

# Overrunning Clutches and Backstops



## Overrunning Clutches and Backstops

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## STIEBER: COMPETENCE IS OUR STRENGTH.



### INNOVATIVE: DEVELOPMENT

Throughout its long history Stieber has been familiar with all types of freewheel designs such as roller and sprag variants and consistently led the way in developing new designs and technologies. We have an unmatched ability in the field of overrunning clutches, built on the long experience of our team of qualified engineers and always seeking the best answers in design and manufacture. Alongside a continuous program of product development unique solutions have been found over the years including:

- Encased overrunning clutches lubricated and cooled by internal oil circulation without the need for a pump.
- Overrunning clutches that may be disengaged either manually or pneumatically.
- Irreversible locks. A novel adaptation of the freewheel principle

and more than 4,000 special designs developed for specific customer requirements. We can supply anything from 0.8 to 1.7 million Nm so you can be sure of finding the best solution, whatever the application.

### ACCURATE: PRODUCTION

Standard products and customer-specific items are produced according to the latest techniques and quality requirements in our two manufacturing plants. Our skilled and experienced workforce take every care to deliver to you a reliable, quality product. Our commitment to continuous improvement ensures that our systems and

processes are constantly under review. Over the past few years this has led to a 30% time saving in manufacture, for example. The assembly and warehouse departments control stock and material flow using a Kanban system to ensure the correct availability of standard parts and on-time delivery to you the customer. If you buy your freewheels from Stieber you can be sure of the best in quality and reliability for you and your customers guaranteed.

### TRADEMARK: QUALITY

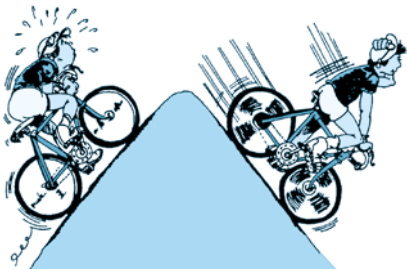
Total quality is assured both by meeting prescribed product performance specifications and thanks to the reliability of manufacturing methods and process workflows including integrated tests. The key technical data of Stieber products are either calculated using FVA\* methods and/or verified on our test benches.

We have test machines with a torque capacity of up to 700.000 Nm. During idling, units with a bore up to 600 mm can be tested at speeds of up to 1.500 rpm. The modern equipment in our quality department allows us to carry out all the necessary tests ourselves.

\* Power Transmission Research Association

## THE PRINCIPLE: THE RIGHT ANSWER – EVERYTIME.

1



### 1 OVERRUNNING CLUTCH

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

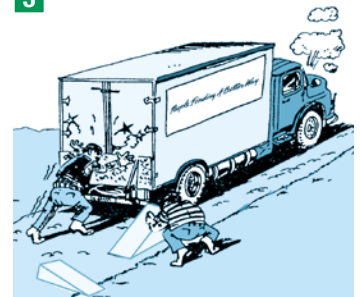
2



### 2 INDEXING CLUTCH

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

3



Overrunning clutches are directional couplings, which means they are engaged and disengaged automatically, depending on the relative direction of rotation of the driving and driven sides. Practical applications of this principle:

### 1 OVERRUNNING CLUTCH

for multiple-machine drives or to separate the inertia of masses of a driven machine from the driving machine after it has been switched off.

### 2 INDEXING CLUTCH

which turns a shaft step by step, thus achieving indexed material feed or a variable speed.

### 3 BACKSTOP

to prevent a machine shaft turning backwards. In this case the overrunning clutch acts as a brake.

### 3 BACKSTOP

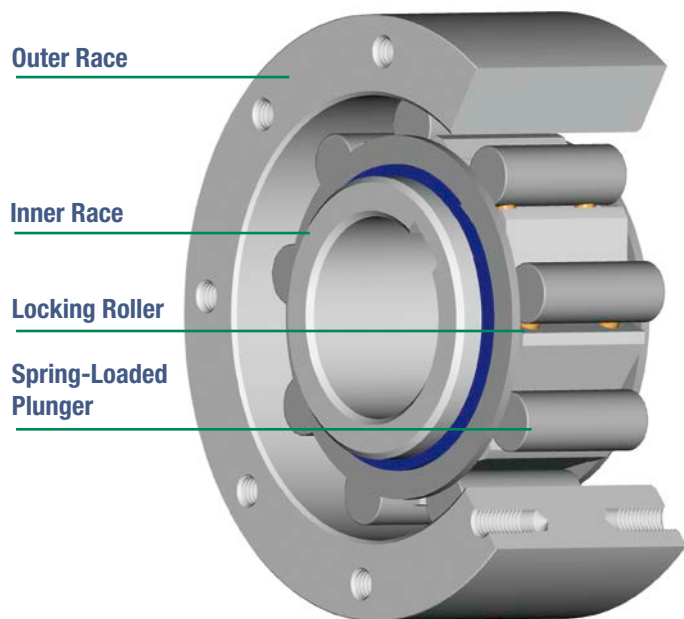
The freewheel allows rotation in one direction only. It overruns continuously during operation. The freewheel prevents reverse rotation if the drive is disconnected.

## BASIC FORMS: ALWAYS A PERFECT SOLUTION.

To achieve the functions described overleaf, so-called locking elements are positioned between an outer and an inner race which effect engaging and disengaging. These locking elements are of two basic designs:

### ROLLER CLUTCH

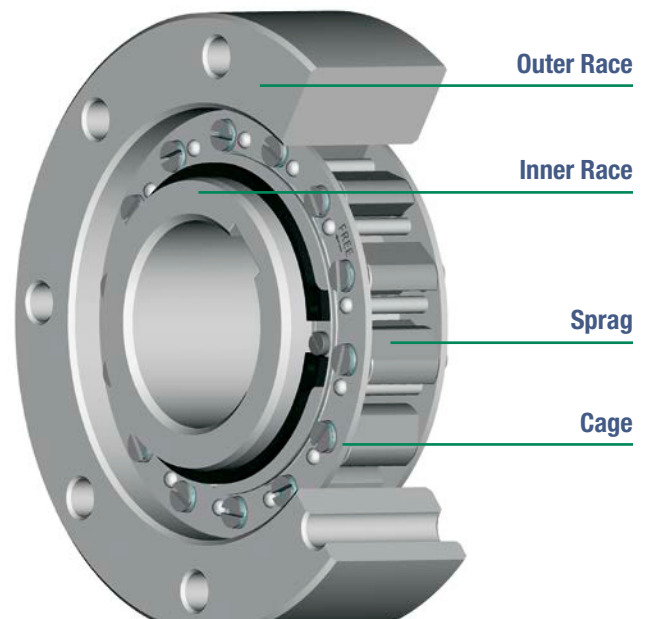
Mainly used as overrunning and indexing clutches.



- Rugged
- Versatile
- High indexing accuracy
- High performance overrunning clutch

### SPRAG CLUTCH

Most suitable as backstops, and mostly the contact-free versions.



- High overrunning speed
- High torque capacity
- High eccentricity tolerances
- Accepts any lubricant

We offer our freewheels in different versions either without bearing support (built-in) or with bearing support (self-contained). (see selection table page 10)

# DESIGN: MANY VERSIONS – ONE QUALITY.

## ROLLER FREEWHEELS

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

Note: the highest overrunning speed is possible if the outer race is overrunning. For this reason it is particularly adapted to high speed overrunning clutch application for dual drivers.

This design is recommended for use as an indexing clutch. To maximise accuracy, specify »V« type, fitted with stronger springs.

## SPRAG FREEWHEELS

In this type of freewheel, the two races are cylindrical. The sprags, fitted in a cage, feature an active profile that ensures engagement or disengagement according to the relative motion of the races.

It is possible to adapt the design of sprags and cage to get significantly different characteristics from one model to another. For example, models which have permanent contact or are contact free during overrunning, are available.

## DC DESIGN

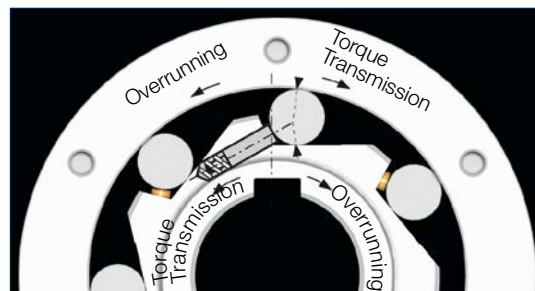
This model features a large number of sprags controlled by two concentric cages. The transmitted torque is high compared to the required space. Sprags are synchronised by the double cage design, and individually energized by a special spring.

## RSCI, RIZ DESIGN

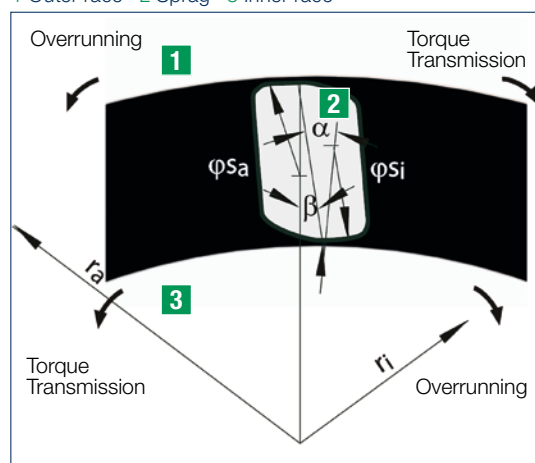
Sprags in this design, are fitted into a cage connected to the overrunning member. The sprag configuration is such that its center of gravity is offset to its rotation axis.

Centrifugal force creates a lift off moment against an engaging spring. When the centrifugal force moment is greater than that of the spring, the sprag tilts over to a contact free position.

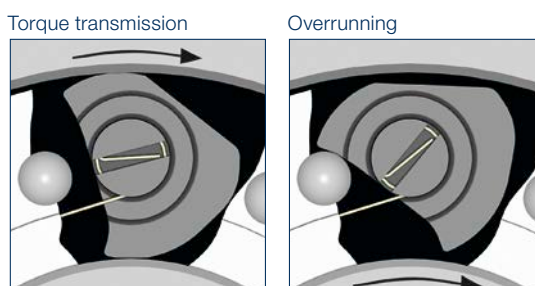
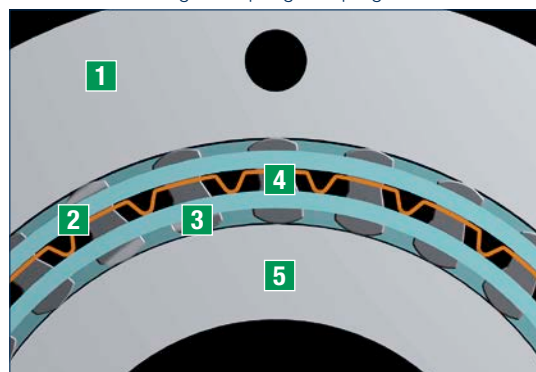
The clamping geometry allows this type of freewheel to accept significant eccentricity tolerances and to work with all the current lubricants used in power transmissions.



1 Outer race 2 Sprag 3 Inner race



1 Outer race 2 Cage 3 Spring 4 Sprag 5 Inner race



## STIEBER SOLUTIONS: ALWAYS THE RIGHT CHOICE.

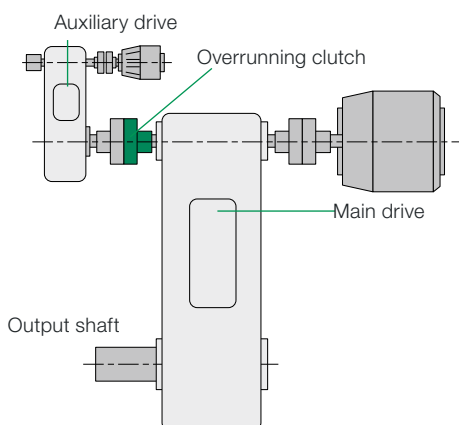
Unit selection is initially determined by the type of application: OC Overrunning clutch, IC Indexing clutch, BS Backstop. Different technical information is required for each one of them. Mounting details and lubrication requirements finally determine the unit selected.

The information required for each type of application is as follows:



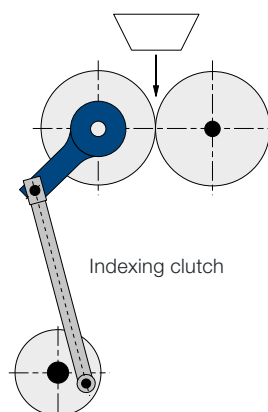
### OVERRUNNING CLUTCH

- Type of motor
- Nm start/Nm nominal of E-motors
- Internal combustion engines, please consult Stieber
- Nominal driving torque
- Range of driving speed
- Inertia „J“ of the driven masses
- Range of overrunning speed
- Number of start during service life
- Shaft diameter



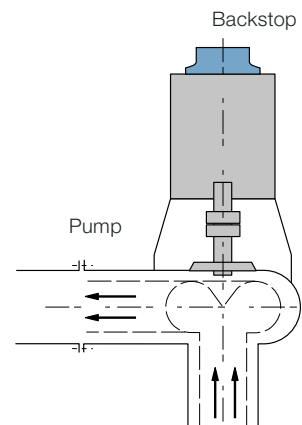
### INDEXING CLUTCH

- Number of cycles/min
- Index angle
- Nominal torque
- Inertia „J“ of the driven masses
- Accelerations of the driving member
- Number of indexes during service life
- Shaft diameter



### BACKSTOP

- Static reverse torque
- Maximum dynamic reverse torque due to elasticity of the locked parts (elastic belts, shafts more than 3 meters long)
- Range of overrunning speed
- Number of torque applications during service life
- Shaft diameter



## THE SELECTION PROCEDURE: WE ADVISE, YOU DECIDE.

If we have the data described on the previous page, Stieber can make the most accurate selection.  
If all of the information is not available, or if you want to make a selection yourself, the following service factor procedure may be used.

Note: The following method and the service factors used are only a guide based on experience and cannot cover all situations. We cannot accept responsibility for incorrect selection resulting from the use of these tables.

### STEP 1 TORQUE SELECTION

The first step is to calculate the catalogue torque ( $T_{KN}$ ) of the unit to be chosen. This torque is derived from the application nominal torque ( $T_{appl}$ ) multiplied by a service factor (S.F.) depending on the function of the freewheel and working conditions.

Nominal torque of the application:

$$T_{appl} (Nm) = \frac{9550 \times P (kW)}{n (min^{-1})}$$

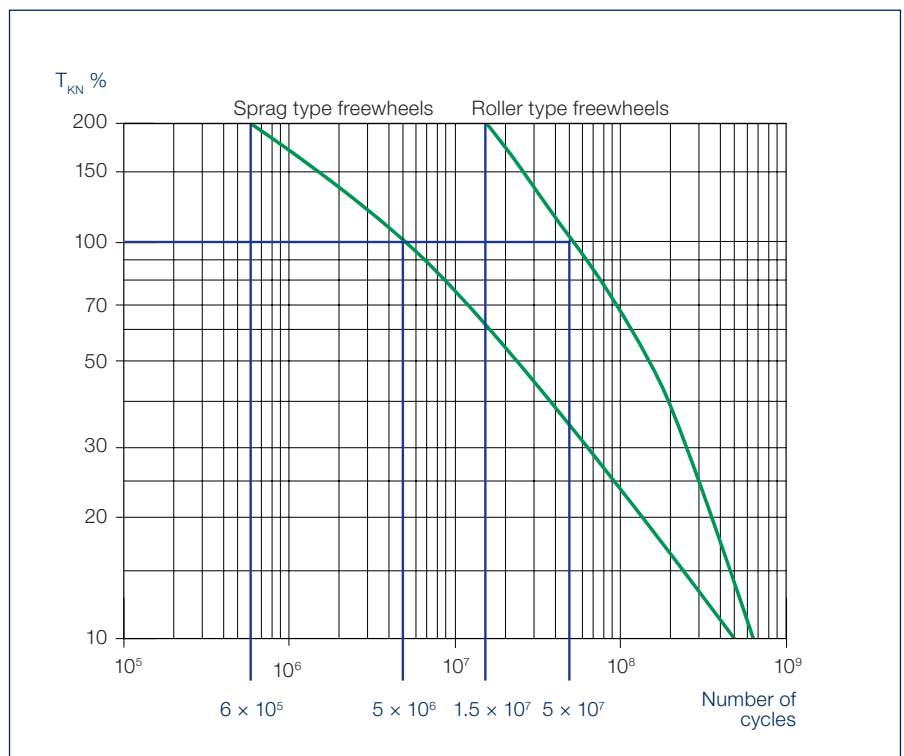
The catalogue torque will be:

$$T_{KN} = T_{appl} \times S.F.$$

S.F. (service factor) can be read from the selection tables on page 8.

Note: All the units shown in this catalog can support a maximum torque equal to 2 times the catalogue torque  $T_{KN}$  indicated in the respective data tables.

The following curve may be used as a guide to determine the relationship between torque transmitted and the number of cycles (applications of this torque) the unit would withstand in its life time. Average values are shown.



## SERVICE FACTORS.

### APPLICATION INDEXING

| Indexing speed                          | Type of freewheel |            |
|-----------------------------------------|-------------------|------------|
|                                         | Roller type       | Sprag type |
| Over 150 strokes/min                    | 3.0               | 4.0        |
| Angle > 90°   Over 100 strokes/min      | 2.5               | 4.0        |
| Angle > 90°   Less than 100 strokes/min | 2.0               | 3.5        |

### APPLICATION BACKSTOP

| Driving machine                                    | Driven machine                          |                                           |      |                |                   |
|----------------------------------------------------|-----------------------------------------|-------------------------------------------|------|----------------|-------------------|
|                                                    | Elastic conveyor belts with risk of jam | Pump drives with more than 5 metres shaft | Fans | Other machines |                   |
|                                                    |                                         |                                           |      | No overloads   | Dynamic overloads |
| Motors with hydraulic couplings                    | 1.3                                     | 1.6                                       | 0.5  | 1.0            | 1.5               |
| Asynchronous motors with direct start <sup>1</sup> | 1.6                                     | 1.6                                       | 0.5  | 1.0            | 1.5               |
| Steam or gas turbine                               | —                                       | 1.6                                       | 0.5  | 1.0            | 1.5               |
| Internal combustion engine                         | 1.6                                     | 1.6                                       | 0.5  | 1.0            | 1.5               |

1) These values do not cover a motor start in the wrong direction.

### APPLICATION OVERRUNNING

| Driving machine                                                 | Working conditions                                       |                                                                            |                                                                  |                                                       |
|-----------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------|
|                                                                 | Starting torque not higher than nominal<br>Smooth drive. | Starting torque up to 2 times running torque.<br>Moderate load variations. | Starting torque 2 to 3 times running torque.<br>Load variations. | High starting torque.<br>High load torque variations. |
| DC - motor.<br>AC - motor with soft start or hydraulic coupling | 1.3                                                      | 1.5                                                                        | 1.8                                                              | —                                                     |
| Asynchronous motor with direct start                            | Speed reduction between motor & freewheel < 20           | 2.5                                                                        | 3.0                                                              | 4.0                                                   |
|                                                                 | Speed reduction between motor & freewheel > 20           | 1.5                                                                        | 2.5                                                              | 3.5                                                   |
| Steam or gas turbine                                            | 1.3                                                      | 1.5                                                                        | —                                                                | —                                                     |
| Internal combustion Engine                                      | Petrol 4 cyl.or Diesel < 6 cyl.                          | 4.0                                                                        | 5.0                                                              | Contact Stieber.                                      |
|                                                                 | Diesel N 6 cyl.                                          | 5.0                                                                        | 6.0                                                              | Contact Stieber.                                      |

# Selection Table

| Types           | Applications groups                                                                                                                                                                                               | Type of support    |  |  |  |  |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                 |                                                                                                                                                                                                                   |                    | OC                                                                                  | IC                                                                                  | BS                                                                                  |  |
| CSK             | Integral bearing/<br>freewheel based on<br>series 62, 60 and 59                                                                                                                                                   | Bearing support    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| CSK..2RS        |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| CSK..P. CSK..PP |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| CSK..P-2RS      |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| ASK             |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AS (NSS)        | Built-in freewheels:<br>Must be integrated in a<br>housing that provides<br>bearing support and<br>lubrication. Low to<br>medium torque and<br>speeds.                                                            | No bearing support | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| ASNU (NFS)      |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AE              |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AA              |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| NF              |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| S200            |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| DC              |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| DC Races        |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| NFR             |                                                                                                                                                                                                                   | Bearing support    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| RSBW            | Self-contained clutches:<br>Sealed, with integral<br>lubrication. From small<br>to high torques, low to<br>max speeds.<br>Applications in all types<br>of industry.                                               | Bearing support    |                                                                                     |                                                                                     | ●                                                                                   |  |
| AV              |                                                                                                                                                                                                                   |                    |                                                                                     | ●                                                                                   | ●                                                                                   |  |
| GFR-GFRN        |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| GFR..F1F2/F2F7  |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| GFRN..F5F6      |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| GFR..F2F3       |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| GFR..F3F4       |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| AL/ALP          |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AL..F2D2        |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AL..F4D2        |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| ALP..F7D7       |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AL..KMSD2       |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |
| AL..KEED2       |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |
| SMZ             |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| FSO 300-700     |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| FSO 750-1027    |                                                                                                                                                                                                                   |                    | ●                                                                                   | ●                                                                                   | ●                                                                                   |  |
| AL..G           |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |
| CEUS            |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |
| BC MA           |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RDBR-E          |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RSCI 20-130     | Centrifugally lift off<br>sprags:<br>Wear free above a given<br>speed. High speeds with<br>little lubrication demand.<br>Specifically designed for:<br>gear reducers, motors,<br>pumps, ventilators,<br>turbines. | No bearing support | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RSCI 180-300    |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RSXM            |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RSRV            |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RSRT            |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RDBK            |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RDBK-H          |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RIZ-RINZ        |                                                                                                                                                                                                                   | Bearing support    | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RIZ..G1G2/G2G7  |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RINZ..G5G5      |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     | ●                                                                                   |  |
| RIZ..G2G3       |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RIZ..G3G4       |                                                                                                                                                                                                                   |                    |                                                                                     |                                                                                     | ●                                                                                   |  |
| RIZ..ESG2       |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |
| RIZ..ELG2       |                                                                                                                                                                                                                   |                    | ●                                                                                   |                                                                                     |                                                                                     |  |

OC = Overrunning Clutch | IC = Indexing Clutch | BS = Backstop | ● = Special Working Conditions

# Selection Table

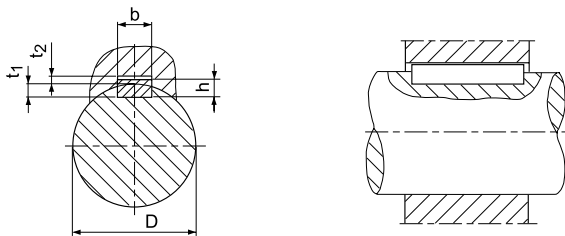
| Bore range-diameter |  |         | Torque range     | Overrunning Speed inner race                                                        | Overrunning Speed outer race                                                         | Lubrication                                                                           | Page |
|---------------------|--|---------|------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------|
|                     |  | mm      | Nm               |                                                                                     |                                                                                      |                                                                                       |      |
|                     |  | 8–40    | 2,5–325          |    |    |    | 14   |
|                     |  | 12–40   | 2,5–325          |                                                                                     |                                                                                      |                                                                                       | 14   |
|                     |  | 12–40   | 9,3–325          |                                                                                     |                                                                                      |                                                                                       | 16   |
|                     |  | 12–40   | 9,3–325          |                                                                                     |                                                                                      |                                                                                       | 16   |
|                     |  | 40–60   | 72–250           |                                                                                     |                                                                                      |                                                                                       | 18   |
|                     |  | 6–80    | 2,1–1 063        |    |    |    | 20   |
|                     |  | 8–200   | 12–44 500        |                                                                                     |                                                                                      |                                                                                       | 22   |
|                     |  | 12–70   | 17–5813          |                                                                                     |                                                                                      |                                                                                       | 24   |
|                     |  | 12–250  | 17–225 000       |                                                                                     |                                                                                      |                                                                                       | 26   |
|                     |  | 8–150   | 20–44 375        |                                                                                     |                                                                                      |                                                                                       | 28   |
|                     |  | 16–56   | 45–850           |                                                                                     |                                                                                      |                                                                                       | 30   |
|                     |  | 15–80   | 63–4 875         |                                                                                     |                                                                                      |                                                                                       | 32   |
|                     |  |         |                  |    |    |                                                                                       | 34   |
|                     |  | 8–130   | 20–34 750        |    |    |                                                                                       |      |
|                     |  | 20–90   | 375–4 875        |    | not possible                                                                         |    | 38   |
|                     |  | 20–120  | 265–11 000       |                                                                                     |                                                                                      |                                                                                       | 40   |
|                     |  | 12–150  | 55–70 000        |  |   |  | 42   |
|                     |  | 12–150  | 55–70 000        |                                                                                     |                                                                                      |                                                                                       | 44   |
|                     |  | 12–150  | 55–70 000        |                                                                                     |                                                                                      |                                                                                       | 44   |
|                     |  | 12–150  | 55–70 000        |                                                                                     | not possible                                                                         |                                                                                       | 46   |
|                     |  | 12–150  | 55–70 000        |                                                                                     |                                                                                      |                                                                                       | 46   |
|                     |  | 12–250  | 55–287 500       |                                                                                     |  |                                                                                       | 48   |
|                     |  | 12–250  | 55–287 500       |                                                                                     |                                                                                      |                                                                                       | 50   |
|                     |  | 12–250  | 55–287 500       |                                                                                     |                                                                                      |                                                                                       | 52   |
|                     |  | 12–250  | 55–287 500       |                                                                                     |                                                                                      |                                                                                       | 52   |
|                     |  | 12–120  | 50–20 000        |                                                                                     |                                                                                      | 54                                                                                    |      |
|                     |  | 12–250  | 55–250 000       |                                                                                     |                                                                                      | 56                                                                                    |      |
|                     |  | 20–70   | 300–4 300        |  |  |  | 58   |
|                     |  | 12–82   | 379–6 900        |                                                                                     |                                                                                      |                                                                                       | 60   |
|                     |  | 57–177  | 9660–36 612      |                                                                                     |                                                                                      |                                                                                       | 62   |
|                     |  | 38–160  | 500–70 000       |                                                                                     |                                                                                      |                                                                                       | 64   |
|                     |  | 40–180  | 680–81 350       | not possible                                                                        |  |  | 66   |
|                     |  | 165–600 | 36 000–1 626 000 |  | not possible                                                                         |                                                                                       | 68   |
|                     |  | 150–320 | 50 000–330 000   |                                                                                     |                                                                                      |                                                                                       | 70   |
|                     |  | 20–130  | 212–15 750       |  | not possible                                                                         |  | 72   |
|                     |  | 180–300 | 31 500–250 000   |                                                                                     |                                                                                      |                                                                                       | 74   |
|                     |  | 20–70   | 100–1 950        |                                                                                     |                                                                                      |                                                                                       | 76   |
|                     |  | 50–190  | 1400–30 000      |                                                                                     |                                                                                      |                                                                                       | 78   |
|                     |  | 50–190  | 1400–30 000      |                                                                                     |                                                                                      |                                                                                       | 78   |
|                     |  | 60–300  | 5500–180 000     |                                                                                     |                                                                                      |                                                                                       | 80   |
|                     |  | 60–300  | 5500–180 000     |                                                                                     |                                                                                      |                                                                                       | 80   |
|                     |  | 30–130  | 375–23 000       |  | not possible                                                                         |  | 80   |
|                     |  | 30–130  | 375–23 000       |                                                                                     |                                                                                      |                                                                                       | 84   |
|                     |  | 30–130  | 375–23 000       |                                                                                     |                                                                                      |                                                                                       | 84   |
|                     |  | 30–130  | 375–23 000       |                                                                                     |                                                                                      |                                                                                       | 86   |
|                     |  | 30–130  | 375–23 000       |                                                                                     |                                                                                      |                                                                                       | 86   |
|                     |  | 30–130  | 80–20 000        |                                                                                     |                                                                                      |                                                                                       | 88   |
|                     |  | 30–130  | 375–23 000       |                                                                                     |                                                                                      |                                                                                       | 90   |

 = high speed |  = middle speed |  = low speed

## MOUNTING INSTRUCTIONS: SO THAT IT FITS.

### KEY ASSEMBLIES

For all freewheel inner races connected to shaft by a key, our standard bore tolerance is H7, with keyway to JS10. If no other indication we recommend a shaft tolerance of h6 or j6. For maximum indexing accuracy, adjusted keys should be machined to give no clearance.



| Bore size | DIN 6885*   Sheet 1 |    |                |                | DIN 6885*   Sheet 3 |    |                |                |
|-----------|---------------------|----|----------------|----------------|---------------------|----|----------------|----------------|
|           | b <sup>JS10</sup>   | h  | t <sub>1</sub> | t <sub>2</sub> | b <sup>JS10</sup>   | h  | t <sub>1</sub> | t <sub>2</sub> |
| > 6–8     | 2 ± 0.020           | 2  | 1.2 + 0.1      | 1 + 0.3        |                     |    |                |                |
| > 8–10    | 3 ± 0.020           | 3  | 1.8 + 0.1      | 1.4 + 0.3      |                     |    |                |                |
| > 10–12   | 4 ± 0.024           | 4  | 2.5 + 0.1      | 1.8 + 0.3      |                     |    |                |                |
| > 12–17   | 5 ± 0.024           | 5  | 3 + 0.1        | 2.3 + 0.3      | 5 ± 0.024           | 3  | 1.9 + 0.1      | 1.2 + 0.3      |
| > 17–22   | 6 ± 0.024           | 6  | 3.5 + 0.1      | 2.8 + 0.3      | 6 ± 0.024           | 4  | 2.5 + 0.1      | 1.6 + 0.3      |
| > 22–30   | 8 ± 0.029           | 7  | 4 + 0.2        | 3.3 + 0.4      | 8 ± 0.029           | 5  | 3.1 + 0.1      | 2 + 0.3        |
| > 30–38   | 10 ± 0.029          | 8  | 5 + 0.2        | 3.3 + 0.4      | 10 ± 0.029          | 6  | 3.7 + 0.2      | 2.4 + 0.3      |
| > 38–44   | 12 ± 0.035          | 8  | 5 + 0.2        | 3.3 + 0.4      | 12 ± 0.035          | 6  | 3.9 + 0.2      | 2.2 + 0.3      |
| > 44–50   | 14 ± 0.035          | 9  | 5.5 + 0.2      | 3.8 + 0.4      | 14 ± 0.035          | 6  | 4 + 0.2        | 2.1 + 0.3      |
| > 50–58   | 16 ± 0.035          | 10 | 6 + 0.2        | 4.3 + 0.4      | 16 ± 0.035          | 7  | 4.7 + 0.2      | 2.4 + 0.3      |
| > 58–65   | 18 ± 0.035          | 11 | 7 + 0.2        | 4.4 + 0.4      | 18 ± 0.035          | 7  | 4.8 + 0.2      | 2.3 + 0.3      |
| > 65–75   | 20 ± 0.042          | 12 | 7.5 + 0.2      | 4.9 + 0.4      | 20 ± 0.042          | 8  | 5.4 + 0.2      | 2.7 + 0.3      |
| > 75–85   | 22 ± 0.042          | 14 | 9 + 0.2        | 5.4 + 0.4      | 22 ± 0.042          | 9  | 6 + 0.2        | 3.1 + 0.4      |
| > 85–95   | 25 ± 0.042          | 14 | 9 + 0.2        | 5.4 + 0.4      | 25 ± 0.042          | 9  | 6.2 + 0.2      | 2.9 + 0.4      |
| > 95–110  | 28 ± 0.042          | 16 | 10 + 0.2       | 6.4 + 0.4      | 28 ± 0.042          | 10 | 6.9 + 0.2      | 3.2 + 0.4      |
| > 110–130 | 32 ± 0.050          | 18 | 11 + 0.3       | 7.4 + 0.4      | 32 ± 0.050          | 11 | 7.6 + 0.2      | 3.5 + 0.4      |
| > 130–150 | 36 ± 0.050          | 20 | 12 + 0.3       | 8.4 + 0.4      | 36 ± 0.050          | 12 | 8.3 + 0.2      | 3.8 + 0.4      |
| > 150–170 | 40 ± 0.050          | 22 | 13 + 0.3       | 9.4 + 0.4      |                     |    |                |                |
| > 170–200 | 45 ± 0.050          | 25 | 15 + 0.3       | 10.4 + 0.4     |                     |    |                |                |
| > 200–230 | 50 ± 0.050          | 28 | 17 + 0.3       | 11.4 + 0.4     |                     |    |                |                |
| > 230–260 | 56 ± 0.060          | 32 | 20 + 0.3       | 12.4 + 0.4     |                     |    |                |                |
| > 260–290 | 63 ± 0.060          | 32 | 20 + 0.3       | 12.4 + 0.4     |                     |    |                |                |
| > 290–330 | 70 ± 0.060          | 36 | 22 + 0.3       | 14.4 + 0.4     |                     |    |                |                |

\*) Keyway tolerances for hardened parts are not given in DIN6885.

