technology

Renold provides practical cost effective solutions with a commitment to value through quality. This is achieved by the continuous investment in people, process technology and manufacturing.



### Consistent Reliability

Renold's 100 years of experience in the design and manufacturing of power transmission products to the highest specifications, with proven performance in diverse industries world-wide, underwrites the guaranteed quality and the assurance of reliability.

Renold Clutches & Couplings is BS EN ISO 9001:2000 approved. All products are designed and manufactured to this Quality Assurance System.



LRQ0/881495



Certificate 9079

### Testing

Although each of our factories manufacturing and testing demands vary, the following capabilities are available if the application demands it:

- Full scale radial and axial stiffness measurement.
- Torsional vibration analysis.
- Misalignment testing of couplings up to 80" diameter.
- Measurements of torsional stiffness up to 162,162 ft.lbs.
- Static and dynamic balancing capabilities.
- Noise attenuation testing.
- Transient and finite element analysis.

## Sprag Clutch - General Specification

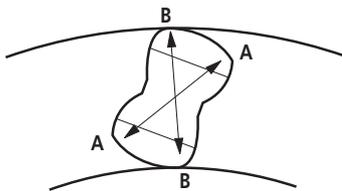
A Sprag Clutch is a freewheel device having an inner race, and an outer race either of which can be the input or output member.

The input member can be arranged to drive the output member in a chosen direction and permit the output member to overrun in the same direction.

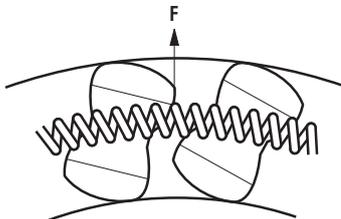
In general, Sprag Clutches are able to transmit greater torques, within given overall dimensions, than other types of freewheel device.

### SO - SX Series

ARO Sprags are fitted into the SO and SX series of Sprag Clutches up to size 700, and assist in resisting the effects of transient overloads and vibrations.



In simple form the Sprag Clutch consists of a full complement of shaped steel sprags or wedges, located in the annular space between concentric inner and outer races. Power is transmitted from one race to the other by the wedging action of the sprags between them. Each sprag is so shaped that dimension AA is greater than BB. Rotation of one race in the 'driving' direction causes the sprags to tilt, thus transmitting the torque in full from one race to the other. Conversely rotation of the race in the other direction frees the sprags and permits overrunning between the races.



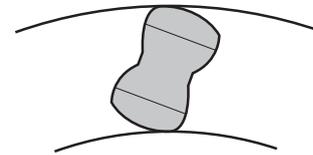
A tilting force F keeps the sprags in light contact with both inner and outer races. There is, thus, no lost motion, the driving torque being instantaneously transmitted between races. Various spring arrangements are used to provide force F, a typical one being an expanding coil spring as shown in the diagram above. In any clutch of this type, the transmitting capacity must be dependent on the total load carrying area. The Renold Sprag Clutch is so designed that the maximum possible number of sprags can be accommodated; thus, it will transmit a greater torque in relation to its size and weight than any other comparable type of clutch.



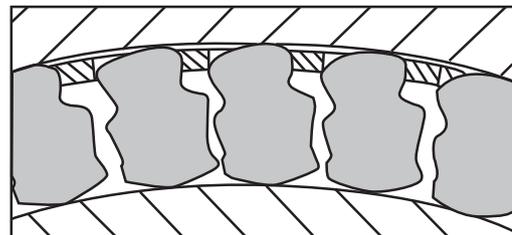
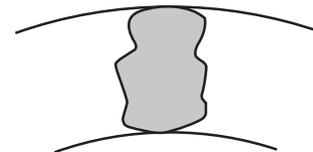
### WARNING

If the clutch is used as the sole failsafe device in any application then other factors in the operating environment such as improper use, lack of servicing maintenance or lubrication may cause the clutch to fail causing danger to users, personnel and property.

### STANDARD SPRAG CLUTCH

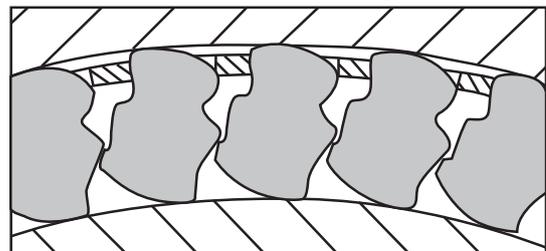


### ARO SPRAG CLUTCH



### Normal Engagement Condition:

Showing the ARO Sprags in the drive locked position transmitting the rated torque of the particular clutch.



### Extreme Overload Condition:

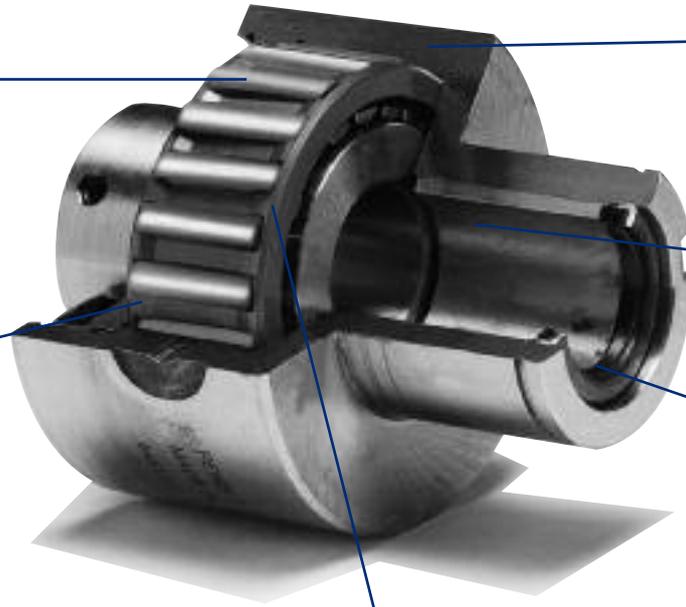
The projected shape at the side of each sprag creates a positive sprag-to-sprag abutment, which resists both rollover and popout.

## Sprag Clutch - Product Features

### Light Duty Sleeve Bearing Clutch

Hardened Sprag with a cam profile allowing for maximum torque transmission.

Free action retainer allows full positional control of the Sprags for maximum load sharing capacity.



Hardened and ground outer race allowing for maximum power transmission with no loss of motion.

Bronze sleeve bearing combining concentricity and long life.

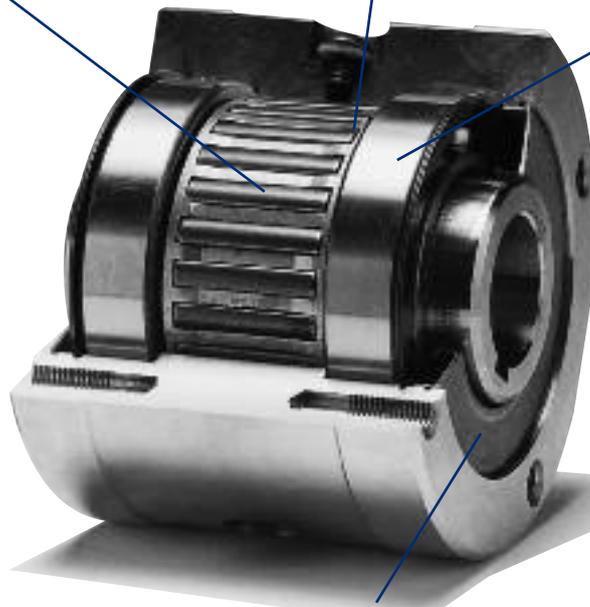
Oil seal for lubricant retention allowing minimum downtime.

Energizing spring ensuring the Sprags are in full contact at any moment in time, eliminating all motion loss.

### Ball Bearing General and Special Purpose Clutches

Anti roll over (ARO) hardened Sprags fitted to clutches up to size 700.

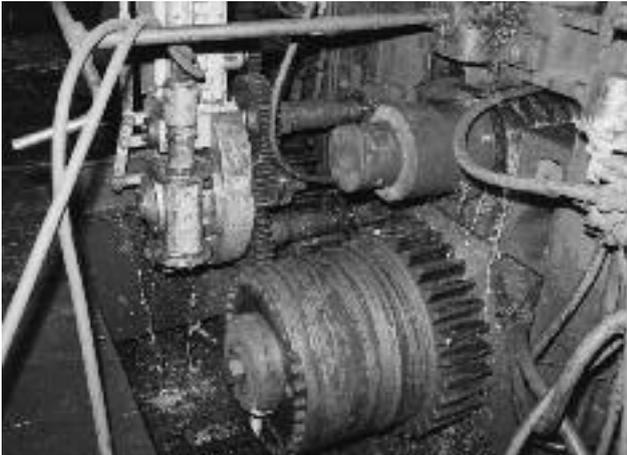
Heavy duty bearing fitted for maximum load capacity and long life.



Seal used for oil filled clutches or metal labyrinth plate fitted for grease filled clutches.

Alternative Labyrinth seal plate

## Sprag Clutch - Typical Applications



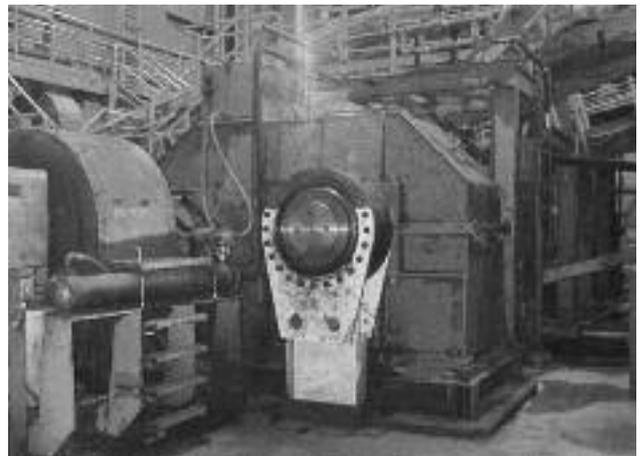
SO/SX Sprag Clutch used as an overrunning device on a nip roll in a steelwork rolling mill. Speed overrun is often created by the steel being rolled.



Sprag Clutch holdbacks are often used on inclined conveyor headshaft drives to prevent runback in the event of a power failure.



Theme park rides are popular world wide, but safety is of major importance. Sprag Clutches are used on the headshaft drive to prevent back-driving at all times during the ride.

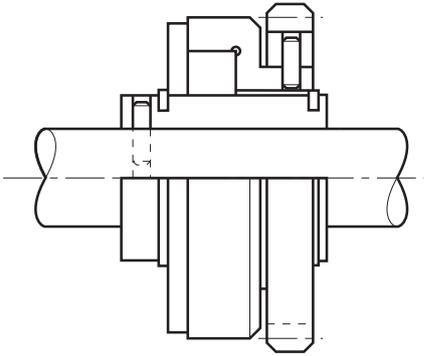


SLH Sprag Clutch backstop on an apron feed conveyor in an iron ore mining plant in Canada.



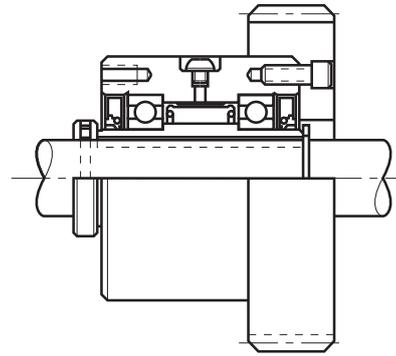
Mobile crane using a Sprag Clutch on the boom raise and lower mechanism, holding the weight of the boom against the diesel engine drive in the lowering motion preventing overspeeding.

## Typical Sprag Clutch Mounting Arrangements



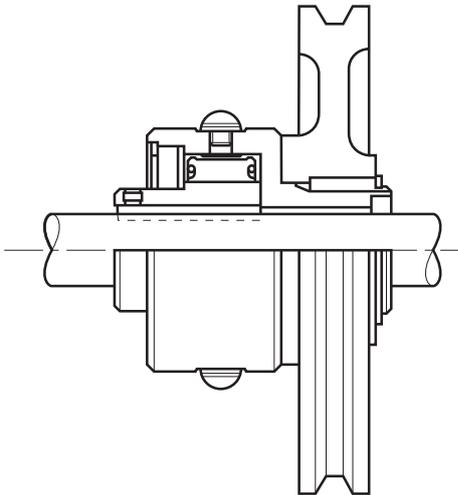
### SA Series

Sleeve bearing clutch with gear mounted on outer race hub.



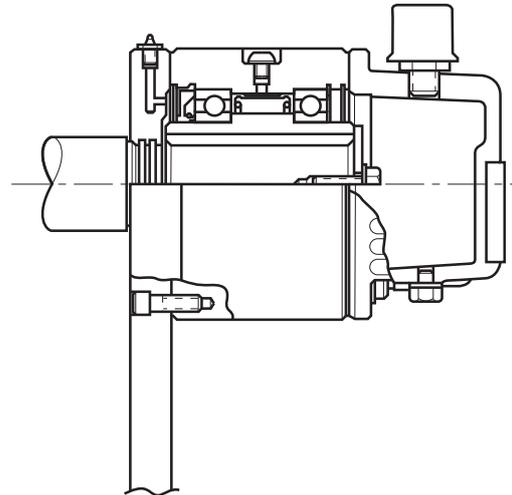
### SO/SX Series

Ball bearing clutch with gear mounted and bolted to face of clutch.



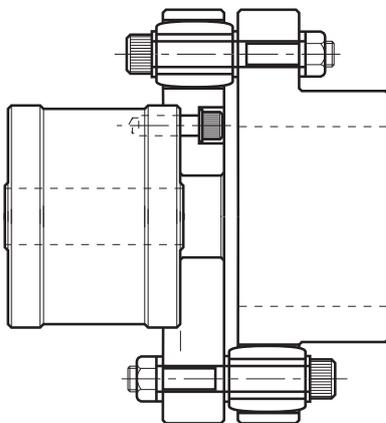
### SB Series

Sleeve bearing clutch with sheave mounted on outer race hub.



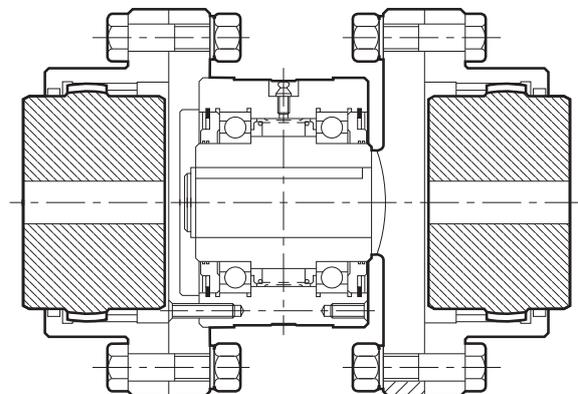
### SO/SX Series

Clutch with reservoir, torque arm and auxiliary seal with bolt and retaining plate.



### SCPF Series

Sprag Clutch and Pinflex Flexible Coupling.



### SCGF Series

Sprag Clutch and Gearflex Coupling combination.

# American Standard Bore and Shaft Tolerances

American Inch Sizes

Nominal Bore (in)	Bore (in)	Shaft (in)
0.500	0.499/0.500	0.499/0.498
0.625	0.624/0.625	0.624/0.623
0.750	0.749/0.750	0.749/0.748
0.875	0.874/0.875	0.874/0.873
1.000	0.999/1.000	0.999/0.998
1.125	1.124/1.125	1.124/1.123
1.250	1.249/1.250	1.249/1.248
1.312	1.311/1.312	1.311/1.310
1.375	1.374/1.375	1.374/1.373
1.500	1.499/1.500	1.499/1.498
1.625	1.624/1.625	1.624/1.623
1.750	1.749/1.750	1.749/1.748
1.875	1.8735/1.875	1.874/1.873
1.937	1.9365/1.9375	1.9365/1.9355
2.000	1.999/2.000	1.999/1.998
2.125	2.142/2.125	2.124/2.123
2.250	2.249/2.250	2.2485/2.2475
2.375	2.375/2.376	2.375/2.374
2.437	2.4360/2.4375	2.436/2.435
2.500	2.4985/2.500	2.4985/2.4975
2.625	2.624/2.625	2.624/2.623
2.687	2.6860/2.6875	2.686/2.685
2.750	2.7485/2.7500	2.7485/2.7475
2.937	2.9360/2.9375	2.9360/2.935
3.000	2.9985/3.0000	2.9985/2.9975
3.125	3.1235/3.1250	3.124/3.123
3.250	3.2485/3.2500	3.2485/3.2475
3.375	3.3735/3.3750	3.374/3.373
3.437	3.4360/3.4375	3.436/3.435
3.500	3.4985/3.5000	3.4985/3.4975
3.750	3.7485/3.7500	3.7485/3.7475
3.937	3.9360/3.9375	3.9355/3.9345
4.000	3.9985/4.0000	3.998/3.997
4.187	4.1860/4.1875	4.186/4.185
4.250	4.248/4.250	4.248/4.247
4.437	4.4360/4.4375	4.4355/4.4345
4.500	4.498/4.500	4.498/4.497
4.750	4.748/4.750	4.748/4.747
4.937	4.9355/4.9375	4.9355/4.9345
5.000	4.998/5.000	4.998/4.997
5.250	5.248/5.250	5.248/5.247
5.437	5.435/5.437	5.435/5.434
5.500	5.498/5.500	5.498/5.497
5.750	5.748/5.750	5.748/5.747
5.937	5.9355/5.9375	5.9355/5.9345
6.000	5.998/6.000	5.998/5.997
6.250	6.248/6.250	6.248/6.247
6.437	6.4355/6.4375	6.4355/6.4345
6.500	6.498/6.500	6.498/6.497
6.750	6.748/6.750	6.748/6.747
6.875	6.873/6.875	6.873/6.872
6.937	6.9355/6.9375	6.9355/6.9345

American Inch Sizes

Nominal Bore (in)	Bore (in)	Shaft (in)
7.000	7.000/6.998	6.998/6.997
7.500	7.504/7.506	7.503/7.502
7.750	7.754/7.756	7.753/7.752
8.000	8.004/8.006	8.003/8.002
8.250	8.254/8.256	8.253/8.252
8.500	8.504/8.506	8.503/8.502
8.750	8.574/8.756	8.753/8.752
9.000	9.004/9.006	9.003/9.002
9.250	9.254/9.256	9.253/9.252
9.500	9.504/9.506	9.503/9.502
9.750	9.754/9.756	9.753/9.752
10.000	10.004/10.006	10.006/10.002
10.250	10.254/10.256	10.253/10.252
10.500	10.504/10.506	10.503/10.502
10.750	10.754/10.756	10.753/10.752
11.000	11.004/11.006	11.003/11.002
11.500	11.504/11.506	11.503/11.502
12.000	12.004/12.006	12.003/12.001
12.250	12.254/12.256	12.253/12.251
12.500	12.504/12.506	12.503/12.501
13.000	13.004/13.006	13.003/13.001
13.250	13.254/13.256	13.253/13.251
13.500	13.504/13.506	13.503/13.501
13.750	13.754/13.756	13.753/13.751
14.000	14.004/14.006	14.003/14.001
14.250	14.254/14.256	14.253/14.251
14.500	14.504/14.506	14.503/14.501
14.750	14.754/14.756	14.7553/14.751
15.000	15.004/15.006	15.003/15.001
15.250	15.254/15.256	15.253/15.251
15.500	15.504/15.506	15.503/15.501
15.750	15.754/15.756	15.753/15.751
16.000	16.004/16.007	16.003/16.001
16.250	16.254/16.257	16.253/16.254
16.500	16.504/16.507	16.503/16.501
16.750	16.754/16.757	16.753/16.751
17.000	17.004/17.007	17.003/17.001
17.250	17.254/17.257	17.253/17.251
17.500	17.504/17.507	17.503/17.501
17.750	17.754/17.757	17.753/17.751
18.000	18.004/18.007	18.003/18.001
18.250	18.254/18.257	18.253/18.251
18.500	18.504/18.507	18.503/18.501
18.750	18.754/18.757	18.753/18.751
19.000	19.004/19.007	19.003/19.001
20.000	20.004/20.007	20.003/20.001

The above are suggested shaft tolerances only. Please confirm the proposed shaft tolerance at order stage.

## Sprag Clutch - Indexing and Overrunning



### SA Series Clutches

Max torque 41 Nm - 30 lb.ft.  
Max bore 16 mm - 0.625 in  
Max overrunning speed 3450 RPM  
Page No: 17



### SB Series Clutches

Max torque 2170 Nm - 1600 lb.ft.  
Max bore 50 mm - 2.0 in  
Max overrunning speed 1950 RPM  
Page No: 19



### SO/SX Series Clutches

Max torque 36600 Nm - 27000 lb.ft.  
Max bore 180 mm - 7.0 in  
Max overrunning speed 3600 RPM  
Page No: 22



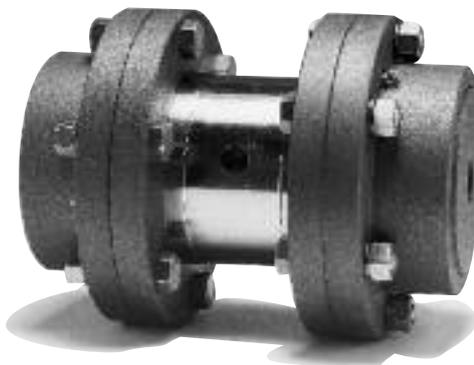
### Flanged Stubshaft Adaptor

Max torque 36600 Nm - 27000 lb.ft.  
Page No: 28



### SCPF Series Coupling

Max torque 9660 Nm - 7120 lb.ft.  
Max bore 175 mm - 6.875 in  
Max overrunning speed 3600 RPM  
Page No: 30



### SCGF Series Coupling

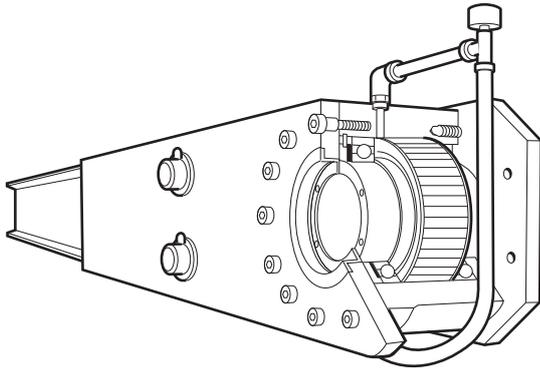
Max torque 9660 Nm - 7120 lb.ft.  
Max bore 145 mm - 5.7 in  
Max overrunning speed 3600 RPM  
Page No: 30



### DM Series Clutches

Max torque 3417 Nm - 2520 lb.ft.  
Max shaft dia. 101.6 mm - 4.0 in  
Max overrunning speed 1800 RPM  
Page No: 34

## Sprag Clutch - Backstops

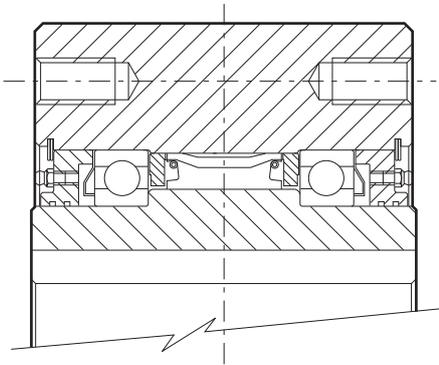


### SH Longlife Large Bore Holdback Clutches

Max torque 759300 Nm - 560000 lb.ft.

Max bore 500mm - 20.0 in

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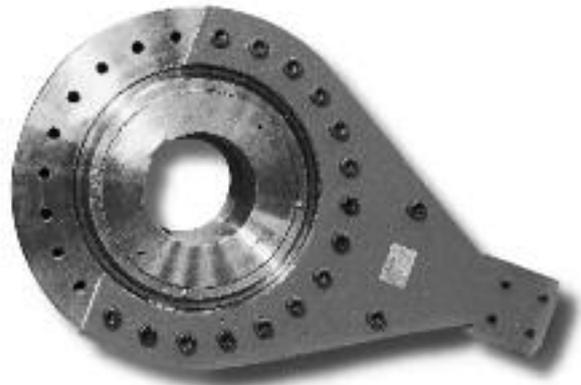


### Enhanced Seal Backstop

Max torque 759300 Nm - 560000 lb.ft.

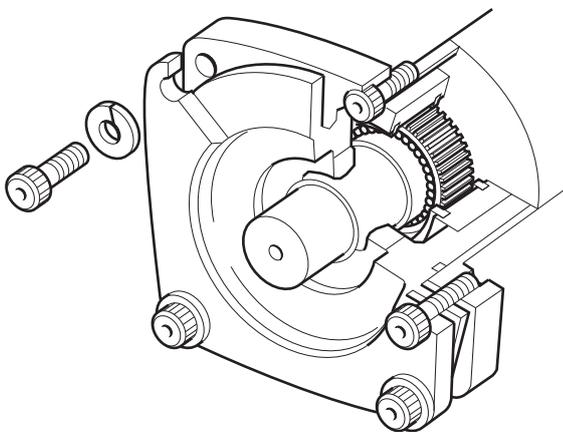
Max bore 500mm - 20.0 in

Page No: 46



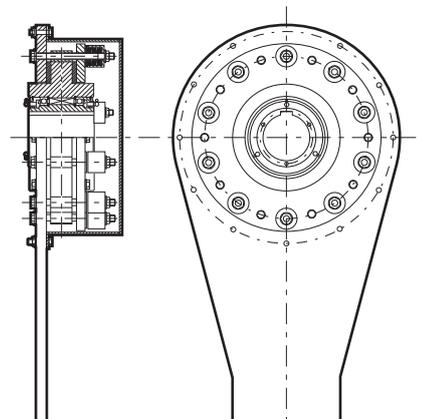
### Alternative Holdback Torque Arm Designs

Page No: 44



### Tension Release Mechanisms

Page 49



### Torque Limiter Clutches

Max torque 759300 Nm - 560000 lb.ft.

Max bore 500 mm - 20.0 in

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## Sprag Clutch - Overrunning-Indexing-Backstopping

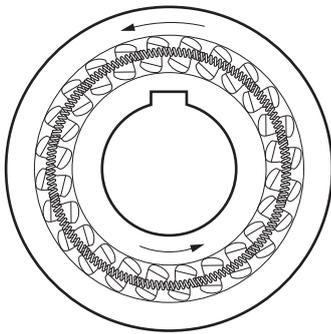
There are three basic applications for the Sprag Clutch.

- Overrunning
- Indexing
- Backstopping or Holdback.

In overrunning and backstopping applications, one race of the clutch is required to run at a faster speed than the other. It is suggested that the inner race is always the one that runs at high speed and the outer race at the lower speed.

Throughout this catalog we show the maximum running speeds of both inner and outer races of all the Renold Sprag Clutch types.

### OVERRUNNING

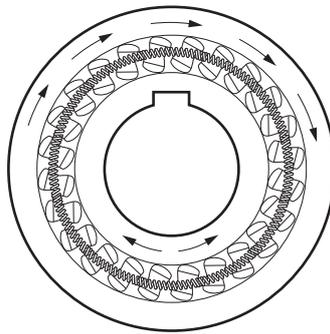


Overrunning applications often can be found in Barring Drives or Standby Drives where two or more motors drive a machine. The high speed / high power drive being the prime mover, with a secondary drive at lower speed and power connected into the system to provide a slow speed drive for maintenance or other function.

#### Applications:

- Barring Drives
- Multi Point Drives
- Fan Drives

### INDEXING

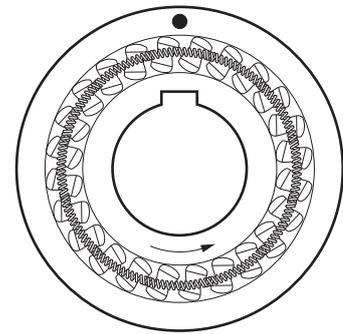


Indexing is an application where accuracy and consistency is required. By linking a reciprocating motion from the prime mover to one race of the Sprag Clutch the motion is converted to an indexing movement at the other race.

#### Applications:

- Assembly Conveyors
- Packaging
- Food and Drink
- Printing Machines

### BACKSTOPPING



Backstopping or holdback applications use a Sprag Clutch where the outer race is attached to the machine frame and the inner race is allowed to rotate in the forward direction. If the machine attempts to backdrive, the Sprag Clutch will prevent reverse rotation by acting as a holdback.

#### Applications:

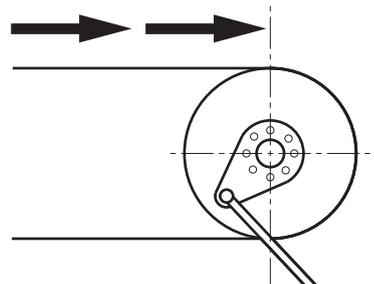
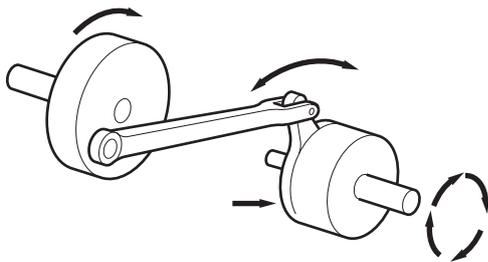
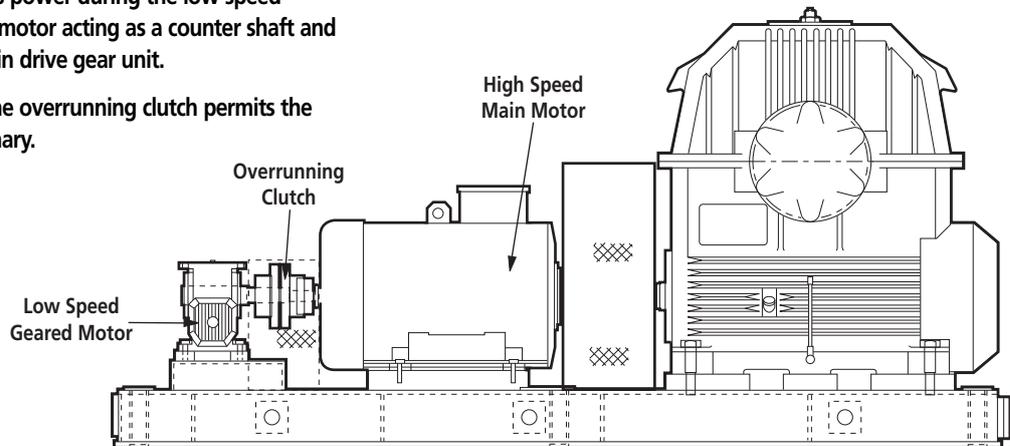
- Inclined Conveyors
- Bucket Elevators
- Fan Drives
- Pumps

## ► Sprag Clutch - Overrunning - Indexing - Backstopping ◀

### Overrunning

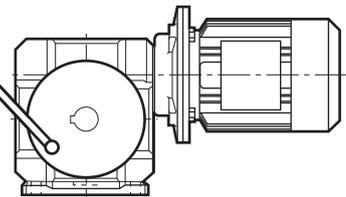
As shown, the clutch transmits power during the low speed running cycle, the high speed motor acting as a counter shaft and transmitting power to the main drive gear unit.