### BOLT ASSEMBLIES

In freewheel technology torque is often transmitted through bolts. Experience has shown that it is a practical and reliable way since freewheels transmit torque in only one direction.

Bolt quality and tightening torques to use are as follows:

| Thread | Strength standard |      |      |      |
|--------|-------------------|------|------|------|
|        | 8.8               |      | 10.9 |      |
|        | Type              | [Nm] | Type | [Nm] |
| M5     | RSCI              | 6    |      | 8    |
| M6     |                   | 10   | AA   | 14   |
| M8     |                   | 25   | AL   | 34   |
| M10    |                   | 48   | FSO  | 68   |
| M12    |                   | 84   | GFR  | 118  |
| M16    |                   | 206  | HPI  | 290  |
| M20    |                   | 402  | RIZ  | 550  |
| M24    |                   | 696  |      | 950  |
| M30    |                   | 1420 |      | 1900 |

### RUN-OUT

Permitted run-out tolerances for the mounting of non self supported roller freewheels AA, AE, AS, ASNU, KI and NF (see table on the bottom right).

In order to maintain these limits, ball bearings with standard clearance must be installed adjacent to the freewheel. The permitted run-out for sprag type freewheels DC, RSCI and S200 are given in their respective tables.

| Bores-diameter [mm] | AA, AE, AS, ASNU, KI, NF |                |
|---------------------|--------------------------|----------------|
|                     | Runout TIR               | Squareness TIR |
| 4–8                 | 0.020                    | 0.02           |
| 10–17               | 0.035                    | 0.03           |
| 20–50               | 0.060                    | 0.03           |
| 55–100              | 0.100                    | 0.03           |
| 110–150             | 0.160                    | 0.03           |

### PRESS FIT ASSEMBLIES

Shaft and bore tolerances are specified on the pages for each type where press fitting is appropriate.

As with standard bearings, suitable tooling must be used for press fitting such that no axial load is transmitted through the inner part of the freewheel during assembly.

## LUBRICATION & MAINTENANCE: NOW LET'S LOOK AFTER IT.

| Oil                                                                                 |  Operating<br>-20°C to +20°C<br>Ambient<br>-40°C to -15°C |  Operating<br>+10°C to +50°C<br>Ambient<br>-15°C to +15°C |  Operating<br>+40°C to +70°C<br>Ambient<br>+15°C to +30°C |  Operating<br>+50°C to +85°C<br>Ambient<br>+30°C to +50°C | Grease                              |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| DIN ISO 3448 mm²/s                                                                  | 10                                                                                                                                         | 22                                                                                                                                         | 46                                                                                                                                         | 100                                                                                                                                          |                                     |
|    | SUMOROL<br>CM10                                                                                                                            | SUMOROL<br>CM22                                                                                                                            | SUMOROL CM 46<br>MOTANOL HE 46                                                                                                             | DEGOL CL 100 T<br>MOTANOL HE 100                                                                                                             | ARALUB<br>HL2                       |
|    | ENERGOL<br>CS10                                                                                                                            | ENERGOL<br>CS22                                                                                                                            | ENERGOL CS 46<br>ENERGOL RC-R 46                                                                                                           | ENERGOL CS 100<br>ENERGOL RC 100                                                                                                             | ENERGREASE<br>LS2                   |
|    | –                                                                                                                                          | –                                                                                                                                          | AIRCOL<br>PD 46                                                                                                                            | AIRCOL<br>PD 100                                                                                                                             | SPHEEROL<br>MP 2                    |
|   | SPINESSO<br>10                                                                                                                             | SPINESSO<br>22                                                                                                                             | TERESSTIC<br>T46                                                                                                                           | NUTO<br>100                                                                                                                                  | UNIREX<br>N2                        |
|  | RENOLIN<br>MR3                                                                                                                             | RENOLIN<br>DTA22                                                                                                                           | RENOLIN<br>DTA46                                                                                                                           | RENOLIN<br>MR30                                                                                                                              | RENOLIT<br>LZR2                     |
|  | ISOFLEX<br>PDP 38                                                                                                                          | ISOFLEX<br>PDP 48                                                                                                                          | LAMORA<br>HLP 46                                                                                                                           | LAMORA<br>100                                                                                                                                | POLYLUB WH2<br>Klübersynth BM 44–42 |
|  | VELOCITE<br>No 6                                                                                                                           | VELOCITE<br>No 10                                                                                                                          | MOBIL<br>DTE 798                                                                                                                           | MOBIL DTE<br>OIL HEAVY                                                                                                                       | POLYREX<br>EM                       |
|  | MORLINA<br>S2 BL 10                                                                                                                        | MORLINA<br>S2 BL 22                                                                                                                        | MORLINA<br>S2 B 46                                                                                                                         | MORLINA<br>S2 B 100                                                                                                                          | GADUS<br>S2 V100 2                  |
|  | AZZOLA<br>ZS10                                                                                                                             | AZZOLA<br>ZS22                                                                                                                             | AZZOLA<br>ZS46                                                                                                                             | AZZOLA<br>ZS100                                                                                                                              | MULTIS 2                            |

Alternatively we strongly recommend the use of multigrade oil SAE 10W-40 at working temperature between 0°C and +80°C.

### OIL

The oil lubricated freewheels from this catalog are delivered lubricated with a VG 32 oil viscosity if they are sealed, self-contained units (except ALP..F7D7, GFRN..F5F6 and GFR..F3F4).

Other freewheels are delivered without lubricant, other than a protection against corrosion. Before putting a unit into operation, it is necessary to remove the anti corrosive fluid and to fill the unit with appropriate oil.

Generally, for a horizontally mounted unit, the correct oil level is 1/3 of the internal clutch height unless specified. (For vertically mounted units please contact us). Correct lubricants to use are given in the lubrication chart.

Oils including graphite, molybdenum and EP additives should be avoided. This chart is for guidance only. In the case of low or high overrunning speeds, or limiting temperatures, please contact our technical department.

Initially change the oil after 10 hours of operation. Afterwards change lubricant every 2000 hours and

every 1000 hours in a dirty environment. Oil level and oil condition as well as rotating seals should be checked regularly. For working temperatures below -40°C and above +100°C, please contact us. If grease lubrication is the only option for one of these types, we recommend you contact our technical department for approval.

### GREASE

A number of models have been designed specially for grease lubrication as standard (see page 10–11). In this case, the unit will always be delivered lubricated, ready for mounting either in horizontal or vertical position. The grease used is a long life type, with high thermal and chemical stability.

Unless specified, no maintenance is required. To increase the service life of units we recommend to remove, clean, inspect and re-grease them after two years of operation.

Note: Unlike all other designs, sprag types RSCI and DC version-N can work with all the current lubricants used in power transmissions.

## Combined Bearing/Freewheel

# CSK CSK..2RS



### TYPE

CSK

CSK..2RS



**T**ype CSK is a sprag type freewheel integrated into a 62 series ball bearing (except sizes 8 and 40). It is bearing supported, delivered grease lubricated and protected against dust of more than 0,3 mm. The use of additional “nylos” type seals is recommended especially when the working temperature exceeds 50°C. Oil bath lubrication is also possible.

All the CSK versions are equipped with

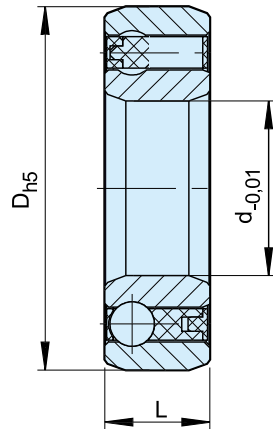
“formchromed” sprags. This process increases several times the overrunning life time. Torque transmission is ensured by a press fit assembly into a rigid steel housing with N6 tolerance, and onto a shaft with n6 tolerance. For this reason, the initial bearing radial clearance is set at C5.

Please contact us when either the ambient or the operating temperature is not within the range +5°C to +60°C. CSK..2RS is 5 mm wider but is equipped with lip seals to be water splash resistant.

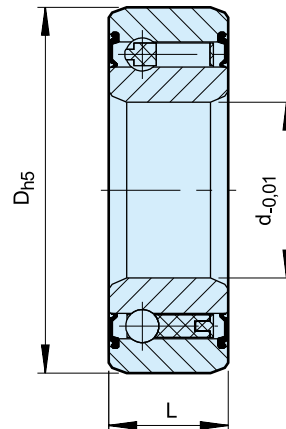
# Combined Bearing/Freewheel

**CSK, CSK..2RS**

**CSK**



**CSK..2RS**



| Type     | Size | Bearing series |                       |                                   |           |           | Bearing loads |                        | Weight | Drag torque |
|----------|------|----------------|-----------------------|-----------------------------------|-----------|-----------|---------------|------------------------|--------|-------------|
|          |      |                | $T_{KN}^{1)}$<br>[Nm] | $n_{max}$<br>[min <sup>-1</sup> ] | D<br>[mm] | L<br>[mm] | C<br>[kN]     | C <sub>0</sub><br>[kN] |        |             |
| CSK (KK) | 8*   | —              | 2,5                   | 15000                             | 22        | 9         | 3,28          | 0,86                   | 0,015  | 0,5         |
|          | 12   | 6201           | 9,3                   | 10000                             | 32        | 10        | 6,1           | 2,77                   | 0,04   | 0,7         |
|          | 15   | 6202           | 17                    | 8400                              | 35        | 11        | 7,4           | 3,42                   | 0,06   | 0,9         |
|          | 17   | 6203           | 30                    | 7350                              | 40        | 12        | 7,9           | 3,8                    | 0,070  | 1,1         |
|          | 20   | 6204           | 50                    | 6000                              | 47        | 14        | 9,4           | 4,46                   | 0,110  | 1,3         |
|          | 25   | 6205           | 85                    | 5200                              | 52        | 15        | 10,7          | 5,46                   | 0,140  | 2,0         |
|          | 30   | 6206           | 138                   | 4200                              | 62        | 16        | 11,7          | 6,45                   | 0,210  | 4,4         |
|          | 35   | 6207           | 175                   | 3600                              | 72        | 17        | 12,6          | 7,28                   | 0,300  | 5,8         |
|          | 40   | —              | 325                   | 3000                              | 80        | 22        | 15,54         | 12,25                  | 0,5    | 7,0         |
| CSK..2RS | 8**  | —              | 2,5                   | 15000                             | 22        | 9         | 3,28          | 0,86                   | 0,015  | 0,8         |
|          | 12   | —              | 9,3                   | 10000                             | 32        | 14        | 6,1           | 2,77                   | 0,05   | 3,0         |
|          | 15   | —              | 17                    | 8400                              | 35        | 16        | 7,4           | 3,42                   | 0,070  | 4,0         |
|          | 17   | —              | 30                    | 7350                              | 40        | 17        | 7,9           | 3,8                    | 0,09   | 5,6         |
|          | 20   | —              | 50                    | 6000                              | 47        | 19        | 9,4           | 4,46                   | 0,145  | 6,0         |
|          | 25   | —              | 85                    | 5200                              | 52        | 20        | 10,7          | 5,46                   | 0,175  | 6,0         |
|          | 30   | —              | 138                   | 4200                              | 62        | 21        | 11,7          | 6,45                   | 0,270  | 7,5         |
|          | 35   | —              | 175                   | 3600                              | 72        | 22        | 12,6          | 7,28                   | 0,400  | 8,2         |
|          | 40   | —              | 325                   | 3000                              | 80        | 27        | 15,54         | 12,25                  | 0,6    | 10          |

## NOTES

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

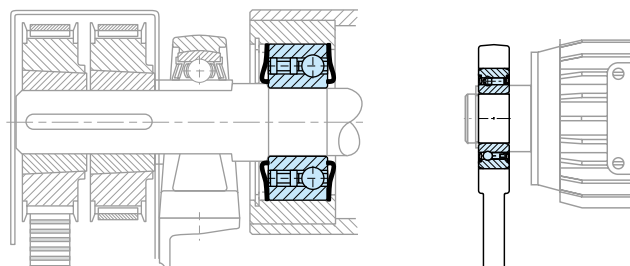
» Refer to Selection page 7 to 11

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

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

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLES



## Combined Bearing/Freewheel

# CSK..P, CSK..PP CSK..P-2RS



### TYPE

CSK..P

CSK..PP



Types CSK..P and CSK..PP are sprag type freewheels integrated into 62.. series ball bearings (except size 40). They are bearing supported, delivered grease lubricated and protected against dust of more than 0,3 mm.

The use of additional “nylos” type seals is recommended especially when the working temperature exceeds 50°C. Oil bath lubrication is also possible.

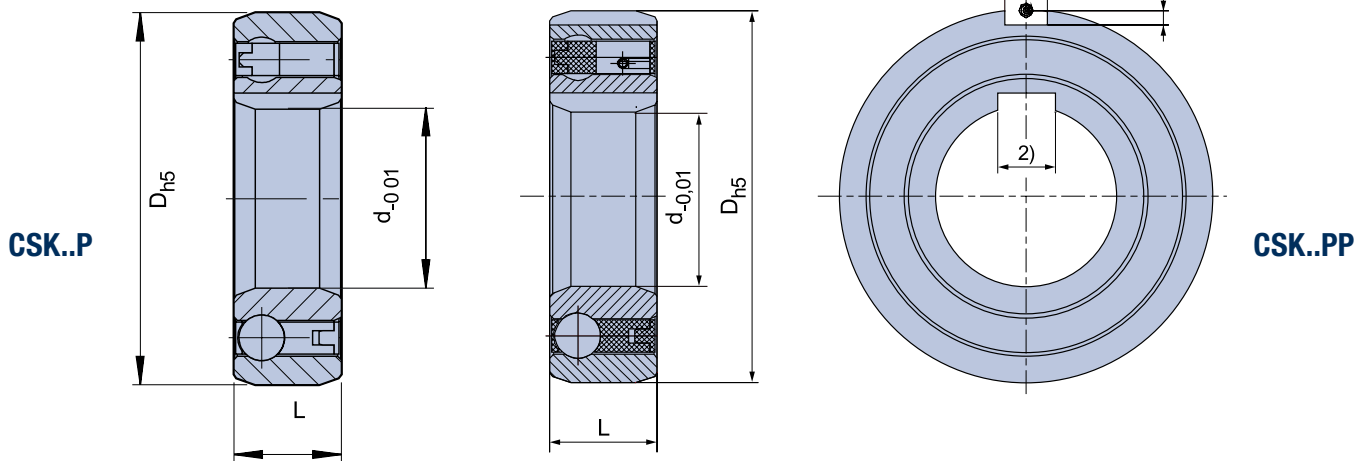
In addition to the basic CSK model, type CSK..P

features a keyway on the inner race. For this reason it can be keyed to a shaft to k6 tolerance. The outer race must still be pressed into a rigid steel housing to N6 tolerance.

CSK..PP features a keyway on both the inner and outer race. The recommended mounting tolerances are h6 on the shaft and H6 in a rigid housing. Please contact us when either the ambient or the operating temperature is not within the range +5°C to +60°C.

# Combined Bearing/Freewheel

## CSK..P, CSK..PP, CSK..P-2RS



| Type                     | Size      | Bearing series |                                       |                                          |           |           |           |           | Bearing loads |                        | Weight | Drag torque             |
|--------------------------|-----------|----------------|---------------------------------------|------------------------------------------|-----------|-----------|-----------|-----------|---------------|------------------------|--------|-------------------------|
|                          |           |                |                                       |                                          |           |           |           |           | dynamic       | static                 |        |                         |
|                          | d<br>[mm] |                | T <sub>KN</sub> <sup>1)</sup><br>[Nm] | n <sub>max</sub><br>[min <sup>-1</sup> ] | D<br>[mm] | L<br>[mm] | b<br>[mm] | t<br>[mm] | C<br>[kN]     | C <sub>0</sub><br>[kN] | [kg]   | T <sub>R</sub><br>[Ncm] |
| CSK..P <sup>2)</sup>     | 12        | 6201           | 9,3                                   | 10000                                    | 32        | 10        |           |           | 6,1           | 2,77                   | 0,04   | 0,7                     |
|                          | 15        | 6202           | 17                                    | 8400                                     | 35        | 11        |           |           | 7,4           | 3,42                   | 0,06   | 0,9                     |
|                          | 17        | 6203           | 30                                    | 7350                                     | 40        | 12        |           |           | 7,9           | 3,8                    | 0,070  | 1,1                     |
|                          | 20        | 6204           | 50                                    | 6000                                     | 47        | 14        |           |           | 9,4           | 4,46                   | 0,110  | 1,3                     |
|                          | 25        | 6205           | 85                                    | 5200                                     | 52        | 15        |           |           | 10,7          | 5,46                   | 0,140  | 2,0                     |
|                          | 30        | 6206           | 138                                   | 4200                                     | 62        | 16        |           |           | 11,7          | 6,45                   | 0,210  | 4,4                     |
|                          | 35        | 6207           | 175                                   | 3600                                     | 72        | 17        |           |           | 12,6          | 7,28                   | 0,300  | 5,8                     |
|                          | 40        | –              | 325                                   | 3000                                     | 80        | 22        |           |           | 15,54         | 12,25                  | 0,5    | 7,0                     |
| CSK..PP <sup>2)</sup>    | 15        | 6202           | 17                                    | 8400                                     | 35        | 11        | 2         | 0,6       | 7,4           | 3,42                   | 0,06   | 0,9                     |
|                          | 17        | 6203           | 30                                    | 7350                                     | 40        | 12        | 2         | 1,0       | 7,9           | 3,8                    | 0,070  | 1,1                     |
|                          | 20        | 6204           | 50                                    | 6000                                     | 47        | 14        | 3         | 1,5       | 9,4           | 4,46                   | 0,110  | 1,3                     |
|                          | 25        | 6205           | 85                                    | 5200                                     | 52        | 15        | 6         | 2,0       | 10,7          | 5,46                   | 0,140  | 2,0                     |
|                          | 30        | 6206           | 138                                   | 4200                                     | 62        | 16        | 6         | 2,0       | 11,7          | 6,45                   | 0,210  | 4,4                     |
|                          | 35        | 6207           | 175                                   | 3600                                     | 72        | 17        | 8         | 2,5       | 12,6          | 7,28                   | 0,300  | 5,8                     |
|                          | 40        | –              | 325                                   | 3000                                     | 80        | 22        | 10        | 3,0       | 15,54         | 12,25                  | 0,5    | 7,0                     |
|                          | –         | –              | –                                     | –                                        | –         | –         | –         | –         | –             | –                      | –      | –                       |
| CSK..P-2RS <sup>2)</sup> | 12        | –              | 9,3                                   | 10000                                    | 32        | 14        |           |           | 6,1           | 2,77                   | 0,05   | 3                       |
|                          | 15        | –              | 17                                    | 8400                                     | 35        | 16        |           |           | 7,4           | 3,42                   | 0,07   | 4                       |
|                          | 17        | –              | 30                                    | 7350                                     | 40        | 17        |           |           | 7,9           | 3,8                    | 0,09   | 5,6                     |
|                          | 20        | –              | 50                                    | 6000                                     | 47        | 19        |           |           | 9,4           | 4,46                   | 0,145  | 6,0                     |
|                          | 25        | –              | 85                                    | 5200                                     | 52        | 20        |           |           | 10,7          | 5,46                   | 0,175  | 6,0                     |
|                          | 30        | –              | 138                                   | 4200                                     | 62        | 21        |           |           | 11,7          | 6,45                   | 0,270  | 7,5                     |
|                          | 35        | –              | 175                                   | 3600                                     | 72        | 22        |           |           | 12,6          | 7,28                   | 0,4    | 8,2                     |
|                          | 40        | –              | 325                                   | 3000                                     | 80        | 27        |           |           | 15,54         | 12,25                  | 0,6    | 10                      |

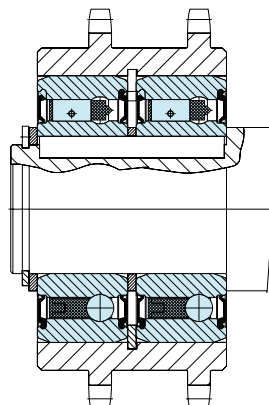
### NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Keyway to DIN 6885.3  
Size 40 keyway to DIN 6885.1

» Refer to mounting and maintenance instructions  
page 12 to 13

### MOUNTING EXAMPLE





## TYPE

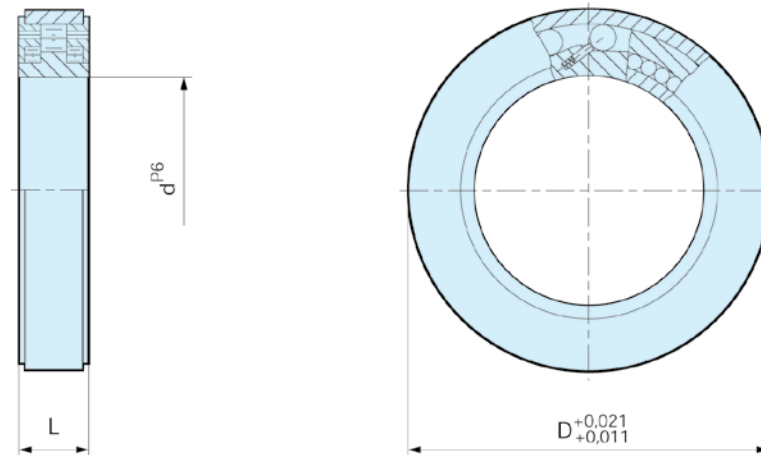


Type ASK is a roller type freewheel bearing supported by two rows of roller bearings. It is a self-contained dust protected unit, delivered grease lubricated.

Nominal outside dimensions are the same as a 60.. series bearing. Torque transmission must be ensured by a press fit on both the inner and outer race. Because of this press fit, the standard radial clearance is C4. The interference tolerances are on the freewheel dimensions,

allowing a direct mounting in a standard series 60.. bearing location: Shaft tolerance should be h6 or j6 The outer race should be pressed into a rigid housing to K6 tolerance.

Radial bearing load capacities are given in the table. Type ASK freewheels can not accept axial loading. In cases of such loads, thrust bearings must be provided.

**ASK**


| Type       | Size                    | Bearing series |                       |                                   |           |           | Bearing loads |                        | Weight | Drag torque |
|------------|-------------------------|----------------|-----------------------|-----------------------------------|-----------|-----------|---------------|------------------------|--------|-------------|
|            |                         |                | $T_{KN}^{1)}$<br>[Nm] | $n_{max}$<br>[min <sup>-1</sup> ] | D<br>[mm] | L<br>[mm] | C<br>[kN]     | C <sub>0</sub><br>[kN] |        |             |
| <b>ASK</b> | d <sup>P6</sup><br>[mm] |                |                       |                                   |           |           |               |                        |        |             |
|            | 40                      | 6008           | 72                    | 3500                              | 68        | 15        | 16            | 20,6                   | 0,25   | 15          |
|            | 50                      | 6010           | 125                   | 2200                              | 80        | 16        | 19,6          | 23,5                   | 0,34   | 20          |
|            | 60                      | 6012           | 250                   | 1800                              | 95        | 18        | 25,3          | 35,1                   | 0,5    | 25          |

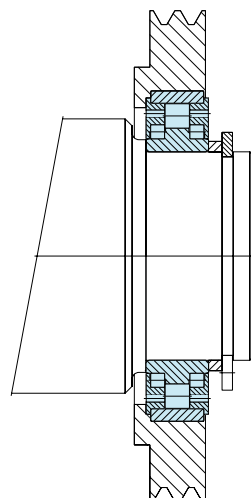
## NOTES

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

» Refer to Selection page 7 to 11

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



# AS



## TYPE

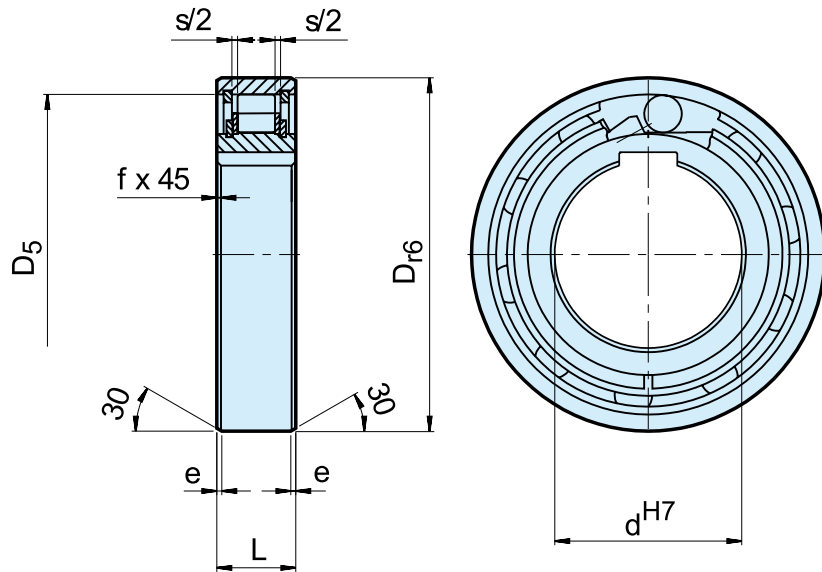


Type AS is a roller type freewheel non-bearing supported. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation. Nominal outside dimensions are the same as series 62.. ball bearings.

A typical arrangement is to install this type alongside a series 62 bearing within the same location tolerances, as shown on the following page.

The inner race is keyed to the shaft (except 6 mm bore). The outer race has a positive R6 tolerance to give a press fit in a H7 housing. The outer housing must be strong enough to not expand after assembly. This design can accept an axial misalignment of inner and outer race of  $\pm S/2$ .

AS



| Type     | Size             |                       | Overrunning speeds                      |                                         |                  |               |             |             |             |             | Weight | Drag torque    |
|----------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|-------------|-------------|-------------|-------------|--------|----------------|
|          | $d^{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{r6}$<br>[mm] | $D_5$<br>[mm] | $L$<br>[mm] | $s$<br>[mm] | $e$<br>[mm] | $f$<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
| AS (NSS) | 6                | 2,10                  | 5000                                    | 7500                                    | 19               | 15,8          | 6           | 0,3         | 0,6         | 0,3         | 0,01   | 0,18           |
|          | 8                | 3,8                   | 4300                                    | 6500                                    | 24               | 20            | 8           | 1,3         | 0,6         | 0,6         | 0,02   | 0,24           |
|          | 10               | 6,8                   | 3500                                    | 5200                                    | 30               | 25,9          | 9           | 1,3         | 0,6         | 0,6         | 0,03   | 0,36           |
|          | 12               | 13                    | 3200                                    | 4800                                    | 32               | 28            | 10          | 1,3         | 0,6         | 0,6         | 0,04   | 0,48           |
|          | 15               | 14                    | 2800                                    | 4300                                    | 35               | 31            | 11          | 1,4         | 0,6         | 0,6         | 0,05   | 0,70           |
|          | 20               | 40                    | 2200                                    | 3300                                    | 47               | 40            | 14          | 2,4         | 0,8         | 0,8         | 0,12   | 1,4            |
|          | 25               | 56                    | 1900                                    | 2900                                    | 52               | 45,9          | 15          | 2,4         | 0,8         | 0,8         | 0,14   | 2,4            |
|          | 30               | 90                    | 1600                                    | 2400                                    | 62               | 55            | 16          | 2,4         | 0,8         | 1           | 0,22   | 7,8            |
|          | 35               | 143                   | 1300                                    | 2000                                    | 72               | 64            | 17          | 2,5         | 0,8         | 1           | 0,31   | 9,0            |
|          | 40               | 185                   | 1200                                    | 1800                                    | 80               | 72            | 18          | 2,5         | 0,8         | 1           | 0,39   | 10             |
|          | 45               | 218                   | 1000                                    | 1600                                    | 85               | 77            | 19          | 2,5         | 1,2         | 1           | 0,44   | 11             |
|          | 50               | 230                   | 950                                     | 1500                                    | 90               | 82            | 20          | 2,5         | 1,2         | 1           | 0,49   | 13             |
|          | 55               | 308                   | 800                                     | 1300                                    | 100              | 90            | 21          | 2,5         | 1,2         | 1           | 0,66   | 14             |
|          | 60               | 508                   | 700                                     | 1100                                    | 110              | 100           | 22          | 2,5         | 1,2         | 1,5         | 0,81   | 26             |
|          | 80               | 1063                  | 600                                     | 900                                     | 140              | 128           | 26          | 2,5         | 1,2         | 1,5         | 1,41   | 58             |

### NOTES

AS6 without keyway.  $\varnothing D = -0_{-0,009}^0$   
 AS8-12 keyway to DIN 6885.1,  
 other sizes to DIN 6885.3

1)  $T_{max} = 2 \times T_{KN}$   
 » Refer to Selection page 7 to 11

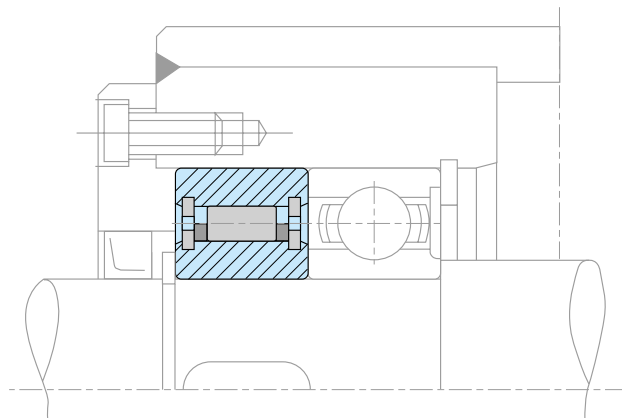
2) Inner race overruns

3) Outer race overruns

Mounting dimensions are identical to ball bearings  
 series 62.

» Refer to mounting and maintenance instructions  
 page 12 to 13

### MOUNTING EXAMPLE



# ASNU



## TYPE



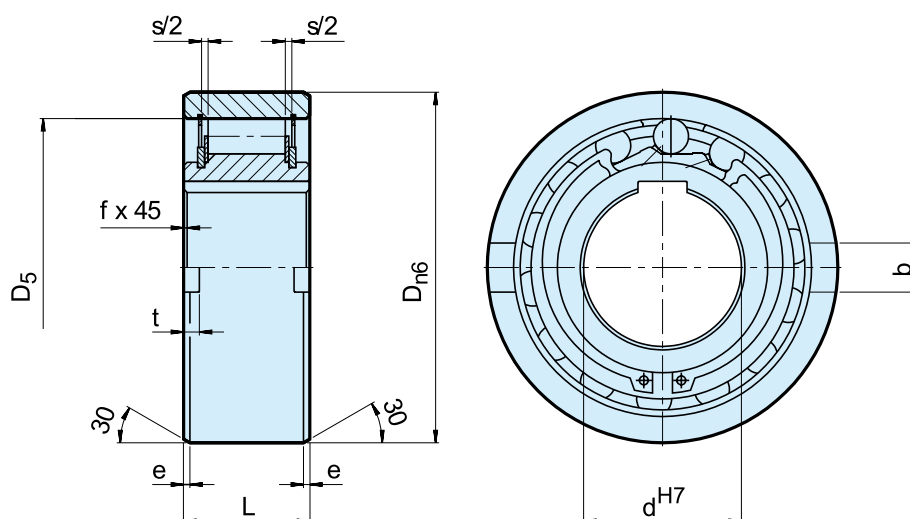
Type ASNU is a roller type freewheel non-bearing supported. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation. Nominal outer diameter is the same as a series 63.. ball bearing.

A typical arrangement is to install this type alongside a bearing within the same location tolerances, as shown on the following page. The inner race is keyed to the

shaft. The outer race has positive n6 tolerance, to give a press fit in a H7 housing. Additional side notches in the outer race provide for positive torque transmission.

If the housing is to K6 tolerance, use of the notches is not necessary, but the housing must be strong enough to not expand after assembly. This design can accept an axial misalignment of inner and outer race of  $\pm S/2$ .

ASNU



| Type | Overrunning Speeds |                       |                                         |                                         |                  |               |             |             |             |             |             |             | Weight | Drag Torque    |
|------|--------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|----------------|
|      | $d^{H7}$<br>[mm]   | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{n6}$<br>[mm] | $D_5$<br>[mm] | $L$<br>[mm] | $b$<br>[mm] | $t$<br>[mm] | $s$<br>[mm] | $e$<br>[mm] | $f$<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
| ASNU | 8                  | 12                    | 3300                                    | 5000                                    | 35               | 28            | 13          | 4           | 1,4         | 2,4         | 0,6         | 0,3         | 0,07   | 1,6            |
|      | 12                 | 12                    | 3300                                    | 5000                                    | 35               | 28            | 13          | 4           | 1,4         | 2,4         | 0,6         | 0,3         | 0,06   | 1,6            |
|      | 15                 | 30                    | 2400                                    | 3600                                    | 42               | 37            | 18          | 5           | 1,8         | 2,4         | 0,8         | 0,3         | 0,11   | 1,9            |
|      | 17                 | 49                    | 2300                                    | 3400                                    | 47               | 40            | 19          | 5           | 2,3         | 2,4         | 1,2         | 0,8         | 0,15   | 1,9            |
|      | 20                 | 78                    | 2100                                    | 3100                                    | 52               | 42            | 21          | 6           | 2,3         | 2,4         | 1,2         | 0,8         | 0,19   | 1,9            |
|      | 25                 | 125                   | 1700                                    | 2600                                    | 62               | 51            | 24          | 8           | 2,8         | 2,4         | 1,2         | 0,8         | 0,38   | 5,6            |
|      | 30                 | 255                   | 1400                                    | 2200                                    | 72               | 60            | 27          | 10          | 2,5         | 2,4         | 1,8         | 1           | 0,54   | 14             |
|      | 35                 | 383                   | 1200                                    | 1900                                    | 80               | 70            | 31          | 12          | 3,5         | 2,4         | 1,8         | 1           | 0,74   | 16             |
|      | 40                 | 538                   | 1100                                    | 1700                                    | 90               | 78            | 33          | 12          | 4,1         | 2,5         | 1,8         | 1           | 0,92   | 38             |
|      | 45                 | 780                   | 1000                                    | 1600                                    | 100              | 85            | 36          | 14          | 4,6         | 2,5         | 1,8         | 1           | 1,31   | 43             |
|      | 50                 | 1013                  | 850                                     | 1350                                    | 110              | 92            | 40          | 14          | 5,6         | 2,5         | 1,8         | 1           | 1,74   | 55             |
|      | 60                 | 1825                  | 750                                     | 1050                                    | 130              | 110           | 46          | 18          | 5,5         | 3,6         | 2,6         | 1,5         | 2,77   | 110            |
|      | 70                 | 2300                  | 600                                     | 950                                     | 150              | 125           | 51          | 20          | 6,9         | 3,6         | 2,6         | 1,5         | 4,16   | 140            |
|      | 80                 | 3275                  | 550                                     | 850                                     | 170              | 140           | 58          | 20          | 7,5         | 3,6         | 2,6         | 1,5         | 6,09   | 180            |
|      | 90                 | 5325                  | 500                                     | 750                                     | 190              | 160           | 64          | 20          | 8,0         | 3,6         | 2,6         | 2           | 8,2    | 230            |
|      | 100                | 7250                  | 450                                     | 680                                     | 215              | 175           | 73          | 24          | 8,5         | 3,6         | 2,6         | 2           | 12,6   | 380            |
|      | 120                | 13500                 | 370                                     | 550                                     | 260              | 215           | 86          | 28          | 10          | 3,6         | 2,6         | 2,5         | 22     | 650            |
|      | 150                | 26625                 | 300                                     | 460                                     | 320              | 260           | 108         | 32          | 12          | 3,6         | 3,6         | 2,5         | 42     | 1000           |
|      | 200                | 44500                 | 230                                     | 350                                     | 420              | 350           | 138         | 45          | 16          | 7,6         | 3,6         | 3           | 93     | 2000           |

### NOTES

ASNU8-12, ASNU200 keyway to DIN 6885. 1, other sizes to DIN 6885.3

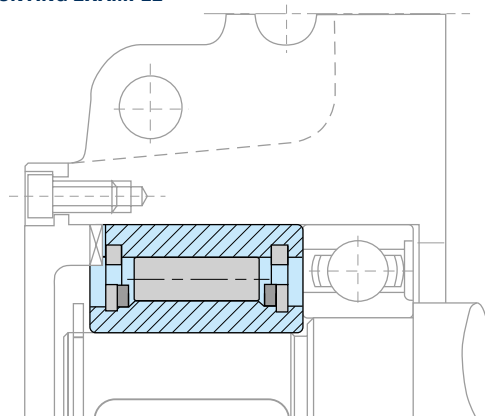
1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

3) Outer race overruns

» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE





### TYPE

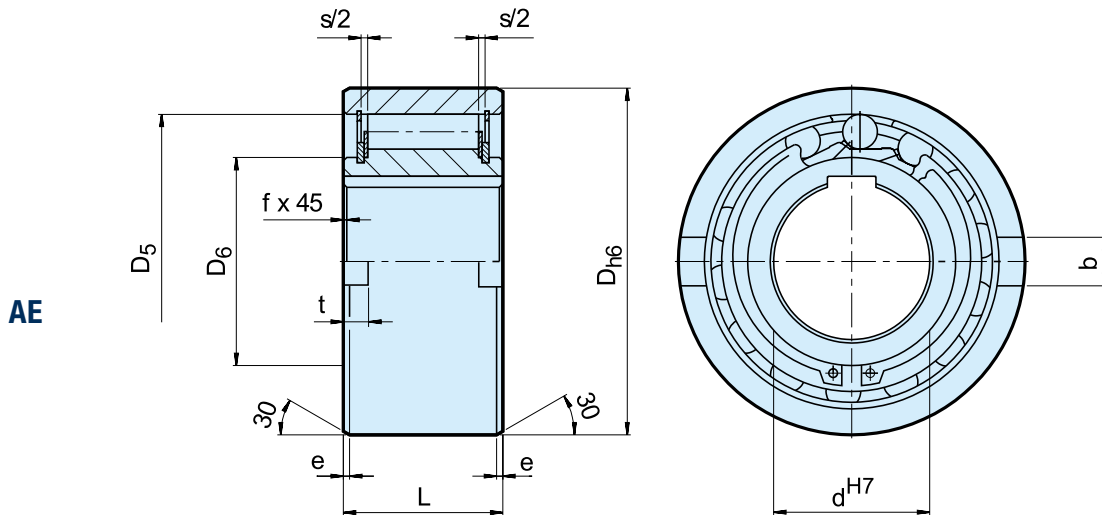


Type AE is a roller type freewheel non-bearing supported. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation. Nominal outside diameter is a standard ball bearing dimension.

A typical arrangement is to install this type beside a bearing with the same housing diameter tolerance as shown on the following page.

The inner race is keyed to the shaft. The outer race has a h6 tolerance and should be fitted in a housing with a K7 tolerance. Additional side notches provide for positive torque transmission.

If the housing tolerance is to R6, use of the notches is not necessary, but the housing must be strong enough to not expand after assembly. This design can accept an axial misalignment of inner and outer race of  $\pm S/2$ .



| Type | Size             | Overrunning speeds    |                                         |                                         |                  |               |               |             |             |             |             |             |             | Weight | Drag torque    |
|------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|----------------|
|      | $d^{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{h6}$<br>[mm] | $D_5$<br>[mm] | $D_6$<br>[mm] | $L$<br>[mm] | $s$<br>[mm] | $f$<br>[mm] | $e$<br>[mm] | $b$<br>[mm] | $t$<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
| AE   | 12               | 17                    | 3100                                    | 6000                                    | 37               | 28            | 20            | 20          | 4,5         | 0,5         | 0,8         | 6           | 3           | 0,11   | 0,7            |
|      | 15               | 55                    | 2300                                    | 5400                                    | 47               | 37            | 26            | 30          | 4,5         | 0,8         | 1,2         | 7           | 3,5         | 0,30   | 3,5            |
|      | 20               | 146                   | 2000                                    | 3600                                    | 62               | 50            | 35            | 34          | 5,5         | 0,8         | 1,2         | 8           | 3,5         | 0,55   | 8,4            |
|      | 25               | 285                   | 1700                                    | 2600                                    | 80               | 68            | 45            | 37          | 6,5         | 1           | 1,8         | 9           | 4           | 0,98   | 14             |
|      | 30               | 500                   | 1500                                    | 2100                                    | 90               | 75            | 50            | 44          | 6,2         | 1           | 1,8         | 12          | 5           | 1,50   | 23             |
|      | 35               | 720                   | 1300                                    | 1950                                    | 100              | 80            | 55            | 48          | 3,8         | 1           | 1,8         | 13          | 6           | 2,00   | 60             |
|      | 40               | 1030                  | 1200                                    | 1700                                    | 110              | 90            | 60            | 56          | 3,8         | 1,5         | 1,8         | 15          | 7           | 2,80   | 72             |
|      | 45               | 1125                  | 1050                                    | 1600                                    | 120              | 95            | 65            | 56          | 3,8         | 1,5         | 2,6         | 16          | 7           | 3,30   | 140            |
|      | 50               | 2150                  | 950                                     | 1300                                    | 130              | 110           | 75            | 63          | 5,8         | 1,5         | 2,6         | 17          | 8           | 4,20   | 180            |
|      | 55               | 2675                  | 850                                     | 1200                                    | 140              | 115           | 82            | 67          | 3,8         | 2           | 2,6         | 18          | 9           | 5,20   | 190            |
|      | 60               | 3500                  | 800                                     | 1100                                    | 150              | 125           | 90            | 78          | 7,6         | 2           | 2,6         | 18          | 9           | 6,80   | 240            |
|      | 70               | 5813                  | 650                                     | 900                                     | 170              | 140           | 100           | 95          | 7,6         | 2,5         | 2,6         | 20          | 9           | 10,5   | 320            |

### NOTES

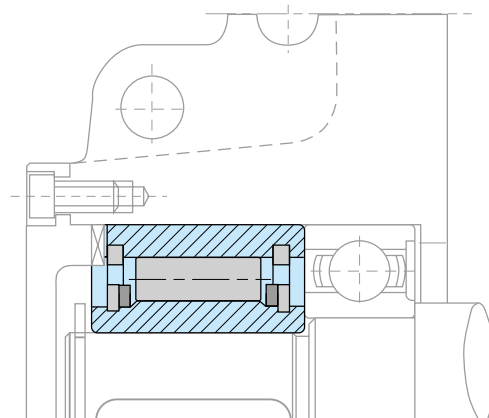
1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

3) Outer race overruns

Keyway to DIN 6885.1  
» Refer to mounting and maintenance instructions  
page 12 to 13

### MOUNTING EXAMPLE



# AA



## TYPE

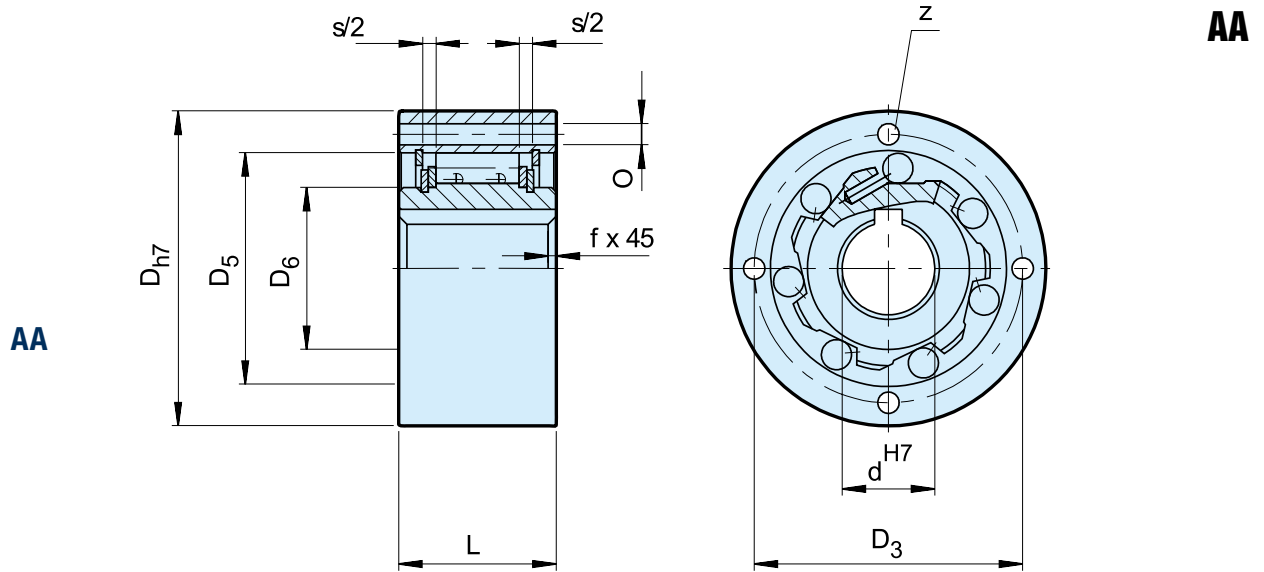


Type AA is a roller type freewheel non-bearing supported. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation.

Standard lubrication is oil. A typical installation is shown on the following page.

The inner race is keyed to the shaft. The fit for centering of the outer race must be to H7 tolerance. Connection of the outer race is via through bolts to grade 10.9 or better.

This design can accept an axial misalignment of inner and outer race of  $\pm S/2$ .



| Type | Size             | Overrunning speeds <sup>1)</sup> |                                                  |                                                  |                  |               |               |               | Number |           |           |           |           | Weight | Drag torque    |
|------|------------------|----------------------------------|--------------------------------------------------|--------------------------------------------------|------------------|---------------|---------------|---------------|--------|-----------|-----------|-----------|-----------|--------|----------------|
| AA   | $d^{H7}$<br>[mm] | $T_{KN}$ <sup>1)</sup><br>[Nm]   | $n_{imax}$ <sup>2)</sup><br>[min <sup>-1</sup> ] | $n_{amax}$ <sup>3)</sup><br>[min <sup>-1</sup> ] | $D_{h7}$<br>[mm] | $D_5$<br>[mm] | $D_6$<br>[mm] | $D_3$<br>[mm] | Z      | O<br>[mm] | L<br>[mm] | f<br>[mm] | s<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
|      | 12               | 17                               | 3100                                             | 6200                                             | 47               | 28            | 20            | 38            | 3      | 5,5       | 20        | 0,5       | 4,5       | 0,21   | 0,7            |
|      | 15               | 55                               | 2300                                             | 5600                                             | 55               | 37            | 26            | 45            | 3      | 5,5       | 30        | 0,8       | 4,5       | 0,44   | 3,5            |
|      | 20               | 146                              | 2000                                             | 4800                                             | 68               | 50            | 35            | 58            | 4      | 5,5       | 34        | 0,8       | 5,5       | 0,70   | 8,4            |
|      | 25               | 285                              | 1700                                             | 4000                                             | 90               | 68            | 45            | 78            | 6      | 5,5       | 37        | 1         | 6,5       | 1,30   | 14             |
|      | 30               | 500                              | 1500                                             | 3400                                             | 100              | 75            | 50            | 87            | 6      | 6,6       | 44        | 1         | 6,5       | 2,00   | 23             |
|      | 35               | 720                              | 1300                                             | 2800                                             | 110              | 80            | 55            | 96            | 6      | 6,6       | 48        | 1         | 6,5       | 2,60   | 60             |
|      | 40               | 1030                             | 1200                                             | 2500                                             | 125              | 90            | 60            | 108           | 6      | 9         | 56        | 1,5       | 7,6       | 3,90   | 72             |
|      | 45               | 1125                             | 1050                                             | 2200                                             | 130              | 95            | 65            | 112           | 8      | 9         | 56        | 1,5       | 7,6       | 4,00   | 140            |
|      | 50               | 2150                             | 950                                              | 2050                                             | 150              | 110           | 75            | 132           | 8      | 9         | 63        | 1,5       | 7,6       | 6,00   | 180            |
|      | 55               | 2675                             | 850                                              | 1950                                             | 160              | 115           | 82            | 138           | 8      | 11        | 67        | 2         | 7,6       | 7,20   | 190            |
|      | 60               | 3500                             | 800                                              | 1800                                             | 170              | 125           | 90            | 150           | 10     | 11        | 78        | 2         | 7,6       | 9,20   | 240            |
|      | 70               | 5813                             | 650                                              | 1700                                             | 190              | 140           | 100           | 165           | 10     | 11        | 95        | 2,5       | 7,6       | 11,8   | 320            |
|      | 80               | 6250                             | 500                                              | 1500                                             | 210              | 160           | 115           | 185           | 10     | 11        | 100       | 2,5       | 7,6       | 15,6   | 330            |
|      | 90               | 10750                            | 400                                              | 1300                                             | 230              | 180           | 130           | 206           | 10     | 14        | 115       | 3         | 7,6       | 24,7   | 650            |
|      | 100              | 15000                            | 350                                              | 1150                                             | 270              | 210           | 150           | 240           | 10     | 18        | 120       | 3         | 7,6       | 35,8   | 830            |
|      | 120              | 25000                            | 230                                              | 900                                              | 310              | 240           | 180           | 278           | 12     | 18        | 140       | 4         | 9,6       | 54,3   | 1080           |
|      | 150              | 57500                            | 160                                              | 600                                              | 400              | 310           | 230           | 360           | 12     | 22        | 180       | 4         | 9,6       | 116    | 1240           |
|      | 200              | 135000                           | 125                                              | 460                                              | 520              | 400           | 260           | 460           | 18     | 26        | 240       | 5         | 10,6      | 267    | 3800           |
|      | 250              | 225000                           | 100                                              | 380                                              | 610              | 480           | 320           | 545           | 20     | 33        | 300       | 5         | 10,6      | 461    | 6100           |

## NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

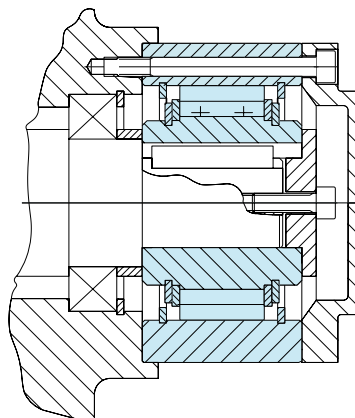
2) Inner race overruns

3) Outer race overruns

Keyway to DIN 6885.1

» Refer to mounting and maintenance instructions  
page 12 to 13

## MOUNTING EXAMPLE





### TYPE

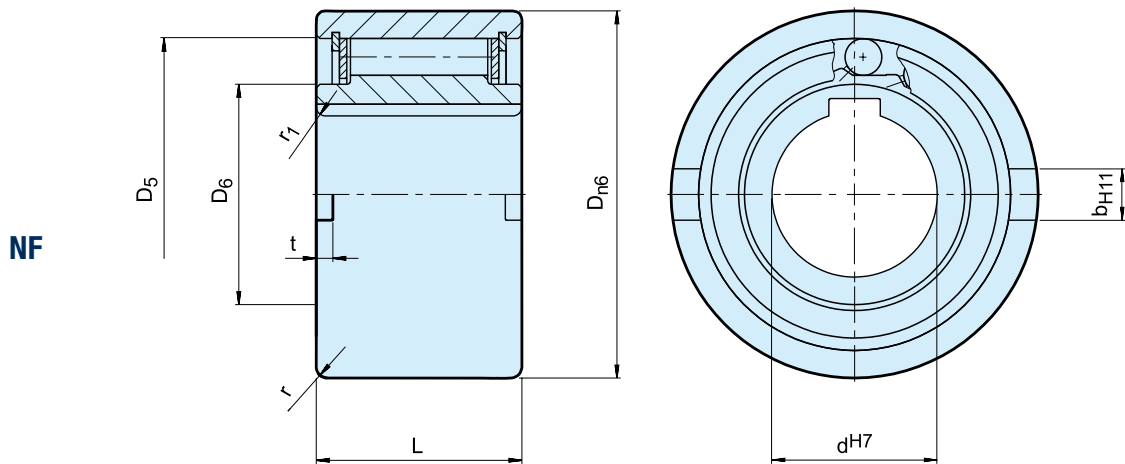


**T**ype NF is a roller type freewheel non-bearing supported. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation.

Standard lubrication is oil. Nominal outside diameter is a standard ball bearing dimension. A typical arrangement is to install this type alongside a bearing with the same housing tolerances, as shown on the

following page. The inner race is keyed to the shaft. The outer race has a positive n6 tolerance to give a press fit in a H7 housing. Additional side notches provide for positive torque transmission.