During the high speed cycle the overrunning clutch permits the low speed motor to be stationary.



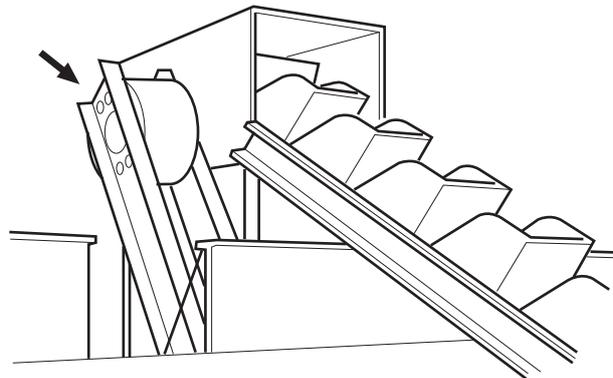
### Indexing (inching)

The use of a Sprag Clutch enables indexing motion with accuracy - and infinite graduations - limited only by the precision of other components of the mechanism.



### Backstopping (non-return)

A shaft in conjunction with one race can rotate freely in one direction but is prevented from reversing. The illustration shows a clutch fitted as a backstop to prevent run-back of an elevator.



## Selection of Sprag Clutches

### Selection of Sprag Clutches

The following notes are given for guidance in the selection of Sprag Clutches, but we strongly recommend that customers make use of the applicational knowledge and experience of our engineers before arriving at their final selection.

A Sprag Clutch must not be used in place of a flexible coupling.

Where it is desired to interpose a Sprag Clutch between separately supported shafts, a flexible coupling must also be used.

See page 30.

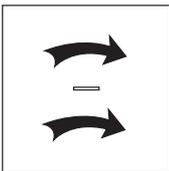
### Vibrational Conditions

Sprag Clutches will accept without detriment to their operation the vibrations which exist normally in most industrial machinery. However, there are certain situations where the torsional and/or the linear vibrations can be of such an order as to cause the clutch to malfunction; typically, where a diesel or gasoline engine is the prime mover and there is no specially selected torsionally flexible coupling to smooth the vibration. In these circumstances, full details of the proposed design and all data related to any flexible elements should be submitted for consideration prior to finalization of the selection.

### Permissible Overrunning Speeds

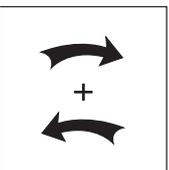
The permissible overrunning speeds given in this catalog for inner and outer races assume the other race to be stationary.

### Same direction of rotation



If both races rotate in the same direction at different speeds, the overrunning speed is the difference in their speeds.

### Opposite direction of rotation

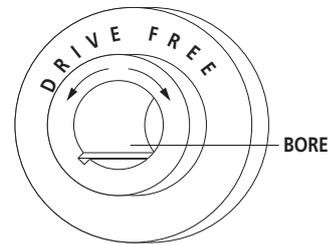


If the races rotate in opposite directions, the overrunning speed is the sum of their speeds.

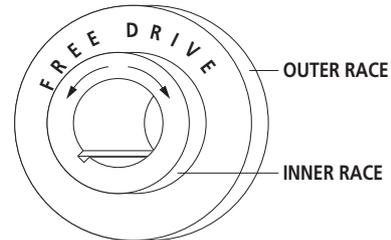
### 'Backlash'

Whilst there is no mechanical lost motion or 'backlash' in a Sprag Clutch, it should be appreciated that there will be some relative rotation between inner and outer races as a result of elastic deformation of component parts when subjected to torque loadings. This movement referred to as 'torque wind-up', may amount to between two and six degrees at nominal torque capacity and is smaller at lower torques.

### CLUTCH HANDLING



LEFT HAND ROTATION SHOWN



RIGHT HAND ROTATION SHOWN

If the overrunning clutch design is not symmetrical, then the clutch rotation will need to be determined, and this information (RH or LH) must be provided at time of order.

To establish rotation of a clutch, look at the clutch from the end specified by the arrow for each clutch series. If the inner race drives the outer race in the clockwise direction it is a right hand rotation.

## Selection of Sprag Clutches

To select a Sprag Clutch the following information must be known and, if we are to make the selection, should be submitted in full to our technical sales department, details at the base of this page.

- Type of prime mover - electric motor, IC engine, air motor etc.
- Clutch application - backstopping, overrunning or indexing.
- Torque to be transmitted.
- Maximum inner race overrunning speed.
- Maximum outer race overrunning speed.
- Shaft diameter or clutch bore size.
- Type of lubrication required.
- Ambient temperatures.

### Duty

- The characteristics of the drive eg. degree of impulsiveness of the driven load.
- Duration of service in hours/day.
- Starting load (HP or KW) and number of starts per day.
- For intermittent duty, reversing or shock loading, state normal power (HP or KW) and frequency.

### Service Factors

Sprag Clutches are used on many drive applications, the following tables show the service factors to be applied to the power or torque to be transmitted relative to the Sprag Clutch function - overrunning, indexing or backstopping.

### Selection Procedure

(1) Calculate torque transmitted through the clutch:-

$$\text{Torque (Nm)} = \frac{\text{KW} \times 9550}{\text{RPM}}$$

$$\text{Torque (lb.ft)} = \frac{\text{HP} \times 5250}{\text{RPM}}$$

- (2) Select service factor from table 1 FB for overrunning and backstopping  
table 2 Fi for indexing
- (3) Selection torque = Actual torque x Service factor (FB or Fi)
- (4) Select Sprag Clutch to suit selection torque (3). Ensure that selection will accept shaft diameters. If not, select next larger size clutch that will accommodate the shaft sizes and re check overrunning speed.
- (5) For overrunning applications, check speed of overrunning member - inner or outer race, see notes on page 12.
- (6) Select type of lubricant required to suit application.

(7) For clutch types SA, SB and clutch couplings SCPF and SCGF, the direction of rotation must be stated.

(8) Vertical and other special applications should be referred to Renold.

### Overrunning and Backstopping

Table 1 Service Factor FB

PRIME MOVER	Driven Machine Classification		
	Steady	Medium	Heavy
AC Motor, Air Motor Steam Turbine	1.25	1.5	2.5
Multi Cylinder IC Engine	1.75	Consult Renold	Consult Renold
Single Cylinder IC Engine, Diesel Engine	Consult Renold	Consult Renold	Consult Renold

### Driven Machine Classification

Steady - Low starting torques and steady load.

Medium - Starting torques up to 2 x FLT with minor shock loading.

Heavy - High starting torques and severe shock loading.

For applications where vibrations are present it is necessary to increase the service factor or introduce vibration damping.

Consult Renold for more information.

### Indexing

Table 2 Service Factor Fi

Type of Load	SA Series SB3 & 5	SB6 to SB16	SX400 to 700	SX750 to 1027
Less than 90° or less than 150 strokes/min	2 - 3	2	2	2
When angle is greater than 90° and over 100 strokes/min	3 - 4	2	2	2
Over 150 strokes/min. in any case	3 - 4	2	2	2

## Sprag Clutch - Ratings Table

Clutch Reference	Maximum Overrunning Speed		Torque Capacity	
	Inner race RPM	Outer race RPM	Nm	lb.ft.
<b>SA Series - Light Duty Clutches</b>				
SA02	3450	2400	6	4.5
SA04	3450	2400	23	17
SA05	1800	900	41	30

<b>SB Series - Sleeve Bearing Clutches</b>				
Clutch Reference	Inner race RPM	Outer race RPM	Nm	lb.ft.
SB3	1950	900	54	40
SB5	1950	900	115	85
SB6	1950	750	372	275
SB8	1650	600	542	400
SB10	1250	350	881	650
SB12	1150	350	1760	1300
SB14	950	250	1970	1450
SB16	950	250	2170	1600

<b>SO/SX Series - Overrunning and Indexing Clutches</b>				
Clutch Reference	Inner race RPM	Outer race RPM	Nm	lb.ft.
SO/SX300	3000 (3600)	900	379	275
SO/SX400	2800 (3600)*	850	407	300
SO/SX500	2500 (3000)*	800	1585	1168
SO/SX600	2200 (2400)*	750	3100	2285
SO/SX700	1600 (2000)*	450	6900	5086
SO/SX750	1000 (1800)*	650	9660	7120
SO/SX800	850(1500)*	525	17940	13223
SO/SX900	700 (1350)*	500	24400**	18000**
SO/SX1000	500 (1100)*	375	33900	24987
SO/SX1027	500 (1100)*	375	36600	27000

\*Grease lubricated clutches only

\*\*20337 Nm / 15000 lb.ft. for 130 mm / 5.25" bore and greater

Clutch Reference	Maximum Continuous Overrunning Speed Inner Race RPM	Torque Capacity	
		Nm	lb.ft.
<b>SH Series - Long Life Holdback Clutches</b>			
SH700	400	5420	4000
SH750	380	9220	6800
SH800	300	15600	11513
SH900	250	24400**	18000**
SH1027	200	36600	27000
SH1051	200	61000	45000
SH1250	170	88100	65000
SH1300	140	122000	90000
SH1375	130	183000	135000
SH2000	100	271200	200000
SH2400	85	359300	265000
SH3500	80	508400	375000
SH5000	75	759300	560000

\*\*20337 Nm for 130 mm and greater  
15000 lb.ft. for 5.25 and 5.437 in bore

Clutch Reference	Maximum Shaft Overrunning Speed RPM	Torque Capacity	
		Nm	lb.ft.
<b>Direct Mounting Clutch</b>			
DM125	1800	143	105
DM150	1800	314	232
DM175	1500	427	315
DM200	1400	601	443
DM225	1200	739	545
DM250	1000	832	614
DM275	1000	966	712
DM300	900	1092	805
DM325	850	1677	1237
DM350	800	2262	1668
DM375	750	3086	2276
DM400	750	3417	2520
DM501	2400	51	38
DM502	2400	68	50
DM506	1800	158	117
DM507	1800	203	150
DM509	1800	339	250
DM510	1800	452	333
DM511	1800	678	500
DM512	1800	904	667
DM513	1200	1580	1177

### Pinflex - Sprag Clutch Coupling

Clutch Coupling Reference	Maximum Overrunning Speed		Maximum Drive Speed RPM	Torque Capacity	
	Inner Race RPM	Outer Race RPM		Nm	lb.ft.
SCPF 400	3600	850	5200	407	300
SCPF 500	3000	800	4400	1585	1168
SCPF 600	2400	750	3600	3100	2285
SCPF 700	2200	450	2900	6900	5086
SCPF 750	1800	650	2200	9660	7120

### Gearflex - Sprag Clutch Coupling

Clutch Coupling Reference	Maximum Overrunning Speed		Maximum Drive Speed RPM	Torque Capacity	
	Inner Race RPM	Outer Race RPM		Nm	lb.ft.
SCGF 400	3600	850	5400	407	300
SCGF 500	3000	800	4800	1585	1168
SCGF 600	2400	750	4250	3100	2285
SCGF 700	2000	450	3600	6900	5086
SCGF 750	1800	650	3290	9660	7120

**SA Series - Sprag Clutch - Size 02 to 05**



The SA Series Clutch is a light duty product with plain bearings.

**Features:**

- Suitable for all small machine applications where small compact dimensions are required.
- Grease lubricated and sealed for life, offering reliability with maintenance-free duty.
- Dimensional interchangeability with other leading manufacturers of clutches.
- SA 02 and SA 04 Clutches supplied with driving pins, key not required.
- SA 05 Clutches are supplied with Woodruff key and retaining rings. A parallel key (not supplied) is required for shaft connection.
- All SA Series Clutches are handed, either left hand or right hand, making them suitable for all design options.
- Standard hardened chromised steel sprags for optimal wear resistance on overrunning and backstopping applications.

**Applications:**

- Light Duty Fans and Blowers
- Printing Machinery
- Textiles
- Instrumentation
- Light Duty Pumps
- Light Duty General Industrial Applications

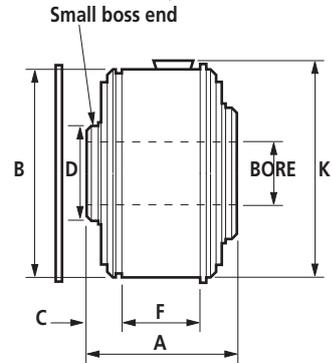
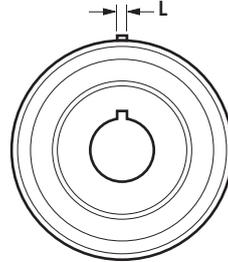
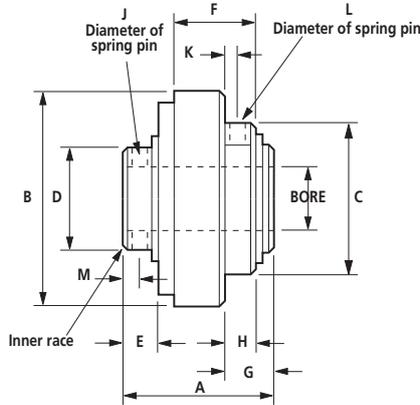
### SA Series - Sprag Clutch

Light Duty Clutches are grease lubricated on assembly and do not require further lubrication in service.

#### Clutches Ref SA 02/04

#### Clutches Ref SA 05

Woodruff key and retaining rings supplied. Parallel keys only must be used; under no circumstances are taper keys acceptable.



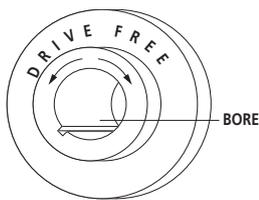
Sprag Clutch Reference	A mm in	B (max) mm in	B (min) mm in	C (max) mm in	C (min) mm in	D mm in	E mm in	F mm in	G mm in	H mm in	J mm in	K mm in	L mm in	M mm in
SA02	27.00 1.06	31.75 1.250	31.71 1.249	19.05 0.750	19.02 0.749	10.70 0.42	5.56 0.22	16.45 0.648	8.71 0.343	6.35 0.25	2.36 0.93	2.77 0.11	2.36 0.93	2.77 0.109
SA04	28.60 1.13	41.28 1.625	41.24 1.624	28.58 1.125	28.55 1.124	20.10 0.79	7.14 0.28	15.86 0.625	9.12 0.359	6.35 0.25	3.18 0.125	2.39 0.09	3.18 0.125	3.18 0.125
SA05	35.70 1.40	49.20 1.937	49.17 1.936	51.18 2.015	7.220 0.284	24.16 0.95	- -	19.05 0.750	- -	- -	- -	50.88 2.003	3.18 0.125	- -

SA Sprag Clutch Reference	Torque Capacity Nm lb ft	Maximum O'running Speed		Resistance After Run-in Nm lb ft	Standard Bore Sizes		Key Size mm in	Weight Approx kg lb
		Inner Race rpm	Outer Race rpm		mm in	mm in		
SA02	6 4.5	3450	2400	0.04 0.03	6 (H8) 0.250 (H8)	- -	- 0.187	0.08
SA04	23 17	2800	2400	0.04 0.03	10 (H8) 0.375 (H8)	12 (H8) 0.500 (H8)	- -	0.14 0.312
SA05	41 30	1800	900	0.07 0.05	16 (H7) 0.625 (H7)	14 (H7) -	4 x 4 1/8 x 1/8	0.37 0.812

#### Clutch Handling

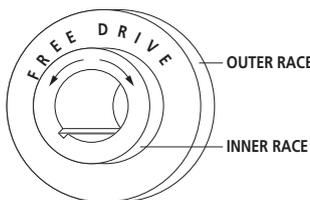
##### SA Series

LH Clutches - Inner race drives counter clockwise when viewed from small boss inner race end.



LEFT HAND ROTATION SHOWN

RH Clutches - Inner race drives clockwise when viewed from small boss inner race end.



RIGHT HAND ROTATION SHOWN

#### ORDERING INFORMATION

Clutch Reference	Part Number	
	Left Hand	Right Hand
SA02	648000	648001
SA04	648002	648003
SA05	648100	648101

When ordering please specify clutch reference or part number eg. SA04/250 or 648002/0012.

**SB Series - Sprag Clutch - Sizes 3 to 16**



A general purpose clutch suitable for most general light to medium duty applications.

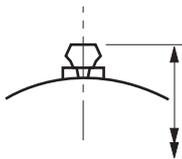
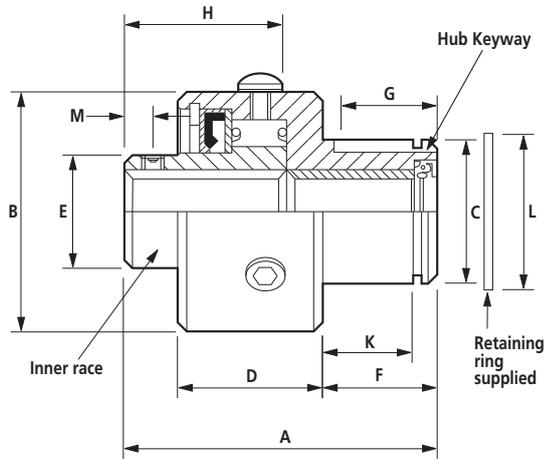
**Features:**

- Extended spigot at one side to allow direct mounting of chain pinions gears, index arms etc., for design flexibility.
- A sleeve bearing inside the extended spigot gives greater support, thus adding strength and robustness.
- Dimensionally identical to other manufacturers, giving interchangeability.
- SB3 Clutches are supplied greased and sealed for life, therefore, no maintenance is required.
- SB5 to SB16 Clutches can be supplied suitable for oil or grease lubrication or without seals for use in oil bath applications.
- All SB Series Clutches are handed, either left or right hand.
- Standard hardened chromised steel sprags for optimal wear resistance on overrunning and backstopping applications.

**Applications:**

- Centrifugal Pumps
- Textile Machinery
- Instrumentation
- Mixer Drives
- Blowers and Fan Drives
- Light Duty General Industrial Applications

### SB Series - Sprag Clutch



For all clutches other than SB3 add 16mm to dimension B for clearance dia over grease nipples/oil plugs.

#### INNER RACE Bore and Key Size

Clutch Ref	Metric Range		Inch Range	
	Bore	Key	Bore	Key
SB3	10H7	*	0.375(H7)	*
			0.500(H7)	*
SB5	16H7	5 x 5	0.500(H7)	1/8 x 1/8
			0.625(H7)	3/16 x 3/16
SB6	18H7	6 x 6	0.750(H7)	3/16 x 3/16
SB8	25H7	8 x 7	0.875(H7)	1/4 x 1/4
			1.000(H7)	1/4 x 1/4
SB10	30H7	8 x 7	1.125(H7)	5/16 x 5/16
			32H7	10 x 8
SB12	28H7	8 x 7	1.375(H7)	5/16 x 5/16
			38H7	10 x 8
SB14	38H7	10 x 8	1.625(H7)	7/16 x 7/16
			45H7	14 x 9
SB16	50H7	14 x 9	1.875(H7)	1/2 x 1/2
			2.000(H7)	1/2 x 1/2

Sprag Clutch Reference	A mm in	B mm in	C (max) mm in	C (min) mm in	D mm in	E mm in	F mm in	G mm in	H mm in	K (min) mm in	L mm in	M mm in	Hub Key Size
SB3	47.62 1.88	41.27 1.63	22.23 0.875	22.20 0.874	17.46 0.69	20.09 0.79	20.64 0.81	12.70 0.50	23.80 0.94	16.74 0.66	25.73 1.00	5.54 0.22	- 1/8 x 1/8
SB5	69.85 2.75	50.80 2.00	31.75 1.250	31.72 1.249	31.75 1.25	25.40 1.00	25.40 1.00	14.27 0.56	41.27 1.63	21.13 0.83	36.27 1.43	6.35 0.25	- 3/16 x 3/16
SB6	80.95 3.19	73.03 2.88	34.93 1.375	34.90 1.374	39.67 1.56	35.00 1.38	33.32 1.31	23.80 0.94	42.85 1.69	29.13 1.15	39.95 1.57	4.75 0.18	- 3/16 x 3/16
SB8	90.22 3.55	82.55 3.25	44.45 1.750	44.42 1.749	47.60 1.87	41.27 1.62	36.50 1.44	24.50 0.96	47.62 1.88	31.47 1.24	50.65 2.00	5.54 0.22	- 1/4 x 1/4
SB10	88.90 3.50	95.25 3.75	57.15 2.250	57.12 2.249	44.45 1.75	51.59 2.03	36.50 1.44	23.80 0.94	46.02 1.81	32.11 1.26	63.35 2.50	6.35 0.25	- 5/16 x 5/16
SB12	98.42 3.87	112.71 4.44	63.50 2.500	63.47 2.499	52.40 2.06	60.33 2.38	36.50 1.44	30.15 1.19	53.97 2.13	30.61 1.21	73.30 2.89	7.14 0.28	- 3/8 x 3/8
SB14	111.18 4.38	139.70 5.50	73.03 2.875	73.00 2.874	55.56 2.19	76.20 3.00	44.45 1.75	34.14 1.34	57.15 2.25	39.34 1.55	81.81 3.22	7.92 0.31	- 7/16 x 7/16
SB16	111.18 4.38	139.70 5.50	82.55 3.250	82.52 3.249	55.56 2.19	76.20 3.00	44.45 1.75	36.50 1.44	57.15 2.25	39.67 1.56	91.85 3.62	7.95 0.31	- 1/2 x 1/2

Clutches Ref SB5-16 are available for either oil or grease lubrication; for applications where the clutch will run immersed in oil, it can be supplied without seals. SB3 is supplied greased for life.

Parallel keys only must be used: under no circumstances are taper keys acceptable.

\* 4.78mm (0.187 ins) spring pin supplied loose.

#### Concentricity

Concentricity of the sprag tracks of Sleeve Bearing Clutches is achieved by using the shaft on which the clutch is mounted as a bearing surface. The surface finish should not exceed 30 micro inch CLA and taper should not exceed 0.01mm per 25mm of journal length.

Standard bore limits are H8 for all light duty clutches. Recommended shaft limits are h6.

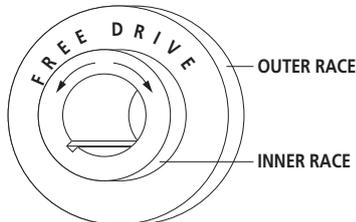
**SB Series - Sprag Clutch**

SB Sprag Clutch Size	Torque Capacity		Maximum O'running Speed		Resistance After Run-in	Oil or Grease Capacity	Weight Approx		
	Nm	lb ft	Inner Race rpm	Outer Race rpm				Nm	lb ft
SB3	54		1950	900	0.27	Greased For Life	0.28		
	40				0.2				
SB5	115		1950	900	0.68	7.1	0.6		
	85				0.5			0.25	1.32
SB6	372		1950	750	2.28	10.6	1.36		
	275				1.68			0.38	3.00
SB8	542		1650	600	3.8	14.2	1.93		
	400				2.8			0.50	4.25
SB10	881		1250	350	4.75	14.2	2.44		
	650				3.5			0.50	5.38
SB12	1760		1150	350	7.9	21.3	3.91		
	1300				5.84			0.75	8.62
SB14	1970		950	250	9.3	28.4	6.32		
	1450				6.87			1.00	13.90
SB16	2170		950	250	9.3	28.4	6.35		
	1600				6.87			1.00	14.00

**CLUTCH HANDLING**

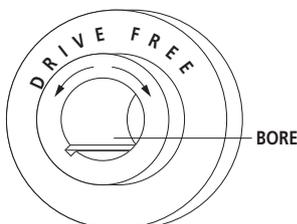
**SB Series**

RH Clutches - Inner race drives clockwise when viewed from small boss or inner race end.



RIGHT HAND ROTATION SHOWN

LH Clutches - Inner race drives counter clockwise when viewed from small boss or inner race end.



LEFT HAND ROTATION SHOWN

**ORDERING INFORMATION**

Clutch Reference	Part Numbers					
	Left Hand Clutches			Right Hand Clutches		
	Grease lubricated	Oil lubricated	Without seal	Grease lubricated	Oil lubricated	Without seal
SB3	648 104	-	-	648 105	-	-
SB5	648 206	648 106	648 108	648 207	648 107	648 109
SB6	648 210	648 110	648 112	648 211	648 111	648 113
SB8	648 214	648 114	648 116	648 215	648 115	648 117
SB10	648 218	648 118	648 120	648 219	648 119	648 121
SB12	648 222	648 122	648 124	648 223	648 123	648 125
SB14	648 226	648 126	648 128	648 227	648 127	648 129
SB16	648 230	648 130	648 132	648 231	648 131	648 133

When ordering please specify clutch reference/part number and bore size required e.g. SB6 LH/0.75" or 648210/0750.



**IMPORTANT** Note that it is essential that the shaft keyway does not extend into the sleeve bearing as excessive wear could be created and result in failure of the clutch.



**IMPORTANT** The clutch must fit on a shaft with a recommended diameter tolerance of h6 for metric and inch shafts and to the USA shaft tolerance figures on page 51.

**SO/SX Series - Sprag Clutches - Sizes 300 to 1027**

A high precision, clutch suitable for medium to heavy duty applications.

**Features:**

- All clutches are fitted with high precision heavy duty bearings for arduous duty applications.
- Clutch Sizes 300 to 700 are fitted with ARO sprags to resist vibration and high transient torques and overloads.
- SO Series Clutches, oil lubricated suitable for overrunning, backstopping and medium duty indexing (up to 150 indexes/minute).
- Grease lubrication is available where high inner race overrunning speeds are required or maintenance is difficult.
- SO Series Clutches, grease lubricated for use on general purpose overrunning and backstopping applications.
- SX Series Clutches, oil lubricated designed for medium to heavy indexing applications (over 150 indexes/minute).
- Standard hardened chromised steel sprags for optimal wear resistance on overrunning and backstopping applications.

- Sealed for life options available on all sizes
- Renold DUSTGARD shields available on all sizes for use in constant dust environments
- Fully interchangeable backstop torque arms available on all sizes.

**Applications:**

- Pump Drives
- Paper Machinery
- Textile Machinery
- Light Duty Hammer Mills
- Fan Drives
- General Industrial Applications

**SO/SX Series - Sprag Clutches - General Specification**

**SO / SX Series Sizes 300 to 700**

Overrunning / Indexing / Backstopping

This range of Sprag Clutches are fitted with ball bearings to ensure concentricity and carry radial and axial loads. From Size 300 to 700 the clutches have cage mounted ARO Sprags which are specifically designed to resist the effects of vibration, high transient torque and overloads. Outer race end faces have tapped holes for the attachment of items such as couplings, sprockets, pulleys etc. with the outside diameter of the outer race providing location to ensure concentricity. The clutch must be mounted on a shaft with the inner race driven by a parallel key with top clearance (taper keys must never be used). Please see page 25 & 27 for bore and keyway sizes and recommended shaft diameters. Grease lubrication should be used where maintenance is likely to be infrequent or where high inner race overrunning speeds are required.

**SO Series - Oil Lubricated**

General purpose Sprag Clutches for overrunning, backstopping and light to medium duty indexing applications (up to 150 indexes per minute). Fitted with lip type seals, for oil retention and protection in hostile environments.

**SO Series - Grease Lubricated**

General purpose Sprag Clutches incorporating Labyrinth seals for use in overrunning and backstopping applications. Labyrinth seals allow higher overrunning speeds.

End face lubrication option is available on many clutch sizes for use in general industrial applications and with the tension release mechanisms.

Sealed for Life and Trash Guard Units available, with application and design approval from Renold Engineering.

**SX Series - Oil Lubricated**

Indexing Sprag Clutches specifically designed for medium to heavy duty indexing applications (over 150 indexes per min). Grease lubrication option is available.

**SO / SX Series Sizes 750 to 1027**

Overrunning / Indexing / Backstopping

SO Series - Oil Lubricated

SO Series - Grease Lubricated

SX Series - Oil Lubricated

The SO / SX Series Sprag Clutches Sizes 750 to 1027 offers many of the features of the 300 to 700 sizes and should be used in the same applications where torque and speed permits.



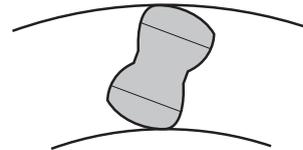
**WARNING**

If the clutch is used as the sole failsafe device in any application then other factors in the operating environment such as improper use, lack of servicing maintenance or lubrication may cause the clutch to fail causing danger to users, personnel and property.

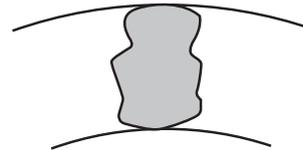
**SO - SX Series**

ARO Sprags are fitted into the SO and SX Series of Sprag Clutches up to size 700, and assist in resisting the effects of transient overloads and vibrations.

STANDARD SPRAG CLUTCH

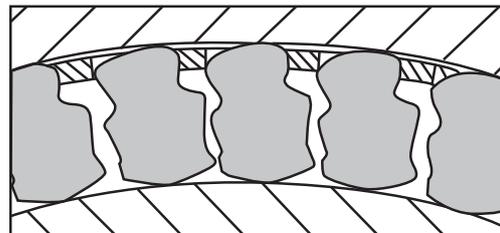


ARO SPRAG CLUTCH



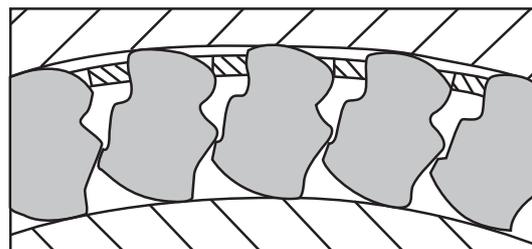
Normal Engagement Condition:

Showing the ARO Sprags in the drive locked position transmitting the rated torque of the particular clutch.