If the housing tolerance is to K6, use of the notches is not necessary, but the housing must be strong enough to not expand after assembly.



| Type | Size             | Overrunning speeds    |                                         |                                         |                  |               |               |             |             |                   |             |               | Weight |
|------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|---------------|-------------|-------------|-------------------|-------------|---------------|--------|
|      | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{n6}$<br>[mm] | $D_5$<br>[mm] | $D_6$<br>[mm] | $L$<br>[mm] | $t$<br>[mm] | $b_{H11}$<br>[mm] | $r$<br>[mm] | $r_1$<br>[mm] | [kg]   |
| NF   | 8                | 20                    | 5000                                    | 6000                                    | 37               | 30            | 20            | 20          | 3           | 6                 | 1,0         | 1,5           | 0,1    |
|      | 12               | 20                    | 5000                                    | 6000                                    | 37               | 30            | 20            | 20          | 3           | 6                 | 1,0         | 1,5           | 0,1    |
|      | 15               | 78                    | 4500                                    | 5400                                    | 47               | 37            | 26            | 30          | 3,5         | 7                 | 1,5         | 1,5           | 0,3    |
|      | 20               | 188                   | 3000                                    | 3600                                    | 62               | 52            | 37            | 36          | 3,5         | 8                 | 2,0         | 2,0           | 0,6    |
|      | 25               | 250                   | 2200                                    | 2600                                    | 80               | 68            | 49            | 40          | 4           | 9                 | 2,5         | 2,0           | 1,1    |
|      | 30               | 500                   | 1800                                    | 2100                                    | 90               | 75            | 52,5          | 48          | 5           | 12                | 2,5         | 2,0           | 1,6    |
|      | 35               | 663                   | 1600                                    | 1950                                    | 100              | 80            | 58            | 53          | 6           | 13                | 2,5         | 2,5           | 2,3    |
|      | 40               | 1100                  | 1250                                    | 1700                                    | 110              | 90            | 62            | 63          | 7           | 15                | 3,0         | 2,5           | 3,1    |
|      | 45               | 1500                  | 1100                                    | 1500                                    | 120              | 95            | 69            | 63          | 7           | 16                | 3,0         | 2,5           | 3,7    |
|      | 50               | 2375                  | 850                                     | 1300                                    | 130              | 110           | 82            | 80          | 8,5         | 17                | 3,5         | 3,0           | 5,4    |
|      | 55               | 2500                  | 800                                     | 1200                                    | 140              | 115           | 83            | 80          | 9           | 18                | 3,5         | 3,0           | 6,1    |
|      | 60               | 4250                  | 700                                     | 1100                                    | 150              | 125           | 93,5          | 95          | 9           | 18                | 3,5         | 3,5           | 8,5    |
|      | 70               | 5875                  | 620                                     | 900                                     | 170              | 140           | 106           | 110         | 9           | 20                | 3,5         | 3,5           | 13,0   |
|      | 80               | 10000                 | 550                                     | 800                                     | 190              | 160           | 122           | 125         | 9           | 20                | 4,0         | 3,5           | 18,0   |
|      | 90               | 17250                 | 480                                     | 700                                     | 215              | 180           | 133           | 140         | 11,5        | 24                | 4,0         | 4,0           | 25,3   |
|      | 100              | 19625                 | 400                                     | 600                                     | 260              | 210           | 157           | 150         | 14,5        | 28                | 4,0         | 4,0           | 42,1   |
|      | 130              | 34750                 | 300                                     | 480                                     | 300              | 240           | 188           | 180         | 17          | 32                | 5,0         | 5,0           | 65,0   |
|      | 150              | 44375                 | 250                                     | 400                                     | 320              | 260           | 205           | 180         | 17          | 32                | 5,0         | 5,0           | 95,0   |

## NOTES

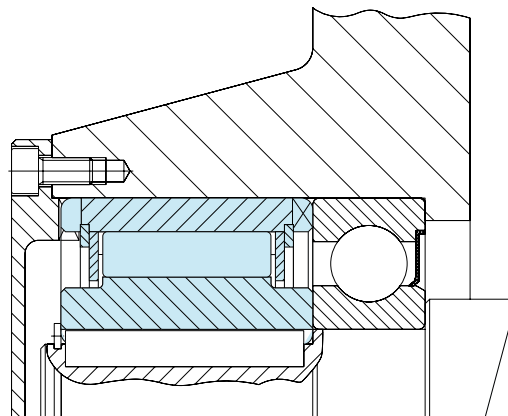
1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

3) Outer race overruns

Keyway to DIN 6885.1  
» Refer to mounting and maintenance instructions  
page 12 to 13

## MOUNTING EXAMPLE



# S200



## TYPE



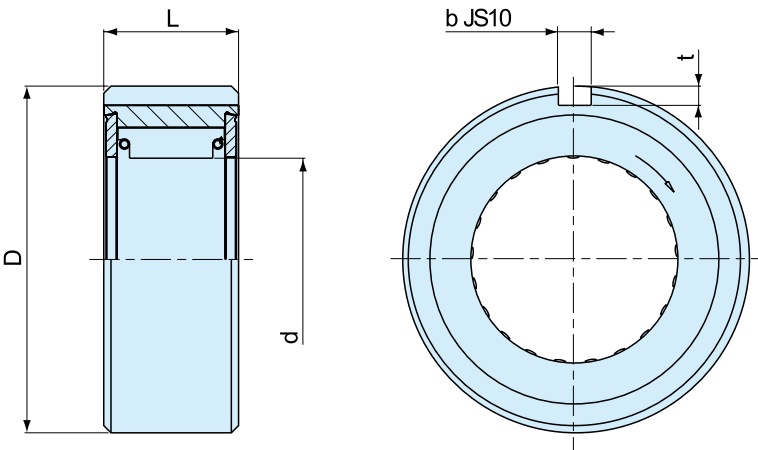
**T**ype S200 is a non bearing supported sprag type freewheel. The sprags run directly on the shaft provided by the user. Bearings are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation.

A typical arrangement is to install this type alongside a bearing as shown on the following page. The housing bore to receive the outer race will be machined with a H7 tolerance. A key will transmit the torque. The shaft on which the sprags run must have a surface hardness of

HRc 60 to 62 for a finished depth of 0,6 mm minimum. Core hardness should be HRc 35 to 45. Surface roughness must not exceed 22 CLA. Maximum shaft taper 0,01 mm per 50 mm length. Concentricity between shaft and housing bore should be maintained within TIR 0,05 mm.

The preferred lubrication is oil. The Stieber design allows the use of most of the common lubricants used in power transmission including gear oils with EP additives. When necessary grease lubrication is also possible.

S200

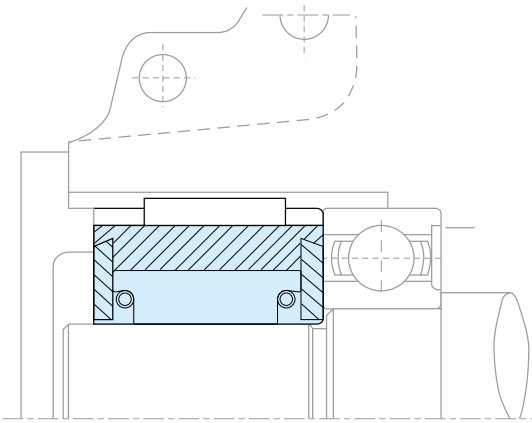


| Type | Size | $d_{+0}^{-0,025}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{max}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | D<br>[mm]                       | L<br>[mm] | b<br>[mm] | t<br>[mm] | Bearing series | Drag torque<br>$T_R$<br>[Ncm] | Weight<br>[kg] |
|------|------|---------------------------|-----------------------|----------------------------------------|-----------------------------------------|---------------------------------|-----------|-----------|-----------|----------------|-------------------------------|----------------|
| S200 | 203  | 16,510                    | 45                    | 2400                                   | 500                                     | 40 <sub>-0,014<br/>-0,039</sub> | 25        | 4         | 2,5       | 6203           | 0,01                          | 0,25           |
|      | 204  | 18,796                    | 60                    | 2400                                   | 500                                     | 47 <sub>-0,014<br/>-0,039</sub> | 25        | 5         | 3         | 6204           | 0,01                          | 0,35           |
|      | 205  | 23,622                    | 100                   | 1800                                   | 400                                     | 52 <sub>-0,017<br/>-0,042</sub> | 25        | 5         | 3         | 6205           | 0,02                          | 0,45           |
|      | 206  | 32,766                    | 240                   | 1800                                   | 350                                     | 62 <sub>-0,017<br/>-0,042</sub> | 28        | 7         | 4         | 6206           | 0,02                          | 0,70           |
|      | 207  | 42,088                    | 380                   | 1800                                   | 300                                     | 72 <sub>-0,017<br/>-0,042</sub> | 28        | 7         | 4         | 6207           | 0,02                          | 0,80           |
|      | 208  | 46,761                    | 560                   | 1800                                   | 200                                     | 80 <sub>-0,017<br/>-0,042</sub> | 32        | 10        | 4,5       | 6208           | 0,02                          | 0,90           |
|      | 209  | 46,761                    | 560                   | 1800                                   | 200                                     | 85 <sub>-0,020<br/>-0,042</sub> | 32        | 10        | 4,5       | 6209           | 0,02                          | 0,95           |
|      | 210  | 56,109                    | 850                   | 1200                                   | 200                                     | 90 <sub>-0,020<br/>-0,042</sub> | 32        | 10        | 4,5       | 6210           | 0,03                          | 1,00           |

NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- 2) Inner race overruns
- 3) Outer race overruns
- » Refer to mounting and maintenance instructions  
page 12 to 13

MOUNTING EXAMPLE





### TYPE



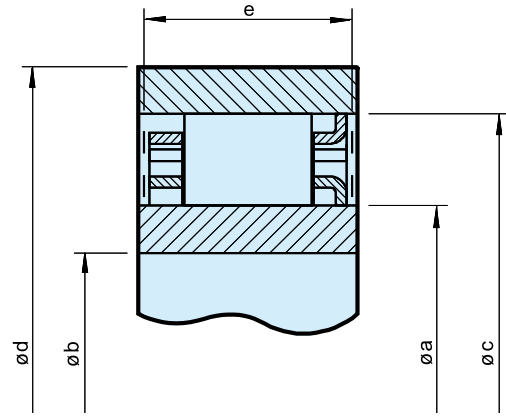
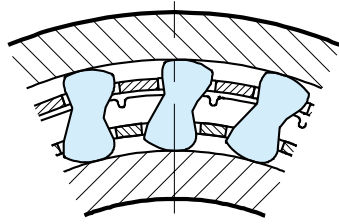
**T**ype DC is a sprag type freewheel cage without inner or outer races. It must be installed in a design providing races, bearing support for axial and radial loads, lubrication and sealing. The DC type version-N accepts all types of lubricants currently used in the power transmission equipment.

The sprag space tolerance must not be exceeded. Inner and outer races must both have a minimum plain width “e”, without any recess, to ensure the freewheel functions correctly as shown on following pages.

Alternatively, races can be made in case hardened steel shafts, or housings, to the specification below. Surface hardness of the finished part should be HRC 60 to 62, for a depth of 0,6 mm minimum.

Core hardness to be HRC35 to 45. Surface roughness not to exceed 22CLA. Maximum taper between races: 0,007 mm for 25 mm width.

DC



DC

| Size            |                                       | Overrunning speeds                                      |                                                         |                               |                    | Sprag space |                          |                           |                           | Number of clips | Number of sprags | Weight |
|-----------------|---------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------|--------------------|-------------|--------------------------|---------------------------|---------------------------|-----------------|------------------|--------|
|                 | T <sub>KN</sub> <sup>1)</sup><br>[Nm] | n <sub>imax</sub> <sup>2)</sup><br>[min <sup>-1</sup> ] | n <sub>amax</sub> <sup>3)</sup><br>[min <sup>-1</sup> ] | Øa + 0,008<br>- 0,005<br>[mm] | Øc ± 0,013<br>[mm] |             | e <sub>min</sub><br>[mm] | Ød <sub>min</sub><br>[mm] | Øb <sub>max</sub><br>[mm] |                 |                  |        |
|                 |                                       |                                                         |                                                         |                               |                    |             |                          |                           |                           |                 |                  | [kg]   |
| DC2222G-N       | 63                                    | 8600                                                    | 4300                                                    | 22,225                        | 38,885             | 8,33 ±0,075 | 10,0                     | 50                        | 15                        | —               | 12               | 0,030  |
| DC2776-N        | 119                                   | 6900                                                    | 3400                                                    | 27,762                        | 44,422             | 8,33 ±0,075 | 13,5                     | 58                        | 18                        | —               | 14               | 0,055  |
| DC3034-N        | 124                                   | 6300                                                    | 3100                                                    | 30,340                        | 47,000             | 8,33 ±0,075 | 13,5                     | 62                        | 20                        | —               | 14               | 0,060  |
| DC3175(3C)-N    | 159                                   | 6000                                                    | 3000                                                    | 31,750                        | 48,410             | 8,33 ±0,075 | 13,5                     | 63                        | 21                        | 3               | 16               | 0,060  |
| DC3809A-N       | 275                                   | 5000                                                    | 2500                                                    | 38,092                        | 54,752             | 8,33 ±0,075 | 16,0                     | 71                        | 25                        | —               | 18               | 0,085  |
| DC4127(3C)-N    | 224                                   | 4600                                                    | 2300                                                    | 41,275                        | 57,935             | 8,33 ±0,075 | 13,5                     | 75                        | 27                        | 3               | 18               | 0,090  |
| DC4445A-N       | 363                                   | 4300                                                    | 2100                                                    | 44,450                        | 61,110             | 8,33 ±0,075 | 16,0                     | 79                        | 29                        | —               | 20               | 0,095  |
| DC4972(4C)-N    | 306                                   | 3800                                                    | 1900                                                    | 49,721                        | 66,381             | 8,33 ±0,075 | 13,5                     | 86                        | 33                        | 4               | 22               | 0,100  |
| DC5476A-N       | 525                                   | 3500                                                    | 1700                                                    | 54,765                        | 71,425             | 8,33 ±0,075 | 16,0                     | 92                        | 36                        | —               | 24               | 0,110  |
| DC5476A(4C)-N   | 525                                   | 3500                                                    | 1700                                                    | 54,765                        | 71,425             | 8,33 ±0,075 | 16,0                     | 92                        | 36                        | 4               | 24               | 0,130  |
| DC5476B(4C)-N   | 769                                   | 3500                                                    | 1700                                                    | 54,765                        | 71,425             | 8,33 ±0,075 | 21,0                     | 92                        | 36                        | 4               | 24               | 0,180  |
| DC5476C(4C)-N   | 990                                   | 3500                                                    | 1700                                                    | 54,765                        | 71,425             | 8,33 ±0,075 | 25,4                     | 92                        | 36                        | 4               | 24               | 0,200  |
| DC5776A-N       | 604                                   | 3300                                                    | 1600                                                    | 57,760                        | 74,420             | 8,33 ±0,075 | 16,0                     | 98                        | 38                        | —               | 26               | 0,110  |
| DC6334B-N       | 806                                   | 3000                                                    | 1500                                                    | 63,340                        | 80,000             | 8,33 ±0,075 | 21,0                     | 104                       | 42                        | —               | 26               | 0,175  |
| DC7221(5C)-N    | 675                                   | 2600                                                    | 1300                                                    | 72,217                        | 88,877             | 8,33 ±0,075 | 13,5                     | 115                       | 48                        | 5               | 30               | 0,140  |
| DC7221B-N       | 1279                                  | 2600                                                    | 1300                                                    | 72,217                        | 88,877             | 8,33 ±0,075 | 21,0                     | 115                       | 48                        | —               | 30               | 0,185  |
| DC7221B(5C)-N   | 1279                                  | 2600                                                    | 1300                                                    | 72,217                        | 88,877             | 8,33 ±0,075 | 21,0                     | 115                       | 48                        | 5               | 30               | 0,210  |
| DC7969C(5C)-N   | 2038                                  | 2400                                                    | 1200                                                    | 79,698                        | 96,358             | 8,33 ±0,075 | 25,4                     | 124                       | 53                        | 5               | 34               | 0,280  |
| DC8334C-N       | 2055                                  | 2300                                                    | 1100                                                    | 83,340                        | 100,000            | 8,33 ±0,075 | 25,4                     | 132                       | 55                        | —               | 34               | 0,270  |
| DC8729A-N       | 1250                                  | 2200                                                    | 1100                                                    | 87,290                        | 103,960            | 8,33 ±0,075 | 16,0                     | 134                       | 58                        | —               | 34               | 0,165  |
| DC10323A(5C)*-N | 1612                                  | 1800                                                    | 900                                                     | 103,231**                     | 119,891            | 8,33 ±0,075 | 16,0                     | 155                       | 68                        | 5               | 40               | 0,205  |
| DC12334C*-N     | 4800                                  | 1500                                                    | 750                                                     | 123,340**                     | 140,000            | 8,33 ±0,075 | 25,4                     | 184                       | 80                        | —               | 50               | 0,400  |
| DC12388C(11C)   | 4875                                  | 1500                                                    | 750                                                     | 123,881**                     | 142,880            | 9,50 ±0,1   | 25,4                     | 186                       | 80                        | 11              | 44               | 0,400  |

## NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

3) Outer race overruns

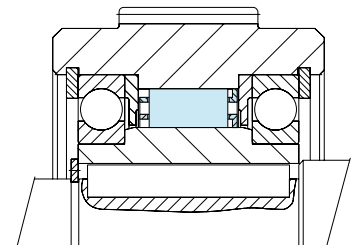
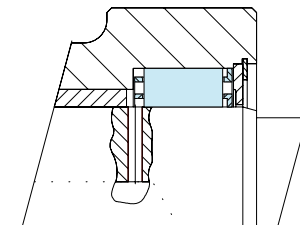
\*) The inner cage centering flange is on the opposite side

\*\*) Extension of tolerance to ± 0,013 permissible

Other dimensions on request

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLES



# DC-RACES



## TYPE

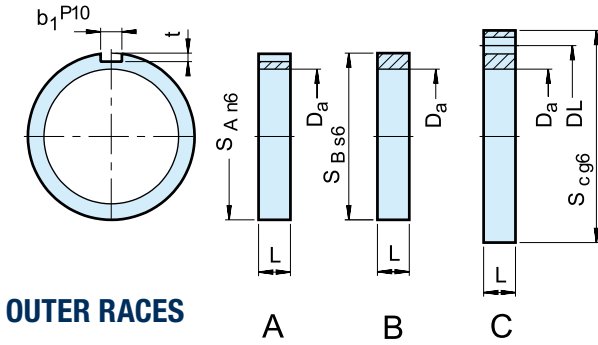


**D**C races are offered for use with the DC freewheel cages shown on the previous pages. The cage and race assembly, makes a non-bearing supported freewheel.

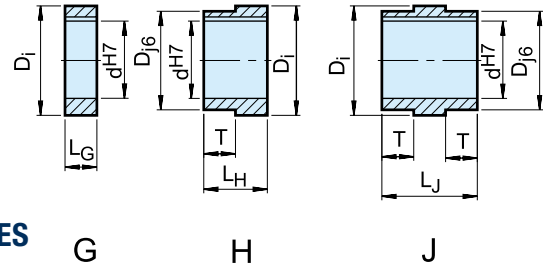
Bearing support for axial and radial loads must be provided, along with lubrication and sealing. The sprag space tolerance must not be exceeded when all bearing clearances and mounting tolerances are considered, (see table page 33).

Taper between races should be below 0,007 mm for 25 mm width. Outer races type A and B should be pressed into housings that will not deform after assembly. Please contact our technical department if you need to transmit maximum freewheel torque capacity with A and G type. Key stresses may have to be checked.

## DC-RACES



OUTER RACES



INNER RACES

1) Keyway to DIN 6885.1

| Size        |                         |                        |                        |                        |                         |           |                                         |           |                          |                    |     |                  |                          |                 | Number of<br>holes × Ø |                                | Number of<br>holes × Ø                    |
|-------------|-------------------------|------------------------|------------------------|------------------------|-------------------------|-----------|-----------------------------------------|-----------|--------------------------|--------------------|-----|------------------|--------------------------|-----------------|------------------------|--------------------------------|-------------------------------------------|
|             | d <sup>H7</sup><br>[mm] | L <sub>g</sub><br>[mm] | L <sub>H</sub><br>[mm] | L <sub>J</sub><br>[mm] | D <sub>j6</sub><br>[mm] | T<br>[mm] | D <sub>i</sub> +0,008<br>-0,005<br>[mm] | L<br>[mm] | S <sub>An6</sub><br>[mm] | b <sub>1</sub> P10 | t   | S <sub>bs6</sub> | S <sub>cg6</sub><br>[mm] | DL ±0,1<br>[mm] |                        | D <sub>a</sub> ± 0,013<br>[mm] |                                           |
| DC 230A     |                         |                        |                        |                        |                         |           |                                         | 16        | 72                       | 6                  | 3,5 |                  |                          |                 |                        | 54,752                         | DC 3809A                                  |
| DC 230B     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     | 72               |                          |                 |                        | 54,752                         |                                           |
| DC 230C     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     |                  | 95                       | 78              | 8 × 7                  | 54,752                         |                                           |
| DC 230 G-10 | 10                      | 16                     |                        |                        |                         |           | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 G-15 | 15                      | 16                     |                        |                        |                         |           | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 G-20 | 20                      | 16                     |                        |                        |                         |           | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 H-10 | 10                      |                        | 33                     |                        | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 H-15 | 15                      |                        | 33                     |                        | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 H-20 | 20                      |                        | 33                     |                        | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 J-10 | 10                      |                        |                        | 50                     | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 230 J-15 | 15                      |                        |                        | 50                     | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                | DC 5476A<br>DC 5476A (4c)                 |
| DC 230 J-20 | 20                      |                        |                        | 50                     | 35                      | 17        | 38,092                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167A     |                         |                        |                        |                        |                         |           |                                         | 16        | 90                       | 10                 | 5   |                  |                          |                 |                        | 71,425                         |                                           |
| DC 167B     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     | 90               |                          |                 |                        | 71,425                         |                                           |
| DC 167C     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     |                  | 110                      | 95              | 8 × 9                  | 71,425                         |                                           |
| DC 167G-25  | 25                      | 16                     |                        |                        |                         |           | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167G-30  | 30                      | 16                     |                        |                        |                         |           | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167G-35  | 35                      | 16                     |                        |                        |                         |           | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167H-25  | 25                      |                        | 35                     |                        | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167H-30  | 30                      |                        | 35                     |                        | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167H-35  | 35                      |                        | 35                     |                        | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167J-25  | 25                      |                        |                        | 54                     | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                | DC 7221 (5c)<br>DC 7221B<br>DC 7221B (5c) |
| DC 167J-30  | 30                      |                        |                        | 54                     | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 167J-35  | 35                      |                        |                        | 54                     | 50                      | 19        | 54,765                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168A     |                         |                        |                        |                        |                         |           |                                         | 21        | 110                      | 14                 | 5,5 |                  |                          |                 |                        | 88,877                         |                                           |
| DC 168B     |                         |                        |                        |                        |                         |           |                                         | 21        |                          |                    |     | 110              |                          |                 |                        | 88,877                         |                                           |
| DC 168C     |                         |                        |                        |                        |                         |           |                                         | 21        |                          |                    |     |                  | 140                      | 120             | 8 × 11                 | 88,877                         |                                           |
| DC 168G-40  | 40                      | 21                     |                        |                        |                         |           | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168G-45  | 45                      | 21                     |                        |                        |                         |           | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168G-50  | 50                      | 21                     |                        |                        |                         |           | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168H-40  | 40                      |                        | 42                     |                        | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168H-45  | 45                      |                        | 42                     |                        | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                | DC 10323A<br>(5c)                         |
| DC 168H-50  | 50                      |                        | 42                     |                        | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168J-40  | 40                      |                        |                        | 63                     | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168J-45  | 45                      |                        |                        | 63                     | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 168J-50  | 50                      |                        |                        | 63                     | 65                      | 21        | 72,217                                  |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235A     |                         |                        |                        |                        |                         |           |                                         | 16        | 150                      | 20                 | 7,5 |                  |                          |                 |                        | 119,891                        |                                           |
| DC 235B     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     | 150              |                          |                 |                        | 119,891                        |                                           |
| DC 235C     |                         |                        |                        |                        |                         |           |                                         | 16        |                          |                    |     |                  | 190                      | 170             | 8 × 11                 | 119,891                        |                                           |
| DC 235G-55  | 55                      | 16                     |                        |                        |                         |           | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235G-60  | 60                      | 16                     |                        |                        |                         |           | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235G-75  | 75                      | 16                     |                        |                        |                         |           | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235H-55  | 55                      |                        | 43                     |                        | 100                     | 27        | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235H-60  | 60                      |                        | 43                     |                        | 100                     | 27        | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235H-75  | 75                      |                        | 43                     |                        | 100                     | 27        | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235J-55  | 55                      |                        |                        | 70                     | 100                     | 27        | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |
| DC 235J-60  | 60                      |                        |                        | 70                     | 100                     | 27        | 103,231                                 |           |                          |                    |     |                  |                          |                 |                        |                                |                                           |

# NFR



## TYPE

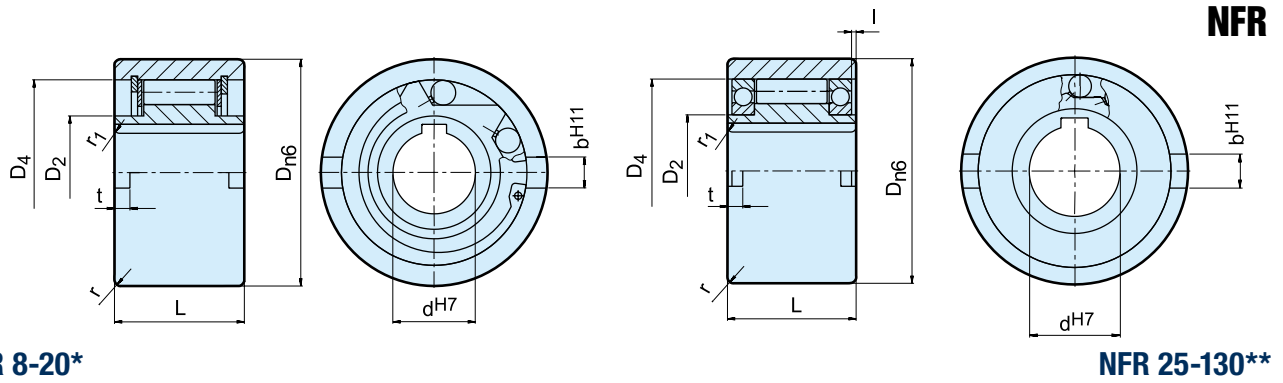


**T**ype NFR is a bearing supported roller type freewheel without any sealing. Lubrication and sealing must be provided by the installation. Standard lubrication is oil.

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

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

# Built-In Freewheels



| Type                     | Size             | Overrunning speeds    |                                         |                                         | Bearing |                  |               |               |             |             |             |                   |             |               | Weight |
|--------------------------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|---------|------------------|---------------|---------------|-------------|-------------|-------------|-------------------|-------------|---------------|--------|
|                          | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] |         | $D_{n6}$<br>[mm] | $D_2$<br>[mm] | $D_4$<br>[mm] | $L$<br>[mm] | $I$<br>[mm] | $t$<br>[mm] | $b_{H11}$<br>[mm] | $r$<br>[mm] | $r_1$<br>[mm] | [kg]   |
| <b>NFR<br/>(ANR-ANG)</b> | 8                | 20                    | 1000                                    | 1000                                    | *       | 37               | 20            | 30            | 20          |             | 3           | 6                 | 1           | 1,5           | 0,1    |
|                          | 12               | 20                    | 1000                                    | 1000                                    | *       | 37               | 20            | 30            | 20          |             | 3           | 6                 | 1           | 1,5           | 0,1    |
|                          | 15               | 78                    | 850                                     | 850                                     | *       | 47               | 26            | 37            | 30          |             | 3,5         | 7                 | 1,5         | 1,5           | 0,3    |
|                          | 20               | 188                   | 650                                     | 650                                     | *       | 62               | 37            | 52            | 36          |             | 3,5         | 8                 | 2           | 2             | 0,6    |
|                          | 25               | 250                   | 2100                                    | 3600                                    | 16008** | 80               | 40            | 68            | 40          | 0,2         | 4           | 9                 | 2,5         | 2             | 1,2    |
|                          | 30               | 500                   | 1700                                    | 3200                                    | 16009** | 90               | 45            | 75            | 48          | 0,2         | 5           | 12                | 2,5         | 2             | 1,8    |
|                          | 35               | 663                   | 1550                                    | 3000                                    | 16010** | 100              | 50            | 80            | 53          | 1,2         | 6           | 13                | 2,5         | 2,5           | 2,4    |
|                          | 40               | 1100                  | 1150                                    | 2600                                    | 16011** | 110              | 55            | 90            | 63          | 2,2         | 7           | 15                | 3           | 2,5           | 3,3    |
|                          | 45               | 1500                  | 1000                                    | 2400                                    | 16012** | 120              | 60            | 95            | 63          | 2,2         | 7           | 16                | 3           | 2,5           | 4,0    |
|                          | 50               | 2375                  | 800                                     | 2150                                    | 16014** | 130              | 70            | 110           | 80          | 2,7         | 8,5         | 17                | 3,5         | 3             | 5,7    |
|                          | 55               | 2550                  | 750                                     | 2000                                    | 16015** | 140              | 75            | 115           | 80          | 4,2         | 9           | 18                | 3,5         | 3             | 6,5    |
|                          | 60               | 4250                  | 650                                     | 1900                                    | 16016** | 150              | 80            | 125           | 95          | 3,2         | 9           | 18                | 3,5         | 3,5           | 8,9    |
|                          | 70               | 5875                  | 550                                     | 1750                                    | 16018** | 170              | 90            | 140           | 110         | 1,1         | 9           | 20                | 3,5         | 3,5           | 13,5   |
|                          | 80               | 10000                 | 500                                     | 1600                                    | 16021** | 190              | 105           | 160           | 125         | 0           | 9           | 20                | 4           | 3,5           | 19,0   |
|                          | 90               | 17250                 | 450                                     | 1450                                    | 16024** | 215              | 120           | 180           | 140         | 0,6         | 11,5        | 24                | 4           | 4             | 27,2   |
|                          | 100              | 19625                 | 350                                     | 1250                                    | 16028** | 260              | 140           | 210           | 150         | 2,6         | 14,5        | 28                | 4           | 4             | 44,5   |
|                          | 130              | 34750                 | 250                                     | 1000                                    | 16032** | 300              | 160           | 240           | 180         | 2           | 17,5        | 32                | 5           | 5             | 68,0   |

## NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

3) Outer race overruns

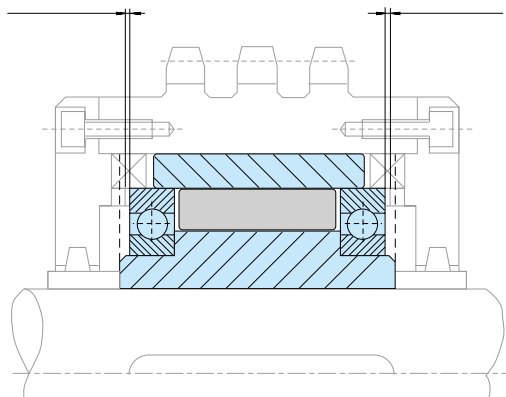
Keyway to DIN 6885.1

\*) With plain bearing steel on steel

\*\*) With 2 ball bearings series 160.

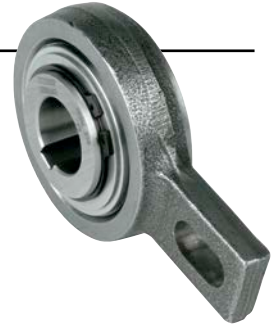
» Refer to mounting and maintenance instructions  
page 12 to 13

## MOUNTING EXAMPLE



## Self-Contained Freewheels

# RSBW



### TYPE



Type RSBW is a DC sprag type freewheel. It is self-contained, centered by plain bearings for low rotational speeds and sealed using shield protected O-Rings.

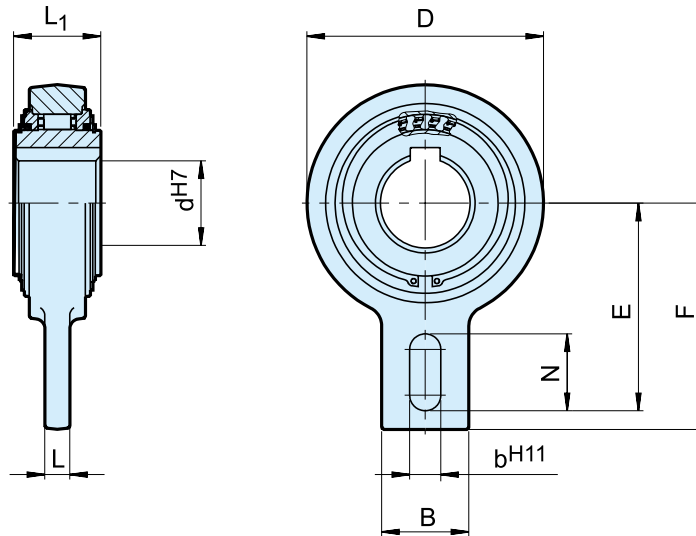
Unit is delivered grease lubricated ready for installation in either a horizontal or vertical position. Primarily used as a backstop, this type provides a high

torque capacity with a minimum space requirement. The design allows installation in difficult environments such as high humidity or water splash areas. A bolt, secured to a fixed part of the machine and passing through the slot in the torque arm, provides the rotational stop. Radial clearance on this bolt should be equal to 1–3 % of the slot width. The torque arm and the bearings must not be prestressed.

# Self-Contained Freewheels

**RSBW**

**RSBW**



| Type | Size             | Overrunning speed     |                                    |           |               |           |           |           |           |           |                   | Weight |
|------|------------------|-----------------------|------------------------------------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-------------------|--------|
|      | $d^{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}$<br>[min <sup>-1</sup> ] | D<br>[mm] | $L_1$<br>[mm] | F<br>[mm] | E<br>[mm] | B<br>[mm] | N<br>[mm] | L<br>[mm] | $b^{H11}$<br>[mm] | [kg]   |
| RSBW | 20               | 375                   | 400                                | 106       | 35            | 113       | 102,5     | 40        | 35        | 15        | 18                | 2      |
|      | 25               | 606                   | 400                                | 106       | 48            | 113       | 102,5     | 40        | 35        | 15        | 18                | 2,6    |
|      | 30               | 606                   | 400                                | 106       | 48            | 113       | 102,5     | 40        | 35        | 15        | 18                | 2,5    |
|      | 35M              | 375                   | 400                                | 106       | 35            | 113       | 102,5     | 40        | 35        | 15        | 18                | 2      |
|      | 35               | 606                   | 400                                | 106       | 48            | 113       | 102,5     | 40        | 35        | 15        | 18                | 2,4    |
|      | 40               | 1295                  | 300                                | 132       | 52            | 125       | 115       | 60        | 35        | 15        | 18                | 4,6    |
|      | 45               | 1295                  | 300                                | 132       | 52            | 125       | 115       | 60        | 35        | 15        | 18                | 4,5    |
|      | 50               | 1295                  | 300                                | 132       | 52            | 125       | 115       | 60        | 35        | 15        | 18                | 4,5    |
|      | 55               | 1295                  | 300                                | 132       | 52            | 125       | 115       | 60        | 35        | 15        | 18                | 4,4    |
|      | 60               | 2550                  | 250                                | 161       | 54            | 140       | 130       | 70        | 35        | 15        | 18                | 6,5    |
|      | 70               | 2550                  | 250                                | 161       | 54            | 140       | 130       | 70        | 35        | 15        | 18                | 6,4    |
|      | 80               | 4875                  | 200                                | 190       | 70            | 165       | 150       | 70        | 45        | 20        | 25                | 9,9    |
|      | 90               | 4875                  | 200                                | 190       | 70            | 165       | 150       | 70        | 45        | 20        | 25                | 9,8    |

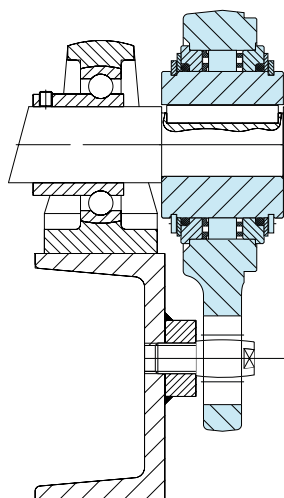
## NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
 » Refer to Selection page 7 to 11

Keyway to DIN 6885.1

» Refer to mounting and maintenance instructions  
 page 12 to 13

## MOUNTING EXAMPLE



# Self-Contained Freewheels

# AV



TYPE

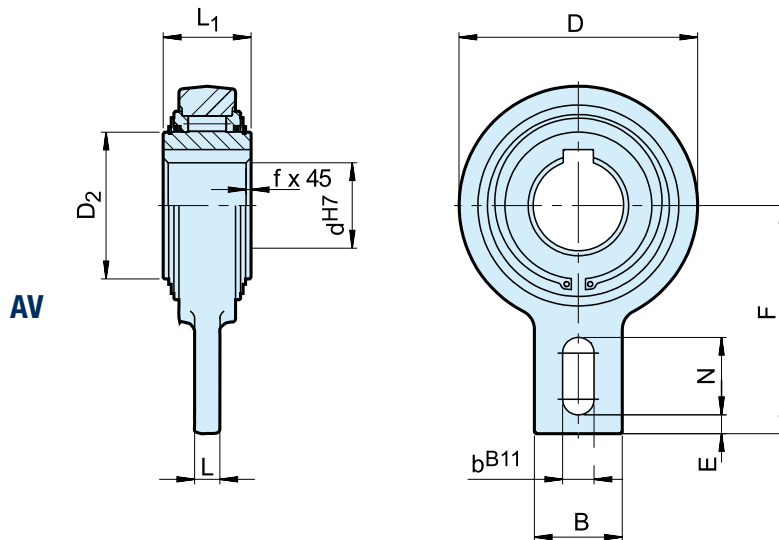


**T**ype AV is a roller type freewheel. It is self-contained, centered by plain bearings for low rotational speeds, and sealed using shield protected metallic labyrinth seals

Unit is delivered grease lubricated, ready to install in a horizontal or vertical position. Primarily used as a backstop, the torque capacity is high for a minimum space requirement. This design is suitable for use in difficult environments. A bolt, secured to a fixed part of

the machine and passing through the slot in the torque arm, provides the rotational stop. Radial clearance on this bolt should be equal to 1–3 % of the slot width.

The torque arm and the bearings must not be prestressed. The roller design makes the AV type ideal for light indexing applications.



| Type | Size             | Overrunning speed     |                                    |           |                        |                        |           |           |           |              |           |           |           | Weight | Drag torque             |
|------|------------------|-----------------------|------------------------------------|-----------|------------------------|------------------------|-----------|-----------|-----------|--------------|-----------|-----------|-----------|--------|-------------------------|
|      | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}$<br>[min <sup>-1</sup> ] | D<br>[mm] | D <sub>2</sub><br>[mm] | L <sub>1</sub><br>[mm] | L<br>[mm] | B<br>[mm] | F<br>[mm] | bB11<br>[mm] | N<br>[mm] | E<br>[mm] | f<br>[mm] | [kg]   | T <sub>R</sub><br>[Ncm] |
| AV   | 20               | 265                   | 450                                | 83        | 42                     | 35                     | 12        | 40        | 90        | 15           | 35        | 5         | 0,8       | 1,3    | 18                      |
|      | 25               | 265                   | 450                                | 83        | 42                     | 35                     | 12        | 40        | 90        | 15           | 35        | 5         | 0,8       | 1,3    | 18                      |
|      | 30               | 1200                  | 320                                | 118       | 60                     | 54                     | 15        | 40        | 110       | 15           | 35        | 8         | 1         | 3,5    | 130                     |
|      | 35               | 1200                  | 320                                | 118       | 60                     | 54                     | 15        | 40        | 110       | 15           | 35        | 8         | 1         | 3,4    | 130                     |
|      | 40               | 1200                  | 320                                | 118       | 60                     | 54                     | 15        | 40        | 110       | 15           | 35        | 8         | 1         | 3,3    | 130                     |
|      | 45               | 2150                  | 280                                | 155       | 90                     | 54                     | 20        | 80        | 140       | 18           | 47        | 10        | 1         | 5,5    | 240                     |
|      | 50               | 2150                  | 280                                | 155       | 90                     | 54                     | 20        | 80        | 140       | 18           | 47        | 10        | 1         | 5,4    | 240                     |
|      | 55               | 2150                  | 280                                | 155       | 90                     | 54                     | 20        | 80        | 140       | 18           | 47        | 10        | 1         | 5,3    | 240                     |
|      | 60               | 2150                  | 280                                | 155       | 90                     | 54                     | 20        | 80        | 140       | 18           | 47        | 10        | 1         | 5,2    | 240                     |
|      | 70               | 2150                  | 280                                | 155       | 90                     | 54                     | 20        | 80        | 140       | 18           | 47        | 10        | 1         | 5,0    | 240                     |
|      | 80               | 2900                  | 200                                | 190       | 110                    | 64                     | 20        | 80        | 155       | 20           | 40        | 10        | 1,5       | 8,7    | 360                     |
|      | 90*              | 7125                  | 150                                | 260       | 160                    | 90                     | 25        | 120       | 220       | —            | —         | —         | 3         | 24,5   | 360                     |
|      | 100*             | 7125                  | 150                                | 260       | 160                    | 90                     | 25        | 120       | 220       | —            | —         | —         | 3         | 23,5   | 360                     |
|      | 110*             | 7125                  | 150                                | 260       | 160                    | 90                     | 25        | 120       | 220       | —            | —         | —         | 3         | 22,5   | 360                     |
|      | 120*             | 11000                 | 130                                | 300       | 180                    | 110                    | 30        | 140       | 260       | —            | —         | —         | 3         | 42     | 600                     |

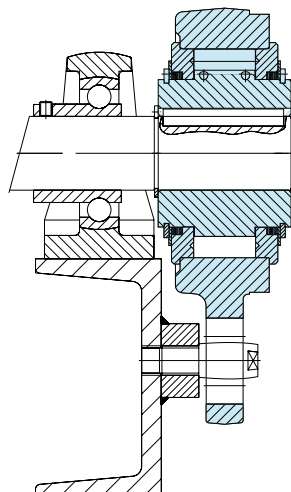
### NOTES

1)  $T_{max} = 2 \times T_{KN}$   
 » Refer to Selection page 7 to 11  
 Keyway to DIN 6885.1

\*) 2 Keyways 120° offset

» Refer to mounting and maintenance instructions  
 page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

# GFR GFRN



### TYPE



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

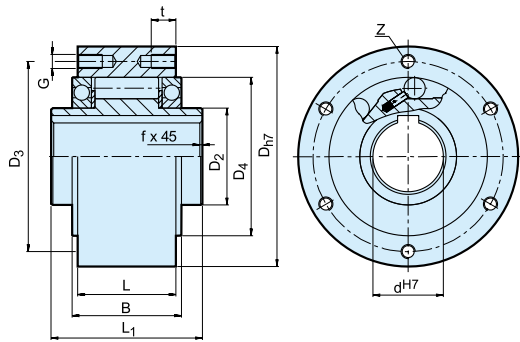
Typically, types GFR, GFRN are used with the F series covers that are designed to transmit torque, and

provide oil lubrication and sealing. Usually these covers are used in pairs according to combinations shown on the following pages. The outer race of the GFR model is plain to receive and center any component bored to H7 tolerance.

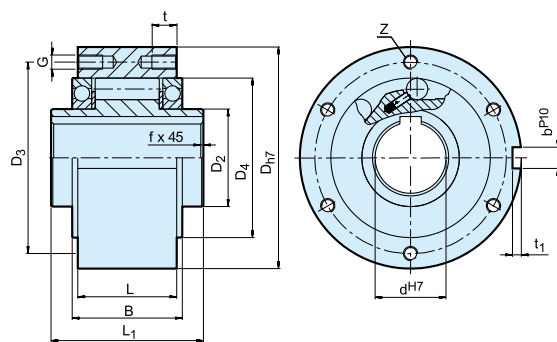
Torque is transmitted by bolts through the cover plate in this case. Types GFR, GFRN are identical except that type GFRN has a keyway on the outside diameter to transmit the torque. Two paper seals are delivered with each unit to be placed between the outer race and cover plates.

# Self-Contained Freewheels

**GFR, GFRN**



**GFR**



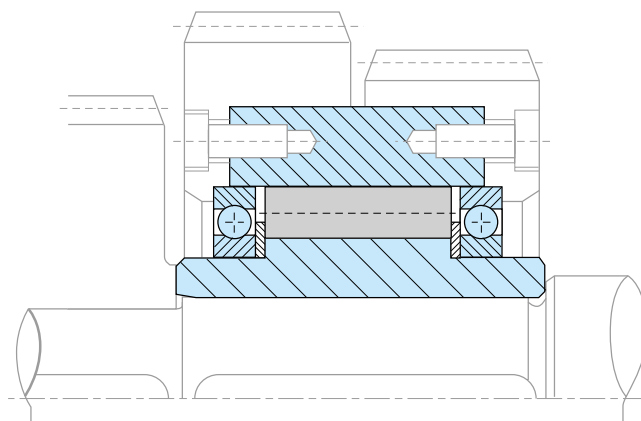
**GFRN**

| Type                | Size             | Overrunning speeds    |                                         |                                         |                  | Number        |               |               |      |           |    |               |           |           |               |                   |           | Weight |
|---------------------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|---------------|---------------|------|-----------|----|---------------|-----------|-----------|---------------|-------------------|-----------|--------|
|                     | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{H7}$<br>[mm] | $D_2$<br>[mm] | $D_4$<br>[mm] | $D_3$<br>[mm] | G    | t<br>[mm] | z  | $L_1$<br>[mm] | L<br>[mm] | B<br>[mm] | $t_1$<br>[mm] | $b^{P10}$<br>[mm] | f<br>[mm] | [kg]   |
| <b>GFR<br/>GFRN</b> | 12*              | 55                    | 4000                                    | 7200                                    | 62               | 20            | 42            | 51            | Ø5,5 | —         | 3  | 42            | 20        | 27        | 2,5           | 4                 | 0,5       | 0,5    |
|                     | 15               | 125                   | 3600                                    | 6500                                    | 68               | 25            | 47            | 56            | M5   | 8         | 3  | 52            | 28        | 32        | 3             | 5                 | 0,8       | 0,8    |
|                     | 20               | 181                   | 2700                                    | 5600                                    | 75               | 30            | 55            | 64            | M5   | 8         | 4  | 57            | 34        | 39        | 3,5           | 6                 | 0,8       | 1,0    |
|                     | 25               | 288                   | 2100                                    | 4500                                    | 90               | 40            | 68            | 78            | M6   | 10        | 4  | 60            | 35        | 40        | 4             | 8                 | 1,0       | 1,5    |
|                     | 30               | 500                   | 1700                                    | 4100                                    | 100              | 45            | 75            | 87            | M6   | 10        | 6  | 68            | 43        | 48        | 4             | 8                 | 1,0       | 2,2    |
|                     | 35               | 725                   | 1550                                    | 3800                                    | 110              | 50            | 80            | 96            | M6   | 12        | 6  | 74            | 45        | 51        | 5             | 10                | 1,0       | 3,0    |
|                     | 40               | 1025                  | 1150                                    | 3400                                    | 125              | 55            | 90            | 108           | M8   | 14        | 6  | 86            | 53        | 59        | 5             | 12                | 1,5       | 4,6    |
|                     | 45               | 1125                  | 1000                                    | 3200                                    | 130              | 60            | 95            | 112           | M8   | 14        | 8  | 86            | 53        | 59        | 5,5           | 14                | 1,5       | 4,7    |
|                     | 50               | 2125                  | 800                                     | 2800                                    | 150              | 70            | 110           | 132           | M8   | 14        | 8  | 94            | 64        | 72        | 5,5           | 14                | 1,5       | 7,2    |
|                     | 55               | 2625                  | 750                                     | 2650                                    | 160              | 75            | 115           | 138           | M10  | 16        | 8  | 104           | 66        | 72        | 6             | 16                | 2,0       | 8,6    |
|                     | 60               | 3500                  | 650                                     | 2450                                    | 170              | 80            | 125           | 150           | M10  | 16        | 10 | 114           | 78        | 89        | 7             | 18                | 2,0       | 10,5   |
|                     | 70               | 5750                  | 550                                     | 2150                                    | 190              | 90            | 140           | 165           | M10  | 16        | 10 | 134           | 95        | 108       | 7,5           | 20                | 2,5       | 13,5   |
|                     | 80               | 8500                  | 500                                     | 1900                                    | 210              | 105           | 160           | 185           | M10  | 16        | 10 | 144           | 100       | 108       | 9             | 22                | 2,5       | 18,2   |
|                     | 90               | 14500                 | 450                                     | 1700                                    | 230              | 120           | 180           | 206           | M12  | 20        | 10 | 158           | 115       | 125       | 9             | 25                | 3,0       | 28,5   |
|                     | 100              | 20000                 | 350                                     | 1450                                    | 270              | 140           | 210           | 240           | M16  | 24        | 10 | 182           | 120       | 131       | 10            | 28                | 3,0       | 42,5   |
|                     | 130              | 31250                 | 250                                     | 1250                                    | 310              | 160           | 240           | 278           | M16  | 24        | 12 | 212           | 152       | 168       | 11            | 32                | 3,0       | 65,0   |
|                     | 150              | 70000                 | 200                                     | 980                                     | 400              | 200           | 310           | 360           | M20  | 32        | 12 | 246           | 180       | 194       | 12            | 36                | 4,0       | 138,0  |

## NOTES

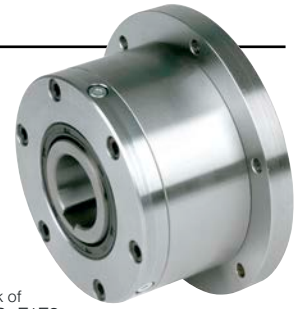
- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- 2) Inner race overruns. Values without radial lip seals
- 3) Outer race overruns. Values without radial lip seals  
Keyway to DIN 6885.1
- \*) GFR12 has through holes in outer race  
» Refer to mounting and maintenance instructions  
page 12 to 13

## MOUNTING EXAMPLE



## Self-Contained Freewheels

# GFR..F1F2, GFR..F2F7 GFRN..F5F6



Back of  
GFR..F1F2

### TYPE



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

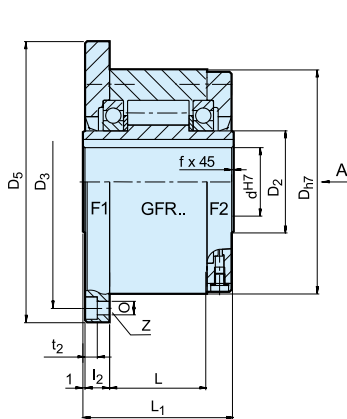
They use the GFR, GFRN base modules described on previous pages. Units must be oil lubricated before use if they are delivered disassembled. Primarily used as overrunning or indexing clutches. The cover combination is chosen according to the type of drive, as shown overleaf. F2 and F6 covers are used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

They are equipped with 3 screws for oil filling, drain and level.

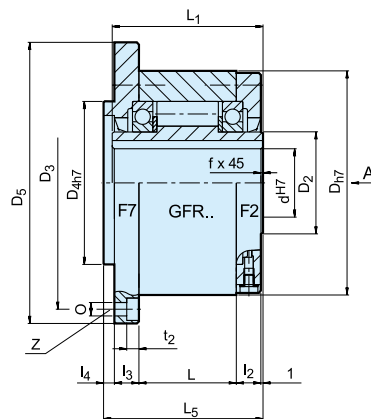
The shaft seal is a standard lip seal. Covers may be easily assembled by a qualified user, allowing direction of rotation to be selected on site. Alternatively, units can be delivered assembled and lubricated (except GFRN..F5F6).

# Self-Contained Freewheels

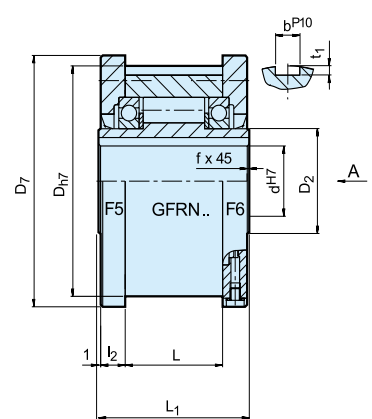
## GFR..F1F2, GFR..F2F7, GFRN..F5F6



**GFR...F1F2**



**GFR...F2F7**



**GFRN...F5F6**

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

### NOTES

1)  $T_{\max} = 2 \times T_{\text{KN}}$   
» Refer to Selection page 7 to 11

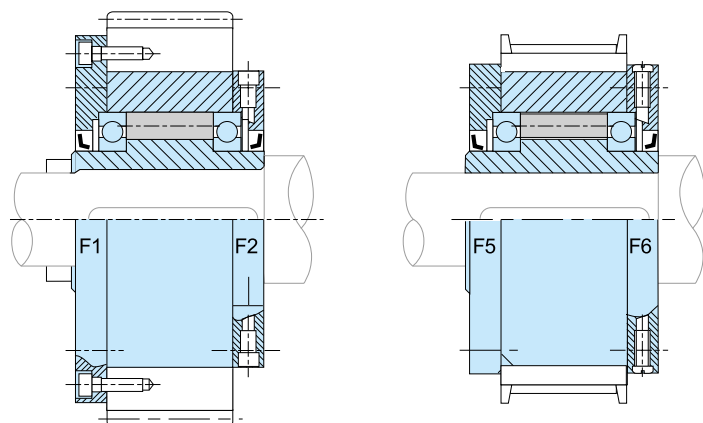
2) Inner race overruns

3) Outer race overruns  
Keyway to DIN 6885.1

When ordered assembled, please specify direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction „L“ Inner race overruns in counter-clockwise direction

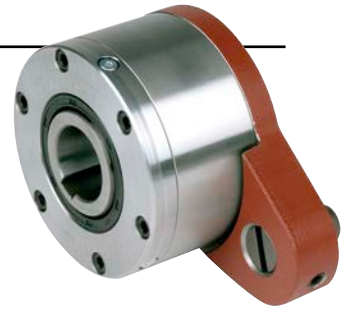
» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLES



## Self-Contained Freewheels

# GFR..F2F3 GFR..F3F4



### TYPE



GFR..F2F3

GFR..F3F4

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

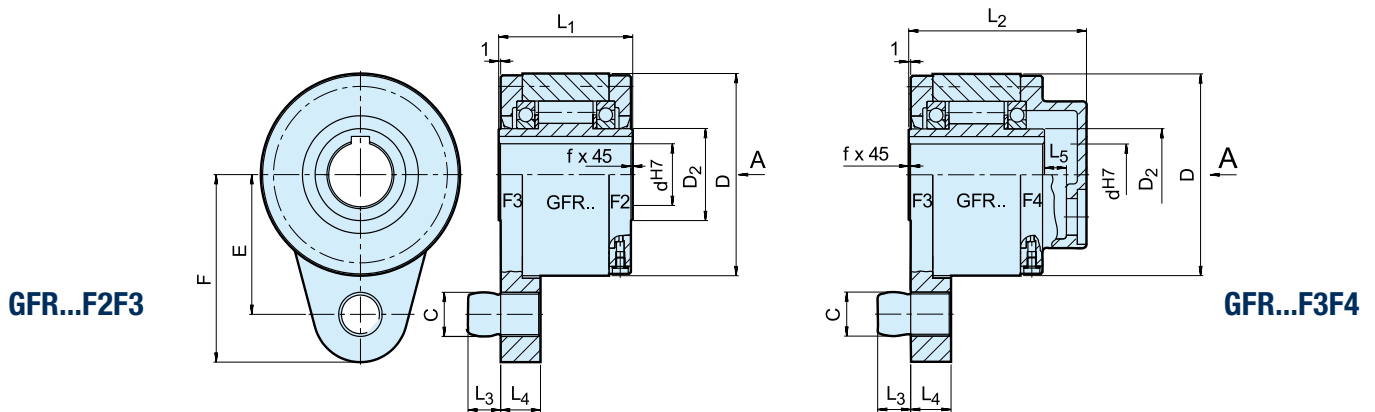
They use the GFR base module. Units must be oil lubricated before use if they are delivered disassembled and in any case for the F3F4 combination. These cover combinations are primarily used as backstops, as shown overleaf. The F3 cover acts as a torque arm and has an integrated stop bolt. The stop bolt should go into a slot in a fixed part of the machine. The stop bolt must have

a radial clearance of 1–3 % of the bolt's diameter. The torque arm and bearings must not be prestressed in any way. F2 and F4 covers are used to close the unit. They are equipped with 3 screws for oil filling, drain and level.

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

# Self-Contained Freewheels

## GFR..F2F3, GFR..F3F4



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

### NOTES

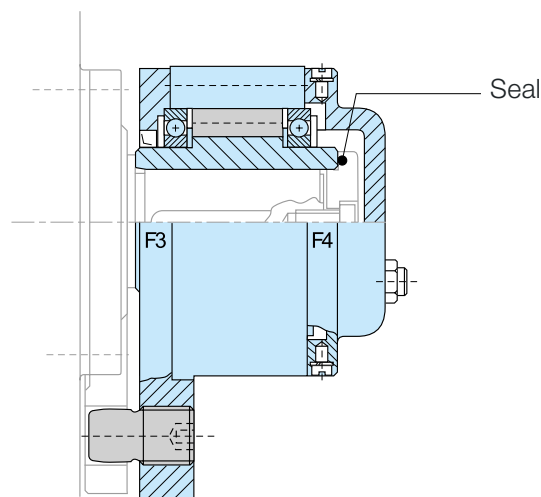
1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns  
Keyway to DIN 6885.1

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

» Refer to mounting and maintenance instructions page 12 to 13

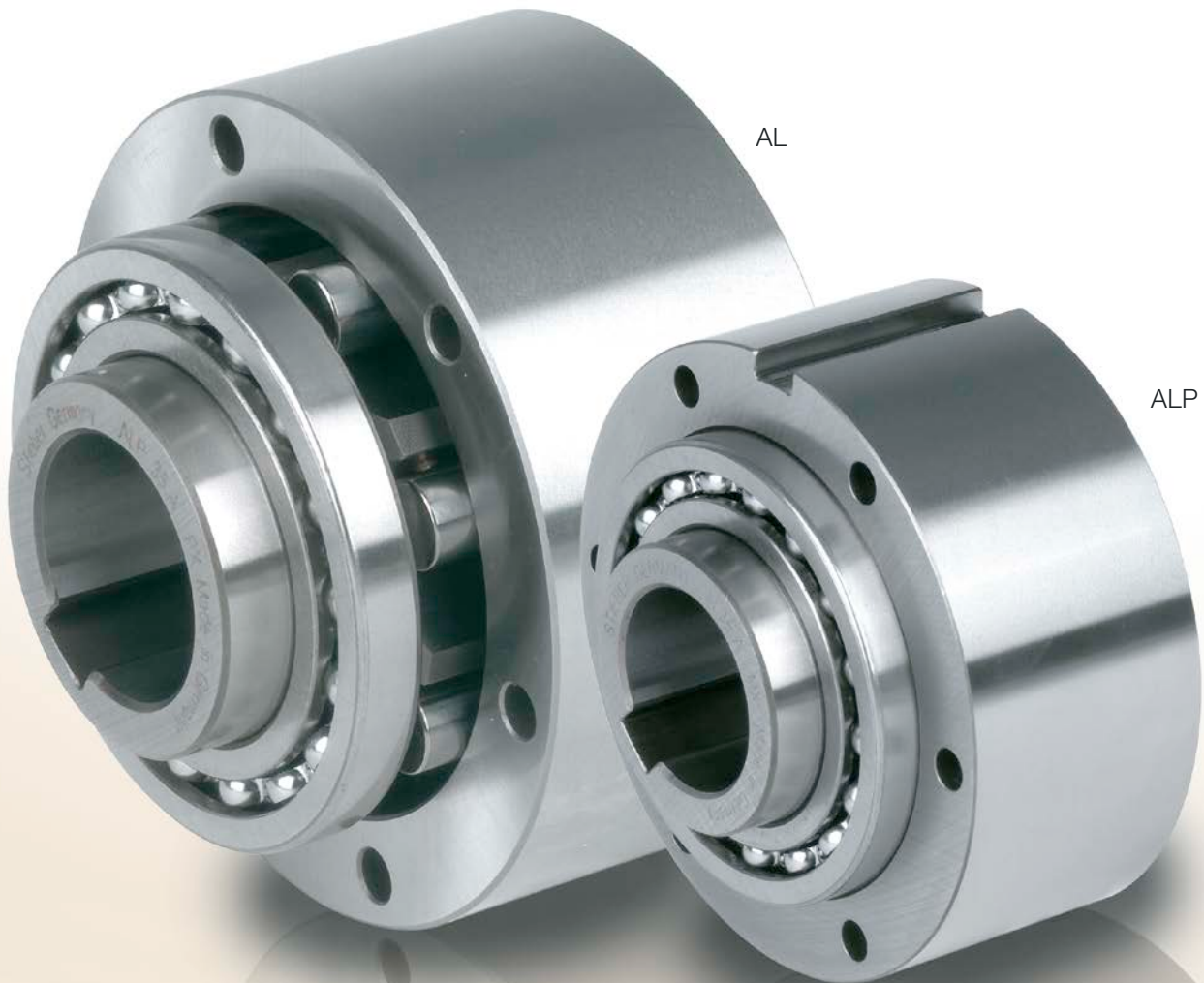
### MOUNTING EXAMPLE



# Self-Contained Freewheels

# AL ALP

TYPE



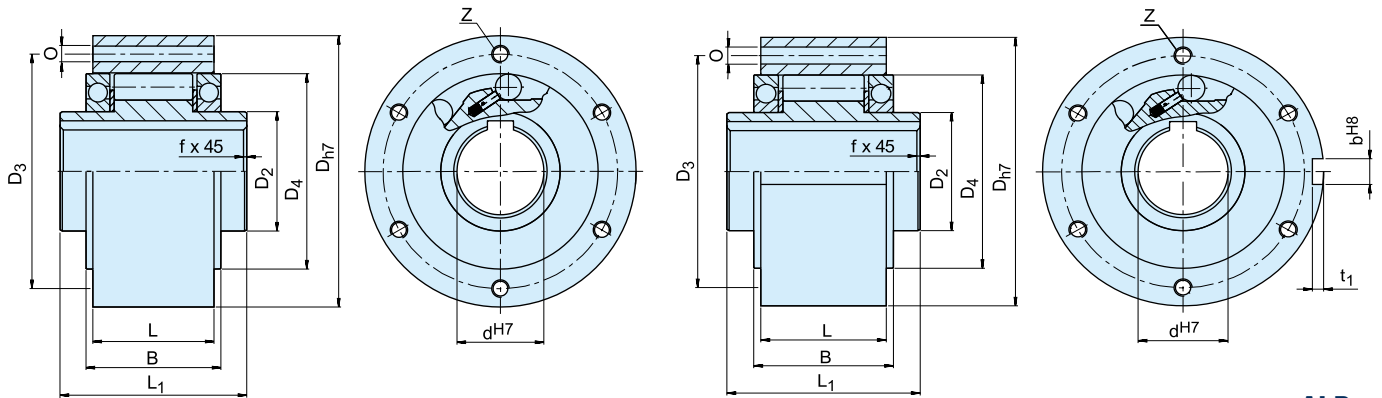
Types AL, ALP are roller type freewheels. These units are part of the Stieber modular system. They are bearing supported, using two 160.. series bearings, and require oil lubrication. These units may be used in designs providing oil lubrication and sealing as on the example overleaf.