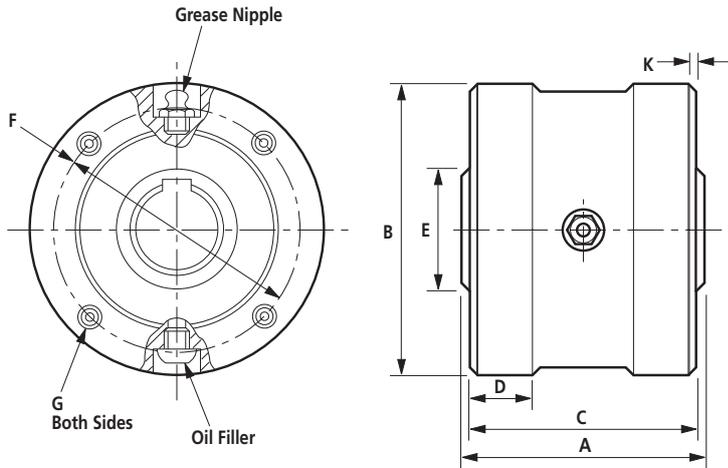


Extreme Overload Condition:

The projected shape at the side of each sprag creates a positive sprag-to-sprag abutment, which assists both rollover and popout.



### SO/SX Series - Sprag Clutches - Sizes 300 to 700

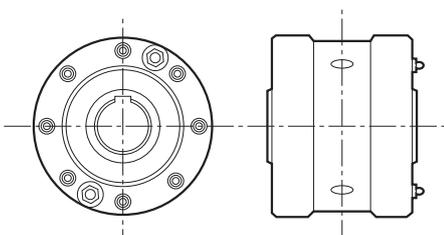


##Hole spacing - SO700  
All other clutches  
holes equally spaced.

Parallel Keys only must be used, under no circumstances are taper keys acceptable.

Sprag Clutch Reference	A	B (max)	B (min)	C	D	E	F	Number of Holes	G	Depth mm Depth in	K	Weight kg lb
	mm in	mm in	mm in	mm in	mm in	mm in	mm in		Thread U.N.F.			
300	63.5 2.50	76.20 3.000	76.15 2.998	60.45 2.38	- -	28.58 1.12	66.67 2.625	4@90°	0.250	12.7 0.500	1.5 0.06	1.6 3.5
400	69.85 2.75	88.900 3.500	88.849 3.498	68.28 2.69	12.70 0.50	30.16 1.19	73.025 2.875	4@90°	0.3125	16 0.625	1.5 0.06	2.7 6.0
500	88.90 3.50	107.950 4.250	107.899 4.248	85.73 3.38	15.88 0.63	44.45 1.75	92.075 3.625	4@90°	0.3125	19 0.75	1.5 0.06	4.8 10.5
600	95.25 3.75	136.525 5.375	136.474 5.373	92.08 3.63	19.05 0.75	63.50 2.50	120.650 4.750	6@60°	0.3125	19 0.75	1.5 0.06	8.6 19.0
700	127.00 5.00	180.975 7.125	180.924 7.123	123.83 4.88	25.40 1.00	88.90 3.50	158.750 6.250	8##	0.375	19 0.75	1.5 0.06	19.0 42.0

SO or SX Sprag Clutch Reference	Torque Capacity Nm lb ft	Maximum Over Running Speed				Max Bore mm in	Resistance After Run-in Nm lb ft
		Lip Seal - Oil Lube		Labyrinth Seal - Grease			
		Inner Race rpm	Outer Race rpm	Inner Race rpm	Outer Race rpm		
300	379 275	3000	900	3600	900	20 0.750	0.18 0.13
400	407 300	2800	850	3600	850	22 0.875	0.27 0.20
500	1585 1168	2500	800	3000	800	32 1.312	0.31 0.23
600	3100 2285	2200	750	2400	750	50 2.000	0.62 0.46
700	6900 5086	1600	450	2000	450	70 2.937	1.56 1.15



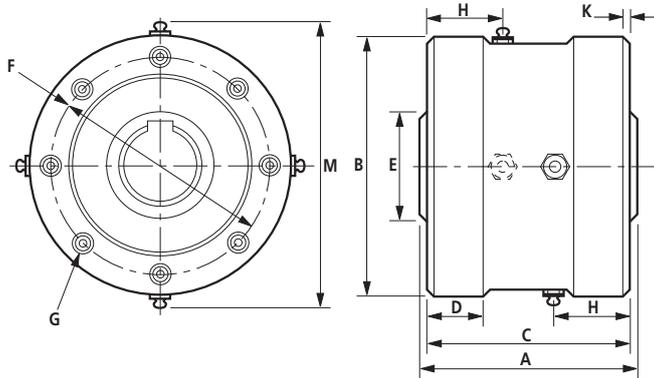
Clutch Sizes 600 and 700 are available with end face lubrication

For Ordering information and Bore sizes see P26

**IMPORTANT** The clutch must run on a shaft with a recommended diameter tolerance of h6 for metric and inch shafts and to the USA shaft tolerance figures on page 51.

**WARNING** The clutch must be mounted on a shaft with the inner race driven by a parallel key with top clearance. TAPER KEYS MUST NEVER BE USED.

**SO/SX Series - Sprag Clutches - Sizes 750 to 1027**



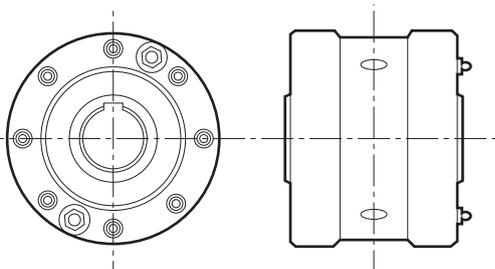
##Hole spacing - SO 750  
All other clutches  
holes equally spaced.

Parallel keys only must be used, under no circumstances are taper keys acceptable.

Sprag Clutch Reference	A mm in	B (max) mm in	B (min) mm in	C mm in	D mm in	E mm in	F mm in	Number of Holes	G Thread U.N.F.	Depth mm Depth in	H mm in	K mm in	Weight kg lbs
750	152.40 6.00	222.25 8.750	222.20 8.748	149.22 5.88	31.75 1.25	107.95 4.25	177.80 7.00	8 # #	0.5	25.4 1.00	49 1.94	1.5	38 83
800	152.40 6.00	254.00 10.00	253.95 9.998	149.22 5.88	31.75 1.25	139.70 5.50	227.01 8.94	8 @ 45°	0.5	25.4 1.00	49 1.94	1.5	46 102
900	161.90 6.38	304.80 12.000	307.72 11.997	158.75 6.25	34.93 1.38	161.93 6.38	247.65 9.75	10 @ 36°	0.625	31.75 1.25	54 2.13	1.5	71 156
1000	177.8 7.00	381.00 15.000	380.92 14.997	171.45 6.75	34.93 1.38	193.68 7.63	298.45 11.75	12 @ 30°	0.625	31.75 1.25	60 2.38	1.5	115 253
1027	168.30 6.63	381.00 15.000	380.92 14.997	165.10 6.50	34.93 1.38	228.60 9.00	298.45 11.75	12 @ 30°	0.625	25.4 1.00	54 2.13	1.5	114 250

SO or SX Sprag Clutch Reference	Torque Capacity Nm lb ft	Maximum Over Running Speed				Max Bore mm in	Resistance After Run-in Nm lb ft
		Lip Seal - Oil Lube		Labyrinth Seal - Grease			
		Inner Race rpm	Outer Race rpm	Inner Race rpm	Outer Race rpm		
750	9660 7120	1000	650	1800	650	80 3.250*	5.08 3.75
800	17940 13223	850	525	1500	525	110 4.250	7.12 5.25
900	24400* 18000*	700	500	1350	500	130 5.437*	8.47 6.25
1000	33900 24987	500	375	1100	375	160 6.438	13.56 10.00
1027	36600 27000	500	375	1100	375	180 7.000	13.56 10.00

\* 20337 Nm for 130 mm and greater 15008 lb ft for 5.25 and 5.437 inch bores.



Clutch sizes 750 to 1000 available with end face lubrication on request

For Ordering information and Bore sizes see P27

**IMPORTANT** The clutch must fit on a shaft with a recommended diameter tolerance of h6 for metric and inch shafts and to the USA shaft tolerance figures on page 51.

**WARNING** The clutch must be mounted on a shaft with the inner race driven by a parallel key with top clearance. TAPER KEYS MUST NEVER BE USED.

### SO/SX Series - Sprag Clutches - Sizes 300 to 700

#### Bore Sizes

Sprag Clutch Reference	British Inch Sizes		Metric Sizes		USA Inch Sizes	
	Bore H7 (in)	Keyway W x D (in)	Bore H7 (mm)	Keyway W x D (mm)	Bore H7 (in)	Keyseat W x D (in)
300	0.4375	0.094 x 0.047			0.4375	0.094 x 0.047
	0.500	0.125 x 0.062	16	5 x 2.5	0.500	0.125 x 0.062
	0.625	0.188 x 0.094	18	6 x 3	0.625	0.188 x 0.094
	0.750	0.188 x 0.094	20	6 x 3	0.750	0.188 x 0.094
400	0.500	0.125 x 0.063	14	5 x 2.5	0.4375	0.094 x 0.047
	0.625	0.187 x 0.094	16	5 x 2.5	0.500	0.125 x 0.062
	0.750	0.187 x 0.094	18	6 x 3	0.625	0.188 x 0.094
	0.875	0.187 x 0.094	20	6 x 3	0.750	0.188 x 0.094
			22	6 x 1.7	0.875	0.188 x 0.062
500	0.750	0.187 x 0.094	22	6 x 3	0.750	0.188 x 0.094
	0.875	0.187 x 0.094	24	8 x 3.5	0.875	0.188 x 0.094
	1.000	0.250 x 0.125	25	8 x 3.5	1.000	0.250 x 0.125
	1.125	0.250 x 0.125	28	8 x 3.5	1.125	0.250 x 0.125
	1.250	0.250 x 0.125	30	8 x 3.5	1.250	0.250 x 0.125
	1.312	0.250 x 0.088	32	10 x 3.2	1.3125	0.250 x 0.094
600	1.125	0.250 x 0.125	30	8 x 3.5	1.250	0.250 x 0.125
	1.250	0.250 x 0.125	32	10 x 4	1.375	0.375 x 0.188
	1.375	0.375 x 0.188	35	10 x 4	1.4375	0.375 x 0.188
	1.500	0.375 x 0.188	38	10 x 4	1.500	0.375 x 0.188
	1.625	0.375 x 0.188	40	12 x 4	1.625	0.375 x 0.188
	1.750	0.375 x 0.188	45	14 x 3.8	1.750	0.375 x 0.188
	1.875	0.500 x 0.156	48	14 x 4.5	1.875	0.375 x 0.188
	2.000	0.500 x 0.156	50	14 x 3.5	1.9375	0.375 x 0.188
					2.000	0.375 x 0.125*
700	1.9375	0.500 x 0.250	50	14 x 4.3	1.875	0.375 x 0.188
	2.000	0.500 x 0.250	55	16 x 4.6	1.9375	0.500 x 0.250
	2.250	0.625 x 0.313	60	18 x 5.4	2.000	0.500 x 0.250
	2.375	0.625 x 0.313	65	18 x 5.4	2.125	0.500 x 0.250
	2.4375	0.625 x 0.219	70	20 x 4.8	2.250	0.500 x 0.250
	2.500	0.625 x 0.313			2.375	0.625 x 0.313
	2.750	0.625 x 0.219			2.4375	0.625 x 0.313**
	2.9375	0.625 x 0.172			2.500	0.625 x 0.313
					2.625	0.625 x 0.250
					2.750	0.625 x 0.219
				2.9375	0.625 x 0.125	

#### ORDERING INFORMATION

Clutch Reference	Part Numbers		
	Grease lubricated	Oil lubricated	Without seal
<b>OVERRUNNING/BACKSTOPPING</b>			
SO300	6481301	6481302	6481303
SO400	6481401	6481402	6481403
SO500	6481501	6481502	6481503
SO600	6481601	6481602	6481603
SO700	6481701	6481702	6481703
<b>INDEXING</b>			
SX300	6482301	6482302	6482303
SX400	6482401	6482402	6482403
SX500	6482501	6482502	6482503
SX600	6482601	6482602	6482603
SX700	6482701	6482702	6482703

For British inch and metric sizes, recommend shaft tolerances are 'h6'.  
For American Inch sizes, suffix bore 'A', see table on page 51 for bore and recommended shaft tolerances.

All keys must be parallel with top clearance - never use taper keys.

\* SO / SX 600 Alternative keyseat 0.500" x 0.250"

\*\* SO / SX 700 Alternative keyseat 0.500" x 0.250"

When ordering please specify clutch reference/part number, bore size required and keyway required if non standard.

eg. SO600/1.375" or 6481602/1.375 (suffix 'A' if American)

**SO/SX Series - Sprag Clutches - Sizes 750 to 1027**

Sprag Clutch Reference	British Inch Sizes		Metric Sizes		USA Inch Sizes	
	Bore H7 (in)	Keyway W x D (in)	Bore H7 (mm)	Keyway W x D (mm)	Bore (in)	Keyseat W x D (in)
750	2.500	0.625 x 0.313	60	18 x 5.5	2.4375	0.625 x 0.313
	2.750	0.625 x 0.313	65	18 x 5.5	2.500	0.625 x 0.313
	2.875	0.75 x 0.375	70	20 x 6.0	2.6875	0.625 x 0.313
	3.000	0.75 x 0.375	75	20 x 6.0	2.750	0.625 x 0.313
	3.125	0.75 x 0.0250	80	22 x 7.0	2.9375	0.750 x 0.375
	3.250	0.75 x 0.0250	85	22 x 5.0	3.000	0.750 x 0.375
	3.375	0.75 x 0.189			3.250	0.750 x 0.250
	3.437	0.75 x 0.189			3.375	0.750 x 0.188
800					3.4375	0.750 x 0.188
	3.000	0.750 x 0.375	70	20 x 6.0	3.000	0.750 x 0.375
	3.250	0.750 x 0.375	75	20 x 6.0	3.250	0.750 x 0.375
	3.437	0.875 x 0.438	80	22 x 7.0	3.4375	0.875 x 0.438
	3.500	0.875 x 0.438	85	22 x 7.0	3.500	0.875 x 0.438
	3.750	0.875 x 0.438	90	25 x 7.0	3.625	0.875 x 0.438
	4.000	1.000 x 0.500	95	25 x 7.0	3.750	0.875 x 0.438
	4.250	1.000 x 0.375	100	28 x 8.0	3.9375	1.000 x 0.500
4.437	1.000 x 0.250	105	28 x 8.0	4.000	1.000 x 0.500	
900			110	28 x 8.0	4.250	1.000 x 0.375
	4.000	1.00 x 0.500	90	25 x 7.0	4.4375	1.000 x 0.250
	4.250	1.00 x 0.500	100	28 x 8.0	4.000	1.000 x 0.500
	4.375	1.00 x 0.500	110	28 x 8.0	4.250	1.000 x 0.500
	4.437	1.00 x 0.500	120	32 x 9.0	4.375	1.000 x 0.500
	4.500	1.00 x 0.500	125	32 x 9.0	4.4375	1.000 x 0.500
	4.750	1.00 x 0.500	130	32 x 9.0	4.500	1.000 x 0.500
	4.937	1.00 x 0.375			4.750	1.000 x 0.500
5.000	1.00 x 0.389			4.9375	1.000 x 0.375	
5.250*	1.00 x 0.265			5.000	1.000 x 0.375	
5.437*	1.00 x 0.268			5.250*	1.000 x 0.250	
1000 & 1027					5.4375*	1.000 x 0.250
	4.750	1.000 x 0.500	130	32 x 9.0	4.9375	1.250 x 0.625
	5.250	1.25 x 0.625	135	36 x 10.0	5.000	1.250 x 0.625
	5.437	1.25 x 0.625	140	36 x 10.0	5.250	1.250 x 0.625
	5.500	1.25 x 0.625	150	36 x 10.0	5.4375	1.250 x 0.625
	5.750	1.25 x 0.625	160	40 x 11.0	5.500	1.250 x 0.625
	5.937	1.25 x 0.625			5.750	1.250 x 0.625
	6.000	1.25 x 0.625			5.9375	1.250 x 0.625
6.250	1.50 x 0.50			6.000	1.250 x 0.625	
6.437	1.50 x 0.50			6.250	1.250 x 0.375	
1027					6.4375	1.250 x 0.375
	6.500	1.50 x 0.50	170	40 x 11.0	6.500	1.500 x 0.500
	6.750	1.50 x 0.45	180	45 x 12.5	6.750	1.500 x 0.500
	6.937	1.50 x 0.45			6.875	1.500 x 0.500
				7.000	1.500 x 0.438	

**ORDERING INFORMATION**

Clutch Reference	Part Numbers		
	Grease lubricated	Oil lubricated	Without seal

**OVERRUNNING/BACKSTOPPING**

SO750	648 1751	648 1752	648 1753
SO800	648 1801	648 1802	648 1803
SO900	648 1901	648 1902	648 1903
SO1000	648 1001	648 1002	648 1003
SO1027	648 1271	648 1272	648 1273

**INDEXING**

SX750	648 2751	648 2752	648 2753
SX800	648 2801	648 2802	648 2803
SX900	648 2901	648 2902	648 2903
SX1000	648 2001	648 2002	648 2003
SX1027	648 2271	648 2272	648 2273

For British inch and metric sizes, recommended shaft tolerances are 'h6'.

For American Inch sizes, suffix bore 'A', see table on page 51 for bore and recommend shaft tolerances.

All keys must be parallel with top clearance - never use taper keys.

When ordering please specify clutch reference/part number and bore size required.

eg. SX900/130mm or 6482902/130 mm.

**Sprag Clutch - Flanged Stub Shaft Adaptors**

Stub Shaft Adaptors for use with SO and SX Sprag Clutches providing a mounting stub shaft for mechanical elements.

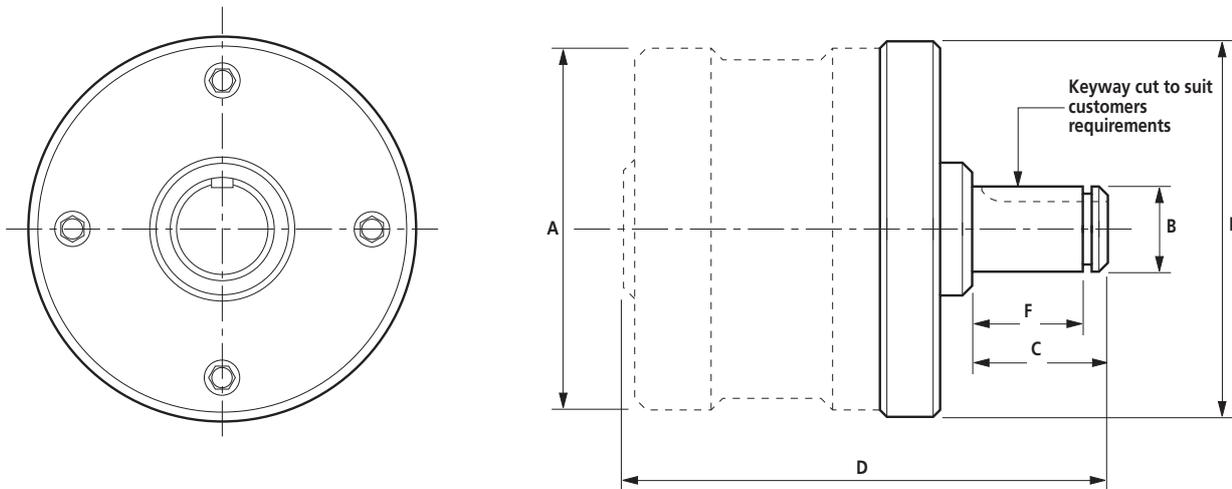
**Features:**

- Extended stub shaft used to fit couplings, chain pinions, gears, cams and index lever arms to standard Sprag Clutches giving extra design flexibility.
- Can reduce the overall dimensions of the combination drive package, thus allowing a more compact size.

**Applications:**

- Fan Drives
- Paper Machinery
- Pump Drives
- Textiles

**Sprag Clutch - Stub Shaft Adaptors**

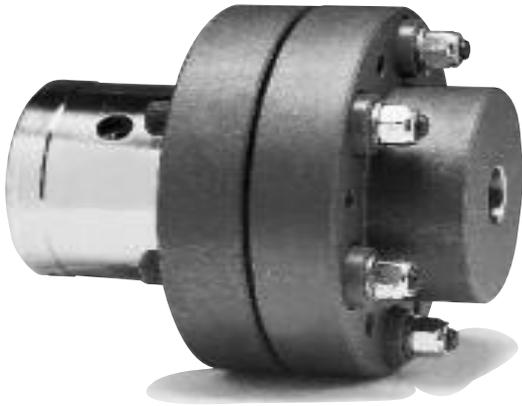
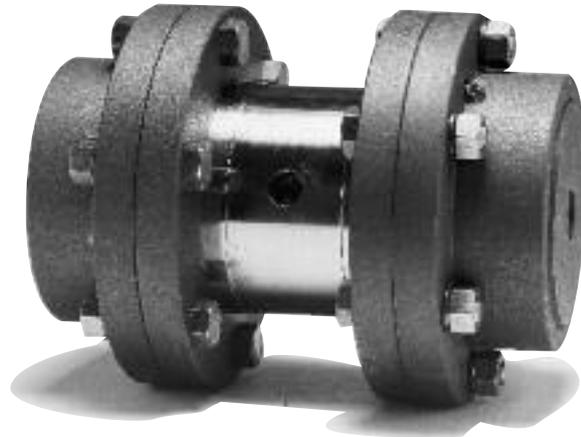


Stub-Shaft Adaptors can be used with SO and SX Series Sprag Clutches to provide a mounting for mechanical elements such as chainwheels, couplings, gears, pulleys, cams, levers, etc., when the size or configuration of these parts does not allow bolting holes to be drilled to match the existing tapped holes in the clutch. Consult Renold for maximum overhung load capacity.

Standard adaptors are supplied to the dimensions shown below and the circlip groove is dimensioned to suit a Spirolox type RS circlip/snap ring. However, the stubshaft portion may be reduced in diameter or shortened to suit customer's requirements and the circlip groove may be omitted or varied to suit other types of retaining ring.

When ordering, specify the Adaptor product number and keyway requirements; also please give details of any required variations as indicated in the preceding paragraph. If the adaptor is to be supplied assembled to a clutch the direction in which it is to drive the clutch inner race when viewed from the stubshaft end should be stated.

Adaptor Part Number	Sprag Clutch Reference	A mm in	B (max) mm in	B (min) mm in	C mm in	D mm in	E mm in	F (min) mm in	Weight kg lb
645 500	SO / SX 400	88.90 3.500	19.08 0.751	19.05 0.750	38.1 1.50	129.4 5.09	98.4 3.88	33.12 1.304	0.73 1.6
645 501	SO / SX 500	107.95 4.250	31.78 1.251	31.75 1.250	44.5 1.75	157.2 6.19	117.5 4.63	38.71 1.524	1.45 3.2
645 502	SO / SX 600	136.52 5.375	44.48 1.751	44.45 1.750	50.8 2.00	171.5 6.75	146 5.75	44.96 1.77	2.63 5.8
645 503	SO / SX 700	180.97 7.125	69.9 2.752	69.85 2.750	63.5 2.50	214.3 8.44	194 7.63	56.44 2.22	5.72 12.6
645 504	SO / SX 750	222.25 8.750	82.6 3.252	82.55 3.250	76.2 3.00	266.7 10.5	241 9.5	68.35 2.691	10.79 23.8
645 505	SO / SX 800	254.00 10.000	108 4.252	107.95 4.250	95.3 3.75	282.57 11.125	273 10.75	87.27 3.436	18.37 40.5
645 506	SO/SX 900	304.80 12.000	133.4 5.252	133.35 5.250	114.3 4.50	311.15 12.25	324 12.75	105.84 4.167	28.49 62.8
645 507	SO/SX 1000	381.00 15.000	158.8 6.252	158.75 6.250	139.7 5.50	352.4 13.875	400 15.75	127.91 5.036	46.9 103.4
645 507	SO/SX 1027	381.00 15.000	158.8 6.252	158.75 6.250	139.7 5.50	344.42 13.56	400 15.75	127.91 5.036	46.9 103.4

**Sprag Clutch - Flexible Coupling Combination****Pinflex Clutch****Gearflex Clutch**

A medium to large power capacity Sprag Clutch and Flexible Coupling combination range.

**Features:**

- SO Series Clutch combined with Pinflex Coupling allowing for angular, parallel and axial misalignment.
- Absorbs vibration and shock loads.
- SO Series Clutch with two flexible half Gearflex Couplings forming a short cardan shaft accommodating parallel and angular misalignment.
- Flexible shaft connection for overrunning barring drive applications.
- Grease lubricated clutch used as standard for high overrunning speeds and infrequent maintenance.
- Allows larger shaft sizes to be used.

**Construction:**

- Pinflex clutch uses all steel coupling half bodies for compactness combined with strength
- Gearflex clutch uses all steel double engagement coupling for maximum flexibility

**Applications:**

- Barring Drives
- Dual Drive Systems - overrunning
- Power Generator Sets
- Packaging Machinery
- Textile Industry
- Fan Drives
- Steel Works
- Mining Industry
- General Industrial Applications

# SCPF and SCGF Series Sprag Clutch Couplings

Shafts should never be connected by a Sprag Clutch as shaft misalignment will create excessive loads on the clutch bearings and sprags and may result in failure.

However by introducing a flexible coupling into the drive, the problem of shaft misalignment is reduced.

Renold have two types of Sprag Clutch Couplings available, as standard, for other options consult Renold, details as follows:-

**SCPF Series**

SO Series Sprag Clutch fitted with a Pinflex Coupling to allow for angular offset misalignment and to absorb vibration.

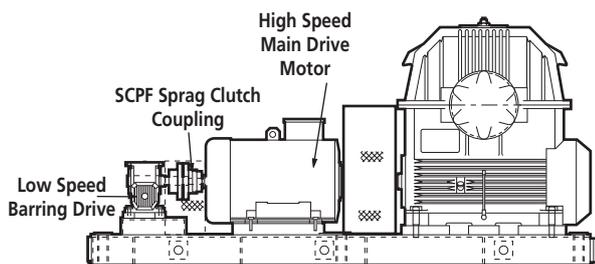
**SCGF Series**

SO Series Sprag Clutch fitted with two flexible half Gearflex Couplings to form a short cardan or spacer shaft.

This design also allows for removal of the Sprag Clutch for replacement without the need to disturb the driving and driven elements.

The SCGF Clutch Coupling can accommodate a larger amount of parallel offset misalignment.

Sprag Clutch / Couplings can be used to connect barring drives or dual drives where there are two alternative motors driving a common gearbox input shaft, for example. The inner race should normally be mounted on the shaft which will be running for long periods at a relatively high speed, while the outer race is stationary. A Grease Lubricated clutch should be used when higher over running speeds are required and / or maintenance will be infrequent.



**Selection**

(1) All Sprag Clutch Couplings should be selected on the driving torque:-

$$\text{Torque (Nm)} = \frac{\text{KW} \times 9550}{\text{RPM}}$$

$$\text{Torque (lb.ft)} = \frac{\text{HP} \times 5250}{\text{RPM}}$$

(2) Select the service factor from table 1.

(3) Selection torque = Actual Torque x Service Factor.

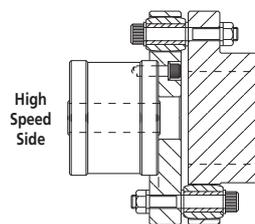
(4) Ensure that the selection will accept all shaft diameters.

PRIME MOVER	Driven Machine Classification		
	Steady	Medium	Heavy
AC Motor, Air Motor Steam Turbine 1.25	1.5	2.5	
Multi Cylinder IC Engine	Consult 1.75	Consult Renold	Renold
Single Cylinder IC Engine, Diesel Engine	Consult Renold	Consult Renold	Consult Renold

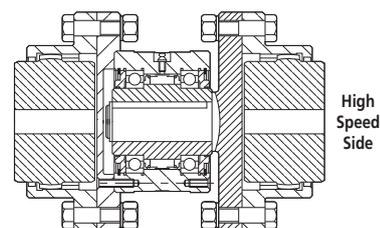
(5) It will be noted from page 32 and 33 that the inner race rotation speed capacity is higher than the outer race speed. The Sprag Clutch Coupling should be designed into the drive system with the highest speed shaft rotation connected to the inner race of the Sprag Clutch.

(6) Direction of rotation should be stated when viewed from the high speed side.