The bearings must not be axially stressed. Typically, types AL, ALP are used with standard covers that are designed to transmit torque, and provide oil lubrication

and sealing. Usually these covers are used in pairs according to combinations shown on the following pages. The outer race of the AL model is plain to receive and center any component bored to H7 tolerance. Torque is transmitted by bolts through the cover plate in this case. Types AL, ALP are identical except that type ALP has a keyway on the outside diameter to transmit the torque. Two paper seals are delivered with each unit to be placed between the outer race and cover plates.

# Self-Contained Freewheels

## AL, ALP



AL

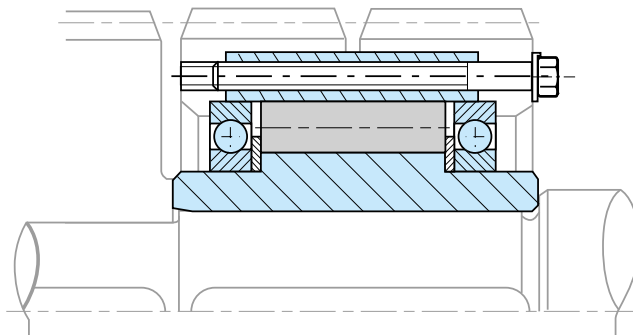
ALP

| Type      | Size     | Overrunning speeds |                      |                      |          |       |       |       |     | Number |       |          |      |       |          |       |       | Weight | Drag torque |
|-----------|----------|--------------------|----------------------|----------------------|----------|-------|-------|-------|-----|--------|-------|----------|------|-------|----------|-------|-------|--------|-------------|
| AL<br>ALP | $d^{H7}$ | $T_{KN}^{1)}$      | $n_{imax}^{2)}$      | $n_{amax}^{3)}$      | $D_{H7}$ | $D_2$ | $D_4$ | $D_3$ | 0   | z      | $L_1$ | $L^{4)}$ | B    | $t_1$ | $b^{H8}$ | f     |       | $T_R$  |             |
|           | [mm]     | [Nm]               | [min <sup>-1</sup> ] | [min <sup>-1</sup> ] | [mm]     | [mm]  | [mm]  | [mm]  |     |        | [mm]  | [mm]     | [mm] | [mm]  | [mm]     | [mm]  | [kg]  | [Ncm]  |             |
|           | 12       | 55                 | 4000                 | 7200                 | 62       | 20    | 42    | 51    | 5,5 | 3      | 42    | 20,3     | 27   | 2,4   | 4        | 0,5   | 0,5   | 3,4    |             |
|           | 15       | 125                | 3600                 | 6500                 | 68       | 25    | 47    | 56    | 5,5 | 3      | 52    | 30,3     | 34,1 | 2,9   | 5        | 0,8   | 0,8   | 4,1    |             |
|           | 20       | 181                | 2700                 | 5600                 | 75       | 30    | 55    | 64    | 5,5 | 4      | 57    | 34,3     | 39,1 | 3,5   | 6        | 0,8   | 1,0   | 8      |             |
|           | 25       | 288                | 2100                 | 4500                 | 90       | 40    | 68    | 78    | 5,5 | 6      | 60    | 37,3     | 42,1 | 4,1   | 8        | 1,0   | 1,5   | 14     |             |
|           | 30       | 500                | 1700                 | 4100                 | 100      | 45    | 75    | 87    | 6,6 | 6      | 68    | 44,3     | 49,1 | 4,1   | 8        | 1,0   | 2,2   | 23     |             |
|           | 35       | 725                | 1550                 | 3800                 | 110      | 50    | 80    | 96    | 6,6 | 6      | 74    | 48,3     | 54,1 | 4,7   | 10       | 1,0   | 3,0   | 60     |             |
|           | 40       | 1025               | 1150                 | 3400                 | 125      | 55    | 90    | 108   | 9   | 6      | 86    | 56,3     | 62,1 | 4,9   | 12       | 1,5   | 4,6   | 72     |             |
|           | 45       | 1125               | 1000                 | 3200                 | 130      | 60    | 95    | 112   | 9   | 8      | 86    | 56,3     | 62,1 | 5,5   | 14       | 1,5   | 4,7   | 140    |             |
|           | 50       | 2125               | 800                  | 2800                 | 150      | 70    | 110   | 132   | 9   | 8      | 92    | 63,3     | 69,1 | 5,5   | 14       | 1,5   | 7,2   | 180    |             |
|           | 55       | 2625               | 750                  | 2650                 | 160      | 75    | 115   | 138   | 11  | 8      | 104   | 67       | 73,1 | 6,2   | 16       | 2,0   | 8,6   | 190    |             |
|           | 60       | 3500               | 650                  | 2450                 | 170      | 80    | 125   | 150   | 11  | 10     | 114   | 78       | 84   | 6,8   | 18       | 2,0   | 10,5  | 240    |             |
|           | 70       | 5750               | 550                  | 2150                 | 190      | 90    | 140   | 165   | 11  | 10     | 134   | 95       | 103  | 7,4   | 20       | 2,5   | 13,5  | 320    |             |
|           | 80       | 8500               | 500                  | 1900                 | 210      | 105   | 160   | 185   | 11  | 10     | 144   | 100      | 108  | 8,5   | 22       | 2,5   | 18,2  | 330    |             |
|           | 90       | 14500              | 450                  | 1700                 | 230      | 120   | 180   | 206   | 14  | 10     | 158   | 115      | 125  | 8,7   | 25       | 3,0   | 28,5  | 650    |             |
|           | 100      | 20000              | 350                  | 1450                 | 270      | 140   | 210   | 240   | 18  | 10     | 182   | 120      | 131  | 9,9   | 28       | 3,0   | 42,5  | 830    |             |
|           | 120      | 31250              | 250                  | 1250                 | 310      | 160   | 240   | 278   | 18  | 12     | 202   | 140      | 152  | 11,1  | 32       | 3,0   | 65,0  | 1080   |             |
|           | 150      | 70000              | 200                  | 980                  | 400      | 200   | 310   | 360   | 22  | 12     | 246   | 180      | 196  | 12,3  | 36       | 4,0   | 138,0 | 1240   |             |
| 200       | 175000   | 150                | 750                  | 520                  | 260      | 400   | 460   | 26    | 18  | 326    | 240   | 265      | 15   | 45    | 5,0      | 315,0 | 3800  |        |             |
| 250       | 287500   | 120                | 620                  | 610                  | 320      | 480   | 545   | 33    | 20  | 396    | 300   | 330      | 15   | 45    | 5,0      | 512,0 | 6100  |        |             |
| ALM       | 25       | 388                | 2100                 | 2800                 | 90       | 40    | 68    | 78    | 5,5 | 6      | 60    | 37,3     | 42,1 | 4,1   | 8        | 1,0   | 1,7   | 22     |             |
|           | 30       | 588                | 1700                 | 2500                 | 100      | 45    | 75    | 87    | 6,6 | 6      | 68    | 44,3     | 49,1 | 4,1   | 8        | 1,0   | 2,5   | 37     |             |
|           | 35       | 838                | 1550                 | 2400                 | 110      | 50    | 80    | 96    | 6,6 | 6      | 74    | 48,3     | 54,1 | 4,7   | 10       | 1,0   | 3,2   | 66     |             |

### NOTES

- $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- Inner race overruns, values without lip seals
- Outer race overruns  
Keyway to DIN 6885.1
- The dimension L includes up to size 50 the each 0.25 mm thick paper seals to be located on both faces  
» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

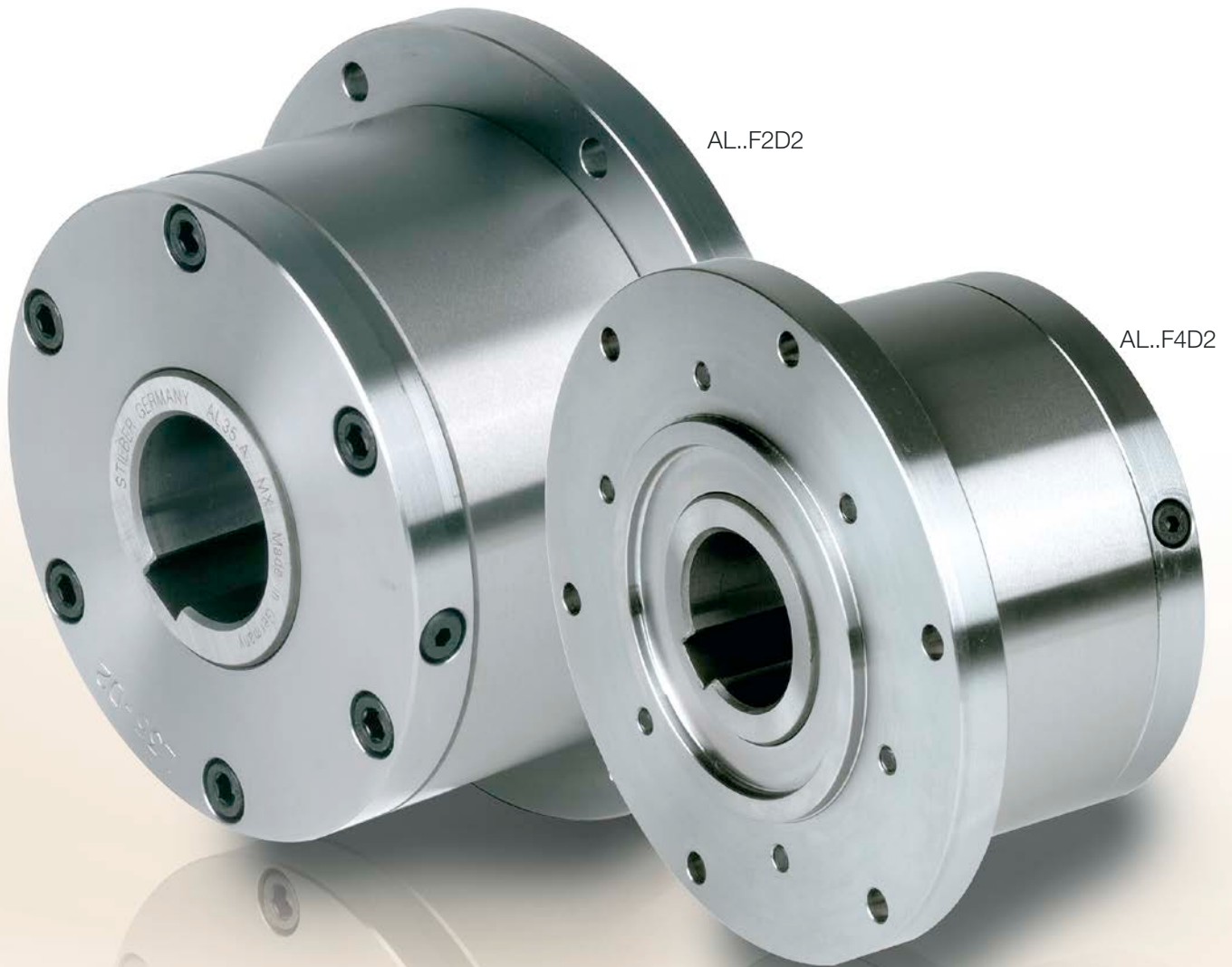
# AL..F2D2 AL..F4D2



Back of  
AL..F2D2

Back of  
AL..F4D2

TYPE



AL..F2D2

AL..F4D2

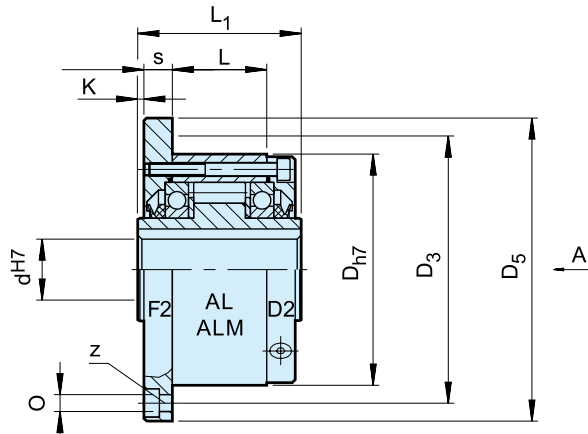
Types AL..F2D2/F4D2 are roller type freewheels, self-contained, sealed and bearing supported, using two 160.. series bearings. Units are delivered oil lubricated.

Primarily used as overrunning or indexing clutches, the cover combination is chosen according to the type of drive, as shown overleaf. D2 cover is used to close the unit.

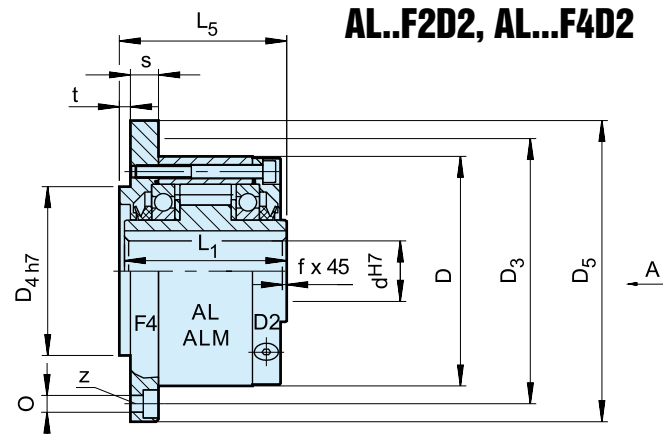
It is equipped with two screws for oil filling, drain and level. The shaft seal is a V-ring type. Cover and seal have been designed to be oil proof with minimum drag torque.

We recommend the unit is supplied assembled. Please specify inner race direction of rotation seen from the D2 flange.

# Self-Contained Freewheels



AL..F2D2



AL..F4D2

| Type                   | Size             | Overrunning speeds    |                                         |                                         |                  | Number        |               |               |    |           |                   |           |               |           |           |           | Weight | Drag torque    |
|------------------------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|---------------|---------------|----|-----------|-------------------|-----------|---------------|-----------|-----------|-----------|--------|----------------|
|                        | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{H7}$<br>[mm] | $L_1$<br>[mm] | $D_5$<br>[mm] | $D_3$<br>[mm] | z  | O<br>[mm] | $D_{4H7}$<br>[mm] | t<br>[mm] | $L_5$<br>[mm] | K<br>[mm] | s<br>[mm] | f<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
| AL..F2D2<br>AL..F4D2   | 12               | 55                    | 2500                                    | 7200                                    | 62               | 42            | 85            | 72            | 3  | 5,5       | 42                | 3         | 44            | 0,5       | 10,3      | 0,5       | 0,9    | 11             |
|                        | 15               | 125                   | 1900                                    | 6500                                    | 68               | 52            | 92            | 78            | 3  | 5,5       | 47                | 3         | 54            | 0,5       | 10,3      | 0,8       | 1,3    | 15             |
|                        | 20               | 181                   | 1600                                    | 5600                                    | 75               | 57            | 98            | 85            | 4  | 5,5       | 55                | 3         | 59            | 0,5       | 10,8      | 0,8       | 1,7    | 18             |
|                        | 25               | 288                   | 1400                                    | 4500                                    | 90               | 60            | 118           | 104           | 4  | 6,6       | 68                | 3         | 62            | 0,5       | 10,5      | 1         | 2,6    | 36             |
|                        | 30               | 500                   | 1300                                    | 4100                                    | 100              | 68            | 128           | 114           | 6  | 6,6       | 75                | 3         | 70            | 0,5       | 11,3      | 1         | 3,5    | 48             |
|                        | 35               | 725                   | 1100                                    | 3800                                    | 110              | 74            | 138           | 124           | 6  | 6,6       | 80                | 3,5       | 76            | 1         | 11,8      | 1         | 4,5    | 60             |
|                        | 40               | 1025                  | 950                                     | 3400                                    | 125              | 86            | 160           | 142           | 6  | 9         | 90                | 3,5       | 88            | 1         | 13,8      | 1,5       | 6,9    | 84             |
|                        | 45               | 1125                  | 900                                     | 3200                                    | 130              | 86            | 165           | 146           | 8  | 9         | 95                | 3,5       | 88            | 1         | 13,8      | 1,5       | 7,1    | 94             |
|                        | 50               | 2125                  | 850                                     | 2800                                    | 150              | 92            | 185           | 166           | 8  | 9         | 110               | 4         | 94            | 1         | 12,8      | 1,5       | 10,1   | 128            |
|                        | 55               | 2625                  | 720                                     | 2650                                    | 160              | 104           | 204           | 182           | 8  | 11        | 115               | 4         | 106           | 1,5       | 16,8      | 2         | 13,1   | 150            |
|                        | 60               | 3500                  | 680                                     | 2450                                    | 170              | 114           | 214           | 192           | 10 | 11        | 125               | 4         | 116           | 1,5       | 16,3      | 2         | 15,6   | 160            |
|                        | 70               | 5750                  | 580                                     | 2150                                    | 190              | 134           | 234           | 212           | 10 | 11        | 140               | 4         | 136           | 1,5       | 17,8      | 2,5       | 20,4   | 360            |
|                        | 80               | 8500                  | 480                                     | 1900                                    | 210              | 144           | 254           | 232           | 10 | 11        | 160               | 4         | 146,3         | 1,5       | 20,3      | 2,5       | 26,7   | 360            |
|                        | 90               | 14500                 | 380                                     | 1700                                    | 230              | 158           | 278           | 254           | 10 | 14        | 180               | 4,5       | 161           | 1,5       | 20        | 3         | 39     | 680            |
|                        | 100              | 20000                 | 350                                     | 1450                                    | 270              | 182           | 335           | 305           | 10 | 18        | 210               | 5         | 184           | 2,5       | 28        | 3         | 66     | 880            |
|                        | 120              | 31250                 | 250                                     | 1250                                    | 310              | 202           | 375           | 345           | 12 | 18        | 240               | 5         | 204           | 2,5       | 28,5      | 3         | 91     | 1200           |
|                        | 150              | 70000                 | 180                                     | 980                                     | 400              | 246           | 485           | 445           | 12 | 22        | 310               | 5         | 249           | 2,5       | 31        | 4         | 186    | 1350           |
|                        | 200              | 175000                | 120                                     | 750                                     | 520              | 326           | 625           | 565           | 18 | 26        | 400               | 5         | 328           | 3         | 40        | 5         | 425    | 4200           |
|                        | 250              | 287500                | 100                                     | 620                                     | 610              | 396           | 740           | 680           | 20 | 33        | 480               | 5         | 398           | 3         | 45        | 5         | 680    | 6500           |
| ALM..F2D2<br>ALM..F4D2 | 25               | 388                   | 1100                                    | 2800                                    | 90               | 60            | 118           | 104           | 4  | 6,6       | 68                | 3         | 62            | 0,5       | 10,5      | 1         | 2,7    | 41             |
|                        | 30               | 588                   | 1000                                    | 2500                                    | 100              | 68            | 128           | 114           | 6  | 6,6       | 75                | 3         | 70            | 0,5       | 11,3      | 1         | 3,65   | 64             |
|                        | 35               | 838                   | 900                                     | 2400                                    | 110              | 74            | 138           | 124           | 6  | 6,6       | 80                | 3,5       | 76            | 1         | 11,8      | 1         | 4,7    | 76             |

## NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

2) Inner race overruns

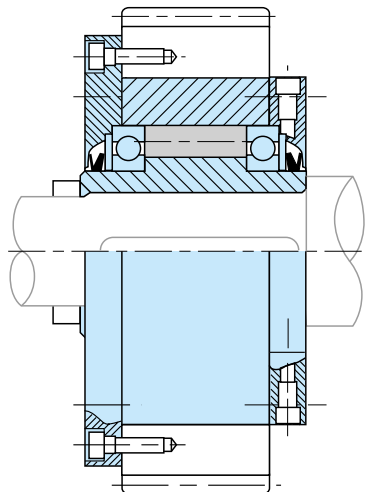
3) Outer race overruns  
Keyway to DIN 6885.1

When ordering, please specify direction of rotation seen from arrow

A": „R" Inner race overruns in clockwise direction, „L" Inner race overruns in counterclockwise

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



## Self-Contained Freewheels

# ALP..F7D7 ALMP..F7D7



TYPE



Type ALP..F7D7 is a roller type freewheel, self-contained, sealed and bearing supported using two 160.. series bearings. Unit is not delivered oil lubricated.

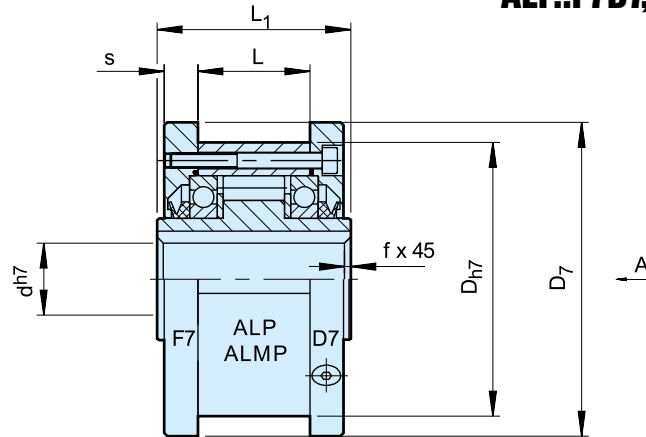
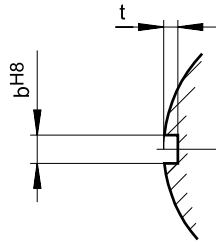
This cover combination is mostly used as an overrunning or indexing clutch as shown overleaf. A keyway is machined on the outer race for the connection to the drive or driven member centered on its

outside. D7 cover is used to close the unit. It is equipped with two screws for oil filling, drain and level. The shaft seal is a V-ring type. Cover and seal have been designed to be oil proof with minimum drag torque.

# Self-Contained Freewheels

## ALP..F7D7, ALMP..F7D7

### ALP..F7D7



| Type      | Size             | Overrunning speeds    |                                         |                                         |                  |               |               |             |             |                  |             |             | Weight | Drag torque    |
|-----------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|---------------|-------------|-------------|------------------|-------------|-------------|--------|----------------|
|           | $d_{h7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | $D_{h7}$<br>[mm] | $L_1$<br>[mm] | $D_7$<br>[mm] | $s$<br>[mm] | $L$<br>[mm] | $b_{H8}$<br>[mm] | $t$<br>[mm] | $f$<br>[mm] | [kg]   | $T_R$<br>[Ncm] |
| ALP..F7D7 | 12               | 55                    | 2500                                    | 7200                                    | 62               | 42            | 70            | 10,4        | 20          | 4                | 2,4         | 0,5         | 1,0    | 11             |
|           | 15               | 125                   | 1900                                    | 6500                                    | 68               | 52            | 76            | 11,4        | 28          | 5                | 2,9         | 0,8         | 1,4    | 15             |
|           | 20               | 181                   | 1600                                    | 5600                                    | 75               | 57            | 84            | 10,9        | 34          | 6                | 3,5         | 0,8         | 1,9    | 18             |
|           | 25               | 288                   | 1400                                    | 4500                                    | 90               | 60            | 99            | 11,9        | 35          | 8                | 4,1         | 1           | 2,8    | 36             |
|           | 30               | 500                   | 1300                                    | 4100                                    | 100              | 68            | 109           | 11,9        | 43          | 8                | 4,1         | 1           | 3,7    | 45             |
|           | 35               | 725                   | 1100                                    | 3800                                    | 110              | 74            | 119           | 13,4        | 45          | 10               | 4,7         | 1           | 4,7    | 60             |
|           | 40               | 1025                  | 950                                     | 3400                                    | 125              | 86            | 135           | 15,4        | 53          | 12               | 4,9         | 1,5         | 7,1    | 84             |
|           | 45               | 1125                  | 900                                     | 3200                                    | 130              | 86            | 140           | 15,4        | 53          | 14               | 5,5         | 1,5         | 7,4    | 94             |
|           | 50               | 2125                  | 850                                     | 2800                                    | 150              | 92            | 160           | 12,9        | 64          | 14               | 5,5         | 1,5         | 10,4   | 128            |
|           | 55               | 2625                  | 720                                     | 2650                                    | 160              | 104           | 170           | 17,5        | 66          | 16               | 6,2         | 2           | 13,4   | 150            |
|           | 60               | 3500                  | 680                                     | 2450                                    | 170              | 114           | 182           | 16,5        | 78          | 18               | 6,8         | 2           | 15,9   | 160            |
|           | 70               | 5750                  | 580                                     | 2150                                    | 190              | 134           | 202           | 18          | 95          | 20               | 7,4         | 2,5         | 20,8   | 360            |
|           | 80               | 8500                  | 480                                     | 1900                                    | 210              | 144           | 222           | 20,5        | 100         | 22               | 8,5         | 2,5         | 27,1   | 360            |
|           | 90               | 14500                 | 380                                     | 1700                                    | 230              | 158           | 242           | 20          | 115         | 25               | 8,7         | 3           | 39,4   | 680            |
|           | 100              | 20000                 | 350                                     | 1450                                    | 270              | 182           | 282           | 28,5        | 120         | 28               | 9,9         | 3           | 66,4   | 880            |
|           | 120              | 31250                 | 250                                     | 1250                                    | 310              | 202           | 322           | 22,5        | 152         | 32               | 11,1        | 3           | 91,5   | 1200           |
|           | 150              | 70000                 | 180                                     | 980                                     | 400              | 246           | 412           | 31          | 180         | 36               | 12,3        | 4           | 187    | 1350           |
|           | 200              | 175000                | 120                                     | 750                                     | 520              | 326           | 540           | 40          | 240         | 45               | 15          | 5           | 430    | 4200           |
|           | 250              | 287500                | 100                                     | 620                                     | 610              | 396           | 630           | 45          | 300         | 45               | 15          | 5           | 688    | 6500           |
| ALMP F7D7 | 25               | 388                   | 1100                                    | 2800                                    | 90               | 60            | 99            | 11,9        | 35          | 8                | 4,1         | 1           | 2,9    | 41             |
|           | 30               | 588                   | 1000                                    | 2500                                    | 100              | 68            | 109           | 11,9        | 43          | 8                | 4,1         | 1           | 3,85   | 64             |
|           | 35               | 838                   | 900                                     | 2400                                    | 110              | 74            | 119           | 13,4        | 45          | 10               | 4,7         | 1           | 4,9    | 76             |

### NOTES

1)  $T_{max} = 2 \times T_{KN}$   
 » Refer to Selection page 7 to 11

2) Inner race overruns

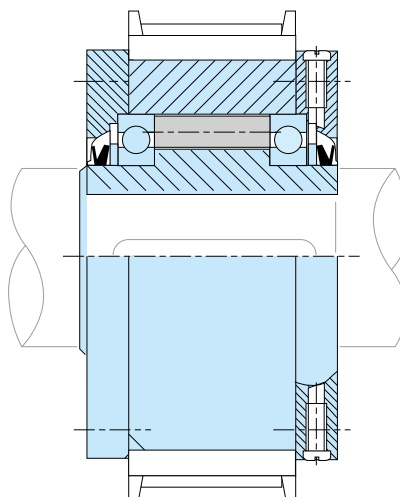
3) Outer race overruns

Keyway to DIN 6885.1

When ordering, please specify direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

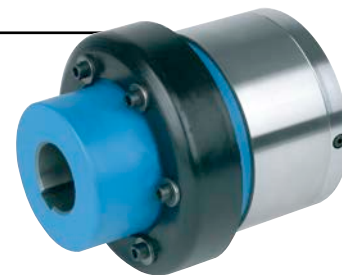
» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

# AL..KMSD2



Back of  
AL..KMSD2

## TYPE



**T**ype AL..KMSD2 is a roller type freewheel, self-contained, sealed and bearing supported, using two 160.. series bearings. Unit is delivered oil lubricated. This combination is used as overrunning clutch as shown overleaf.

In this design, a standard AL freewheel is connected to a KMS flexible coupling for in-line mounting. The KMS type is a rugged coupling, economical and suitable for

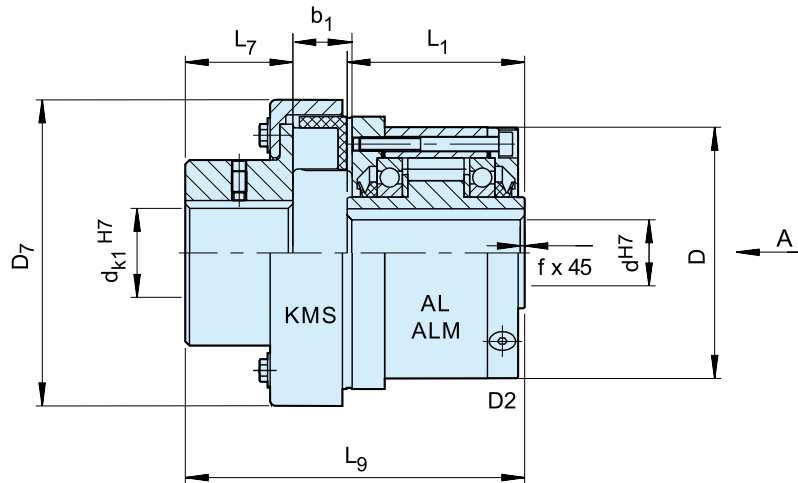
many applications. D2 cover is used to close the unit. It is equipped with two screws for oil filling, drain and level. We recommend the unit is supplied assembled.

Please specify inner race direction of rotation seen from the D2 flange. Refer to manufacturer's catalogue to check coupling selection.

# Self-Contained Freewheels

## AL..KMSD2

### AL..KMSD2



Coupling half: keyway tolerance P9

| Type       | Size                  |      | Overrunning speeds |                                         |                                         |                       |           |                        |                        |                        |                        |                        | Weight |
|------------|-----------------------|------|--------------------|-----------------------------------------|-----------------------------------------|-----------------------|-----------|------------------------|------------------------|------------------------|------------------------|------------------------|--------|
|            | $d_{K1}^{H7}$<br>[mm] | KMS  | $T_{KN}$<br>[Nm]   | $n_{imax}^{1)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{2)}$<br>[min <sup>-1</sup> ] | $d_{K1}^{H7}$<br>[mm] | D<br>[mm] | L <sub>1</sub><br>[mm] | D <sub>7</sub><br>[mm] | L <sub>7</sub><br>[mm] | L <sub>9</sub><br>[mm] | b <sub>1</sub><br>[mm] | [kg]   |
| AL..KMSD2  | 12                    | 4    | 50                 | 2500                                    | 6000                                    | 7... 35               | 62        | 42                     | 78                     | 40                     | 100                    | 18                     | 2,10   |
|            | 15                    | 6,3  | 79                 | 1900                                    | 6000                                    | 12... 40              | 68        | 52                     | 90                     | 45                     | 116                    | 20                     | 2,70   |
|            | 20                    | 10   | 125                | 1600                                    | 5600                                    | 10... 45              | 75        | 57                     | 117                    | 48                     | 123,5                  | 17                     | 3,80   |
|            | 25                    | 10   | 125                | 1400                                    | 4500                                    | 10... 45              | 90        | 60                     | 117                    | 48                     | 126,5                  | 17                     | 4,4    |
|            | 30                    | 16   | 200                | 1300                                    | 4100                                    | 10... 50              | 100       | 68                     | 129                    | 52                     | 140                    | 19                     | 5,9    |
|            | 35                    | 25   | 313                | 1100                                    | 3800                                    | 15... 55              | 110       | 74                     | 134                    | 57                     | 155                    | 22                     | 8,1    |
|            | 40                    | 40   | 500                | 950                                     | 3400                                    | 20... 60              | 125       | 86                     | 155                    | 61                     | 173                    | 26                     | 11,4   |
|            | 45                    | 63   | 788                | 900                                     | 3200                                    | 20... 70              | 130       | 86                     | 175                    | 67                     | 186                    | 30                     | 13,3   |
|            | 50                    | 100  | 1250               | 850                                     | 2800                                    | 25... 75              | 150       | 92                     | 196                    | 75                     | 208,5                  | 35                     | 19,1   |
|            | 55                    | 100  | 1250               | 720                                     | 2650                                    | 25... 75              | 160       | 104                    | 196                    | 75                     | 216,5                  | 35                     | 20,4   |
|            | 60                    | 160  | 2000               | 680                                     | 2450                                    | 30... 80              | 170       | 114                    | 223                    | 82                     | 243                    | 41                     | 27,1   |
|            | 70                    | 250  | 3125               | 580                                     | 2150                                    | 35... 90              | 190       | 134                    | 252                    | 89                     | 277,5                  | 47                     | 40,4   |
|            | 80                    | 400  | 5000               | 480                                     | 1900                                    | 45... 100             | 210       | 144                    | 290                    | 97                     | 305                    | 56                     | 57     |
|            | 90                    | 630  | 7875               | 380                                     | 1700                                    | 60... 120             | 230       | 158                    | 330                    | 116                    | 346,5                  | 64                     | 87     |
|            | 100                   | 1000 | 12500              | 350                                     | 1450                                    | 75... 140             | 270       | 182                    | 378                    | 140                    | 386                    | 75                     | 131    |
|            | 120                   | 1600 | 20000              | 250                                     | 1250                                    | 90... 160             | 310       | 202                    | 432                    | 160                    | 430                    | 85                     | 196    |
|            | 150                   |      |                    |                                         |                                         |                       |           |                        |                        |                        |                        |                        |        |
|            | 200                   |      |                    |                                         |                                         |                       |           |                        |                        |                        |                        |                        |        |
|            | 250                   |      |                    |                                         |                                         |                       |           |                        |                        |                        |                        |                        |        |
| ALM..KMSD2 | 25                    | 16   | 200                | 1100                                    | 2800                                    | 12... 50              | 90        | 60                     | 117                    | 52                     | 132,5                  | 19                     | 4,4    |
|            | 30                    | 25   | 313                | 1000                                    | 2500                                    | 15... 55              | 100       | 68                     | 129                    | 57                     | 150                    | 22                     | 5,9    |
|            | 35                    | 40   | 500                | 900                                     | 2400                                    | 18... 60              | 110       | 74                     | 134                    | 61                     | 163                    | 26                     | 8,1    |

### NOTES

1) Inner race overruns

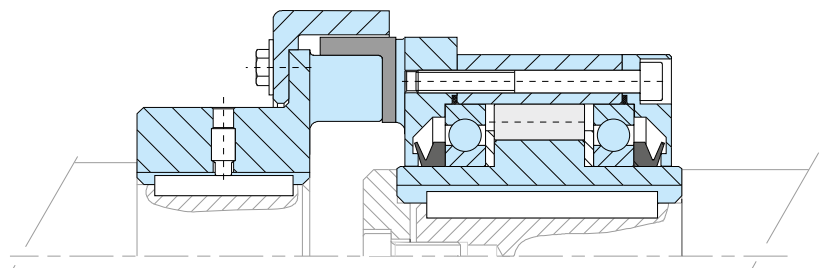
2) Outer race overruns

Keyway to DIN 6885.1

When ordering, please specify bore  $\phi d_K$  and direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

# AL..KEED2



Back of  
AL..KEED2

## TYPE



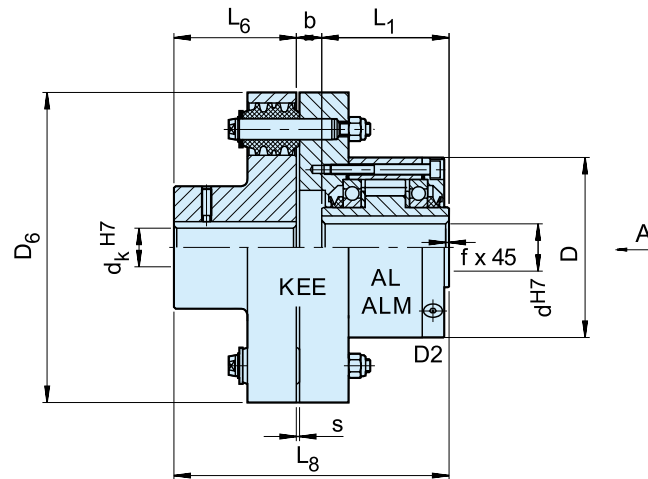
**T**ype AL..KEED2 is a roller type freewheel, self-contained, sealed and bearing supported, using two 160.. series bearings. Unit is delivered oil lubricated.

This combination is used as overrunning clutch as shown overleaf. In this design, a standard AL freewheel is connected to a flexible coupling for in-line mounting.

The KEE type is a high performance coupling used to damp torsional vibrations and to accept misalignment

without excess bearing loads. D2 cover is used to close the unit. It is equipped with two screws for oil filling, drain and level. We recommend the unit is supplied assembled. Please specify inner race direction of rotation seen from the D2 flange. Refer to manufacturer's catalogue to check coupling selection.

### AL..KEED2



| Type       | Size               |     |                  | Overrunning speeds                      |                                         |                    |           |                        |                        |                        |                        |           |           |           | Weight |
|------------|--------------------|-----|------------------|-----------------------------------------|-----------------------------------------|--------------------|-----------|------------------------|------------------------|------------------------|------------------------|-----------|-----------|-----------|--------|
|            | $d_k^{H7}$<br>[mm] | KEE | $T_{KN}$<br>[Nm] | $n_{imax}^{1)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{2)}$<br>[min <sup>-1</sup> ] | $d_k^{H7}$<br>[mm] | D<br>[mm] | L <sub>1</sub><br>[mm] | D <sub>6</sub><br>[mm] | L <sub>6</sub><br>[mm] | L <sub>8</sub><br>[mm] | b<br>[mm] | s<br>[mm] | f<br>[mm] | [kg]   |
| AL..KEED2  | 12                 | 2   | 55               | 2500                                    | 6000                                    | 12...25            | 62        | 42                     | 97                     | 35                     | 90                     | 13        | 3         | 0,5       | 3      |
|            | 15                 | 3   | 122              | 1900                                    | 6000                                    | 16...30            | 68        | 52                     | 112                    | 40                     | 110                    | 18        | 3         | 0,8       | 4,4    |
|            | 20                 | 3   | 122              | 1600                                    | 5600                                    | 16...30            | 75        | 57                     | 112                    | 40                     | 114,5                  | 17,5      | 3         | 0,8       | 4,6    |
|            | 25                 | 4   | 288              | 1400                                    | 4500                                    | 20...40            | 90        | 60                     | 130                    | 50                     | 127,5                  | 17,5      | 3         | 1         | 6,4    |
|            | 30                 | 5   | 500              | 1300                                    | 4100                                    | 20...50            | 100       | 68                     | 160                    | 60                     | 148                    | 20        | 2         | 1         | 11     |
|            | 35                 | 6   | 725              | 1100                                    | 3800                                    | 25...65            | 110       | 74                     | 190                    | 75                     | 168                    | 19        | 2         | 1         | 17     |
|            | 40                 | 6   | 1025             | 950                                     | 3400                                    | 25...65            | 125       | 86                     | 190                    | 75                     | 178                    | 17        | 2         | 1,5       | 19     |
|            | 45                 | 6   | 1050             | 900                                     | 3200                                    | 25...65            | 130       | 86                     | 190                    | 75                     | 178                    | 17        | 2         | 1,5       | 19     |
|            | 50                 | 7   | 1750             | 850                                     | 2800                                    | 30...75            | 150       | 92                     | 225                    | 90                     | 207                    | 25        | 2,5       | 1,5       | 31     |
|            | 55                 | 8   | 2625             | 720                                     | 2650                                    | 35...90            | 160       | 104                    | 270                    | 100                    | 233,5                  | 29,5      | 3         | 2         | 47     |
|            | 60                 | 8   | 2750             | 680                                     | 2450                                    | 35...90            | 170       | 114                    | 270                    | 100                    | 244                    | 30        | 3         | 2         | 49     |
|            | 70                 | 10  | 5750             | 580                                     | 2150                                    | 45...110           | 190       | 134                    | 340                    | 140                    | 312,5                  | 38,5      | 3         | 2,5       | 90     |
|            | 80                 | 11  | 8500             | 480                                     | 1900                                    | 55...125           | 210       | 144                    | 380                    | 160                    | 340                    | 36        | 3         | 2,5       | 107    |
|            | 90                 | 12  | 13750            | 380                                     | 1700                                    | 65...140           | 230       | 158                    | 440                    | 180                    | 388                    | 50        | 3,5       | 3         | 170    |
|            | 100                | 14  | 20000            | 350                                     | 1450                                    | 75...160           | 270       | 182                    | 500                    | 200                    | 422,5                  | 40,5      | 3,5       | 3         | 230    |
|            | 120                | 16  | 30000            | 250                                     | 1250                                    | 85...180           | 310       | 202                    | 560                    | 220                    | 471                    | 49        | 4         | 3         | 330    |
|            | 150                | 18  | 43750            | 180                                     | 980                                     | 95...200           | 400       | 246                    | 640                    | 250                    | 543                    | 47        | 4         | 4         | 500    |
|            | 200                | 22  | 97500            | 120                                     | 750                                     | 125...250          | 520       | 326                    | 880                    | 320                    | 700,5                  | 54,5      | 4,5       | 5         | 965    |
|            | 250                | 28  | 250000           | 100                                     | 620                                     | 160...320          | 610       | 396                    | 1160                   | 400                    | 868                    | 72        | 5         | 5         | 1725   |
| ALM..KEED2 | 25                 | 4   | 288              | 1100                                    | 2800                                    | 20...40            | 90        | 60                     | 130                    | 50                     | 127,5                  | 17,5      | 3         | 1         | 6,4    |
|            | 30                 | 5   | 588              | 1000                                    | 2500                                    | 20...50            | 100       | 68                     | 160                    | 60                     | 148                    | 20        | 2         | 1         | 11     |
|            | 35                 | 6   | 838              | 900                                     | 2400                                    | 25...65            | 110       | 74                     | 190                    | 75                     | 168                    | 19        | 2         | 1         | 17     |

### NOTES

1) Inner race overrunt

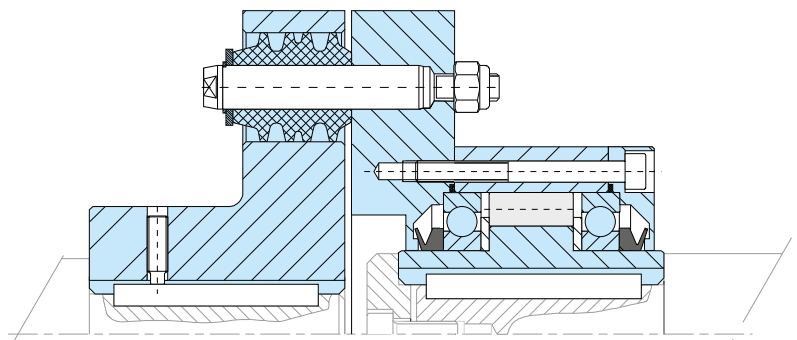
2) Outer race overruns

Keyway to DIN 6885.1

When ordering, please specify bore  $\phi d_k$  and direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



# SMZ



## TYPE

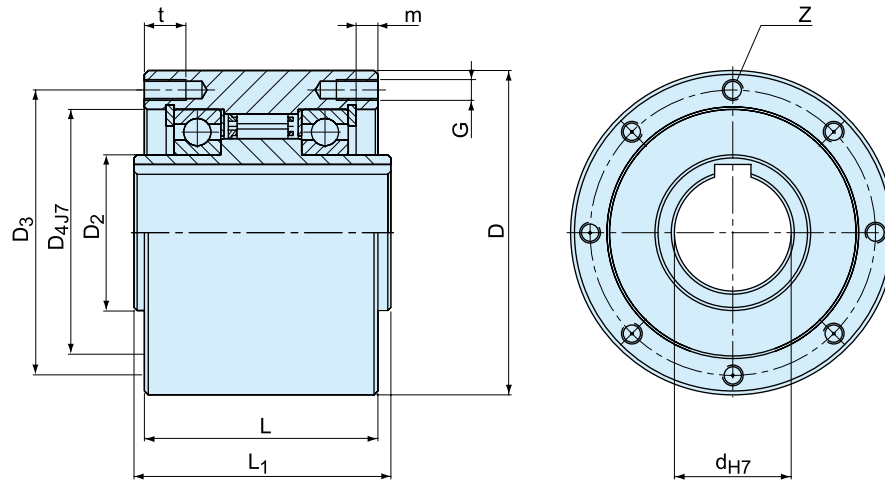


**T**ype SMZ is a sealed, sprag type freewheel, bearing supported using two 60..ZZ series grease lubricated bearings.

Units are delivered grease lubricated ready for installation. SMZ units are intended as multipurpose, to be used in various applications. A typical mounting

arrangement is shown on the following page. The inner race is keyed to the shaft. The inside diameter of the outer race (dimension D4) should be used as the mounting register for the connected parts (sprocket, pulley, gear, torque arm). The mounting spigot should be to g6 tolerance.

SMZ

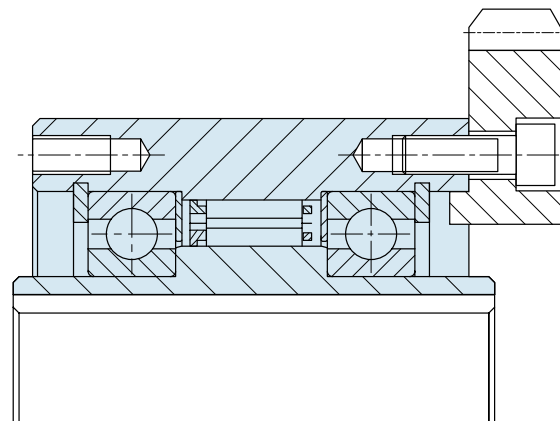


| Type | Size             | Overrunning speeds    |                                         |                                         |           |                        |                        |                                      |           |                        |           | Number    |           |           | Weight |
|------|------------------|-----------------------|-----------------------------------------|-----------------------------------------|-----------|------------------------|------------------------|--------------------------------------|-----------|------------------------|-----------|-----------|-----------|-----------|--------|
|      | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{imax}^{2)}$<br>[min <sup>-1</sup> ] | $n_{amax}^{3)}$<br>[min <sup>-1</sup> ] | D<br>[mm] | D <sub>2</sub><br>[mm] | D <sub>3</sub><br>[mm] | D <sub>4</sub> <sup>J7</sup><br>[mm] | L<br>[mm] | L <sub>1</sub><br>[mm] | G<br>[mm] | z<br>[mm] | t<br>[mm] | m<br>[mm] | [kg]   |
| SMZ  | 20               | 300                   | 1600                                    | 700                                     | 80        | 30                     | 68                     | 55                                   | 65        | 67                     | M6        | 6         | 12        | 7,6       | 2      |
|      | 30               | 1035                  | 1500                                    | 500                                     | 100       | 45                     | 88                     | 75                                   | 80        | 82                     | M8        | 6         | 16        | 8,9       | 3,7    |
|      | 35               | 1100                  | 1400                                    | 300                                     | 110       | 50                     | 95                     | 80                                   | 85        | 87                     | M8        | 6         | 16        | 8,7       | 4,8    |
|      | 45               | 1750                  | 1300                                    | 300                                     | 125       | 60                     | 110                    | 95                                   | 90        | 92                     | M8        | 8         | 16        | 8,4       | 6,2    |
|      | 60               | 3400                  | 1100                                    | 250                                     | 155       | 80                     | 140                    | 125                                  | 100       | 102                    | M8        | 8         | 16        | 9,1       | 10,2   |
|      | 70               | 4300                  | 1000                                    | 250                                     | 175       | 95                     | 162                    | 140                                  | 103       | 105                    | M8        | 8         | 16        | 8,6       | 13,2   |

### NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
  - 2) Inner race overruns
  - 3) Outer race overruns  
Keyway to DIN 6885.1
- » Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

# FSO 300-700, FSO-GR 300-700, HPI 300-700



### TYPE



FSO..GR

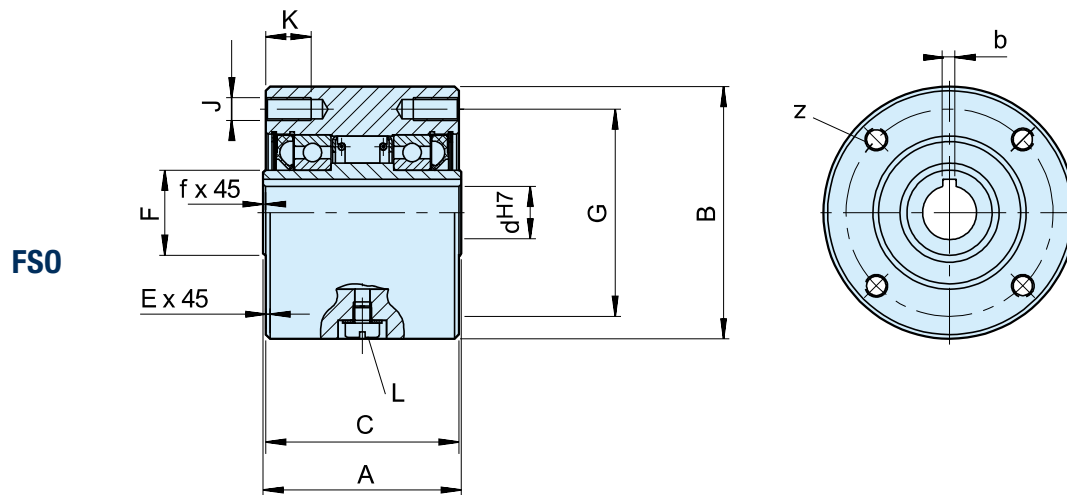
Types FSO, FSO-GR, and HPI 300 to 700 are sprag type freewheels self-contained, sealed and bearing supported, using two ball bearings.

Units are delivered oil or grease lubricated according to the type. It is a Formsprag USA design with a »full sprag complement« that gives a very high torque for a

given diameter. Any overload is resisted by a sprag to sprag abutment, avoiding a sprag tilt over. Types FSO and HPI are oil lubricated and use standard shaft lip seals. Type FSO-GR is grease lubricated and can be equipped with contact free labyrinth seals. Type HPI is specially designed for high speed indexing applications.

# Self-Contained Freewheels

## FSO, FSO-GR, HPI 300-700

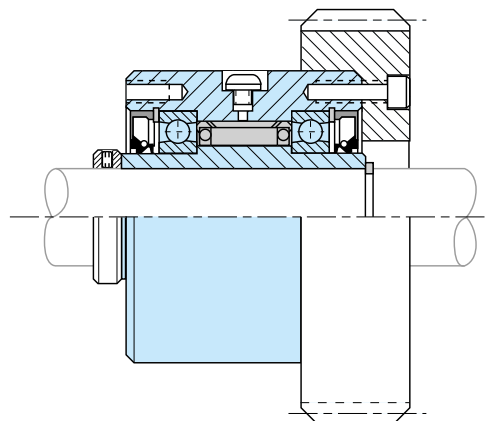


| Type                 | Size | Overrunning speeds                    |                                                        |                                                        |                              |                                    |           |                    |           |           |                     |           |    | Number |           |           |           |             |                 | Lubricant   |      |                         | Weight | Drag torque |
|----------------------|------|---------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------------------|------------------------------------|-----------|--------------------|-----------|-----------|---------------------|-----------|----|--------|-----------|-----------|-----------|-------------|-----------------|-------------|------|-------------------------|--------|-------------|
| FSO<br>FSO-GR<br>HPI |      | T <sub>KN</sub> <sup>1)</sup><br>[Nm] | n <sub>max</sub> <sup>2)</sup><br>[min <sup>-1</sup> ] | n <sub>max</sub> <sup>3)</sup><br>[min <sup>-1</sup> ] | d <sup>H7</sup> -bxh<br>[mm] | d <sup>4)</sup><br>min-max<br>[mm] | A<br>[mm] | B<br>-0,05<br>[mm] | C<br>[mm] | E<br>[mm] | F<br>[mm]           | G<br>[mm] | z  | J      | K<br>[mm] | L<br>[mm] | f<br>[mm] | FSO<br>[ml] | FSO..GR<br>[ml] | HPI<br>[ml] | [kg] | T <sub>R</sub><br>[Ncm] |        |             |
|                      | 300  | 374                                   | 3000/900                                               | 3600/900                                               | 15-5x5                       | 12... 19                           | 63,50     | 76,20              | 60,45     | 1,6       | 28,58               | 66,67     | 4  | M8     | 13        | M6        | 0,8       | 7           | 10              | 14          | 1,6  | 18                      |        |             |
|                      | 400  | 408                                   | 2800/850                                               | 3600/850                                               | 18-6x6                       | 12... 22                           | 69,85     | 88,90              | 68,07     | 1,6       | 30                  | 73        | 4  | M8     | 13        | M6        | 0,8       | 10          | 20              | 20          | 2,7  | 27                      |        |             |
|                      | 500  | 1598                                  | 2500/800                                               | 3000/800                                               | 30-8x7                       | 19... 33                           | 88,90     | 107,95             | 85,73     | 1,6       | 45                  | 92        | 4  | M8     | 16        | M6        | 1,5       | 22          | 35              | 35          | 4,8  | 31                      |        |             |
|                      | 600  | 3060                                  | 2200/750                                               | 2400/750                                               | 40-12x8                      | 24... 57                           | 95,25     | 136,525            | 92,2      | 1,6       | 65                  | 120,6     | 6  | M8     | 16        | M6        | 1,6       | 52          | 84              | 84          | 8,6  | 62                      |        |             |
|                      |      |                                       |                                                        |                                                        | 45-14x9                      |                                    |           |                    |           |           |                     |           |    |        |           |           |           |             |                 |             |      |                         |        |             |
|                      |      |                                       |                                                        |                                                        | 50-14x6                      |                                    |           |                    |           |           |                     |           |    |        |           |           |           |             |                 |             |      |                         |        |             |
|                      |      |                                       |                                                        |                                                        | 50-14x9                      |                                    |           |                    |           |           |                     |           |    |        |           |           |           |             |                 |             |      |                         |        |             |
|                      | 700  | 6800                                  | 1600/450                                               | 2000/450                                               | 60-18x11                     | 48... 82                           | 127,00    | 180,975            | 123,85    | 1,6       | 90                  | 158,75    | 8* | M10*   | 20        | M6        | 1,6       | 168         | 280             | 280         | 19   | 156                     |        |             |
|                      |      |                                       |                                                        |                                                        | 65-18x11                     |                                    |           |                    |           |           |                     |           |    |        |           |           |           |             |                 |             |      |                         |        |             |
|                      |      |                                       |                                                        | 70-20x12                                               |                              |                                    |           |                    |           |           | 101,6 <sup>5)</sup> |           |    |        |           |           |           |             |                 |             |      |                         |        |             |

### NOTES

- 1)  $T_{max} = 1.5 \times T_{KN}$   
» Refer to Selection page 7 to 11
  - 2) Inner race/outer race
  - 3) Inner race/outer race labyrinth seal
  - 4) Inch bore available on request
  - 5) Only for oversize bore  
Size 600 > 50 mm  
Size 700 > 75 mm
  - 6) 6 holes equally spaced at 60° plus  
2 extra-holes at 180°
- » Refer to mounting and maintenance instructions  
page 12 to 13

### MOUNTING EXAMPLE



## Self-Contained Freewheels

# FS 750-1027, FSO 750-1027, HPI 750-1027



### TYPE

FSO



Types FS, FSO, and HPI 750 to 1027 are sprag type freewheels self-contained, sealed and bearing supported, using two ball bearings.