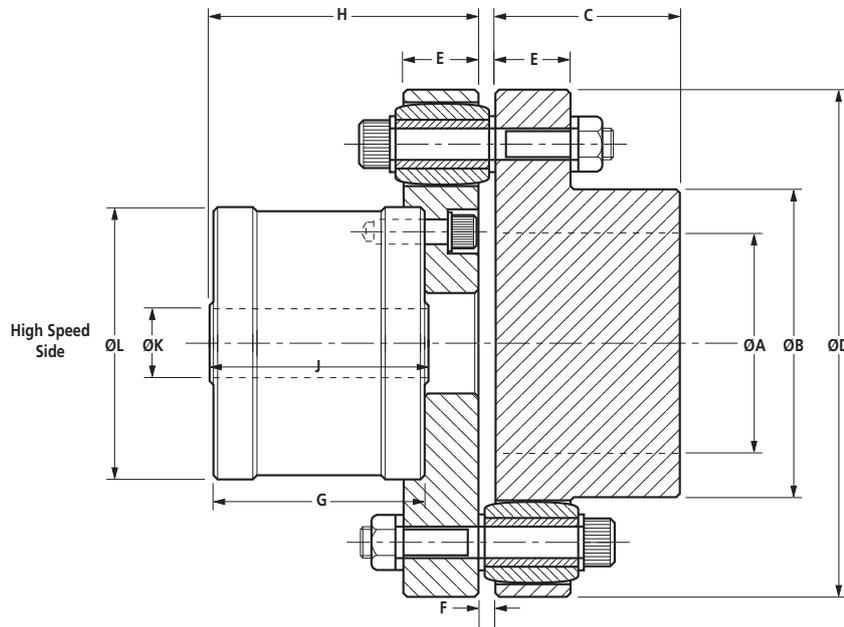
**Reference SCPF clutch coupling**



**Reference SCGF clutch coupling**



## Pinflex - Sprag Clutch Coupling

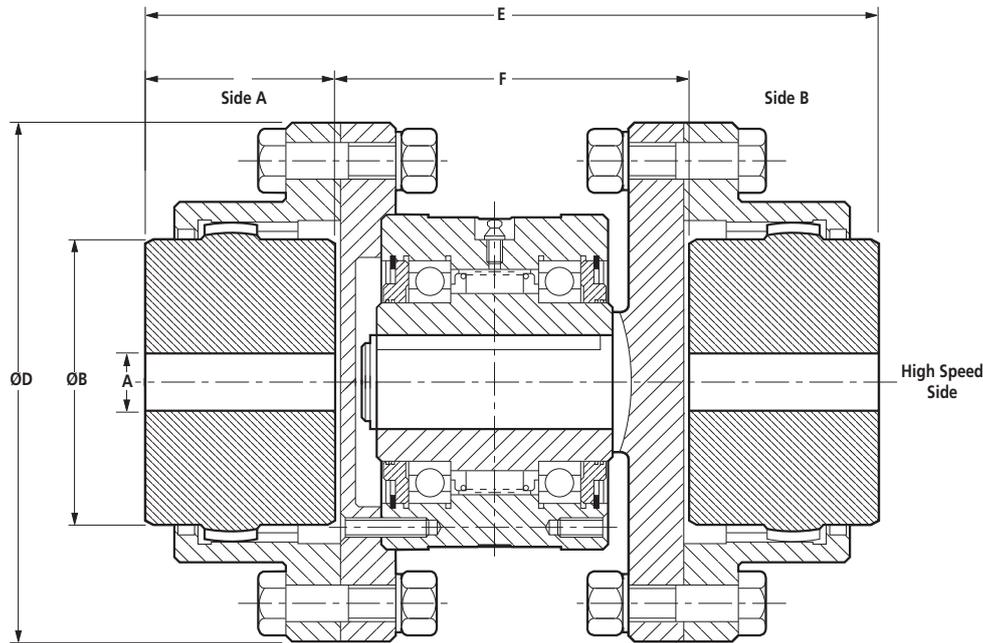


SCPF Clutch Coupling Reference	A (min) mm in	A (max) mm in	B mm in	C mm in	D mm in	E mm in	F mm in	G mm in	H mm in	J mm in	K (max) mm in	L mm in
SCPF400	-	72	110	60	165	25	5	68.26	87	70.1	22	88.90
	-	2.834	4.33	2.36	6.50	1.00	0.20	2.69	3.43	2.76	0.875	3.500
SCPF500	-	80	113	75	195	35	6	85.72	115	89.15	32	107.95
	-	3.149	4.45	2.98	7.68	1.38	0.24	3.37	4.53	3.51	1.312	4.250
SCPF600	-	110	150	89	235	35	6	92.08	122	95.5	50	136.53
	-	4.331	5.91	3.50	9.25	1.38	0.24	3.63	4.80	3.76	2.00	5.375
SCPF700	55	130	180	110	290	50	7	123.82	168	127.25	70	180.97
	2.17	5.118	7.09	4.33	11.42	1.97	0.28	4.87	6.61	5.00	2.9375	7.125
SCPF750	75	175	245	150	380	60	7	149.23	204	152.65	80	222.25
	2.95	6.890	9.65	5.91	14.96	2.36	0.28	5.88	8.03	6.00	3.25	8.750

SCPF Clutch Coupling Reference	Torque Capacity Nm lb ft	*Maximum Over Running Speed		Maximum Drive Speed rpm	SO Sprag Clutch Reference	Pinflex Coupling Size	Coupling Max Bore mm in	Min Bore mm in
		Inner Race rpm	Outer Race rpm					
SCPF400	407 300	3600	850	5200	400	PF3	72 2.875	-
SCPF500	1585 1168	3000	800	4400	500	PF4	80 3.125	-
SCPF600	3100 2285	2400	750	3600	600	PF5	110 4.375	-
SCPF700	6900 5086	2000	450	2900	700	PF6	130 5.125	55 2.165
SCPF750	9660 7120	1800	650	2200	750	PF8	175 6.875	75 2.953

\*Grease filled clutch only - for oil filled clutches contact Renold.

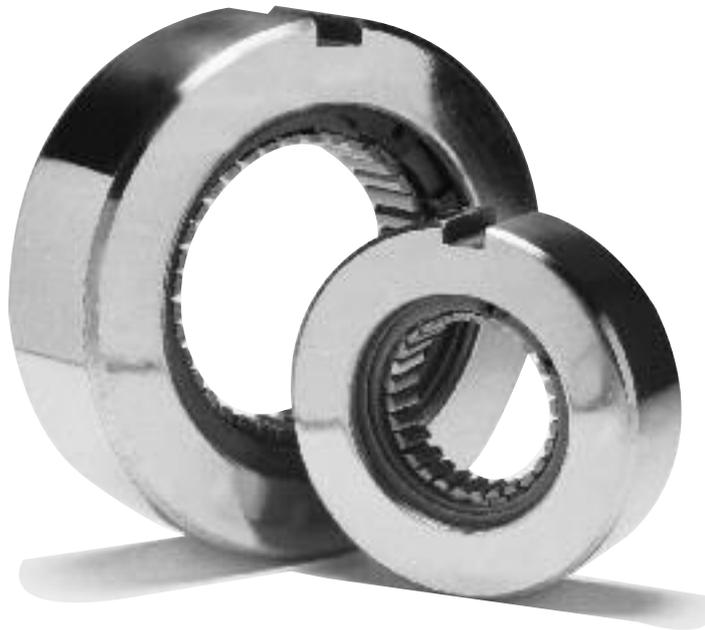
**Gearflex - Sprag Clutch Coupling**



SCGF Clutch Coupling Reference	A (min) mm in	A (max) mm in	B mm in	C mm in	D mm in	E mm in	F mm in	L mm in
SCGF400	20 0.787	57 2.25	76 3	49 1.94	152 6	207 8.15	109 4.29	207 8.15
SCGF500	27 1.063	78 3.07	102 4	62 2.44	178 7	252 9.92	128 5.04	252 9.92
SCGF600	27 1.063	90 3.54	117 4.6	77 3.03	213 8.38	297 11.69	143 5.63	297 11.69
SCGF700	39 1.535	127 5	165 6.5	106 4.19	279 11	398 15.67	186 7.32	398 15.67
SCGF750	55 2.165	145 5.7	191 7.5	121 4.75	318 12.5	454 17.87	212 8.35	454 17.87

SCGF Clutch Coupling Reference	Torque Capacity Nm lb ft	*Maximum Over Running Speed Inner Race rpm	*Maximum Over Running Speed Outer Race rpm	Maximum Drive Speed rpm	SO Sprag Clutch Reference	Coupling Gearflex Coupling Size	Max Bore mm in	Min Bore mm in
SCGF400	407 300	3600	850	5400	400	GF15	57 2.25	20 0.787
SCGF500	1585 1168	3000	800	4800	500	GF20	78 3.07	27 1.063
SCGF600	3100 2285	2400	750	4250	600	GF25	90 3.54	27 1.063
SCGF700	6900 5086	2000	450	3600	700	GF35	127 5	39 1.535
SCGF750	9660 7120	1800	650	3290	750	GF40	145 5.7	55 2.165

\*Grease filled clutch only - for oil filled clutches contact Renold.

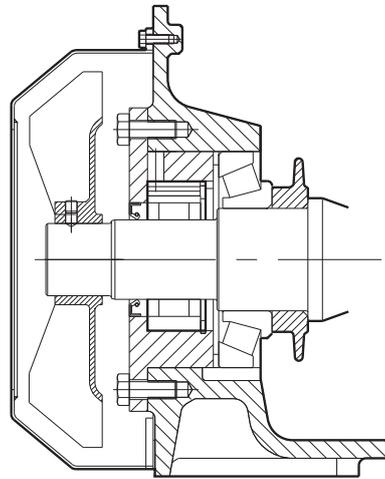
**DM Series - Sprag Clutches****Direct Mounting Sprag Clutch without bearings.****Features:**

- High torque capacity yet compact direct mounting design.
- Suitable for backstopping applications.
- DM clutches drive directly onto the shaft, without an inner race, resulting in compact design.
- The clutch is suitable for use in gear units where the oil provides lubrication.
- Standard hardened chromised steel sprags for optimal wear resistance on overrunning and backstopping applications.

**Applications:**

- Conveyor Drives
- Foundry Equipment Drives
- Steel Works
- Textile Machinery
- Packaging Machinery
- Water Treatment

**DM Series - Sprag Clutches**



DM Series direct mounting Sprag Clutches are specifically designed for use as backstops in applications where compact dimensions are required. The clutch is designed to fit in a housing with the shaft as the inner race. This type is particularly suitable for use in gear units and similar equipment where good concentricity between shaft and housing is ensured. For all applications it is essential that shafts conform of the following specification.

- Diameter: Shaft diameter to tolerances shown in table for dimension 'B'
- Carburized: To an effective depth of 1.27 / 1.52mm (0.050" / 0.060") after grinding
- Hardened: Surface HV30 650 to 750. Core HV30 250 to 400
- Ground: Surface finish 13 to 20 micro-inches CLA  
Taper not to exceed 0.0003" per inch
- Concentricity: Shaft to be supported in bearings such that shaft and housing are concentric within 0.05mm (0.002") TIR  
Diametral clearance within housing to be 0.025 to 0.076mm (0.001" to 0.003")



**SAFETY**

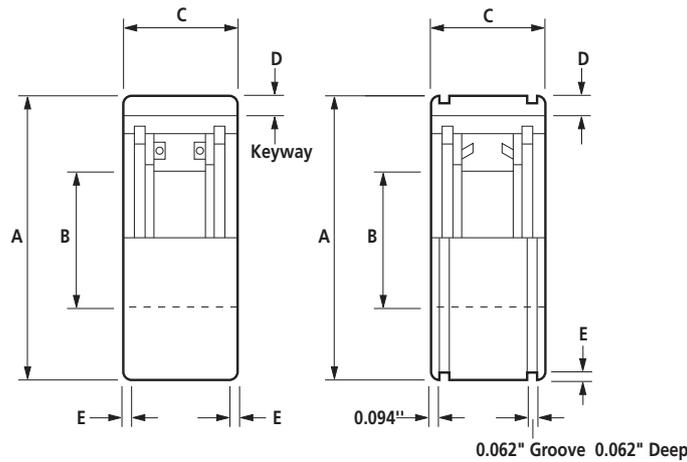
Sprag clutches used as hold back devices afford a reliable means of preventing run back provided our recommendations for routine lubrication by the user and periodic internal examination by Renold personnel are properly followed, but in the event of neglect or a serious overload it cannot be assumed that they will fail safe.



**WARNING**

Lubricant must not contain slippery additives or those containing extreme pressure characteristics.

### DM Series - Sprag Clutches Ref 125 to 513



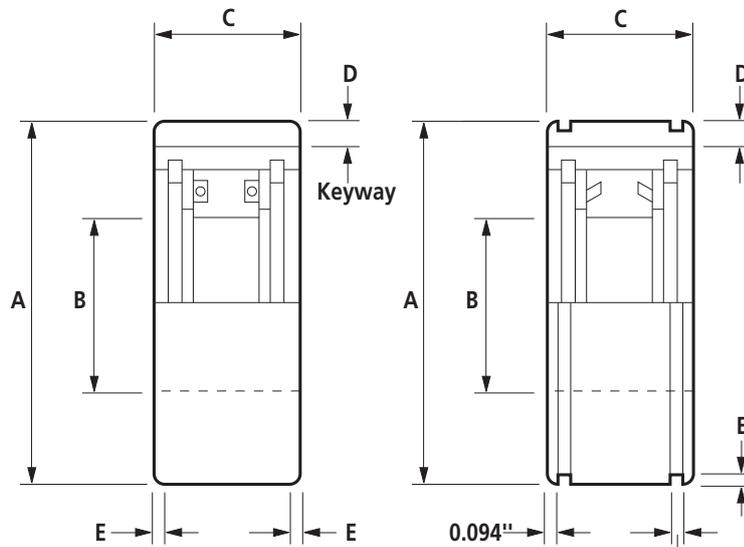
Clutch Sizes 25 to 400

Clutch Sizes 501 to 513

Part No.	DM Sprag Clutch Reference	Torque Capacity Nm lb ft	Shaft O'running Speed rpm (max)	A		Shaft Diameter B		C		D	E	Weight Approx kg lb
				(max) mm in	(min) mm in	(max) mm in	(min) mm in	(max) mm in	(min) mm in			
649033	125	143 105	1800	67.132 2.643	67.107 2.642	31.750 1.250	31.725 1.249	28.194 1.110	27.686 1.090	.250 x .125	.062 x 45	0.43 0.95
649034	150	314 232	1800	84.099 3.311	84.074 3.310	38.100 1.500	38.075 1.499	32.004 1.260	31.496 1.240	.375 x .187	.094 x 45	0.85 1.87
649035	175	427 315	1500	93.243 3.671	93.218 3.670	44.450 1.750	44.425 1.749	32.004 1.260	31.496 1.240	.375 x .187	.094 x 45	1.05 2.31
649056	200	601 443	1400	112.547 4.431	112.522 4.430	50.800 2.000	50.775 1.999	35.179 1.385	34.671 1.365	.500 x .250	.094 x 45	1.87 4.11
649057	225	739 545	1200	122.453 4.821	122.428 4.820	57.150 2.250	57.125 2.249	35.179 1.385	34.671 1.365	.500 x .250	.094 x 45	2.18 4.80
649036	250	832 614	1000	111.15 4.376	111.13 4.375	63.50 2.500	63.47 2.499	44.70 1.760	44.20 1.740	.500 x .250	.094 x 45	1.87 4.11
649039	275	966 712	1000	124.74 4.911	124.71 4.910	69.85 2.750	69.82 2.749	46.23 1.820	45.72 1.800	.500 x .250	.025 x 45	1.9 4.18
649040	300	1092 805	900	132.105 5.201	132.080 5.200	76.200 3.000	76.175 2.999	46.228 1.820	45.720 1.800	.500 x .250	.025 x 45	2.55 5.61
649037	325	1677 1237	850	146.710 5.776	146.685 5.775	82.550 3.250	82.525 3.249	51.054 2.010	50.546 1.990	.500 x .250	.025 x 45	3.8 8.4
649042	350	2262 1668	800	166.675 6.562	166.649 6.561	88.900 3.500	88.875 3.499	51.054 2.010	50.546 1.990	.625 x .312	.025 x 45	5.3 11.7
649203	375	3086 2276	750	172.237 6.781	172.212 6.780	95.250 3.750	95.225 3.749	60.579 2.385	60.071 2.365	.625 x .312	.025 x 45	6.52 14.3
649038	400	3417 2520	750	181.889 7.161	181.864 7.160	101.600 4.000	101.575 3.999	60.579 2.385	60.071 2.365	.625 x .312	.025 x 45	7.26 16.0
648250	501	51 38	2400	39.992 1.575	39.967 1.574	16.510 0.650	16.485 0.6495	25.654 1.010	25.146 0.990	.250 x .125	.03 x 45	0.18 0.40
648251	502	68 50	2400	46.965 1.849	46.939 1.848	18.753 0.7383	18.740 0.7378	22.479 0.885	21.971 0.865	.250 x .125	.03 x 45	0.23 0.51
648252	506	158 117	1800	61.963 2.4395	61.938 2.4385	28.791 1.1335	28.766 1.1325	25.654 1.010	25.146 0.990	.250 x .125	.03 x 45	0.37 0.81
648253	507	203 150	1800	61.963 2.4395	61.938 2.4385	24.653 0.9706	24.628 0.9696	28.829 1.135	28.321 1.115	.250 x .125	.03 x 45	0.48 1.06
648254	509	339 250	1800	71.963 2.8332	71.938 2.8322	28.791 1.1335	28.766 1.1325	32.004 1.260	31.496 1.240	.250 x .125	.03 x 45	0.73 1.61
648255	510	452 333	1800	79.972 3.1485	79.934 3.147	32.931 1.2965	32.906 1.2955	35.179 1.385	34.671 1.365	.375 x .187	.03 x 45	0.92 2.02
648256	511	678 500	1800	79.985 3.149	79.959 3.148	35.001 1.378	34.976 1.377	41.529 1.635	41.021 1.615	.375 x .187	.03 x 45	1.18 2.60
648257	512	904 667	1800	89.967 3.542	89.941 3.541	39.141 1.541	39.116 1.540	41.529 1.635	41.021 1.615	.375 x .187	.03 x 45	1.37 3.01
648258	513	1582 1167	1200	120.650 4.750	120.625 4.749	51.961 2.0457	51.935 2.0447	44.70 1.760	44.20 1.740	.500 x .250	.03 x 45	2.81 6.18

When ordering please specify: clutch reference and part number.

**DM Series – Sprag Clutches Ref 200 and DMD**



With Keyway  
DMD Series sizes 1,2,4 & 5

0.062" Groove 0.062" Deep  
With Retaining Ring  
DMD Series sizes 3, 6-13

Part No.	DM Sprag Clutch Reference	Torque Capacity Nm lb ft	Shaft O'running Speed rpm (max)	Shaft Diameter				C (max) mm in	C (min) mm in	D mm in	E mm in	Weight Approx kg lb	Retaining Ring? (ref DMD)	Dodge Backstop Size (ref DMD)
				A (max) mm in	A (min) mm in	B (max) mm in	B (min) mm in							
649813	203	53 39	2500	39.987 1.5743	39.949 1.5728	16.51 0.65	16.485 0.649	25.654 1.01	25.146 0.99	.125 x .062	.03 x .45	0.5 1.1		
649814	204	68 50	2500	46.985 1.8498	46.947 1.8483	18.796 0.74	18.771 0.739	25.654 1.01	25.146 0.99	.188 x .094	.03 x .45	0.75 1.66		
649815	205	108 80	2500	51.976 2.0463	51.938 2.0448	23.622 0.93	23.597 0.929	25.654 1.01	25.146 0.99	.188 x .094	.03 x .45	0.75 1.66		
649816	206	237 175	2000	61.984 2.4403	61.946 2.4388	32.766 1.29	32.741 1.289	28.829 1.135	28.321 1.115	.250 x .125	.03 x .45	1 2.21		
649817	207	373 275	2000	71.986 2.8341	71.948 2.8326	42.088 1.657	42.063 1.656	28.829 1.135	28.321 1.115	.250 x .125	.03 x .45	1.25 2.76		
649818	208	549 405	1800	79.987 3.1491	79.95 3.1476	46.761 1.841	46.74 1.84	32.004 1.26	31.496 1.24	.375 x .188	.03 x .45	1.75 3.87		
649820	210	780 575	1800	89.987 3.5428	89.949 3.5413	56.109 2.209	56.083 2.208	32.004 1.26	31.496 1.24	.375 x .188	.03 x .45	2 4.42		
649711	DMD-1	52 38		46.965 1.849	46.939 1.848	18.753 0.7383	18.74 0.7378	22.225 0.875	21.971 0.865				N	1
649722	DMD-2	136 100		61.963 2.4395	61.938 2.4385	24.653 0.9705	24.628 0.9696	24.917 0.99	24.892 0.98				N	2
649713	DMD-3	52 38		46.965 1.849	46.939 1.848	18.753 0.7383	18.74 0.7378	22.225 0.875	21.971 0.865				Y	3
649714	DMD-4	203 150		61.964 2.4395	61.938 2.4385	22.583 0.8891	22.558 0.8881	28.473 1.13	28.448 1.12				N	4
649715	DMD-5	446 329		79.972 3.1485	79.934 3.147	30.861 1.215	30.836 1.214	36.652 1.452	36.657 1.442				N	5
649716	DMD-6	832 614		99.974 3.936	99.949 3.935	38.138 1.5015	38.125 1.501	26.873 1.058	26.746 1.053				Y	6
649717	DMD-7	723 533		99.987 3.937	99.936 3.935	38.138 1.5015	38.125 1.501	26.873 1.058	26.721 1.062				Y	7
649719	DMD-8/9	848 625		114.275 4.499	114.224 4.497	44.488 1.7515	44.475 1.751	26.899 1.059	26.746 1.053				Y	8, 9
649724	DMD-10/12	1356 1000		114.275 4.499	114.224 4.497	44.488 1.7515	44.475 1.751	39.599 1.559	39.446 1.553				Y	10, 11, 12
649726	DMD-13	1627 1200		117.472 4.625	117.447 4.624	49.237 1.9385	49.213 1.9375	49.213 1.9375	48.832 1.9225				Y	13

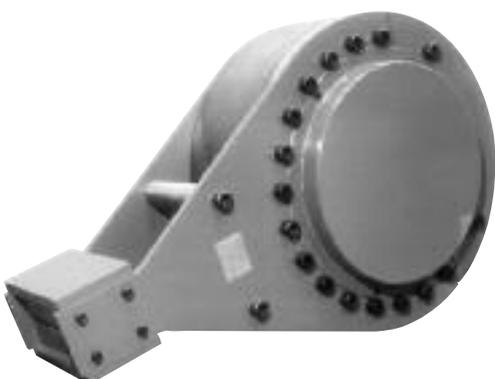
When ordering please specify: clutch reference and part number.

## Sprag Clutch Holdbacks



- Heavy duty Sprag Clutches eliminate reverse rotation when used on non-backdriving applications. Often referred to as Backstops.
- Precision sprags create instantaneous action with no backlash.
- High Torque capacity yet compact design.
- Enhanced sealing available on large clutch sizes for use in hostile environment.

- All clutches are fitted with high precision heavy duty bearings for arduous duty applications.
- Grease lubrication available where maintenance is difficult or where high inner race overrunning speeds are required.
- SO Series Clutches, grease lubricated for use on general purpose backstopping applications.
- SH series designed for **LONGLIFE** and to accommodate **LARGE BORES**.
- Dimensionally interchangeable torque arm holdbacks available on all sizes of Renold backstops.



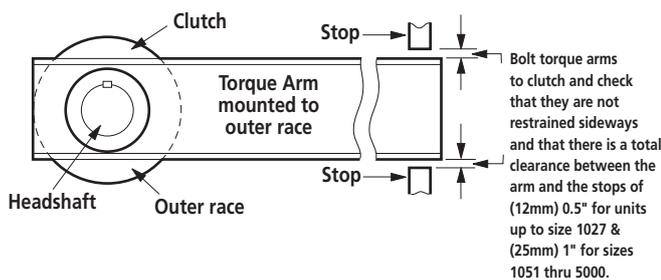
### Applications

- Conveyor Drives
- Elevators
- Fan Drives
- Feeders
- Pumps
- General Industrial Applications

# Sprag Clutch Holdbacks - Selections

Renold Sprag Clutch Holdbacks are devices that can eliminate reverse rotation if fitted to the headshaft of an inclined conveyor, bucket elevator or pump drive, fan drives etc.

The Sprag Clutch can be restrained with a number of variations of torque arm designs as can be seen on pages 38 to 50 in this catalog. When the clutch is directly mounted to the machine headshaft, the torque arm should be restrained by stops built into the machine framework to prevent reverse rotation and yet allow a small amount of float for inaccuracies in the headshaft bearings and fabrication.



## Holdback Selection Procedure

The backstopping torque for an inclined conveyor or bucket elevator can be calculated in several different ways, the basic methods are shown here. Renold recommends considering all aspects of the equipment design and using whichever value is greater for the selection of the backstop.

### 1. Runback Torque

The first method is based on CEMA (Conveyor Equipment Manufacturing Association) recommendations, this allows friction to be considered as a partial aid to resisting runback of an inclined conveyor but a service factor must be used depending on the duty of the equipment.

#### Selection Service Factor F1

For backstopping up to 3 times per day Service Factor = 1.0  
 For backstopping up to 10 times per day Service Factor = 1.5  
 For backstopping over 10 times per day Service Factor = 2.0

#### Conveyors

$$\text{Torque (Nm)} = \frac{(F_1) \times (\text{kW to lift load} - 1/2 \text{ kW to overcome friction}) \times 9550}{\text{Backstop shaft RPM}}$$

$$\text{Torque (lb.ft)} = \frac{(F_1) \times (\text{Hp to lift load} - 1/2 \text{ Hp to overcome friction}) \times 5250}{\text{Backstop shaft RPM}}$$

#### Bucket Elevators

For bucket elevators it is not usual to consider friction as an aid to holdback because the value is so small relative to the capacity of the elevator but a service factor must be used as above.

$$\text{Torque (Nm)} = \frac{(F_1) \times (\text{kW to lift load}) \times 9550}{\text{Backstop shaft RPM}}$$

$$\text{Torque (lb.ft)} = \frac{(F_1) \times (\text{Hp to lift load}) \times 5250}{\text{Backstop shaft RPM}}$$

### 2. Motor Breakdown or Stall Torque

An alternative method is to consider the maximum Motor Breakdown or Stall Torque. Depending on the motor size and design, this could be as much as 300% or more of the Motor Nameplate Torque, the actual value can be found by reference to the manufacturer of the motor. The Breakdown (or Stall or Pull Out) torque, when applied to the conveyor, will allow overloading, before stalling, resulting in higher load to be held by the backstop. A service factor must be used depending on the Breakdown Torque % over Nameplate Torque.

#### Selection Service Factor F2

Breakdown Torque up to and including 175% Service Factor = 1.0  
 Breakdown Torque over 175% and up to 250% Service Factor = 1.2  
 Breakdown Torque over 250% and up to 400% Service Factor = 1.5

$$\text{Torque (Nm)} = \frac{(F_2) \times (\text{Motor Nameplate kW}) \times 9550}{\text{Backstop shaft RPM}}$$

$$\text{Torque (lb.ft)} = \frac{(F_2) \times (\text{Motor Nameplate Hp}) \times 5250}{\text{Backstop shaft RPM}}$$

### 3. Torque Limiting

Where a torque limiting device is used, it is possible to select a backstop based on motor nameplate torque, but with the torque limiter set at 175% above this. See page 48.

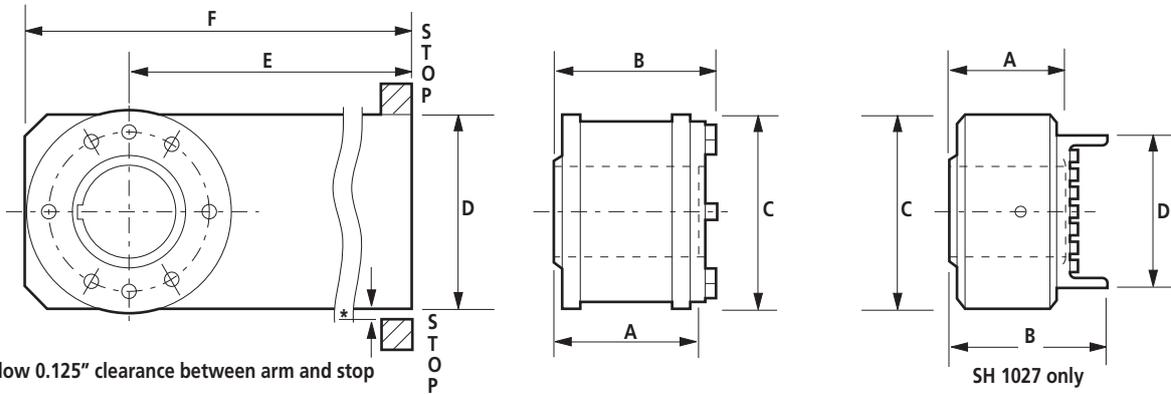
### 4. Multi Point Drives

Sprag Clutch Holdbacks can be used in multi point drive systems. For selection advice, please consult Renold.

If a torque limiting device is incorporated with the holdback and set at up to 175% of Motor Nameplate torque, then the holdback should be selected by the CEMA formula with a minimum Service Factor of 1.5.

## SH Series Sprag Clutch Holdback Sizes 700 to 1027

### Longlife, Large Bore Holdback Clutches



Standard SH Series Clutches are self-contained Sprag Clutches supplied complete with torque arm and ready for mounting on the headshafts, or other suitable driving shafts, of inclined conveyors or elevators so as to prevent runback.

#Bore sizes see Page 42.

Sprag Clutch Size Ref.	Torque Capacity Nm lb ft	Maximum O'running Speed rpm	Resistance After Run-in Nm lb ft	Bore Range#		Dimensions						Weight Approx. kg lb
				Min mm in	Max mm in	A mm in	B mm in	C mm in	D mm in	E mm in	F mm in	
SH700	5420	400	5.08	50	70	127.25	155	181	180	762	854	43.5
	4000		3.75	1.875	2.9375	5.00	6.10	7.13	7.09	30.00	33.62	95.7
SH750	9220	380	7.12	60	85	152.65	181	222	220	813	924	67.0
	6800		5.25	2.500	3.437	6.00	7.13	8.74	8.66	32.00	36.38	147
SH800	15600	300	8.47	70	110	152.65	186	254	250	813	940	88.5
	11513		6.25	3.000	4.437	6.00	7.32	10.0	9.84	32.00	37.00	195
SH900	24400**	250	13.56	90	130	162.18	204	305	300	1118	1270	153
	18000**		10.00	4.000	5.437	6.39	8.03	12.0	11.81	44.00	50.00	337
SH1027	36600	200	13.56	130	180	168.6	256	381	305	1553	1743	200
	27000		10.00	5.000	7.000	6.64	10.1	15.0	12.00	61.10	68.62	440

\*\* 20337 Nm for 130mm and greater  
15008 lb ft for 5.25 and 5.437 ins bores.

### ORDERING INFORMATION

Sprag Clutch Size Ref.	Part Number
SH700	648390
SH750	648392
SH800	648394
SH900	648396
SH1027	648398

When ordering please specify: clutch reference, part number and bore size.

eg. SH700/60mm or 648390/60mm. or SH700/2.500

Suffix "A" means American Bore.



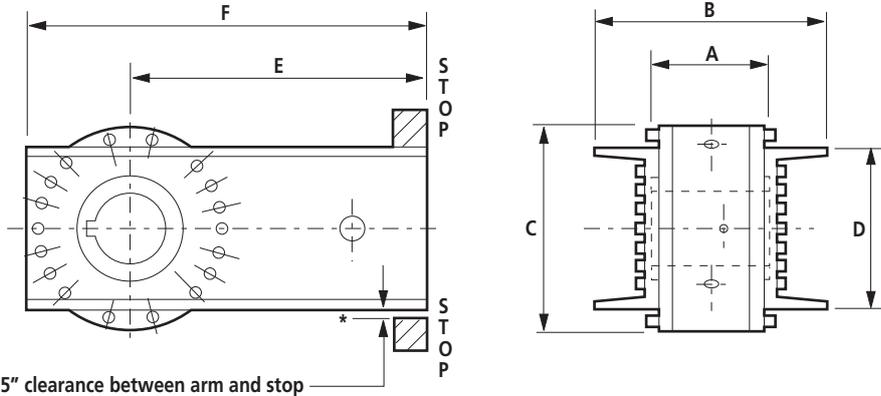
**IMPORTANT** The clutch must fit on a shaft with a recommended diameter tolerance of g7 for metric and inch shafts or to the USA shaft tolerance figures on page 44 and 45.



**WARNING** TAPER KEYS MUST NEVER BE USED. The clutch must be mounted on a shaft with the inner race driven by a parallel key with top clearance.

**SH Series Sprag Clutch Holdback Sizes 1051 to 5000**

Longlife, Large Bore Holdback Clutches



#Bore sizes see Page 43.

SH Sprag Clutch Ref.	Torque Capacity Nm lb ft	Maximum O'running Speed rpm	Resistance After Run-in Nm lb ft	Bore Range#		Dimensions						Weight Approx. kg lb
				Min mm in	Max mm in	A mm in	B mm in	C mm in	D mm in	E mm in	F mm in	
SH1051	61000 45000	200	16 11.8	130 5	180 7	229 9	400 15.75	381 15	305 12	1550 61	1740 68.5	306 673
SH1250	88100 65000	170	30 22.1	190 7.5	230 9	254 10	428 16.9	480 18.9	381 15	1670 65.75	1920 75.6	447 983
SH1300	122000 90000	140	34 25.1	200 8	250 10	260 10.25	432 17	546 21.54	432 17	1700 67	1980 77.95	600 1320
SH1375	183000 135000	130	47 34.6	240 9	280 11	270 10.625	399 15.7	616 24.25	465 18.25	1780 70	2090 82.28	772 1698
SH2000	271200 200000	100	75 55.4	280 11	335 13.25	270 10.625	483 19	737 29	610 24	2080 81.9	2450 96.5	1140 2508
SH2400	359300 265000	85	105 77.5	340 13	400 15.5	277 10.9	514 20.25	864 34	686 27	2100 82.7	2530 99.6	1456 3203
SH3500	508400 375000	80	142 105	360 13.5	500 20	318 12.5	551 21.7	965 38	770 30.3	2100 82.7	2580 101.6	2250 4950
SH5000	759300 560000	75	169 124	350 13.5	500 20	445 17.5	704 27.75	965 38	851 33.5	2100 82.7	2580 101.6	2994 6587

**IMPORTANT**  The clutch must fit a shaft with a recommended diameter tolerance of g7 for metric and inch shafts or to the USA shaft tolerance figures on page 44 and 45.

**WARNING**  The clutch must be mounted on a shaft with the inner race driven by a parallel key with top clearance. **TAPER KEYS MUST NEVER BE USED.**

**ORDERING INFORMATION**

Sprag Clutch Size Ref.	Part Number
SH1051	648400
SH1250	648402
SH1300	648404
SH1375	648406
SH2000	648408
SH2400	648410
SH3500	648412
SH5000	648414

When ordering please specify: clutch reference, part number and bore size.

eg. SH1375/9.00" or 648406/9.00" suffix 'A' for American bore.

## SH Series Sprag Clutch Holdback Bore Sizes

Sprag Clutch Size	British Inch Sizes		Metric Sizes		USA Inch Sizes	
	Bore H7 (in)	Keyway W X D (in)	Bore H7 (mm)	Keyway W X D (mm)	Bore (in)	Keyseat WxD (in)
700	2.000	0.500 X 0.250	50	14 X 4.3	1.875	0.375 x 0.188
	2.250	0.500 X 0.250	55	16 X 4.3	1.9375	0.500 x 0.250
	2.375	0.625 X 0.313	60	18 X 4.6	2.000	0.500 x 0.250
	2.500	0.625 X 0.313	65	18 X 5.4	2.125	0.500 x 0.250
	2.750	0.625 X 0.219	70	20 X 4.8	2.250	0.500 x 0.250
	2.9375	0.625 X 0.172			2.375	0.625 x 0.313
					2.4375	0.625 x 0.313
					2.500	0.625 x 0.313
					2.625	0.625 x 0.250
					2.750	0.625 x 0.219
750	2.500	0.625 X 0.313	60	18 X 5.5	2.4375	0.625 x 0.313
	2.750	0.625 X 0.313	65	18 X 5.5	2.500	0.625 x 0.313
	2.875	0.75 X 0.375	70	20 X 6.0	2.6875	0.625 x 0.313
	3.000	0.75 X 0.375	75	20 X 6.0	2.750	0.625 x 0.313
	3.125	0.75 X 0.250	80	22 X 7.0	2.9375	0.750 x 0.375
	3.250	0.75 X 0.250	85	22 X 5.0	3.000	0.750 x 0.375
	3.375	0.75 X 0.189			3.250	0.750 x 0.250
	3.437	0.75 X 0.189			3.375	0.750 x 0.188
					3.4375	0.750 x 0.188
					3.000	0.750 x 0.375
800	3.000	0.750 X 0.375	70	20 X 6.0	3.000	0.750 x 0.375
	3.250	0.750 X 0.375	75	20 X 6.0	3.250	0.750 x 0.375
	3.437	0.875 X 0.438	80	22 X 7.0	3.4375	0.875 x 0.438
	3.500	0.875 X 0.438	85	22 X 7.0	3.500	0.875 x 0.438
	3.750	0.875 X 0.438	90	25 X 7.0	3.625	0.875 x 0.438
	4.000	1.000 X 0.500	95	25 X 7.0	3.750	0.875 x 0.438
	4.250	1.000 X 0.375	100	28 X 8.0	3.9375	1.000 x 0.500
	4.437	1.000 X 0.250	105	28 X 8.0	4.000	1.000 x 0.500
			110	28 X 8.0	4.250	1.000 x 0.375
					4.4375	1.000 x 0.250
900	4.000	1.00 X 0.500	90	25 X 7.0	4.000	1.000 x 0.500
	4.250	1.00 X 0.500	100	28 X 8.0	4.250	1.000 x 0.500
	4.375	1.00 X 0.500	110	28 X 8.0	4.375	1.000 x 0.500
	4.437	1.00 X 0.500	120	32 X 9.0	4.4375	1.000 x 0.500
	4.500	1.00 X 0.500	125	32 X 9.0	4.500	1.000 x 0.500
	4.750	1.00 X 0.500	130	32 X 9.0	4.750	1.000 x 0.500
	4.937	1.00 X 0.375			4.9375	1.000 x 0.375
	5.000	1.00 X 0.389			5.000	1.000 x 0.375
	5.250	1.00 X 0.265			5.250	1.000 x 0.250
	5.437	1.00 X 0.268			5.4375	1.000 x 0.250
1027	5.000	1.25 X 0.625	130	32 X 9.0	4.9375	1.250 x 0.625
	5.250	1.25 x 0.625	135	36 X 10.0	5.000	1.250 x 0.625
	5.437	1.25 X 0.625	140	36 X 10.0	5.250	1.250 x 0.625
	5.500	1.25 X 0.625	150	36 X 10.0	5.4375	1.250 x 0.625
	5.750	1.25 X 0.625	160	40 X 11.0	5.500	1.250 x 0.625
	5.937	1.25 X 0.625	170	40 X 11.0	5.750	1.250 x 0.625
	6.000	1.25 X 0.625	180	45 X 12.5	5.9375	1.250 x 0.625
	6.250	1.50 X 0.500			6.000	1.250 x 0.625
	6.437	1.50 X 0.500			6.250	1.250 x 0.375
	6.500	1.50 X 0.500			6.4375	1.250 x 0.375
	6.750	1.50 X 0.450			6.500	1.500 x 0.500
	6.937	1.50 X 0.450			6.750	1.500 x 0.500
	7.000	1.50 X 0.450			6.875	1.500 x 0.500
				7.000	1.500 x 0.438	

For British Inch and Metric Sizes, recommended shaft tolerances are 'g7'.  
 For American Inch Sizes, suffix bore 'A', see table on page 51 for bore and recommended shaft tolerances.  
 All Keys must be parallel with top clearance - never use taper keys.  
 All keyway and keyseat depths are measured at side.

## SH Series Sprag Clutch Holdback Bore Sizes

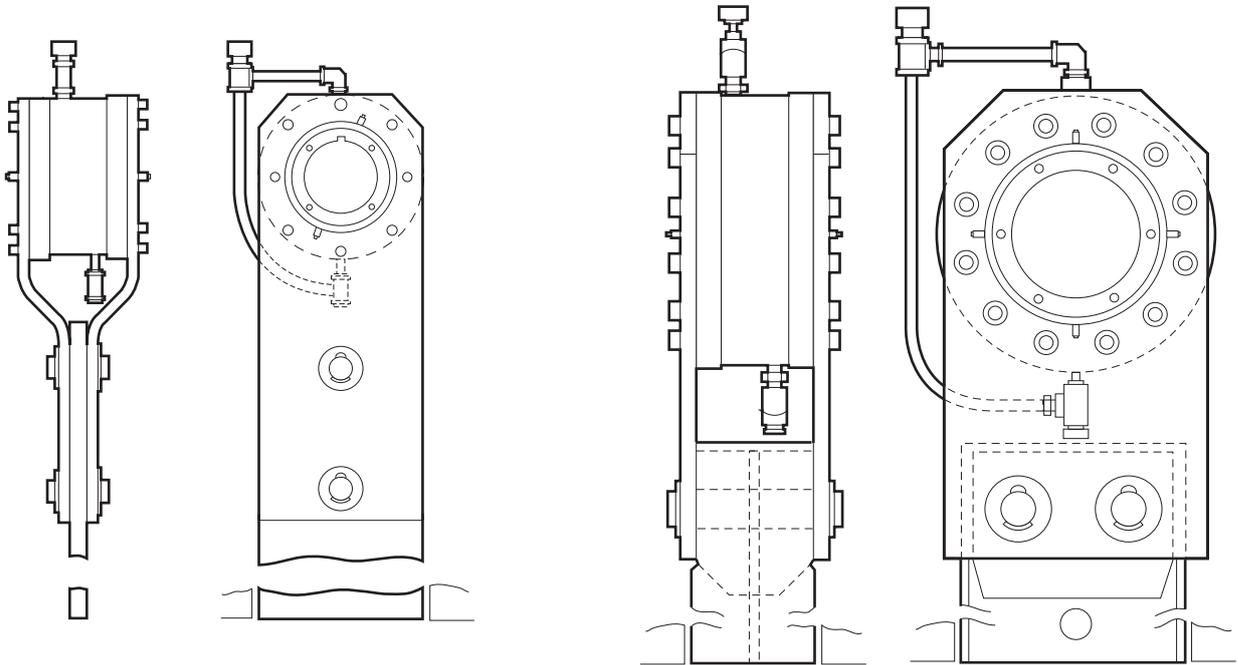
Sprag Clutch Size	British Inch Sizes		Metric Sizes		USA Inch Sizes	
	Bore H7 (in)	Keyway W X D (in)	Bore H7 (mm)	Keyway W X D (mm)	Bore (in)	Keyseat W x D (in)
1051	5.00	1.250 x 0.625	130	32 X 7.4	5.00	1.000 x 0.375
	5.25	1.250 x 0.625	140	36 X 8.4	5.25	1.000 x 0.250
	5.50	1.250 x 0.625	150	36 X 8.4	5.50	1.250 x 0.625
	5.75	1.250 x 0.625	160	40 X 9.4	5.75	1.250 x 0.625
	6.00	1.250 x 0.625	170	40 X 9.4	6.00	1.500 x 0.625
	6.25	1.500 x 0.625	180	45 X 10.4	6.25	1.500 x 0.500
	6.50	1.500 x 0.625			6.50	1.500 x 0.500
	7.00	1.500 x 0.438			7.00	1.500 x 0.500
1250	7.50	1.750 x 0.875	190	45 X 10.4	7.50	1.750 x 0.875
	7.75	1.750 x 0.875	200	45 X 10.4	7.75	1.750 x 0.875
	8.00	1.750 x 0.625	220	50 X 11.4	8.00	1.750 x 0.625
	8.25	1.750 x 0.625	230		8.25	1.750 x 0.625
	8.50	1.500 x 0.500			8.50	1.500 x 0.500
	8.75	1.500 x 0.500			8.75	1.500 x 0.500
	9.00	1.500 x 0.500			9.00	1.500 x 0.500
1300	8.00	1.750 x 0.875	200	45 X 10.4	8.00	1.750 x 0.875
	8.25	1.750 x 0.875	220	50 X 11.4	8.25	1.750 x 0.875
	8.50	1.750 x 0.875	240	50 X 11.4	8.50	1.750 x 0.875
	8.75	1.750 x 0.875	250		8.75	1.750 x 0.875
	9.00	1.750 x 0.875			9.00	1.500 x 0.500
	9.25	1.750 x 0.875			9.25	1.500 x 0.500
	9.50	1.500 x 0.500			9.50	1.500 x 0.500
	9.75	1.500 x 0.500			9.75	1.500 x 0.500
1375	10.00	1.500 x 0.500			10.00	1.500 x 0.500
	9.00	1.750 x 0.875	240	56 X 12.4	9.00	1.750 x 0.875
	9.25	1.750 x 0.875	260	56 X 12.4	9.25	1.750 x 0.875
	9.50	1.750 x 0.875	280	63 X 12.4	9.50	1.750 x 0.875
	9.75	1.750 x 0.875			9.75	1.750 x 0.875
	10.00	1.750 x 0.875			10.00	1.750 x 0.875
	10.25	1.750 x 0.875			10.25	2.000 x 0.750
	10.50	2.000 x 0.750			10.50	2.000 x 0.750
2000	10.75	2.000 x 0.750			10.75	2.000 x 0.750
	11.00	2.000 x 0.750			11.00	2.000 x 0.750
	11.00	2.500 x 1.250	280	63 X 12.4	11.00	2.500 x 1.250
	11.50	2.500 x 1.250	300	70 X 14.4	11.50	2.500 x 1.250
	12.00	2.500 x 1.250	320	70 X 14.4	12.00	2.500 x 1.250
	12.50	2.500 x 1.000	340	80 X 15.4	12.50	2.500 x 1.000
2400	13.00	2.500 x 1.000			13.00	2.500 x 1.000
	13.00	2.500 x 1.250	340	80 X 15.4	13.00	2.500 x 1.250
	13.50	2.500 x 1.250	350	80 X 15.4	13.50	2.500 x 1.250
	14.00	2.500 x 1.250	360	80 X 15.4	14.00	2.500 x 1.250
	14.50	2.500 x 1.250	380	80 X 15.4	14.50	2.500 x 1.250
	15.00	2.500 x 1.250	400	90 X 17.4	15.00	2.500 x 1.250
3500	15.50	2.500 x 1.000			15.50	2.500 x 1.000
	13.50	2.500 x 1.250	360	80 X 15.4	13.50	2.500 x 1.250
	14.00	2.500 x 1.250	380	80 X 15.4	14.00	3.000 x 1.500
	14.50	3.000 x 1.500	400	90 X 17.4	14.50	3.000 x 1.500
	15.00	3.000 x 1.500	420	90 X 17.4	15.00	3.000 x 1.500
	16.00	3.000 x 1.500	450	100 X 19.5	16.00	3.000 x 1.500
	17.00	3.000 x 1.500	500	100 X 19.5	17.00	3.000 x 1.500
	18.00	3.000 x 1.500			18.00	3.000 x 1.500
5000	20.00	3.000 x 1.250			20.00	3.000 x 1.250
	13.50	2.500 x 1.250	360	80 X 15.4	13.50	2.500 x 1.250
	14.00	3.000 x 1.500	380	80 X 15.4	14.00	3.000 x 1.500
	14.50	3.000 x 1.500	400	90 X 17.4	14.50	3.000 x 1.500
	15.00	3.000 x 1.500	420	90 X 17.4	15.00	3.000 x 1.500
	16.00	3.000 x 1.500	450	100 X 19.5	16.00	3.000 x 1.500
	17.00	3.000 x 1.500	500	100 X 19.5	17.00	3.000 x 1.500
18.00	3.000 x 1.500			18.00	3.000 x 1.500	
20.00	3.000 x 1.250			20.00	3.000 x 1.250	

For British Inch and Metric Sizes, recommended shaft tolerances are 'g7'.

For American Inch Sizes, suffix bore 'A', see table on page 51 for bore and recommended shaft tolerances.

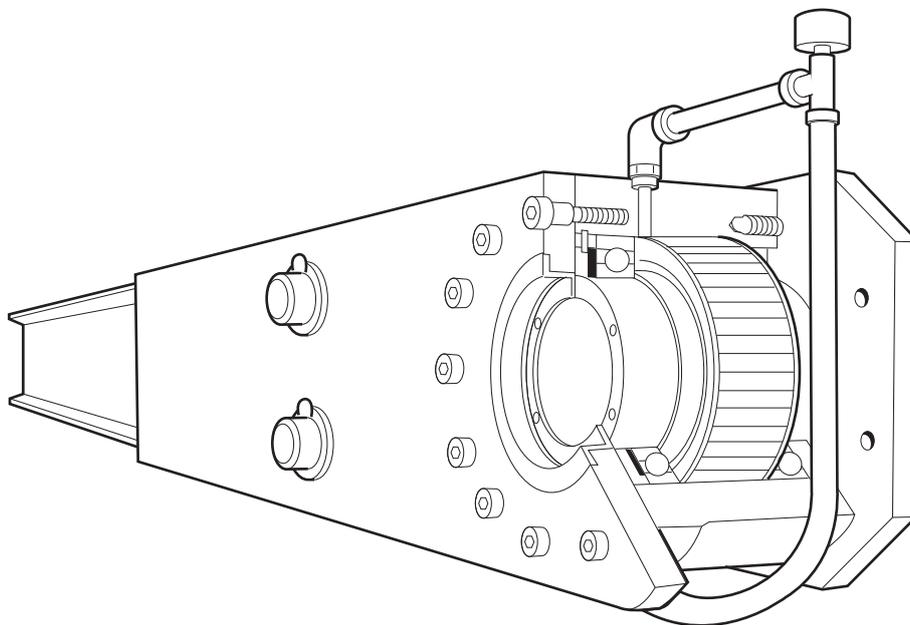
All Keys must be parallel with top clearance - never use taper keys.

All keyway and keyseat depths are measured at side.

**SH Series Sprag Clutch Holdback Sizes 700 to 1027**

Sprag Clutch Sizes 700 to 900  
Alternative Design

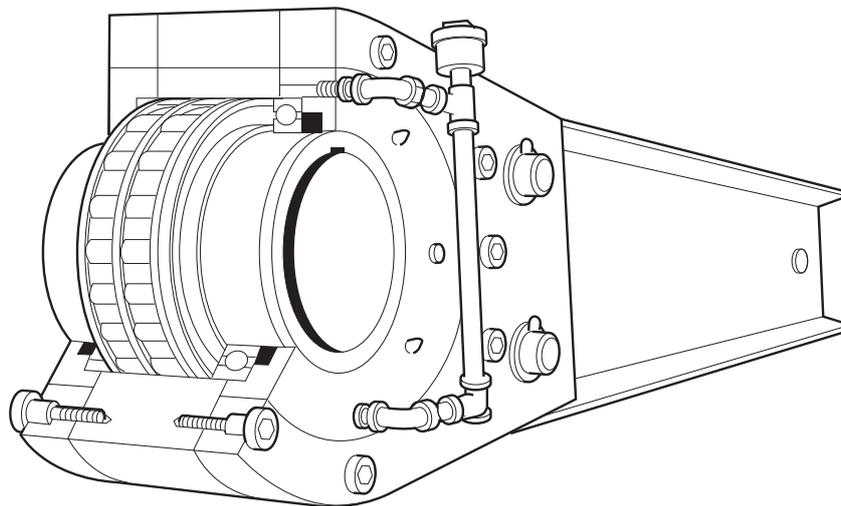
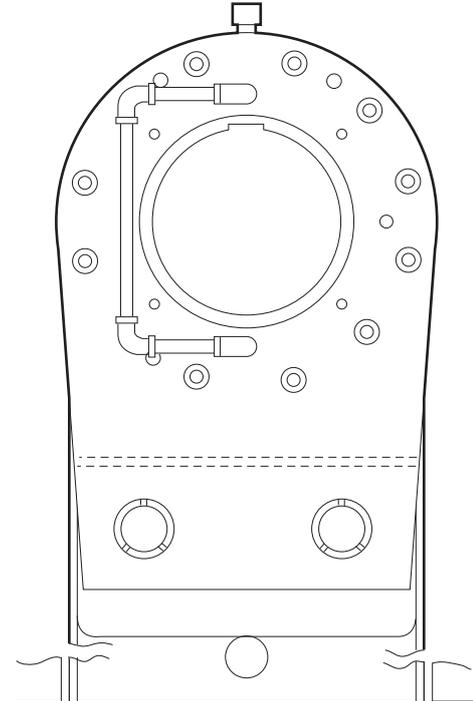
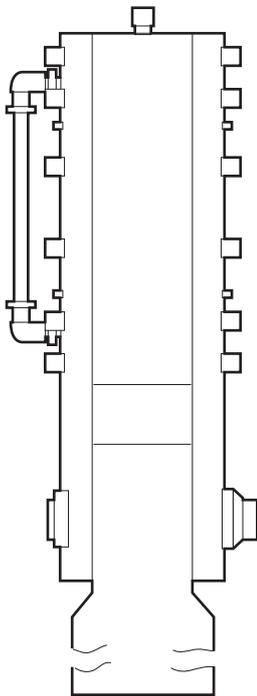
Sprag Clutch Size 1027 only  
Alternative Design



Various Sprag Clutch holdback torque arm and sideplate design arrangements are obtainable from Renold. A number of alternative options are shown above.

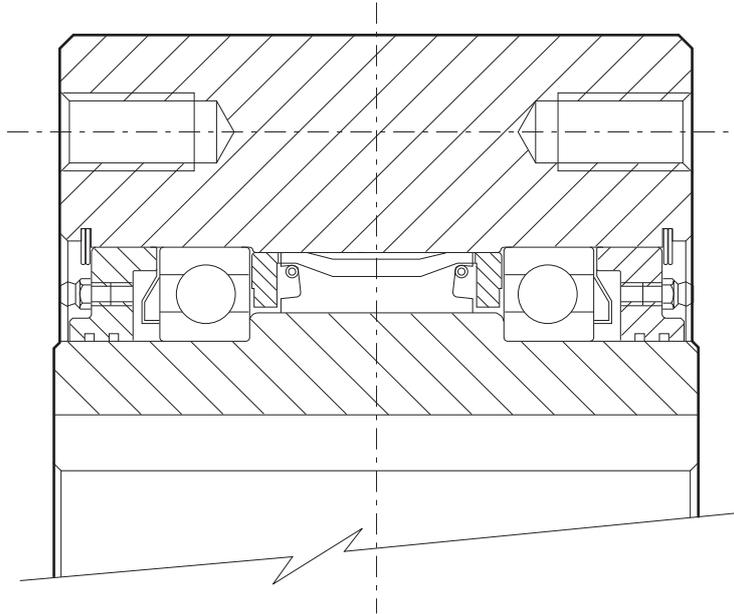
Renold are able offer on all TORQUE ARM HOLDBACKS used with any SO and SH backstop complete dimensional interchangeability to any other manufacturers torque arm holdback.

► **SH Series Sprag Clutches Holdback Sizes 1051 to 5000** ◀



Various Sprag Clutch holdback torque arm and sideplate design arrangements are obtainable from Renold. A number of alternative options are shown above.

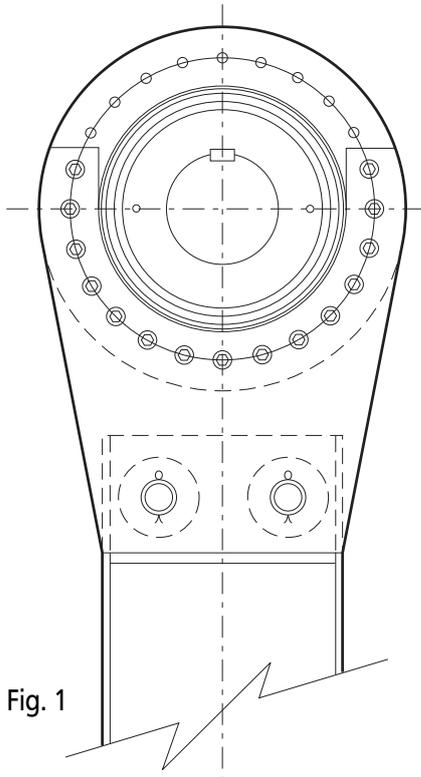
Renold are able offer on all TORQUE ARM HOLDBACKS used with any SO and SH backstop complete dimensional interchangeability with any other manufacturers torque arm holdback.

**Enhanced Seal Holdback Sprag Clutches**

The Renold Enhanced Seal Sprag Clutch range of products are based on the standard size range of 1027 to 3500. The design of the clutch includes a Labyrinth seal, preventing the ingress of abrasive dust, grit and moisture making it suitable for use in most hostile environments. Each clutch is factory filled with long life grease which reduces working temperature allowing the backstops to operate more efficiently at higher ambient temperatures.

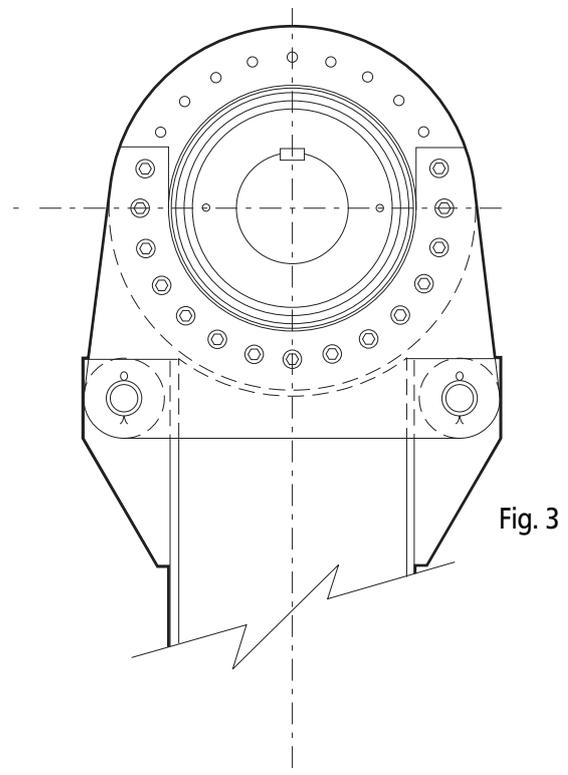
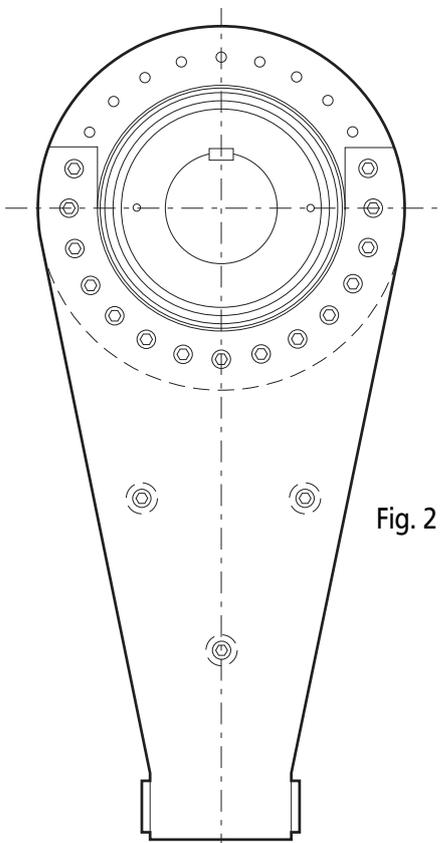
- Long life lubrication reduces maintenance costs.
- Larger heavy duty bearings increasing the running life.
- Labyrinth seal to prevent ingress of dust and moisture making it suitable for use in hostile environments.
- Detachable side plates allowing interchangeability with other manufacturers backstops.

## Enhanced Seal Holdback Sprag Clutches



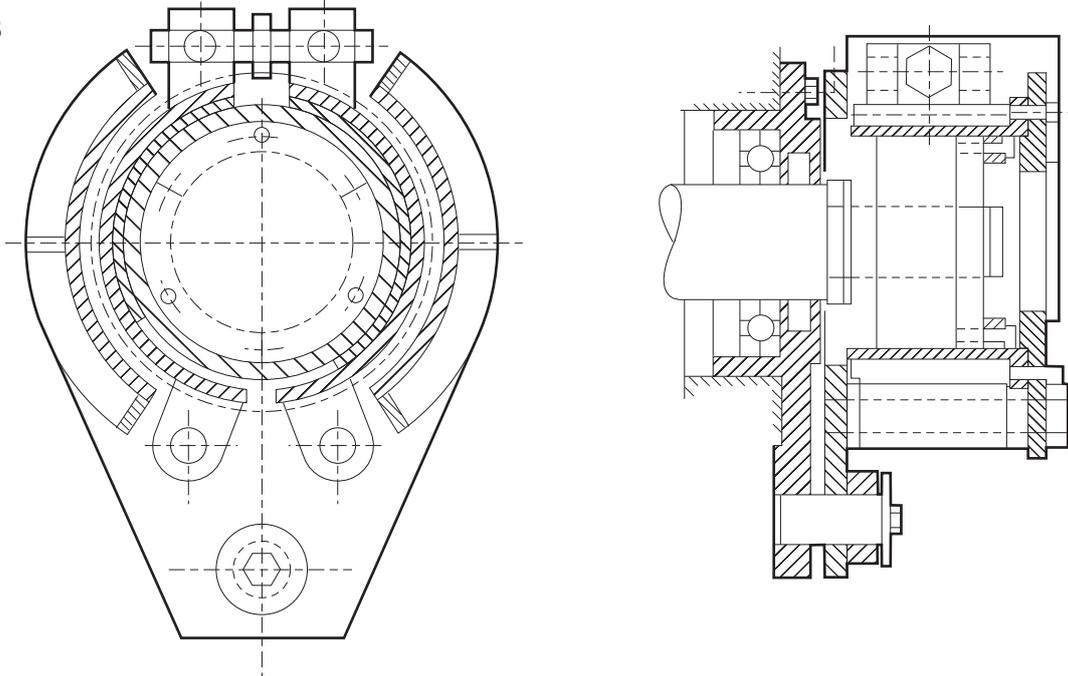
There are many design variations of torque restraint arms to suit applicational demands.

The standard Renold holdback design is shown in Fig. 1 and the designs as Fig. 2 and Fig. 3 shows alternatives allowing interchangeability with other manufacturers.



## Sprag Clutch Tension Release Mechanisms

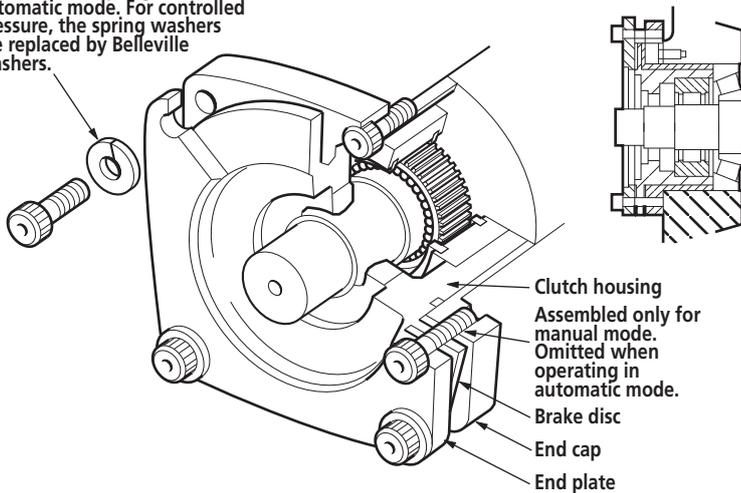
### WA Series



The WA Series Tension Release Mechanism is a Renold Sprag Clutch Holdback contained within a housing which allows for the safe controlled release of tension on an inclined belt conveyor when needed or required.

### TRM-I Series

4 screws with spring washers for automatic mode. For controlled pressure, the spring washers are replaced by Belleville washers.

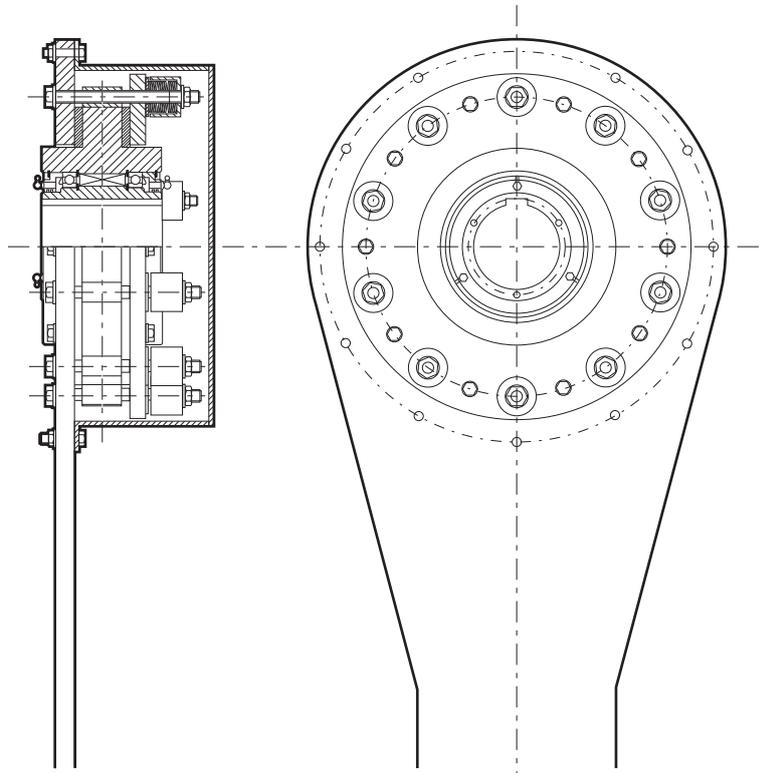


As an extension to our other types of Tension Release Devices and the inclusion of many Renold Direct Mounted Sprag Clutches being used in gear boxes, we designed the TRM-I Device to compliment our range. Many features of this device include automatic Torque Limiting.

Being a custom designed device there are no external dimensional changes to your gear unit. The device is also designed with no modifications necessary to the gear or worm shaft, thus existing field units can be readily converted and no special tools are required to operate them.

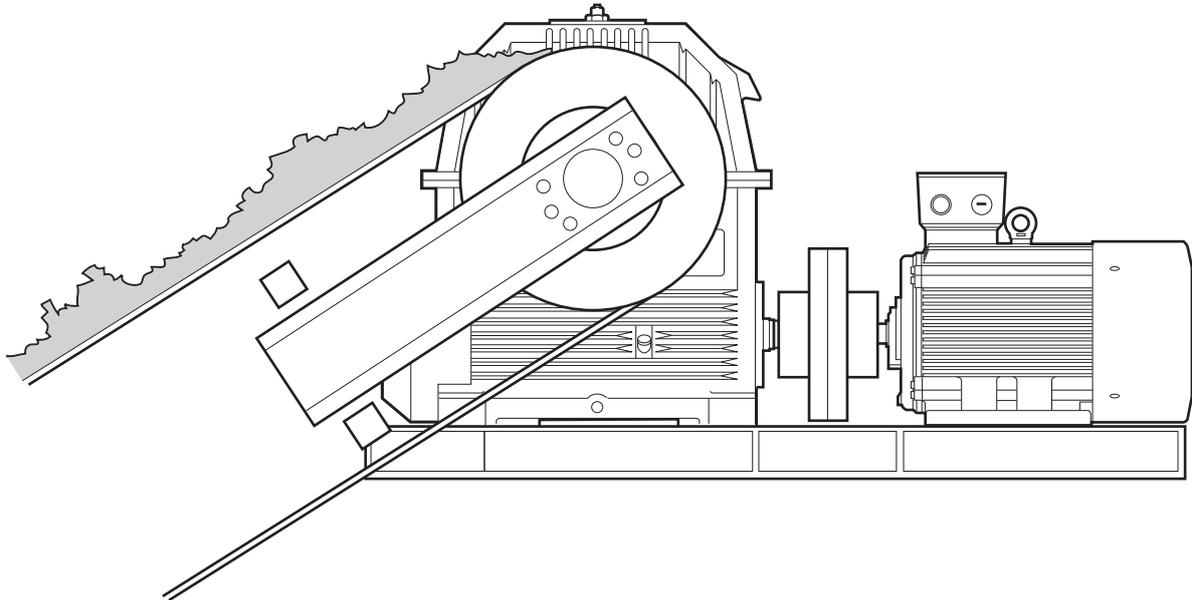
They are suitable for single or multiple drive applications in the automatic mode and no lengthy preparation time is required prior to operation in the manual mode.

**Torque Limiter - Sprag Clutch**



The Renold Sprag Clutch Torque Limiter Device is designed for use on applications where overload conditions are to be restricted to a design limit.

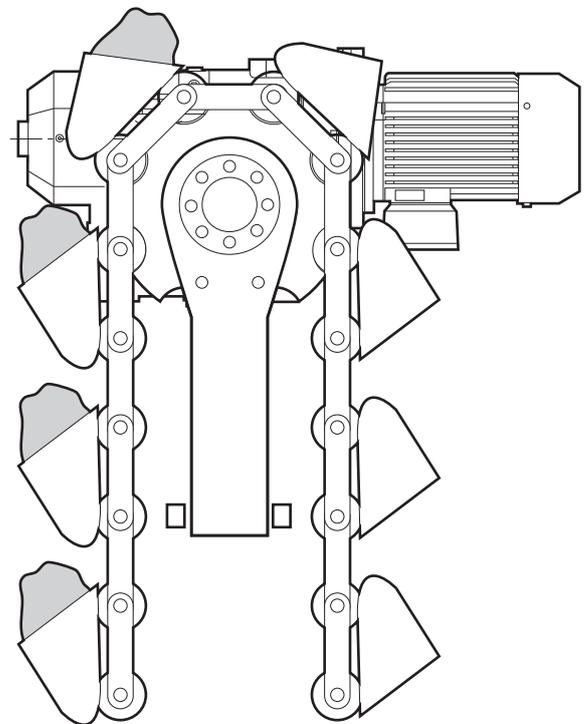
- Variable torque settings offer optimum clutch selection.
- Allows controlled torque release at point of jam-up.
- Available on all SO Sprags Clutch sizes for complete design flexibility.
- Enhanced seal clutches for low maintenance.
- Suitable for use on multi-point drives equalizing the load and allowing load sharing on all transmission parts.

**Sprag Clutch Holdbacks - Applications**

The applications shown are an inclined belt conveyor and a vertical bucket elevator using conveyor chain. Both applications require the use of a Sprag Clutch holdback, (backstop).

If reverse rotation occurred serious safety problems would be created and possible machinery failure.

To overcome the problem of drive reversal a Renold Sprag Clutch backstop clutch is fitted to the conveyor headshaft and held with a torque arm against stops fitted to the framework of the conveyor.



## Sprag Clutch Installation and Lubrication

### Pre Installation Check

#### Shaft Fit

Standard bore limits are H8 for Light Duty Clutches and H7 for other clutches. Recommended shaft limits are h6 for all clutches, except SH Series where g7 should be used.

However, an interference not exceeding 0.025 mm on diameter is acceptable for indexing clutches.

Check clutch for direction of rotation.

#### Outer Race

The clutches are designed to provide efficient means of connecting them to other equipment without involving an interference fit on the outside diameter of the outer race. Any equipment which locates from the outer race should have a clearance fit of 0.025mm minimum.

#### Key and Keyway

Parallel keys with top clearance only must be used; under no circumstances are taper keys acceptable.

It is recommended that a hardened key is used, made from 0.55/0.6% carbon steel and heat-treated to a hardness of HRC 25 - 40 (HV30 260 - 380). (It is assumed that the keyway in the shaft conforms to P9 or Js9 limits as specified by British and ISO Standards.)

In cases where the key has not been hardened it can be individually fitted and a side interference of up to 0.025mm is recommended. There should be a small clearance between the top of the key and the keyway in the clutch bore. It is good practice to provide a tapped hole in the outboard end of the key to facilitate withdrawal. The length of the key should not be less than the length of the clutch bore.

Renold do not supply shaft keys, unless specifically requested to do so.

### LUBRICATION

Correct lubrication and maintenance are the most important factors for trouble free operation. Under no circumstances should lubricant be used containing EP or slippery additives. For alternatives to the following recommendations consult Renold

### OVERRUNNING AND BACKSTOPPING

	Oil lubrication			Grease lubricated
	(-20/+20°C)	(+20/+50°C)	(+50/+80°)	
Mobil	Mobil Velocite Oil No 6	Mobil Velocite Oil No 10	Mobil DTE 25	Unirex N2/N3
Renolin	Renolin DTA10	Renolin DTA22	Renolin DTA46	
Petronas	Petronas ISO VG10	Petronas ISO VG22	Petronas ISO VG46	
Castrol	Hyspin Spindle Oil 10	Hyspin Spindle Oil 22	Hyspin Spindle HVI 22	
Total	Drosera MS10	Drosera MS22	Drosera MS46	
SKF				LGHP2
Leprinxol				Lycos MZ 2
Matrix				Grease USG 2

For indexing applications the preferred clutch lubricant is oil. If grease is to be used consult Renold. Oil lubricated clutches are supplied empty of oil and must be filled in accordance with the instructions supplied with the clutch. For applications outside the above parameters consult Renold.

### Sprag Clutch Reconditioning Service

No attempt should be made to dis-assemble or repair a Sprag Clutch in the field. It is a precision made device which cannot be adequately reconditioned except under factory conditions of production, quality control and testing.

The Renold Sprag Clutch Reconditioning Service provides for the complete reconditioning of the clutch to bring it to an as new condition. The service is not available for the Light Duty Series Clutches nor for Sleeve Bearing Clutches SB3 (648 104/5)

### Type of Lubrication

**OIL LUBRICATED CLUTCHES** are fitted with filler plugs and must be completely filled for indexing; half filled for overrunning or backstopping.

**GREASE LUBRICATED CLUTCHES** are fitted with grease nipples and must be completely filled.

**CLUTCHES WITHOUT SEALS** are intended for immersion in an oil bath.

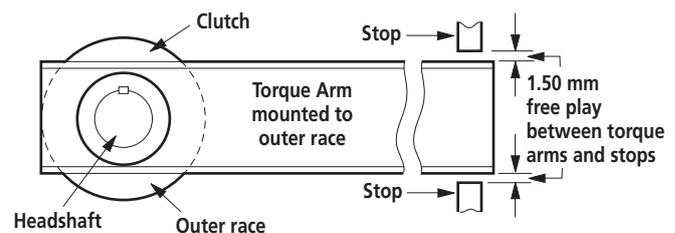
**CLUTCHES REF NO SA02, SA04, SA05 and SB3** are supplied pre-lubricated with grease which is intended to last for the life of the clutch.

### Concentricity

Concentricity of the sprag tracks of Sleeve Bearing Clutches is achieved by using the shaft on which the clutch is mounted as a bearing surface. The surface finish should not exceed 30 micro inch CLA and taper should not exceed 0.01mm per 25mm of journal length.

### Torque Arms (Backstopping Clutches)

Bolt torque arms to clutch and check that they are not restrained sideways and that there is a total clearance between each arm and the stops of 3mm as shown in diagram.



**Trapped Roller, Ball Bearing & Cage Clutches**

Type: REUS  
Page 54-55



Type: REUSNU  
Page 56-57



Type: REUF  
Page 58-59



Type: REGF  
Page 60-61



Type: REGV  
Page 62-63



Type: REGL  
Page 64-65



Type: REGL F2-D2(D3)  
Page 66-67



Type: REGL F4-D2  
Page 68-69



Type: REGL F5-D2 (D3)  
Page 70-71



Type: REGLP F7-D7  
Page 72-73

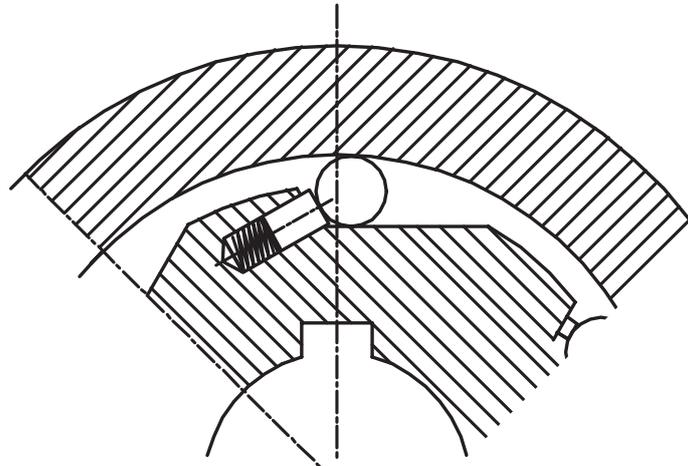


Type: REUK/REUKC/REUKCC  
/REUK 2RS  
Page 74-75



Type: REGP  
Page 76-77

**Trapped Roller and Ball Bearing Clutches - Introduction**



Trapped Roller Freewheels consist of a cylindrical outer race, an inner race with ramps and individually sprung rollers. The springs ensure that the rollers are held in contact with the outer race and inner race ramp, making torque transmission instantaneous.

The Trapped Roller Freewheel can be used in three applications:-

**Overrunning**

When used in overrunning applications it is advisable for the outer race to rotate at the higher speed. This ensures the best performance, reduces wear, heat generation and increases free wheel life.

**Backstopping**

In backstopping applications the Trapped Roller Freewheel has one race fixed to prevent reversing of a load. Typically the trapped roller would be used to prevent runback on an inclined conveyor. To ensure good lubrication a low viscosity oil should be used, preferably with oil circulation.

**Indexing**

Simple cam and link arm mechanisms combined with a Trapped Roller Freewheel provide an accurate indexing motion. For increased indexing accuracy it is recommended that Trapped Roller Freewheels be fitted with stronger springs.

**Non Self-Centering Freewheels**

REUS, REUSNU and REUF Series Freewheels are usually fitted inside end covers and housings situated near existing bearings. The inner and outer components have no centering capability of their own and so rely on the machine bearings for centering and support. They must not be placed under any axial loads. When pressing freewheels into position simultaneously apply pressure to both inner and outer races to avoid damage to rollers and springs. Existing lubrication may be sufficient provided that the oil used is recommended for use with Renold Trapped Roller Freewheels.

**Self-Centering Freewheels**

REGF (sizes 8 to 20) and REGV Series Freewheels self center via plain bearings; REGF (sizes 25 to 130) Series Freewheels have ball bearings. The REGF Series are normally used in closed guards and utilize existing lubrication (if suitable). The REGV Series Freewheels are normally situated outside housings and are greased for life.

**Modular Trapped Roller Freewheels**

The REGL and REGLP Freewheels are the basis of the Modular Series. The inner and outer races are centered by ball bearings. A range of end cover options provides versatility of application and a self contained lubrication environment. Basic freewheels, assembly bolts and flange components are normally supplied unassembled. If the direction of rotation is supplied, the freewheels can be assembled prior to dispatch.

**Type: REUS**

Renold REUS Series Trapped Roller Freewheels are non self-centering. Bearings must be placed adjacent to the freewheel to ensure concentricity between inner and outer races.

The REUS Series Freewheels have the same outside dimensions as standard 62 series bearings.

Torque is transmitted to the inner race via a key and the outer race by means of an interference fit. If the face keys in the outer race are used for torque transmission the housing tolerance should be H7 to provide a press fit. The housing must be strong enough to accept the stresses from the interference. Shaft tolerance must be h6 or j6.

Prior to use, the freewheel must be lubricated as per instructions on page 78. Oil lubrication is essential for overrunning applications.

The REUS is an open design so sealing must be provided by the installation.

Type: REUS

REUS Series										
Type	$d_{H7}$	$D_{r6}$	L	$D_2$	s	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)	(Nm)
REUS 8	8	24	8	19	1	0.03	4350	6600	3,8	0.003
REUS 10	10	30	9	25	1	0.04	3550	5200	6,8	0.004
REUS 12	12	32	10	26	1	0.05	3200	4850	13	0.005
REUS 15	15	35	11	30	1	0.10	2900	4300	14	0.007
REUS 17	17	40	12	34	1	0.11	2600	3700	27,5	0.010
REUS 20	20	47	14	40	1	0.12	2200	3300	40	0.020
REUS 25	25	52	15	45	1	0.15	2000	2900	56	0.030
REUS 30	30	62	16	55	1	0.25	1600	2500	90	0.080
REUS 35	35	72	17	62	1	0.33	1350	2000	143	0.090
REUS 40	40	80	18	70	1	0.42	1200	1900	185	0.100
REUS 45	45	85	19	74	1	0.46	1100	1650	218	0.110
REUS 50	50	90	20	80	1	0.50	900	1450	230	0.130
REUS 55	55	100	21	90	1	0.65	800	1300	308	0.140
REUS 60	60	110	22	98	1	0.80	700	1100	508	0.260

Notes

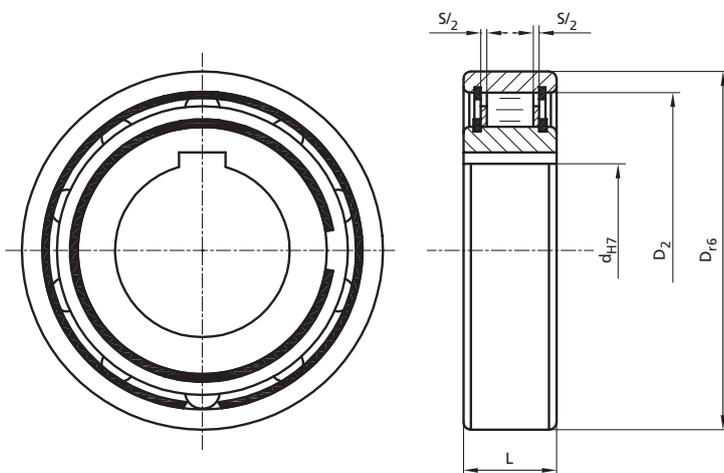
[1] Inner race overrunning

[2] Outer race overrunning

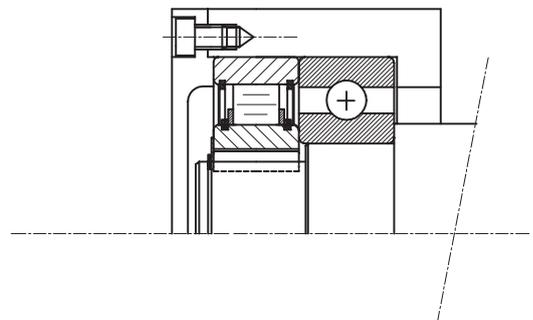
[3]  $T_{MAX} = 2 \times T_N$

REUS 8-12 Keyways to BS4235 Part 1  
(DIN 6885 Part 1)

REUS 15-60 Keyways to DIN 6885 Part 3



Mounting example



**Type: REUSNU**

Renold REUSNU Series Trapped Roller Freewheels are non self-centering. Bearings must be placed adjacent to the freewheel to ensure concentricity between inner and outer races.

The REUSNU Series Freewheels have the same outside dimensions as standard 63 series bearings.

Torque is transmitted to the inner race via a key and the outer race by means of either face keys or interference fit. If the face keys in the outer race are used for torque transmission the housing tolerance should be H7 to provide a press fit. If torque transmission is via interference alone, the housing tolerance should be K6. The housing must be strong enough to accept the stresses from the interference. Shaft tolerance must be h6 or j6.

Prior to use, the freewheel must be lubricated as per instructions on page 78. Oil lubrication is essential for overrunning applications.

The REUSNU is an open design so sealing must be provided by the installation.

**Type: REUSNU**

REUSNU Series												
Type	$d_{H7}$	$D_{n6}$	L	s	$D_2$	b	t	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)	(Nm)
REUSNU 8	8	35	13	1	27	4	1.3	0.10	3300	5000	12	0.016
REUSNU 12	12	35	13	1	27	4	1.3	0.10	3300	5000	12	0.016
REUSNU 15	15	42	18	1	36	5	1.3	0.10	2500	3600	30	0.016
REUSNU 17	17	47	19	1	36	5	2	0.10	2300	3400	49	0.020
REUSNU 20	20	52	21	1	44	6	2.5	0.20	2200	3100	78	0.020
REUSNU 25	25	62	24	1	52	8	2	0.40	1700	2600	125	0.050
REUSNU 30	30	72	27	1	60	10	3	0.60	1400	2200	255	0.140
REUSNU 35	35	80	31	1	70	12	3.5	0.70	1200	1900	383	0.160
REUSNU 40	40	90	33	1	78	12	3.5	0.90	1100	1700	538	0.400
REUSNU 45	45	100	36	2	85	14	3.5	1.20	1000	1600	780	0.450
REUSNU 50	50	110	40	2	92	14	4.5	1.70	900	1300	1013	0.500
REUSNU 60	60	130	46	2	110	18	5.5	2.80	700	1100	1825	1.100
REUSNU 70	70	150	51	2	125	20	6.5	4.00	600	1000	2300	1.500
REUSNU 80	80	170	58	2	140	20	7.5	5.80	500	800	3275	1.800

Notes

[1] Inner race overrunning

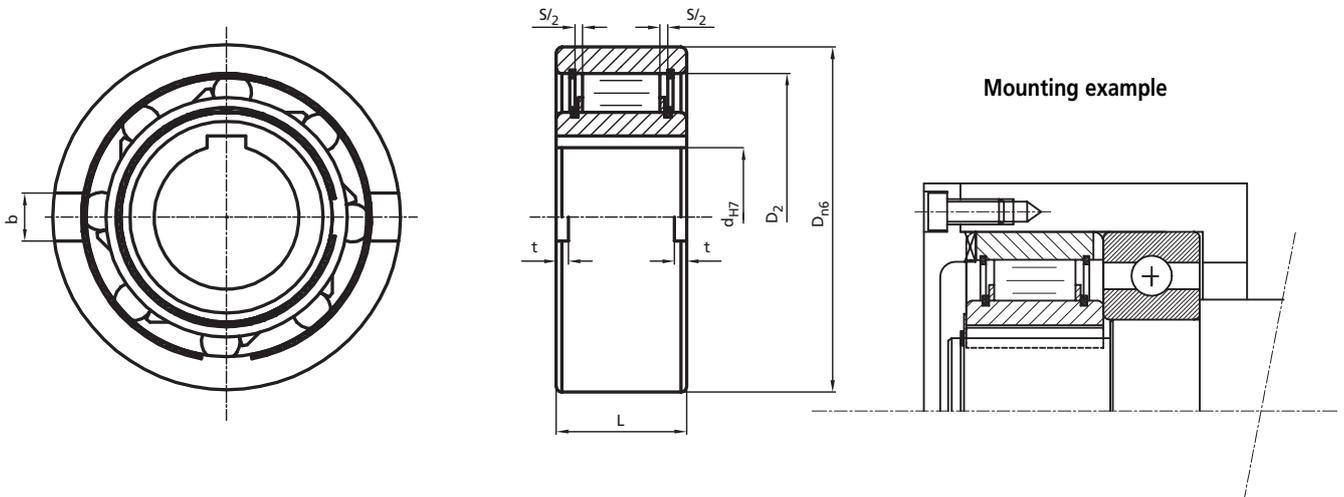
[2] Outer race overrunning

[3]  $T_{MAX} = 2 \times T_N$

REUSNU 12 Keyway to BS4235 Part 1

(DIN 6885 Part 1)

REUSNU 15-80 Keyways to DIN 6885 Part 3





Renold REUF Series Trapped Roller Freewheels are non self-centering. Bearings must be placed adjacent to the freewheel to ensure concentricity between inner and outer races.

Torque is transmitted to the inner race via a key and the outer race by means of either face keys or interference fit. If the face keys in the outer race are used for torque transmission the housing tolerance should be H7/G7 to provide a press fit. If torque transmission is via interference alone the housing tolerance should be K6. The housing must be strong enough to accept the stresses from the interference. Shaft tolerance must be h6 or j6.

Prior to use, the freewheel must be lubricated as per instructions on page 78. Oil lubrication is essential for overrunning applications.

The REUF is an open design so sealing must be provided by the installation.

## Type: REUF

REUF Series													
Type	$d_{H7}$	$D_{n6}$	L	s	$D_1$	$D_2$	b	t	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)	(Nm)
REUF 8	8	37	20	1	20	30	6	3	0.10	5000	6000	20	0.09
REUF 9	9	37	20	1	20	30	6	3	0.10	5000	6000	20	0.09
REUF 12	12	37	20	1	20	30	6	3	0.10	5000	6000	20	0.11
REUF 15	15	47	30	1	26	37	7	3.5	0.30	4500	5500	78	0.15
REUF 20	20	62	36	2	37	52	8	3.5	0.60	3000	3600	188	0.18
REUF 25	25	80	40	2	40	68	9	4	1.10	2200	2600	250	0.36
REUF 30	30	90	48	2	45	75	12	5	1.60	1800	2100	500	0.40
REUF 35	35	100	53	2	50	80	13	6	2.30	1600	2000	663	0.60
REUF 40	40	110	63	2	55	90	15	7	3.10	1300	1700	1100	0.84
REUF 45	45	120	63	2	60	95	16	7	3.70	1100	1500	1500	0.94
REUF 50	50	130	80	2	70	110	17	8.5	5.40	850	1300	2375	1.28
REUF 55	55	140	80	2	75	115	18	9	6.10	800	1200	2500	1.50
REUF 60	60	150	95	2	80	125	18	9	8.50	700	1100	4250	1.60
REUF 70	70	170	110	3	95	140	20	9	13.00	620	900	5875	3.60
REUF 80	80	190	125	3	110	160	20	9	18.00	550	800	10000	3.60
REUF 90	90	215	140	3	120	180	24	11.5	25.30	500	700	17250	6.80
REUF 100	100	260	150	4	140	210	28	14.5	42.10	400	600	19625	8.80
REUF 130	130	300	180	4	160	240	32	17.5	65.00	300	500	34750	12.50
REUF 150	150	320	180	4	205	260	32	17	95.00	250	400	44375	13.50

### Notes

[1] Inner race overrunning

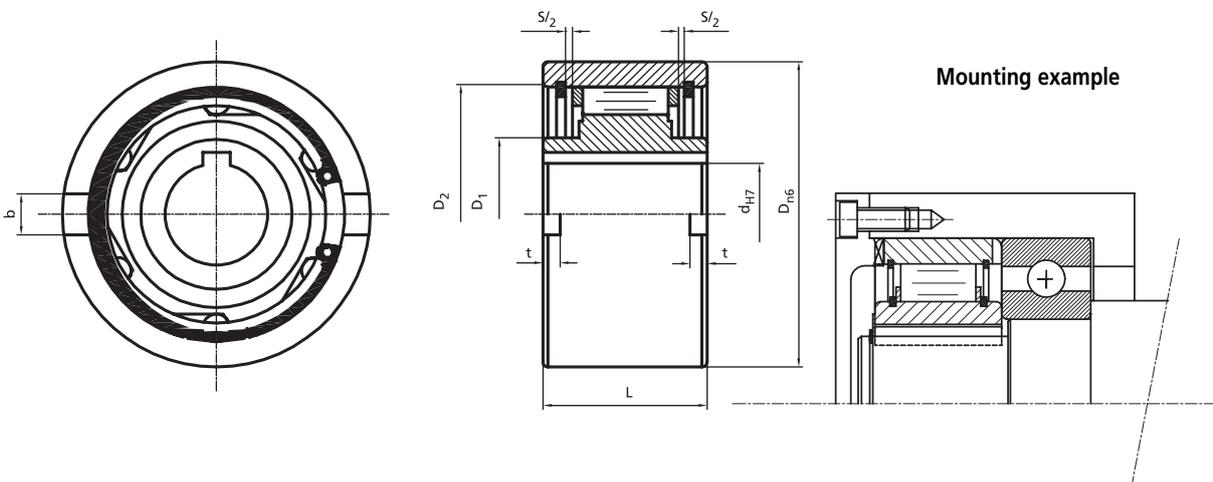
[2] Outer race overrunning

[3]  $T_{max} = 2 \times T_N$

REUF 12 Keyway to BS4235 Part 1

(DIN 6885 Part 1)

REUF 15-80 Keyways to DIN 6885 Part 3



**Type: REGF**

Renold REGF Series Trapped Roller Freewheels are self centering: Sizes 8 to 20 use plain bearings and Sizes 25 to 130 use a pair of 160 series ball bearings. This allows improved speed capacity for the larger freewheels.

Torque is transmitted to the inner race via a key and the outer race by means of either face keys or interference fit. If the face keys in the outer race are used for torque transmission the housing tolerance should be H7/G7 to provide a press fit. If torque transmission is via interference alone the housing tolerance should be K6. The housing must be strong enough to accept the stresses from the interference. Shaft tolerance must be h6 or j6.

Prior to use, the freewheel must be lubricated as per instructions on page 78. Oil lubrication is essential for overrunning applications.

The REGF is an open design so sealing must be provided by the installation.

Type: REGF

REGF Series													
Type	$d_{H7}$	$D_{n6}$	L	s	$D_1$	$D_2$	b	t	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)	(Nm)
REGF 8	8	37	20	1	20	30	6	3	0.10	1000	1000	20	0.09
REGF 9	9	37	20	1	20	30	6	3	0.10	1000	1000	20	0.09
REGF 12	12	37	20	1	20	30	6	3	0.10	1000	1000	20	0.11
REGF 15	15	47	30	1	26	37	7	3.5	0.30	900	900	78	0.15
REGF 20	20	62	36	1	37	52	8	3.5	0.60	700	700	188	0.18
REGF 25	25	80	40	-	40	68	9	4	1.20	2100	3600	250	0.36
REGF 30	30	90	48	-	45	75	12	5	1.80	1700	3200	500	0.40
REGF 35	35	100	53	-	50	80	13	6	2.40	1500	3000	663	0.60
REGF 40	40	110	63	-	55	90	15	7	3.30	1200	2600	1100	0.84
REGF 45	45	120	63	-	60	95	16	7	4.00	1000	2400	1500	0.94
REGF 50	50	130	80	-	70	110	17	8.5	5.70	800	2100	2375	1.28
REGF 55	55	140	80	-	75	115	18	9	6.50	750	2000	2550	1.50
REGF 60	60	150	95	-	80	125	18	9	8.90	650	1900	4250	1.60
REGF 70	70	170	110	-	95	140	20	9	13.50	550	1800	5875	3.60
REGF 80	80	190	125	-	110	160	20	9	19.00	500	1600	10000	3.60
REGF 90	90	215	140	-	120	180	24	11.5	27.20	450	1400	17250	6.80
REGF 100	100	260	150	-	140	210	28	14.5	44.50	350	1300	19625	8.80
REGF 130	130	300	180	-	160	240	32	17.5	68.00	250	1000	34750	12.50

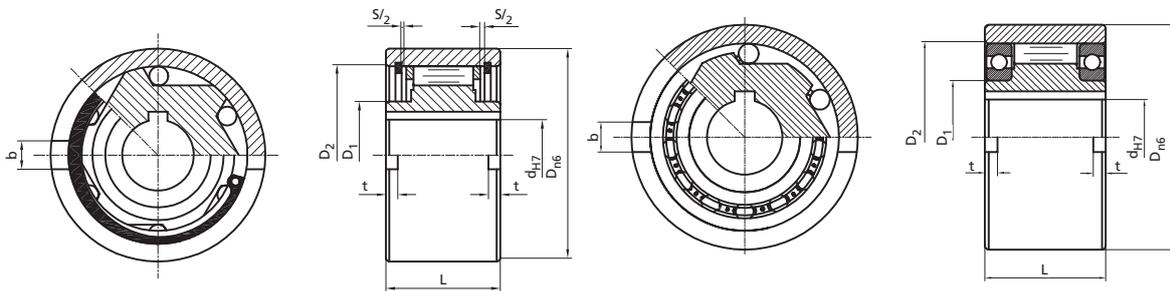
Notes

[1] Inner race overrunning

[2] Outer race overrunning

[3]  $T_{MAX} = 2 \times T_N$

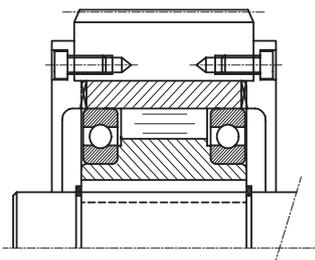
REGF Keyways to DIN 6885 Part 3



GF 8-20

GF 25-130

Mounting example



**Type: REGV**

Renold REGV Series Trapped Roller Freewheels are self-centering by means of plain bearings.

Torque is transmitted to the inner race via a key and the outer race via the torque arm. Shaft tolerance must be h6.

The primary use for the REGV freewheels is as a backstop. The freewheel should be fixed to the machine body by placing brackets on either side of the torque arm or by using a pin or bolt in the slot. Note that a clearance of 1% of slot width is needed between torque arm and brackets or slot and pin. If a bolt is used instead of a pin it must not apply any axial loads to the torque arm.

An alternative application would be indexing where a push rod is connected to the torque arm slot. Clearance between slot and pin must be 1% of slot width.

The REGV is supplied pre-filled with grease and normally requires no further sealing.

**Type: REGV**

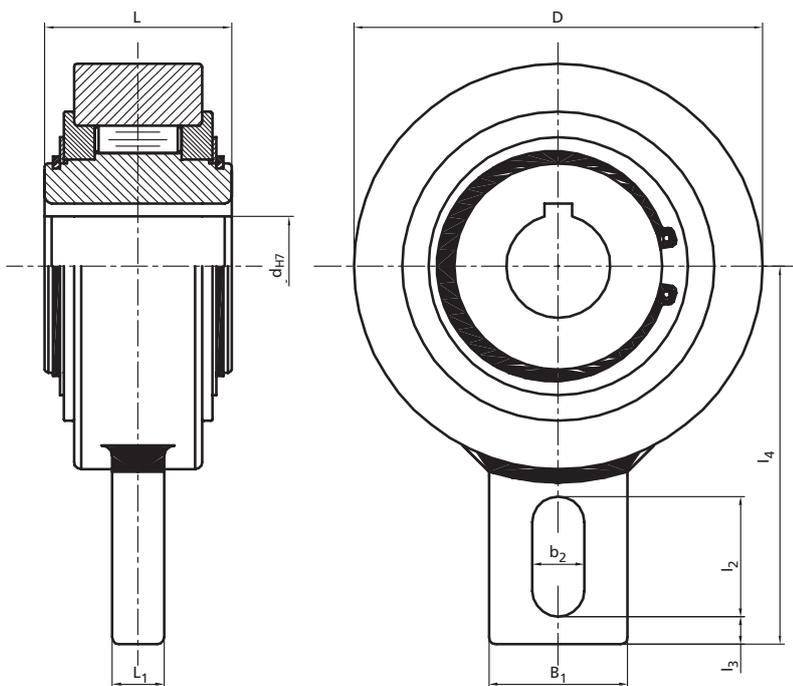
REGV Series													
Type	$d_{H7}$	D	L	$B_1$	$L_1$	$b_2$	$l_2$	$l_3$	$l_4$	Weight	$n_{max}$ Inner race	$T_N$ [1]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(Nm)	(Nm)
REGV 20	20	83	35	40	12	15	35	5	90	1.30	450	275	0.2
REGV 25	25	83	35	40	12	15	35	5	90	1.30	450	275	0.2
REGV 30	30	118	54	40	15	15	35	8	110	3.50	320	1250	1.2
REGV 35	35	118	54	40	15	15	35	8	110	3.40	320	1250	1.2
REGV 40	40	118	54	40	15	15	35	8	110	3.30	320	1250	1.2
REGV 45	45	155	54	80	15	18	35	10	140	5.80	300	2180	2.2
REGV 50	50	155	54	80	15	18	35	10	140	5.70	300	2180	2.2
REGV 55	55	155	54	80	15	18	35	10	140	5.60	300	2180	2.2
REGV 60	60	155	54	80	15	18	35	10	140	5.50	300	2180	2.2
REGV 70	70	155	54	80	15	18	35	10	140	5.30	300	2180	2.2
REGV 80	80	190	64	80	20	20	40	20	155	8.70	200	2930	3.5
REGV 90*	90	260	90	120	25	30	50	20	220	24.50	150	7250	3.5
REGV 100*	100	260	90	120	25	30	50	20	220	23.50	150	7250	3.5
REGV 110*	110	260	90	120	25	30	50	20	220	22.50	150	7250	3.5
REGV 120*	120	300	110	140	30	-	-	-	220	42.00	130	11100	6.0

Notes

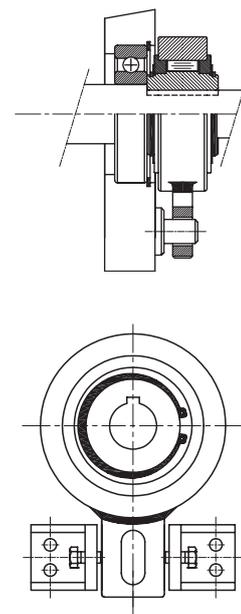
[1]  $T_{MAX} = 2 \times T_N$

REGV Keyways to DIN 6885 Part 3

\*REGV 90-120 have two Keyways at 120 degrees.



Mounting example



**Type: REGL**

Renold REGL Series Trapped Roller Freewheels are self-centering by means of a pair of 160 series ball bearings.

Torque is transmitted to the inner race via a key and the outer race by means of bolts. Components mounted onto the outside diameter of the outer race should be bored to an H7 tolerance. Shaft tolerance must be h6.

The REGL is the base unit of the modular system. It is supplied with two paper gaskets for use between outer race and sealing cover/fixing plates. Failure to use the gaskets may cause loss of lubricant and subsequent rapid failure of the freewheel.

Prior to use, the freewheel must be lubricated as per instructions on page 78.

The REGL base unit is an open design so sealing must be provided by the installation.

The REGL base unit may be used in combination with a range of standard fixing (F series) and cover (D series) plates. The range of options allows the customer to economically tailor the base unit to suit individual applications. Recommended combinations are detailed on the following pages and are suitable for oil lubrication. For pre-greased lubrication options the REGLG range is available, contact Renold Sales for assistance.

Type: REGL

REGL Series															
Type	d <sub>H7</sub>	D <sub>h6</sub>	L	L <sub>1</sub>	L <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	z	g*	Weight	n <sub>max</sub> [1] Inner race	n <sub>max</sub> [2] Outer race	T <sub>N</sub> [3]	Resistance torque
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	qty	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)	(Nm)
REGL 12	12	62	42	27	20	42	20	51	3	5.5	0.50	4000	5600	55	0.11
REGL 15	15	68	52	32	28	47	25	56	3	M5	0.80	3700	5300	125	0.15
REGL 20	20	75	57	39	34	55	30	64	4	M5	1.00	2700	4600	181	0.18
REGL 25	25	90	60	40	35	68	40	78	4	M6	1.50	2200	3600	288	0.36
REGL 30	30	100	68	48	43	75	45	87	6	M6	2.20	1800	3300	500	0.40
REGL 35	35	110	74	51	45	80	50	96	6	M6	3.00	1500	3000	725	0.60
REGL 40	40	125	86	59	53	90	55	108	6	M8	4.60	1200	2600	1025	0.84
REGL 45	45	130	86	59	53	95	60	112	8	M8	4.70	1000	2400	1125	0.94
REGL 50	50	150	94	72	64	110	70	132	8	M8	7.20	850	2200	2125	1.28
REGL 55	55	160	104	72	66	115	75	138	8	M10	8.60	750	2000	2625	1.50
REGL 60	60	170	114	89	78	125	80	150	10	M10	10.50	650	1900	3500	1.60
REGL 70	70	190	134	108	95	140	90	168	10	M10	13.50	550	1700	5750	3.60
REGL 80	80	210	144	108	100	160	105	185	10	M10	18.20	500	1600	8500	3.60
REGL 90	90	230	158	125	115	180	120	206	10	M12	28.50	450	1500	14500	6.80
REGL 100	100	270	182	131	120	210	140	240	10	M16	42.50	350	1250	20000	8.80
REGL 120	120	310	202	152	140	240	160	278	12	M16	56.00	300	1100	25000	12.00
REGL 130	130	310	212	168	152	240	160	278	12	M16	65.00	250	1000	31250	12.50
REGL 150	140	400	246	194	180	310	200	360	12	M20	138.00	200	800	70000	13.50

Notes

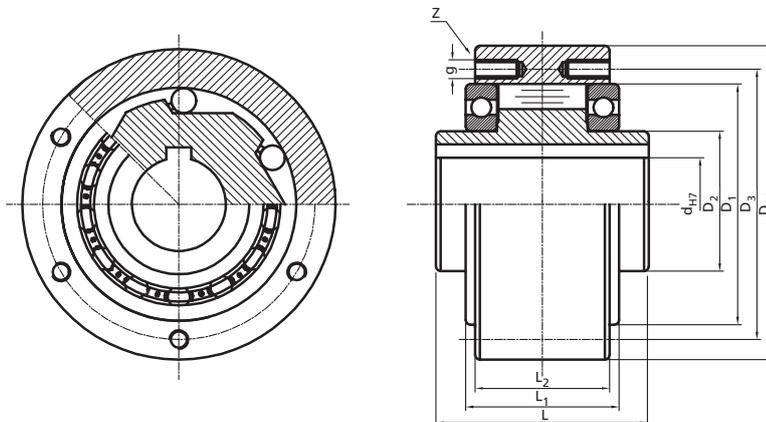
[1] Inner race overrunning

[2] Outer race overrunning

[3] T<sub>MAX</sub> = 2 x T<sub>N</sub>

REGL Keyways to DIN 6885 Part 1

\* REGL12 has 3 off Ø5.5mm through holes.



**Type: REGL F2-D2(D3)**

The REGL F2-D2 (or D3) Series comprises an REGL Base Unit Freewheel, combined with an F2 Fixing Flange and a D2 (or D3) Cover Flange.

Torque is transmitted to the inner race via a key from the shaft and the outer race by means of bolts.

Components mounted onto the outside diameter of the outer race should be bored to an H7 tolerance. Shaft tolerance must be h6/j6.

The unit is supplied with two paper gaskets for use between outer race and sealing cover/fixing plates. Failure to use the gaskets may cause loss of lubricant and subsequent rapid failure of the freewheel.

Prior to use, the freewheel must be lubricated as per instructions on page 78.

The REGL F2-D2 (or D3) unit is a self-sealed design. If a D3 type end cap is used, a sealant must be applied to the keyway to avoid loss of oil lubricant through the keyway.

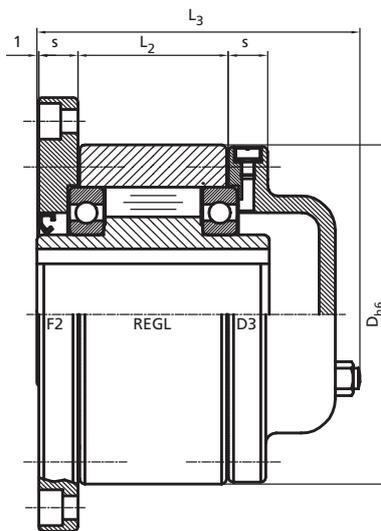
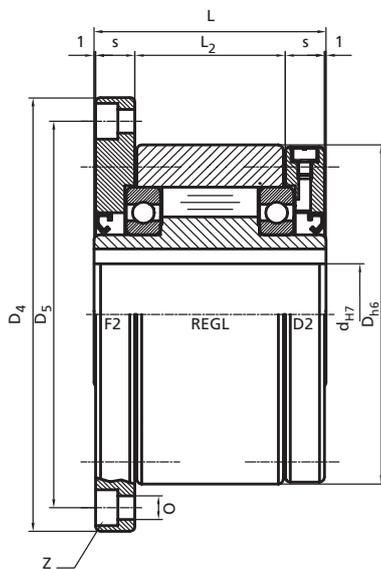
For pre-greased lubrication options the REGLG range is available, contact Renold Sales for assistance.

Type: REGL F2-D2(D3)

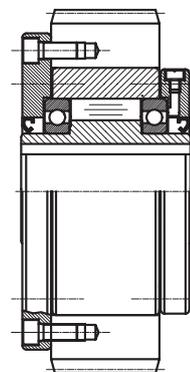
REGL F2-D2(D3) Series														
Type	$d_{H7}$	$D_{h6}$	L	$L_2$	$L_3$	s	$D_4$	$D_5$	o	z	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	qty	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)
REGL F2-D2(D3) 12	12	62	42	20	64	10	85	72	5.5	3	0.90	4000	5600	55
REGL F2-D2(D3) 15	15	68	52	28	78	11	92	78	5.5	3	1.30	3700	5300	125
REGL F2-D2(D3) 20	20	75	57	34	82	10.5	98	85	5.5	4	1.70	2700	4600	181
REGL F2-D2(D3) 25	25	90	60	35	85	11.5	108	104	6.6	4	2.60	2200	3600	288
REGL F2-D2(D3) 30	30	100	68	43	95	11.5	128	114	6.6	6	3.50	1800	3300	500
REGL F2-D2(D3) 35	35	110	74	45	102	13.5	140	124	6.6	6	4.50	1500	3000	725
REGL F2-D2(D3) 40	40	125	86	53	115	15.5	160	142	9	6	6.90	1200	2600	1025
REGL F2-D2(D3) 45	45	130	86	53	115	15.5	165	146	9	8	7.10	1000	2400	1125
REGL F2-D2(D3) 50	50	150	94	64	123	14	185	166	9	8	10.10	850	2200	2125
REGL F2-D2(D3) 55	55	160	104	66	138	18	204	182	11	8	13.10	750	2000	2625
REGL F2-D2(D3) 60	60	170	114	78	147	17	214	192	11	10	15.60	650	1900	3500
REGL F2-D2(D3) 70	70	190	134	95	168	18.5	234	212	11	10	20.40	550	1700	5750
REGL F2-D2(D3) 80	80	210	144	100	178	21	254	232	11	10	26.70	500	1600	8500
REGL F2-D2(D3) 90	90	230	158	115	192	20.5	278	254	14	10	39.00	450	1500	14500
REGL F2-D2(D3) 100	100	270	182	120	217	30	335	305	18	10	66.00	350	1250	20000
REGL F2-D2(D3) 120	120	310	202	140	-	30	375	345	18	12	91.00	300	1100	25000
REGL F2-D2(D3) 130	130	310	212	152	250	29	375	345	18	12	91.00	250	1000	31250
REGL F2-D2(D3) 150	150	400	246	180	286	32	485	445	22	12	200.00	200	800	70000

Notes

- [1] Inner race overrunning
  - [2] Outer race overrunning
  - [3]  $T_{MAX} = 2 \times T_N$
- REGL Keyways to DIN 6885 Part 1



Mounting example



**Type: REGL F4-D2**

The REGL F4-D2 Series comprises an REGL Base Unit Freewheel, combined with an F4 Fixing Flange and a D2 Cover Flange.

Torque is transmitted to the inner race via a key from the shaft and the outer race by means of bolts.

Components mounted onto the outside diameter of the outer race should be bored to an H7 tolerance. Shaft tolerance must be h6/j6.

The driven part (pulley, gear etc.) is centered on the spigot dimension  $D_6$  (h7), of the F4 Flange.

The unit is supplied with two paper gaskets for use between outer race and sealing cover/fixing plates. Failure to use the gaskets may cause loss of lubricant and subsequent rapid failure of the freewheel.

Prior to use, the freewheel must be lubricated as per instructions on page 78.

The REGL F4-D2 unit is a self-sealed design.

For pre-greased lubrication options the REGLG range is available, contact Renold Sales for assistance.

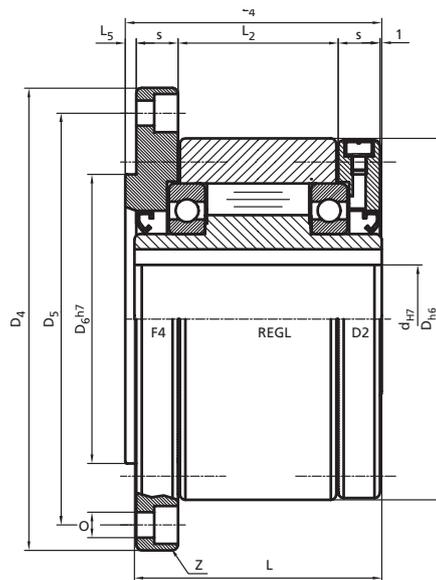
Type: REGL F4-D2

REGL F2-D2(D3) Series																	
Type	$d_{H7}$	$D_{h6}$	L	$L_2$	$L_4$	$L_5$	s	$s_1$	$D_4$	$D_5$	$D_{6h7}$	o	z	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	qty	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)
REGL F4-D2 12	12	62	42	20	44	3	10	10	85	72	42	5.5	3	0.90	4000	5600	55
REGL F4-D2 15	15	68	52	28	54	3	11	11	92	78	47	5.5	3	1.30	3700	5300	125
REGL F4-D2 20	20	75	57	34	59	3	10.5	10.5	98	85	55	5.5	4	1.70	2700	4600	181
REGL F4-D2 25	25	90	60	35	62	3	11.5	10.5	118	104	68	6.6	4	2.60	2200	3600	288
REGL F4-D2 30	30	100	68	43	70	3	11.5	11.5	128	114	75	6.6	6	3.50	1800	3300	500
REGL F4-D2 35	35	110	74	45	76	3.5	13.5	13	140	124	80	6.6	6	4.50	1500	3000	725
REGL F4-D2 40	40	125	86	53	88	3.5	15.5	15	160	142	90	9	6	6.90	1200	2600	1025
REGL F4-D2 45	45	130	86	53	88	3.5	15.5	15	165	146	95	9	8	7.10	1000	2400	1125
REGL F4-D2 50	50	150	94	64	96	4	14	13	185	166	110	9	8	10.10	850	2200	2125
REGL F4-D2 55	55	160	104	66	106	4	18	17	204	182	115	11	8	13.10	750	2000	2625
REGL F4-D2 60	60	170	114	78	116	4	17	16	214	192	125	11	10	15.60	650	1900	3500
REGL F4-D2 70	70	190	134	95	136	4	18.5	17.5	234	212	140	11	10	20.40	550	1700	5750
REGL F4-D2 80	80	210	144	100	146	4	21	20	254	232	160	11	10	26.70	500	1600	8500
REGL F4-D2 90	90	230	158	115	160	4.5	20.5	19	278	254	180	14	10	39.00	450	1500	14500
REGL F4-D2 100	100	270	182	120	184	5	30	28	335	305	210	18	10	66.00	350	1250	20000
REGL F4-D2 120	120	310	202	140	214	5	30	27	375	345	240	18	12	91.00	300	1100	25000
REGL F4-D2 130	130	310	212	152	214	5	29	27	375	345	240	18	12	91.00	250	1000	31250
REGL F4-D2 150	150	400	246	180	248	5	32	30	485	445	310	22	12	200.00	200	800	70000

Notes

- [1] Inner race over-running
- [2] Outer race over-running
- [3]  $T_{MAX} = 2 \times T_N$

REGL F4-D2 Keyways to DIN 6885 Part 1



**Type: REGL F5-D2 (D3)**

The REGL F5-D2 (or D3) Series comprises an REGL Base Unit Freewheel, combined with an F5 Torque Arm and a D2 (or D3) Cover Flange.

Torque is transmitted to the inner race via a key from the shaft and the outer race by means of a torque arm. Shaft tolerance must be h6/j6.

The primary use for the REGL F5-D2 (or D3) freewheels is as a backstop. The freewheel should be fixed to the machine body by use of the fixing pin attached to the F5 Torque Arm, and a suitable hole in the machine. Note that a radial clearance of 1% of pin diameter is needed between the pin and hole.

The unit is supplied with two paper gaskets for use between outer race and sealing cover/fixing plates. Failure to use the gaskets may cause loss of lubricant and subsequent rapid failure of the freewheel.

Prior to use, the freewheel must be lubricated as per instructions on page 78.

The REGL F5-D2 (or D3) unit is a self-sealed design. If a D3 type end cap is used, a sealant must be applied to the keyway to avoid loss of oil lubricant through the keyway.

For pre-greased lubrication options the REGLG range is available, contact Renold Sales for assistance.

Type: REGL F5-D2 (D3)

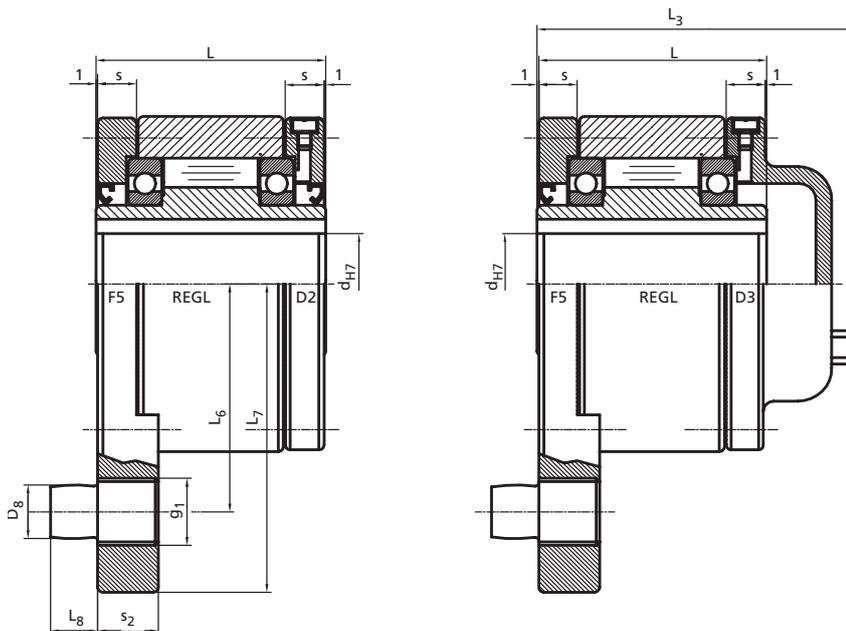
REGL F5-D2(D3) Series													
Type	d <sub>H7</sub>	L	s	s <sub>2</sub>	L <sub>3</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	D <sub>8</sub>	Weight	g <sub>1</sub>	n <sub>max</sub> [1] Inner race	T <sub>N</sub> [2]
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)		(min <sup>-1</sup> )	(Nm)
REGL F5-D2(D3) 12	12	42	10	12	64	44	59	10	10	1.10	M14	4000	55
REGL F5-D2(D3) 15	15	52	11	13	78	47	62	10	10	1.50	M14	3700	125
REGL F5-D2(D3) 20	20	57	10.5	15	82	54	72	11	12	2.10	M16	2700	181
REGL F5-D2(D3) 25	25	60	11.5	18	85	62	84	14	16	3.10	M20x2	2200	288
REGL F5-D2(D3) 30	30	68	11.5	18	95	68	92	14	16	4.10	M20x2	1800	500
REGL F5-D2(D3) 35	35	74	13.5	22	102	76	102	18	20	5.20	M24x2	1500	725
REGL F5-D2(D3) 40	40	86	15.5	22	115	85	112	18	20	7.90	M24x2	1200	1025
REGL F5-D2(D3) 45	45	86	15.5	26	115	90	120	22	25	8.10	M30x2	1000	1125
REGL F5-D2(D3) 50	50	94	14	26	123	102	135	22	25	12.10	M30x2	850	2125
REGL F5-D2(D3) 55	55	104	18	30	138	108	142	25	32	15.30	M36x2	750	2625
REGL F5-D2(D3) 60	60	114	17	30	147	112	145	25	32	18.00	M36x2	650	3500
REGL F5-D2(D3) 70	70	134	18.5	35	168	135	175	30	38	23.00	M42x2	550	5750
REGL F5-D2(D3) 80	80	144	21	35	178	145	185	30	38	31.50	M42x2	500	8500
REGL F5-D2(D3) 90	90	158	20.5	45	192	155	205	40	50	43.30	M55x2	450	14500
REGL F5-D2(D3) 100	100	182	30	45	217	180	230	40	50	71.00	M55x2	350	20000
REGL F5-D2(D3) 120	120	202	30	60	-	205	268	55	68	99.00	M72x2	300	25000
REGL F5-D2(D3) 130	130	212	29	60	250	205	268	55	68	99.00	M72x2	250	31250
REGL F5-D2(D3) 150	150	246	32	60	286	255	325	55	68	199.00	M72x2	200	70000

Notes

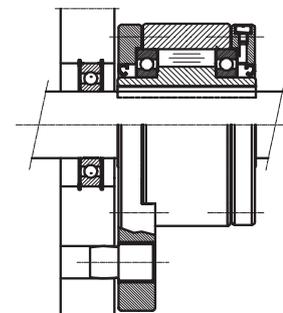
[1] Inner race

[2] T<sub>MAX</sub> = 2 x T<sub>N</sub>

REGL F5-D2 (or D3) Keyways to DIN 6885 Part 1



Mounting example



**Type: REGLP F7-D7**

The REGLP F7-D7 Series comprises an REGL Base Unit Freewheel, combined with an F7 Fixing Flange and a D7 Cover Flange.

Torque is transmitted to the inner race via a key from the shaft and the outer race by means of the external key. Shaft tolerance must be h6/j6.

The unit is supplied with two paper gaskets for use between outer race and sealing cover/fixing plates. Failure to use the gaskets may cause loss of lubricant and subsequent rapid failure of the freewheel.

Prior to use, the freewheel must be lubricated as per instructions on page 78.

The REGL F7-D7 unit is a self-sealed design.

For pre-greased lubrication options the REGLG range is available, contact Renold Sales for assistance.

Type: REGLP F7-D7

REGLP F7-D7 Series												
Type	$d_{H7}$	$D_{h6}$	L	$L_2$	s	$D_g$	$b_{p10}$	t	Weight	$n_{max}$ [1] Inner race	$n_{max}$ [2] Outer race	$T_N$ [3]
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	(min <sup>-1</sup> )	(min <sup>-1</sup> )	(Nm)
REGLP F7-D7 12	12	62	42	20	10	70	4	2	1.00	4000	5600	55
REGLP F7-D7 15	15	68	52	28	11	76	5	3	1.40	3700	5300	125
REGLP F7-D7 20	20	75	57	34	10.5	84	6	3.5	1.90	2700	4600	181
REGLP F7-D7 25	25	90	60	35	11.5	99	8	4	2.80	2200	3600	288
REGLP F7-D7 30	30	100	68	43	11.5	109	8	4	3.70	1800	3300	500
REGLP F7-D7 35	35	110	74	45	13.5	119	10	5	4.70	1500	3000	725
REGLP F7-D7 40	40	125	86	53	15.5	135	12	5	7.10	1200	2600	1025
REGLP F7-D7 45	45	130	86	53	15.5	140	14	5.5	7.40	1000	2400	1125
REGLP F7-D7 50	50	150	94	64	14	160	14	5.5	10.40	850	2200	2125
REGLP F7-D7 55	55	160	104	66	18	170	16	6	13.40	750	2000	2625
REGLP F7-D7 60	60	170	114	78	17	182	18	7	15.90	650	1900	3500
REGLP F7-D7 70	70	190	134	95	18.5	202	20	7.5	20.80	550	1700	5750
REGLP F7-D7 80	80	210	144	100	21	222	22	9	27.10	500	1600	8500
REGLP F7-D7 90	90	230	158	115	20.5	242	25	9	40.00	450	1500	14500
REGLP F7-D7 100	100	270	182	120	30	282	28	10	67.00	350	1250	20000
REGLP F7-D7 120	120	310	202	140	30	322	32	11	82.00	300	1100	25000
REGLP F7-D7 130	130	310	212	152	29	322	32	11	94.00	250	1000	31250
REGLP F7-D7 150	150	400	246	180	32	412	36	12	187.00	200	800	70000

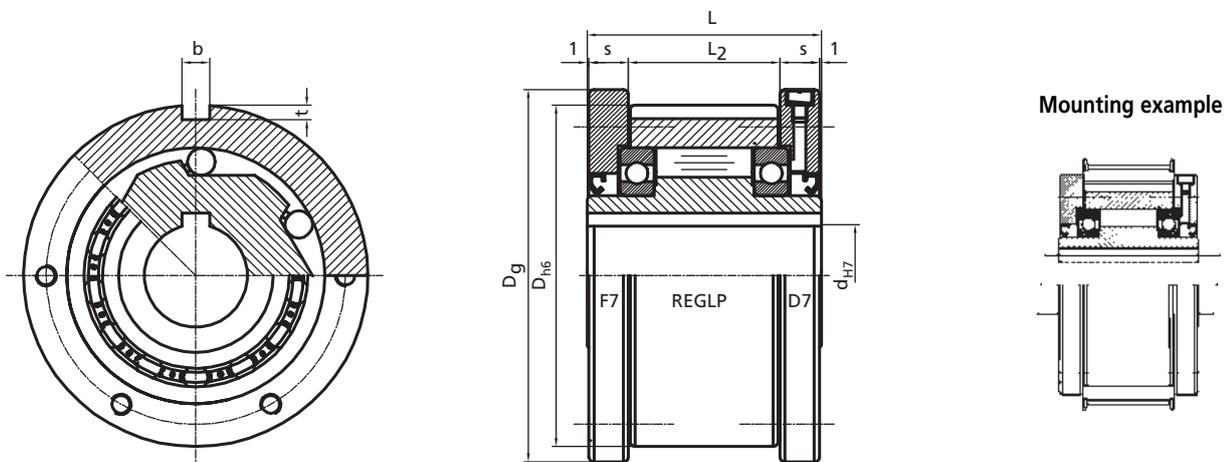
Notes

[1] Inner race overrunning

[2] Outer race overrunning

[3]  $T_{MAX} = 2 \times T_N$

REGLP F7-D7 Keyways to DIN 6885 Part 1



**Type: REUK/REUKC/REUKCC/REUK2RS**

The REUK Series is a Freewheel incorporating a 62 Series bearing.

The self-centering freewheels are already grease-lubricated and come with dust-proof protection.

For the REUK model, the transmission occurs by mounting the inner race onto a shaft with an n6 tolerance. The outer race is fitted into a housing with an N6 tolerance.

The REUKC model is equipped with a keyway on the inner race and should be fitted on k6 tolerance shafts. The outer race is fitted into a housing with an N6 tolerance.

The REUKCC model is equipped with a keyway on the inner and outer race. The inner race is fitted onto a shaft with an n6 tolerance. The outer race is fitted into a housing with an H6 tolerance.

The REUK2RS model is equipped with waterproof seals.

The REUK Series is built with a C5 clearance that turns into a normal clearance after keying.

The races can be glued to the shaft and the seat. In this case, the clearance remains C5.

**Type: REUK/REUKC/REUKCC/REUK2RS**

REUK Series														
Type	d <sub>H7</sub>	D <sub>h6</sub>	L	b	t	T <sub>N</sub> [1]	Weight	n <sub>max</sub>	Dynamic Load Capacity	Static Load Capacity	Bearing series	Resistance torque	b1 (JS9) mm	t1 mm
	(mm)	(mm)	(mm)	(mm)	(mm)	(Nm)	(Kg)	(min <sup>-1</sup> )	(N)	(N)				
REUK 8 ZZ	8	22	9			2.5	0.02	15000	3300	860	-	0.005		
REUK 12 ZZ	12	32	10			2.5	0.04	10000	6100	2770	6201 ZZ	0.005		
REUK 15 ZZ	15	35	11			16.9	0.06	8400	7400	3400	6202 ZZ	0.009		
REUK 17 ZZ	17	40	12			30.6	0.07	7350	7900	3800	6203 ZZ	0.011		
REUK 20 ZZ	20	47	14			50	0.11	6000	9400	4450	6204 ZZ	0.013		
REUK 25 ZZ	25	52	15			85	0.14	5200	10700	5450	6205 ZZ	0.020		
REUK 30 ZZ	30	62	16			138	0.21	4200	11700	6450	6206 ZZ	0.044		
REUK 35 ZZ	35	72	17			175	0.30	3600	12600	7250	6207 ZZ	0.058		
REUK 40 ZZ	40	80	22			325	0.50	3000	15540	12250	-	0.070		
REUKC 12 ZZ	12	32	10	4	1.3	9.3	0.04	10000	6100	2770	6201 ZZ	0.007		
REUKC 15 ZZ	15	35	11	5	1.2	16.9	0.06	8400	7400	3400	6202 ZZ	0.009		
REUKC 17 ZZ	17	40	12	5	1.2	30.6	0.07	7350	7900	3800	6203 ZZ	0.011		
REUKC 20 ZZ	20	47	14	6	1.6	50	0.11	6000	9400	4450	6204 ZZ	0.013		
REUKC 25 ZZ	25	52	15	8	2	85	0.14	5200	10700	5450	6205 ZZ	0.020		
REUKC 30 ZZ	30	62	16	8	2	138	0.21	4200	11700	6450	6206 ZZ	0.044		
REUKC 35 ZZ	35	72	17	10	2.4	175	0.30	3600	12600	7250	6207 ZZ	0.058		
REUKC 40 ZZ	40	80	22	12	3.3	325	0.50	3000	15540	12250	-	0.070		
REUKCC 15 ZZ	15	35	11	5	1.2	16.9	0.06	8400	7400	3400	6202 ZZ	0.009	2	0.6
REUKCC 17 ZZ	17	40	12	5	1.2	30.6	0.07	7350	7900	3800	6203 ZZ	0.011	2	1
REUKCC 20 ZZ	20	47	14	6	1.6	50	0.11	6000	9400	4450	6204 ZZ	0.013	3	1.5
REUKCC 25 ZZ	25	52	15	8	2	85	0.14	5200	10700	5450	6205 ZZ	0.020	6	2
REUKCC 30 ZZ	30	62	16	8	2	138	0.21	4200	11700	6450	6206 ZZ	0.044	6	2
REUKCC 35 ZZ	35	72	17	10	2.4	175	0.30	3600	12600	7250	6207 ZZ	0.058	8	2.5
REUKCC 40 ZZ*	40	80	22	12	3.3	325	0.50	3000	15540	12250	-	0.070	10	3
REUK 17 2RS	17	40	17			30.6	0.09	7350	7900	3800	-	0.056		
REUK 20 2RS	20	47	19			50	0.145	6000	9400	4450	-	0.06		
REUK 25 2RS	25	52	20			85	0.175	5200	10700	5450	-	0.06		
REUK 30 2RS	30	62	21			138	0.27	4200	11700	6450	-	0.075		

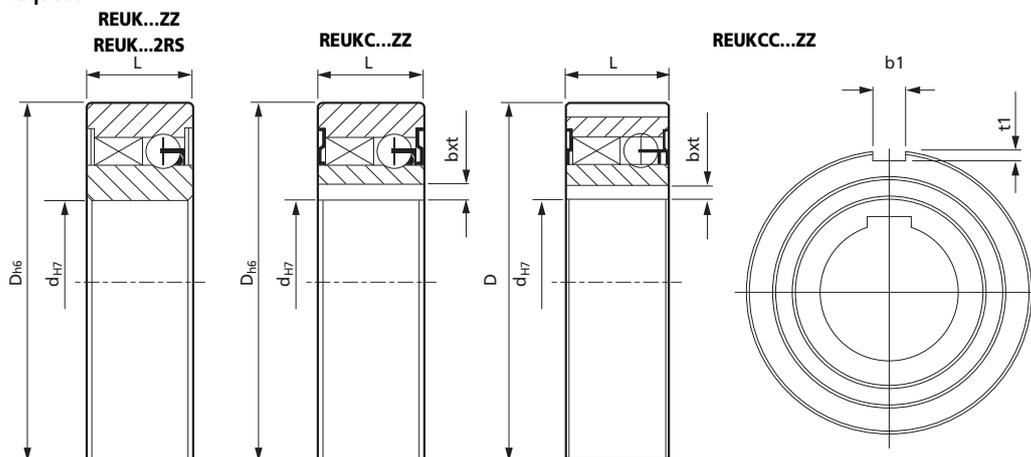
Notes

$T_{MAX} = 2 \times T_N$

Keyway REUKC 15-35 DIN 6885 part 3

Keyway REUKC 40 DIN 6885 part 1

\*Manufactured on request



**Type - REGP**

The REGP Series is a cage with contact elements running as freewheel on races primarily measured in inches.

The smaller dimensions and the high transmission torque offer some interesting technical and cost-saving solutions.

Fitting multiple cages side-by-side increases torques.

It is necessary to place one or two bearings next to the freewheel so that the outer race can rotate centrally to the inner race.

When the sliding race is machined in the seats or on the shafts, the following specifications must be adhered to -

- 1) 60/62 HRC surface hardness
- 2) 1 mm minimum depth of tempering after grinding
- 3) ensure the concentric rotation of the races
- 4) lubrication suitable for the application.

For further information, please consult Renold Clutches and Couplings

**Type - REGP**

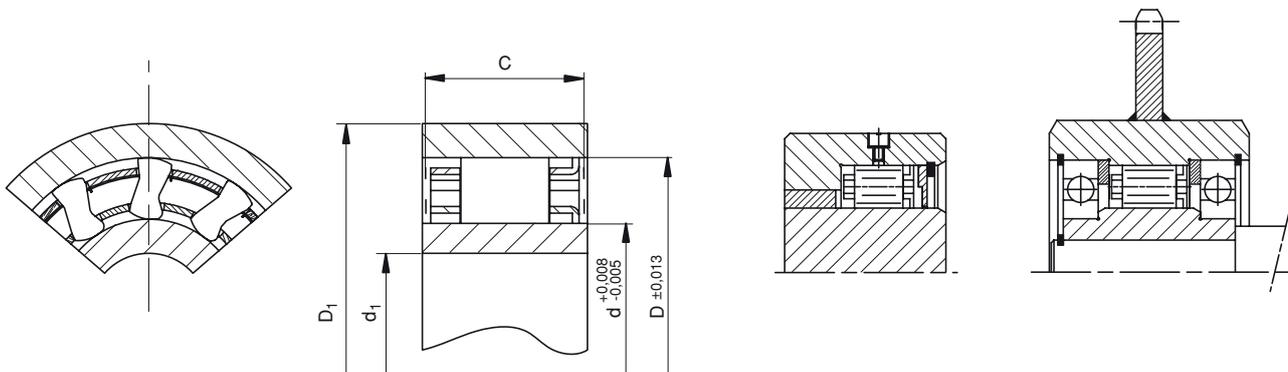
REGP Series												
Type	$T_N$ Nm	Inner race $n_{max1}$ min-1	Outer race $n_{max2}$ min-1	d mm	D mm	Sprag space mm	$C_{min}$ mm	$d1_{max}$ mm	$D1_{min}$ mm	Number of clips	Number of sprags	Weight Kg
GP 2222G	63	8600	4300	22,225	38,885	8,33±0,1	10,0	15	50	-	12	0,030
GP 2776	119	6900	3400	27,762	44,422	8,33±0,1	13,5	18	58	-	14	0,055
GP 3034	124	6300	3100	30,340	47,000	8,33±0,1	13,5	20	62	-	14	0,060
GP 3175 (3C)	159	6000	3000	31,750	48,410	8,33±0,1	13,5	21	63	3	16	0,060
GP 3809A	275	5000	2500	38,092	54,752	8,33±0,1	16,0	25	71	-	18	0,085
GP 4127 (3C)	224	4600	2300	41,275	57,935	8,33±0,1	13,5	27	75	3	18	0,090
GP 4445A	363	4300	2100	44,450	61,110	8,33±0,1	16,0	29	79	-	20	0,095
GP 4972 (4C)	306	3800	1900	49,721	66,381	8,33±0,1	13,5	33	86	4	22	0,100
GP 5476A	525	3500	1700	54,765	71,425	8,33±0,1	16,0	36	92	-	24	0,110
GP 5476A (4C)	525	3500	1700	54,765	71,425	8,33±0,1	16,0	36	92	4	24	0,130
GP 5476B (4C)	769	3500	1700	54,765	71,425	8,33±0,1	21,0	36	92	4	24	0,180
GP 5476C (4C)	990	3500	1700	54,765	71,425	8,33±0,1	25,4	36	92	4	24	0,200
GP 5776A	604	3300	1600	57,760	74,420	8,33±0,1	16,0	38	98	-	26	0,110
GP 6334B	806	3000	1500	63,340	80,000	8,33±0,1	21,0	42	104	-	26	0,175
GP 7221 (5C)	675	2600	1300	72,217	88,877	8,33±0,1	13,5	48	115	5	30	0,140
GP 7221B	1279	2600	1300	72,217	88,877	8,33±0,1	21,0	48	115	-	30	0,185
GP 7221B (5C)	1279	2600	1300	72,217	88,877	8,33±0,1	21,0	48	115	5	30	0,210
GP 7969C (5C)	2038	2400	1200	79,698	96,358	8,33±0,1	25,4	53	124	5	34	0,280
GP 8334C	2055	2300	1100	83,340	100,000	8,33±0,1	25,4	55	132	-	34	0,270
GP 8729A	1250	2200	1100	87,290	103,960	8,33±0,1	16,0	58	134	-	34	0,165
GP 10323A (3C)*	1612	1800	900	103,231**	119,891	8,33±0,1	16,0	68	155	3	40	0,205
GP 12334C*	4800	1500	750	123,340**	140,000	8,33±0,1	25,4	80	184	-	50	0,400
GP 12388C (11C)	4875	1500	750	123,881	142,880	9,50±0,1	25,4	80	186	11	44	0,400

Notes

$T_{MAX} = 2 \times T_N$

- 1) Inner race is faster than outer race
- 2) Outer race is faster than inner race
- \*) The inner cage centering flange is on the opposite side
- \*\*\*) Extension of tolerance to ±0,013 permissible

Mounting example



## Fitting and Maintenance Instructions

### Fitting and Maintenance Instructions for REUS, REUSNU, REUF and REGF Trapped Roller Freewheels

1. These ranges of Freewheel are an open design and lubrication and sealing is to be provided by the installation.
2. Determine direction for free rotation and lock.
3. When fitting or removing the Freewheel, ensure that pressure forces are equalized on both races to avoid damage. Extra care should be taken with the REGF range to avoid deformation of the ball bearings. An end float of 0.1/0.2mm is therefore recommended between the ball bearing outer race and the flanges to be connected.  
  
On Freewheels used for indexing applications, the keys must be fitted correctly to allow the least possible clearance.
4. Good lubrication ensures safe operation and prolongs Freewheel service life.
5. Lubrication. Only use an oil from the approved list.
6. Grease Lubrication. Applications for clutches with grease lubrication should be referred to Renold Sales.

NOTE: Under no circumstances should lubricants containing EP (Extreme Pressure) additives such as molybdenum disulphide, graphite, etc., be used. Lubricants containing such additives reduce the coefficient of friction and hence the transmissible torque of the Freewheel.

#### Maintenance

For Freewheels in backstopping application the oil should be changed after the first 100 hours of operation. Subsequent changes should be after every 2000 hours of operation.

After any oil change the clutch should be checked for leaks.

### Fitting and Maintenance Instructions for REGL, REGLG and REGLP Trapped Roller Freewheels

1. Determine direction for free rotation and lock.
2. Important: Ensure that gaskets are fitted between end plates and freewheel body. End plates should be fixed using screws supplied.  
  
Care must be taken not to damage oil seals during fitting of end plates.
3. If either flange is of the customers manufacture:
  - a) Ensure fixing screws are of the correct length.
  - b) When end plates are securely fixed check freewheel turns easily in the free direction.
4. Oil Lubrication. Only use an oil from the approved list on page 81.
  - a) For type D2 and D7 covers, position one filler hole at 12 o'clock. The second filler hole will now be at 120°. With both filler plugs removed, pour oil into the top hole until it starts to come out of the hole at 120°. The freewheel now has the correct oil fill. Refit both filler plugs ensuring that their o-rings are in place.
  - b) For shaft end cover D3, first check that the machine shaft end/keyway is correctly sealed using o-rings, gaskets and washers supplied by the user. Failure to correctly seal the shaft end could result in the loss of lubricant and subsequent rapid failure of the freewheel. The filling process is then as detailed in 4a.
5. Grease Lubrication. Applications for clutches with grease lubrication should be referred to Renold Sales.

NOTE: Under no circumstances should lubricants containing EP (Extreme Pressure) additives such as molybdenum disulphide, graphite, etc., be used. Lubricants containing such additives reduce the coefficient of friction and hence the transmissible torque of the freewheel.

#### Maintenance

For Freewheels in backstopping application the oil should be changed after the first 100 hours of operation. Subsequent changes should be after every 2000 hours of operation.

After any oil change the clutch should be checked for leaks.

## Lubricants

Operating conditions	Oil lubrication			Grease lubricated
	-20°C / +20°C	>+20°C / +50°C	>+50°C / +80°C	
Lubricant type	Oil CL10/CLP10 DIN 51517 Viscosity at 40°C 10 ±1mm <sup>2</sup> /s (cSt)	Oil CL22/CLP22 DIN 51517 Viscosity at 40°C 22 ±2.2mm <sup>2</sup> /s (cSt)	Oil CL46/CLP46 DIN 51517 Viscosity at 40°C 46 ±4.6mm <sup>2</sup> /s (cSt)	Grease K 2 N
AGIP	AGIP SIC 10 AGIP OSO 10	AGIP SIC 22 AGIP OSO 22	AGIP SIC 46 AGIP OSO 46	AGIP GR MU 2
ARAL	ARAL VITAM GF 10 ARAL VITAM DE 10	ARAL VITAM GF 22 ARAL VITAM DE 22	ARAL VITAM GF 46 ARAL VITAM DE 46	ARALUB FK 2
BP	BP ENERGOL HLP-D 10 BP ENERGOL HLP 10	BP ENERGOL HL 22 BP ENERGOL HLP-D 22 BP ENERGOL HLP 22	BP ENERGOL HL 46 BP ENERGOL HLP-D 46 BP ENERGOL HLP 46	BP ENERGREASE LS 2 BP OLEX PR 9142
CASTROL	CASTROL HYSPIV VG 10 CASTROL HYSPIV AWS 10	CASTROL HYSPIV VG 22 CASTROL HYSPIV AWS 22	CASTROL HYSPIV VG 46 CASTROL HYSPIV AWS 46	CASTROL BNS CASTROL LZV
ESSO	NUTO H 10	NUTO H 22	NUTO H 46	BEACON 2
FINA	FINA CIRKAN 10 FINA HYDRAN 10	FINA CIRKAN 22 FINA HYDRAN 22	FINA CIRKAN 46 FINA HYDRAN 46	FINA MARSON AX 2
KLÜBER	CRUCOLAN 10 LAMORA 10	CRUCOLAN 22 LAMORA 22	CRUCOLAN 46 LAMORA 46	ISOFLEX LDS 18 SPECIAL A
MOBIL	Mobil Velocite Oil No 6 Mobil D.T.E. 21	Mobil Velocite Oil No 10 Mobil D.T.E. 22	Mobil Velocite Oil Medium Mobil D.T.E. 25	Mobilux 2
OPTIMOL	ULTRA 2035 VG 10	ULTRE 5025 VG 22	ULTRA 5045 VG 46 HYDO 5045 E VG 46	LONTIME PD 2 OLIT 2
REINER	REINER B 3	REINER B 5	REINER B 15	URETHYN LT 60
SHELL	Tellus Oel C 10 Tellus Oel 10	Tellus Oel C 22 Tellus Oel 22	Tellus Oel C 46 Tellus Oel 46	Alvania Fett R 2 Retinax A
TEXACO	Rando Oil 10 Rando Oil HD A-10	Rando Oil HD A-22	Rando Oil 46 Rando Oil HD A-46	Multifak 20 Texando FO 20 Multifak 2
TOTAL	TOTAL Azolla 10	TOTAL Azolla 22	TOTAL Azolla 46	TOTAL Multis
VALVOLINE	VALVOLINE R-60	VALVOLINE R-100 VALVOLINE ETC 20	VALVOLINE WA-4 VALVOLINE ETC-20	VALVOLINE LB-2

Contact our office for temperatures greater than 80°C.

N.B. If sealants are used, check that they do not penetrate inside the freewheels.

## Torque Calculations

Drive torque Couple nominal	(Nm)	$T_{AN} = 9550 \cdot P/n$
Load torque	(Nm)	$T_{LN} = 9550 \cdot P/n$
Acceleration torque	(Nm)	$T_a = \frac{J_{LK} \cdot \Delta n}{9,55 \cdot t_a}$
Mass moment of inertia	(Kg m <sup>2</sup> )	$J = n \cdot r^2$
Annular body mass moment of inertia	(Nm)	$J = 98,175 (D_o^4 - D_i^4) \cdot B \cdot e \cdot 10^{-3}$

P = motor power rating (kW)

n = speed (rpm)

F = tangential force (N)

l = lever arm length (m)

$J_x = J \times \left(\frac{n_x}{n_k}\right)^2$  referred inertia

$J_x$  = mass moment of inertia on shaft X (kgm<sup>2</sup>)

$n_x$  = speed of shaft X (rpm)

$n_k$  = clutch shaft speed (rpm)

$\Delta n$  = change in speed (rpm)

$t_a$  = acceleration time (s)

m = mass (kg)

r = radius (m)

$D_o$  = race outside dia. (m)

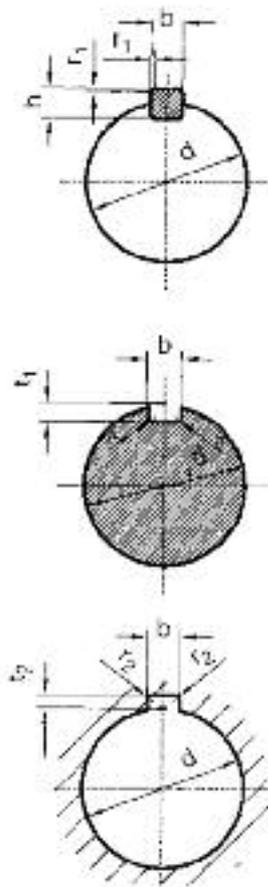
$D_i$  = race inside dia. (m)

B = race width (m)

e = density (kg/m<sup>3</sup>)

## Torque Calculations

d	DIN 6885 - Part 1					DIN 6885 - Part 3				
	<sup>JS10</sup> b x h	t <sub>1</sub>	t <sub>2</sub>	r <sub>1</sub>	r <sub>2</sub>	<sup>JS10</sup> b x h	t <sub>1</sub>	t <sub>2</sub>	r <sub>1</sub>	r <sub>2</sub>
> 6 - 8	2 x 2	1,2 + 0,1	1,0 + 0,0,q	0,2	0,2					
> 8 - 10	3 x 3	1,8 + 0,1	1,4 + 0,1	0,2	0,2					
> 10 - 12	4 x 4	2,5 + 0,1	1,8 + 0,1	0,2	0,2					
> 12 - 17	5 x 5	3,0 + 0,1	2,3 + 0,1	0,3	0,2	5 x 3	1,9 + 0,1	1,2 + 0,1	0,2	0,2
> 17 - 22	6 x 6	3,5 + 0,1	2,8 + 0,1	0,3	0,2	6 x 4	2,5 + 0,1	1,6 + 0,1	0,4	0,4
> 22 - 30	8 x 7	4,0 + 0,2	3,3 + 0,2	0,5	0,2	8 x 5	3,1 + 0,2	2,0 + 0,1	0,4	0,4
> 30 - 38	10 x 8	5,0 + 0,2	3,3 + 0,2	0,5	0,3	10 x 6	3,7 + 0,2	2,4 + 0,1	0,4	0,4
> 38 - 44	12 x 8	5,0 + 0,2	3,3 + 0,2	0,5	0,3	12 x 6	3,9 + 0,2	2,2 + 0,1	0,5	0,5
> 44 - 50	14 x 9	5,5 + 0,2	3,8 + 0,2	0,5	0,3	14 x 6	4,0 + 0,2	2,1 + 0,1	0,5	0,5
> 50 - 58	16 x 10	6,0 + 0,2	4,3 + 0,2	0,5	0,3	16 x 7	4,7 + 0,2	2,4 + 0,1	0,5	0,5
> 58 - 65	18 x 11	7,0 + 0,2	4,4 + 0,2	0,5	0,3	18 x 7	4,8 + 0,2	2,3 + 0,1	0,5	0,5
> 65 - 75	20 x 12	7,5 + 0,2	4,9 + 0,2	0,7	0,5	20 x 8	5,4 + 0,2	2,7 + 0,1	0,6	0,6
> 75 - 85	22 x 14	9,0 + 0,2	5,4 + 0,2	0,7	0,5	22 x 9	6,0 + 0,2	3,1 + 0,2	0,6	0,6
> 85 - 95	25 x 14	9,0 + 0,2	5,4 + 0,2	0,7	0,5	25 x 9	6,2 + 0,2	2,9 + 0,2	0,6	0,6
> 95 - 100	28 x 16	10,0 + 0,2	6,4 + 0,2	0,7	0,5	28 x 10	6,9 + 0,2	3,2 + 0,2	0,8	0,8
> 110 - 130	32 x 18	11,0 + 0,3	7,4 + 0,3	1,1	0,8	32 x 11	7,6 + 0,2	3,5 + 0,2	0,8	0,8
> 130 - 150	36 x 20	12,0 + 0,3	8,4 + 0,3	1,1	0,8	36 x 12	8,3 + 0,2	3,8 + 0,2	1,0	1,0



## Interchange Freewheel Chart

Trapped Roller Freewheels				
RENOLD	RINGSPANN	STIEBER FORMSPRAG MARLAND	CROSS AND MORSE	VP TECHNIK
REGL	FGR	GFR/AL	AGF	GL
REGLP	FGRN	GFRN/ALP	AGFN	GLP
REGV	FAV/FAB*	AV/RSBW*	CRBV/CRBW*	GV/RSBW*
REGF	FNR	NFR/ANG	ANR	GF
REUF	FN	NF/AE	ANF	UF
REUSNU	FSN	NFS/ASNU	CNFS	USNU
REUS	FCN/R	NSS/AS	CNAS	NSS/AS/US
REUK	ZZ	CSK/KK	CKK	K
REUKC	ZZP/FCN-K	CSKP	CKKN	KP
REUKCC	ZZPP	CSKPP	CKKNN	KPP
REUK 2RS	ZZ 2RS	CSK 2RS	CSK RS	K 2RS
REGP	BWX	DC	BWX	DC

\* For FAB, RSBW, CRBW type interchangeability consult Renold

The interchange charts shown above are to be used as a general guide when looking for directly interchangeable Freewheels. Full technical specifications and product information on all Renold Freewheels is available from Renold Coupling & Gears.

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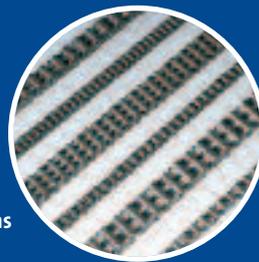
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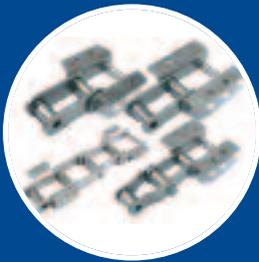
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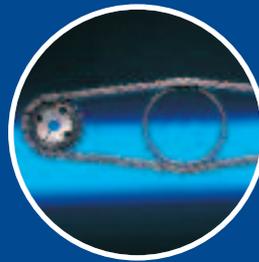
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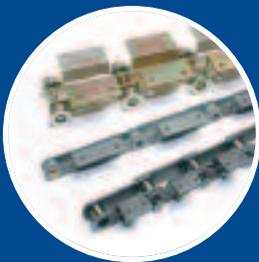
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