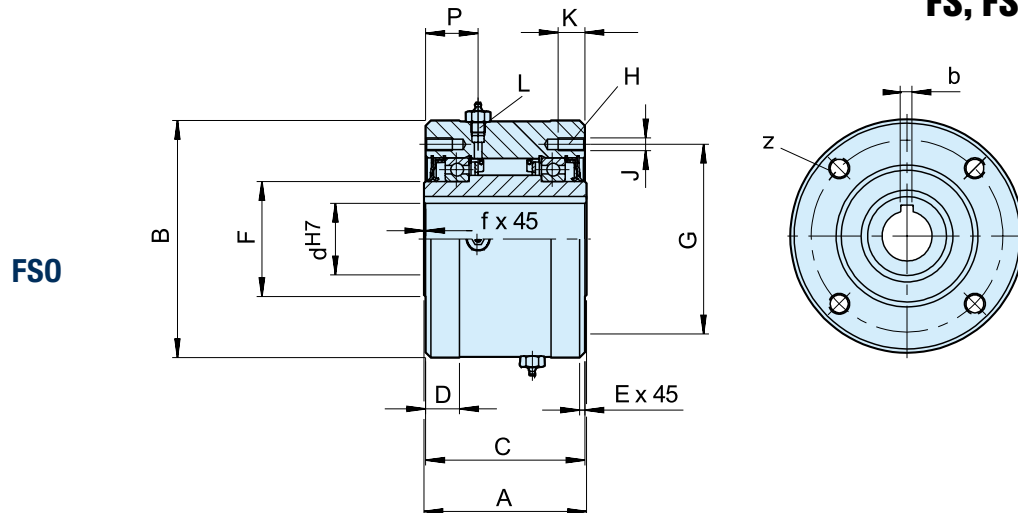
Units are delivered oil or grease lubricated according to the type. It is a Formsprag USA design that uses tall sprags with multi-radius active surfaces. Designed specially for large size freewheels to compensate for any eccentricity due to bearing wear. Types FS and HPI are

oil lubricated and use standard shaft lip seals. Type FSO is grease lubricated and equipped with special grease seals.

Type HPI is specially designed for high speed indexing applications. Each of the different models show a range of standard metric bore diameters. We can supply any bore size between the minimum and maximum specified in the table, including imperial sizes.

# Self-Contained Freewheels

## FS, FSO, HPI 750-1027

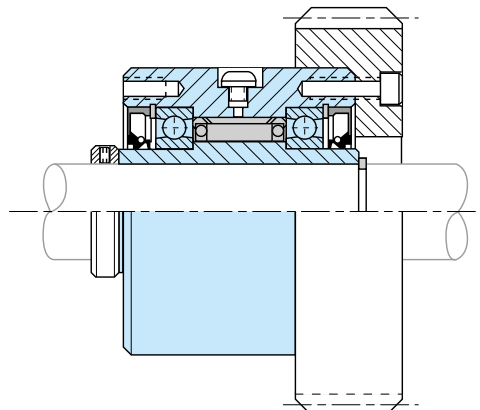


| Type             | Size |                                       | Overrunning speeds                                     |                                                        |                      |                 |               |                 |       |      |      |        |        |      |      |      | Number |      |      |      |      |      | Lubricant |                |  | Weight | Drag torque |
|------------------|------|---------------------------------------|--------------------------------------------------------|--------------------------------------------------------|----------------------|-----------------|---------------|-----------------|-------|------|------|--------|--------|------|------|------|--------|------|------|------|------|------|-----------|----------------|--|--------|-------------|
| FSO<br>FS<br>HPI |      |                                       | FS0                                                    | FS                                                     | d <sup>H7</sup> -bxh | d <sup>4)</sup> | A             | B <sup>5)</sup> | C     | D    | E    | F      | G      | z    | J    | K    | L      | P    | f    | FS0  | HPI  | FS   |           | T <sub>R</sub> |  |        |             |
|                  |      | T <sub>KN</sub> <sup>1)</sup><br>[Nm] | n <sub>max</sub> <sup>2)</sup><br>[min <sup>-1</sup> ] | n <sub>max</sub> <sup>3)</sup><br>[min <sup>-1</sup> ] | min-max<br>[mm]      | min-max<br>[mm] | -0,05<br>[mm] | [mm]            | [mm]  | [mm] | [mm] | [mm]   | [mm]   | [mm] | [mm] | [mm] | [mm]   | [mm] | [mm] | [ml] | [ml] | [ml] | [kg]      | [Ncm]          |  |        |             |
|                  | 750  | 9520                                  | 1800/650                                               | 1000/650                                               | 65-18x11             | 57–87           | 152,4         | 222,25          | 149,2 | 31,7 | 1,6  | 107,74 | 177,8  | 8*   | M12* | 25   | 1/2-20 | 49,2 | 1,6  | 222  | 384  | 207  | 38        | 5,08           |  |        |             |
|                  |      |                                       |                                                        |                                                        | 70-20x12             |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 75-20x12             |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 80-22x14             |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 85-22x14             |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  | 800  | 17680                                 | 1500/525                                               | 850/525                                                | 80-22x14             | 66–112          | 152,4         | 254,00          | 149,2 | 31,7 | 1,6  | 139,70 | 227,0  | 8    | M12  | 25   | 1/2-20 | 49,2 | 1,6  | 222  | 444  | 251  | 46        | 7,12           |  |        |             |
|                  |      |                                       |                                                        |                                                        | 90-25x14             |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 100-28x16            |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 110-28x16            |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  | 900  | 24480                                 | 1350/500                                               | 700/500                                                | 100-28x16            | 92–138          | 161,9         | 304,80          | 158,7 | 34,9 | 1,6  | 161,92 | 247,65 | 10   | M16  | 32   | 1/2-20 | 54   | 1,6  | 532  | 473  | 340  | 71        | 8,47           |  |        |             |
|                  |      |                                       |                                                        |                                                        | 110-28x16            |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 120-32x18            |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        |                                                        | 130-32x18            |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  | 1027 | 36720                                 | 700/375                                                | 500/375                                                | 130-32x18            | 125-177         | 168           | 381,00          | 165,1 | 34,9 | 3,2  | 228,60 | 298,45 | 12   | M16  | 32   | 1/2-20 | 54   | 3,2  | 651  | 946  | 473  | 113       | 13,56          |  |        |             |
|                  |      |                                       |                                                        | 150-36x20                                              |                      |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |
|                  |      |                                       |                                                        | 175-45x25                                              |                      |                 |               |                 |       |      |      |        |        |      |      |      |        |      |      |      |      |      |           |                |  |        |             |

### NOTES

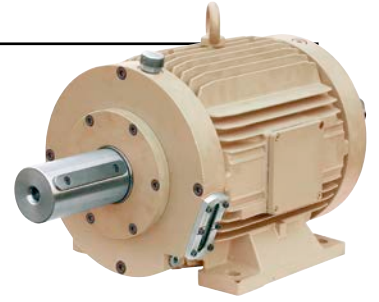
- 1)  $T_{max} = 1.5 \times T_{KN}$   
» Refer to Selection page 7 to 11
- 2) Inner race/outer race
- 3) Inner race/outer race labyrinth seal
- 4) Inch bore available on request
- \* 6 holes equally spaced at 60° plus  
2 extra-holes at 180°
- 5) Tolerance for sizes 900 and 1027: -0,08

### MOUNTING EXAMPLE

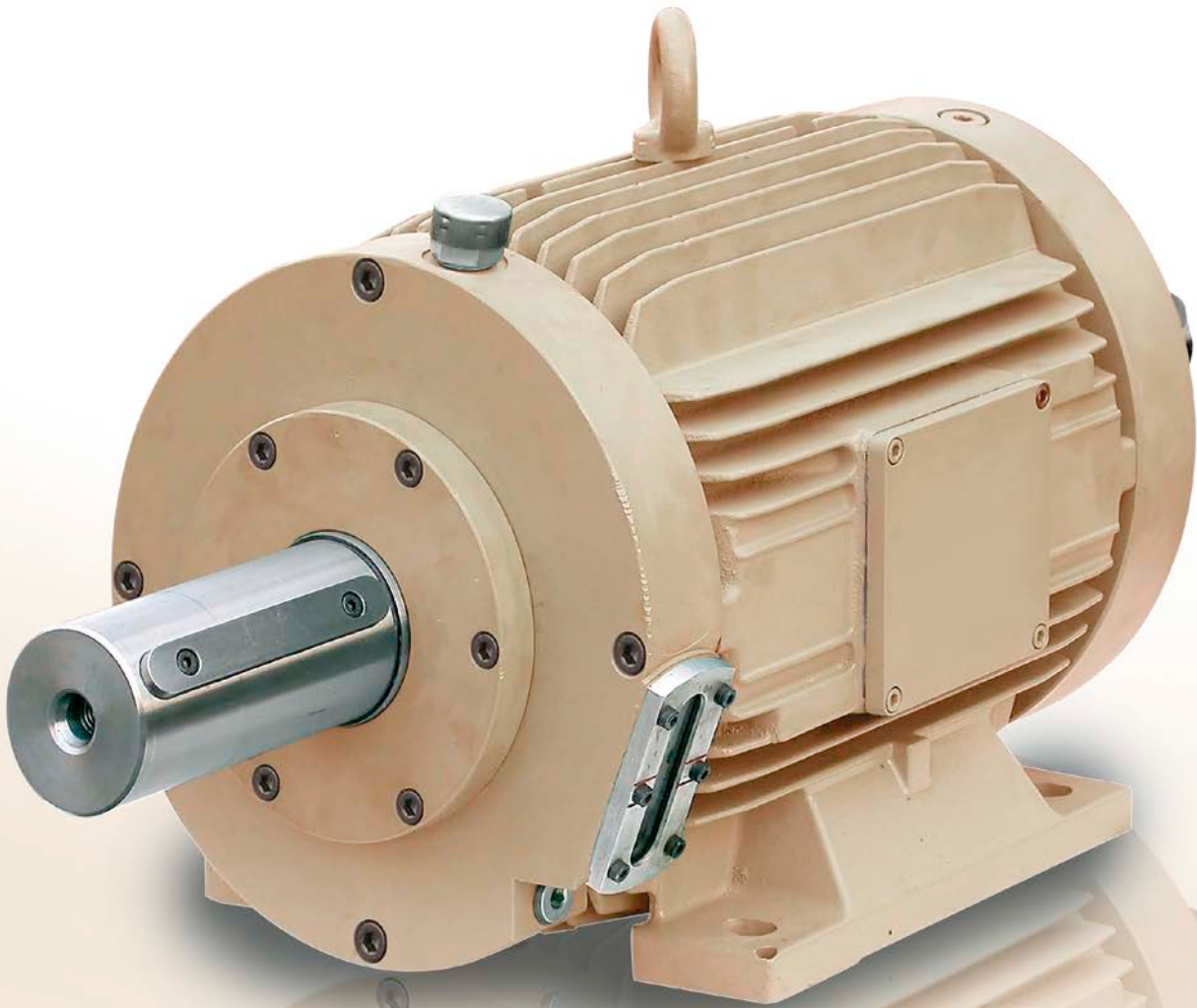


## Self-Contained Freewheels

# AL..G



### TYPE



**T**ype AL..G is a roller type freewheel bearing supported and self-contained in a cast iron housing. Standard lubrication is oil.

This type is designed for dual or standby drives on large equipment requiring high power at high speeds such as, industrial fans, pumps, and turbines. The housing provides a cooling surface, a large oil volume and maximum safety for equipment running continuously

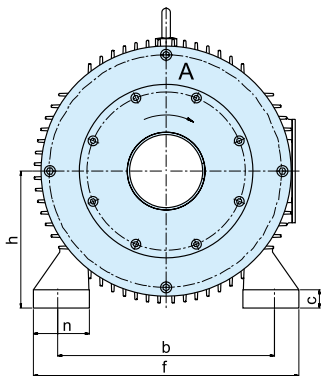
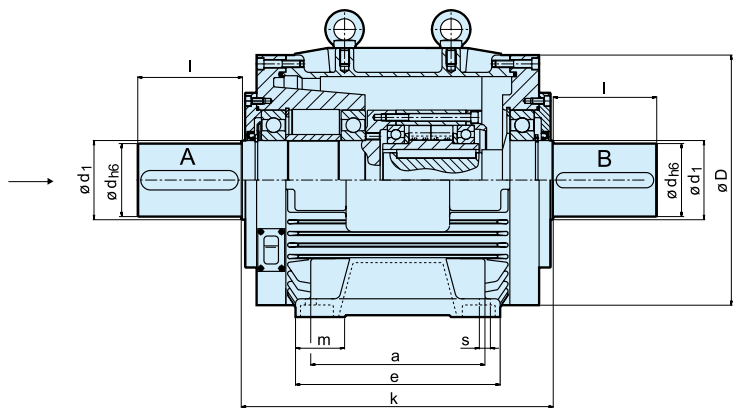
without supervision. Units of this type must be connected with the driver and driven machine using flexible couplings.

Integrated forced lubrication allows hydrodynamic contact free operation during overrunning. The given overrunning speeds are valid for a maximum ambient temperature of 40°C. On request additional air cooling can be provided.

# Self-Contained Freewheels

AL..G

AL..G



| Type  | Size   | Overrunning Speed shaft A |                                   |                  |             |             |             |               |             |             |             |             |             |             |             |             |             | Weight |
|-------|--------|---------------------------|-----------------------------------|------------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
|       |        | $T_{KN}^{1)}$<br>[Nm]     | $n_{max}$<br>[min <sup>-1</sup> ] | $d_{h6}$<br>[mm] | $l$<br>[mm] | $k$<br>[mm] | $D$<br>[mm] | $d_1$<br>[mm] | $h$<br>[mm] | $m$<br>[mm] | $n$<br>[mm] | $f$<br>[mm] | $e$<br>[mm] | $a$<br>[mm] | $b$<br>[mm] | $s$<br>[mm] | $c$<br>[mm] | [kg]   |
| AL..G | 30-G1  | 500                       | 5500                              | 30               | 80          | 300         | 194         | 45            | 100         | 33,5        | 42          | 200         | 175         | 140         | 160         | 14          | 14          | 50     |
|       | 50-G3  | 2125                      | 3400                              | 50               | 140         | 430         | 310         | 80            | 160         | 58          | 71,5        | 318         | 260         | 210         | 254         | 18          | 22          | 115    |
|       | 60-G3  | 3500                      | 2900                              | 60               | 140         | 430         | 310         | 80            | 160         | 58          | 71,5        | 318         | 260         | 210         | 254         | 18          | 22          | 125    |
|       | 70-G3  | 5750                      | 2600                              | 70               | 140         | 430         | 310         | 80            | 160         | 58          | 71,5        | 318         | 260         | 210         | 254         | 18          | 22          | 138    |
|       | 80-G4  | 8500                      | 2400                              | 80               | 170         | 510         | 434         | 95            | 225         | 80,5        | 92          | 436         | 346         | 286         | 356         | 22          | 30          | 284    |
|       | 90-G4  | 14500                     | 2000                              | 90               | 170         | 510         | 434         | 130           | 225         | 80,5        | 92          | 436         | 346         | 286         | 356         | 22          | 30          | 300    |
|       | 100-G4 | 20000                     | 1500                              | 100              | 210         | 510         | 434         | 130           | 225         | 80,5        | 92          | 436         | 346         | 286         | 356         | 22          | 30          | 330    |
|       | 120-G5 | 31250                     | 1300                              | 120              | 210         | 800         | 610         | 140           | 315         | 100         | 131         | 620         | 550         | 457         | 508         | 30          | 46          | 980    |
|       | 150-G5 | 70000                     | 1200                              | 150              | 250         | 800         | 610         | 190           | 315         | 100         | 131         | 620         | 550         | 457         | 508         | 30          | 46          | 1100   |

## NOTES

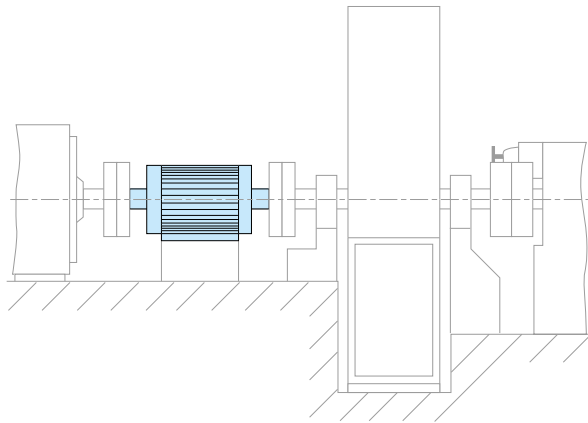
1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 13

Keyway to DIN 6885.1

rotation seen from shaft „A“: „R“ Shaft „A“ overruns in clockwise direction, „L“ Shaft „A“ overruns in counterclockwise direction  
Note: The constant overrunning function must be performed by the driven shaft „A“

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



# CEUS



## TYPE



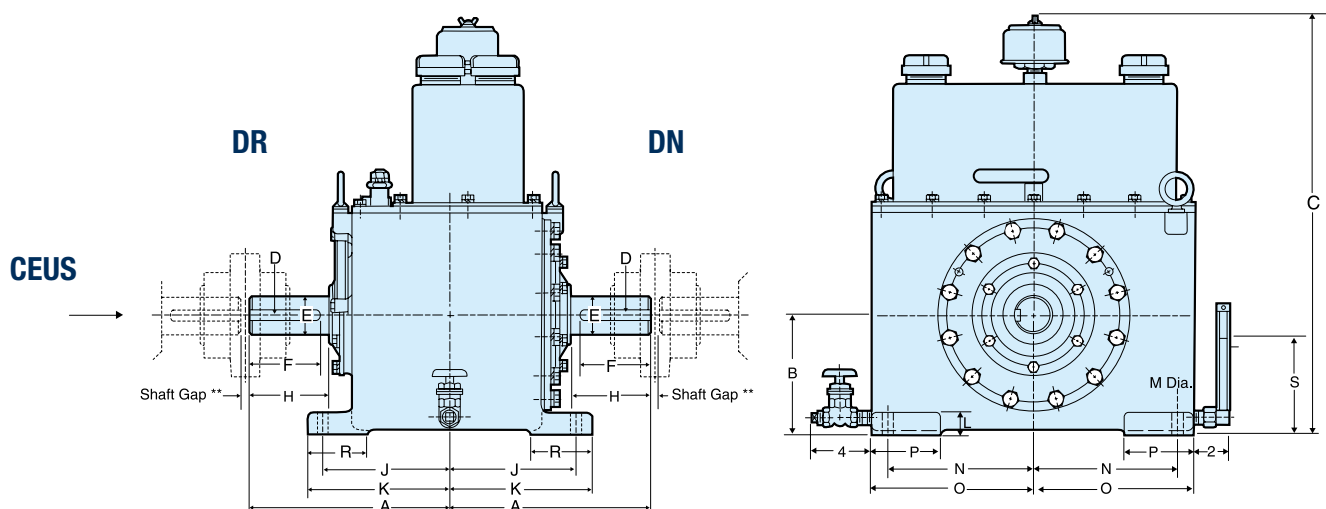
Type CEUS from the CECON product group is a roller type one way clutch bearing supported and self-contained in a cast iron housing. Standard lubrication is oil.

This type is designed for dual or standby drives on large equipment requiring high power at high speeds such as industrial fans, pumps, and turbines.

The housing provides a cooling surface, a large oil volume and maximum safety for equipment running

continuously without supervision.

Units of this type must be connected with the driver and driven machine using flexible couplings. Integrated forced lubrication allows hydrodynamic contact free operation during overrunning. The oil is continuously filtered through internal strainers. Detailed catalogue over the full CECON range on request. The given overrunning speeds are valid for a maximum ambient temperature of 40°C.



| Type | Size |                         | Overrunning<br>Speed shaft<br>DN         |           |           |           |               |           |           |           |           |           |           |           |           |           |           |           |           | Weight |
|------|------|-------------------------|------------------------------------------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| CEUS |      | T <sup>1)</sup><br>[Nm] | n <sub>max</sub><br>[min <sup>-1</sup> ] | A<br>[mm] | B<br>[mm] | C<br>[mm] | D<br>[mm]     | E<br>[mm] | F<br>[mm] | H<br>[mm] | J<br>[mm] | K<br>[mm] | L<br>[mm] | M<br>[mm] | N<br>[mm] | O<br>[mm] | P<br>[mm] | R<br>[mm] | S<br>[mm] | [kg]   |
|      | 5C   | 680                     | 6000                                     | 215,90    | 120,65    | 546,1     | 9,40 x 4,83   | 39,69     | 76,20     | 81,03     | 139,70    | 161,80    | 31,75     | 17,53     | 171,45    | 193,55    | 79,25     | 79,25     | 95,25     | 100    |
|      | 1M   | 1355                    | 5600                                     | 249,17    | 146,05    | 596,9     | 9,40 x 4,83   | 44,45     | 95,25     | 98,30     | 161,80    | 184,15    | 31,75     | 17,53     | 161,80    | 206,25    | 88,90     | 88,90     | 117,35    | 146    |
|      | 2M   | 2710                    | 4200                                     | 295,15    | 174,50    | 647,7     | 15,75 x 7,87  | 58,74     | 114,30    | 117,35    | 187,20    | 209,55    | 31,75     | 17,53     | 212,60    | 238,00    | 101,60    | 88,90     | 139,70    | 200    |
|      | 4M   | 5425                    | 3600                                     | 325,37    | 196,85    | 698,5     | 15,75 x 7,87  | 69,85     | 133,35    | 136,40    | 196,85    | 222,25    | 31,75     | 17,53     | 228,60    | 254,00    | 101,60    | 101,60    | 155,45    | 255    |
|      | 8M   | 10845                   | 3000                                     | 374,65    | 218,95    | 742,95    | 22,10 x 11,18 | 84,14     | 152,40    | 155,45    | 231,65    | 260,35    | 38,10     | 20,57     | 222,25    | 273,05    | 101,60    | 101,60    | 171,45    | 354    |
|      | 12M  | 16270                   | 2500                                     | 433,32    | 244,35    | 793,75    | 25,40 x 12,70 | 98,48     | 171,45    | 176,28    | 273,05    | 301,50    | 38,10     | 26,92     | 231,65    | 288,80    | 114,30    | 114,30    | 190,50    | 545    |
|      | 18M  | 24405                   | 2300                                     | 481,08    | 285,75    | 857,25    | 25,40 x 12,70 | 109,54    | 190,50    | 195,33    | 295,15    | 326,90    | 44,45     | 33,27     | 260,35    | 330,20    | 127,00    | 127,00    | 225,30    | 726    |
|      | 30M  | 40675                   | 2000                                     | 533,40    | 323,85    | 952,5     | 31,75 x 15,75 | 128,59    | 215,90    | 218,95    | 333,25    | 374,65    | 44,45     | 33,27     | 323,85    | 393,70    | 139,70    | 139,70    | 254,00    | 908    |
|      | 42M  | 56945                   | 1700                                     | 580,90    | 368,30    | 1028,7    | 38,10 x 19,05 | 149,23    | 228,60    | 231,65    | 365,00    | 403,10    | 50,80     | 33,27     | 368,30    | 444,50    | 152,40    | 152,40    | 285,75    | 1134   |
|      | 60M  | 81350                   | 1400                                     | 628,65    | 406,40    | 1104,9    | 44,45 x 22,10 | 177,80    | 266,70    | 269,75    | 387,35    | 425,45    | 50,80     | 33,27     | 406,40    | 482,60    | 152,40    | 152,40    | 311,15    | 1361   |

### NOTES

1) Torque selection procedure. Nominal torque of the application:

$$T_{appl}(Nm) = \frac{9550 \times P (kW)}{n (min^{-1})}$$

The CECON unit catalogue torque will be:

$$T_{KN} \geq T_{appl} \times 1,5$$

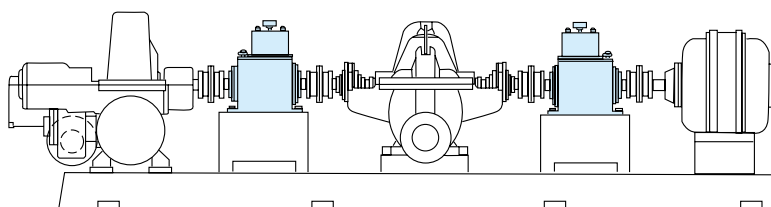
The dimensions are metric conversion of imperial ones

Rotation seen from shaft „DR“: „R“ Shaft „DR“ drives in clockwise direction, „L“ Shaft „DR“ drives in counterclockwise direction

Note: The constant overrunning function must be performed by the driven shaft „DN“

» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE

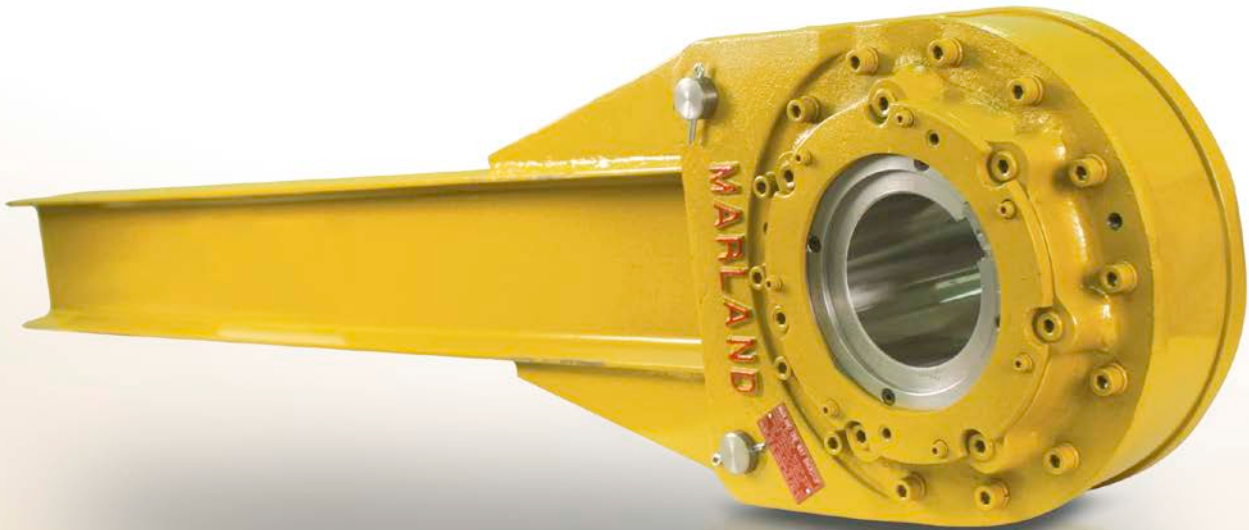


## Self-Contained Freewheels

# BC MA



### TYPE



**T**ype BC MA is a roller type backstop, bearing supported and self-contained. Standard lubrication is oil.

This type is designed to be mounted on the drive pulley shaft of large inclined conveyers. It is capable of working in the harsh environment of mine sites. The unit is symmetrical and can be mounted for desired free shaft rotation. The torque arm is a single "I" beam section which is attached to the backstop with two precision ground torque arm pins. This greatly simplifies field installation. The arm may be placed up, down, or at any

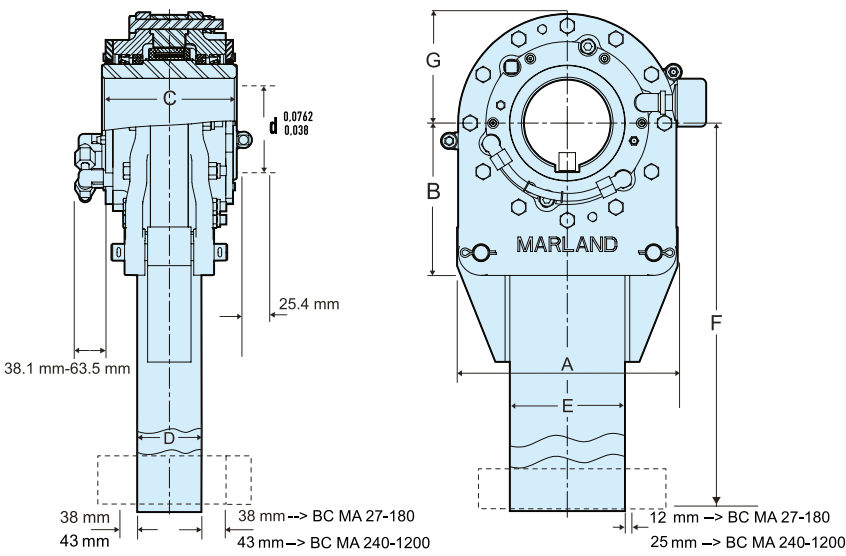
angle, and provides uniform loading on both cover plates. The preferred position is horizontal to reduce bearing loading for longer bearing life. The shaft fit should be f6 or f7. The clutch elements and ball bearings are continuously self-lubricated in a sealed oil chamber.

The seal package consists of:

- Double-lip oil seals outside the bearings to keep oil in and dirt out.
- Relubricable grease pocket and all metal graphited labyrinth grease seal.

Detailed catalog on request.

BC MA



| Type | Size   | Bore             | Overrunning Speed                     |                                          |           |           |           |           |           |           |           | Weight |
|------|--------|------------------|---------------------------------------|------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| BC   |        | d <sub>max</sub> | T <sub>KN</sub> <sup>1)</sup><br>[Nm] | n <sub>max</sub><br>[min <sup>-1</sup> ] | A<br>[mm] | B<br>[mm] | C<br>[mm] | D<br>[mm] | E<br>[mm] | F<br>[mm] | G<br>[mm] | [kg]   |
|      | 27MA   | 165              | 36 607                                | 150                                      | 384       | 254       | 222       | 98        | 178       | 1676      | 191       | 207    |
|      | 45MA   | 180              | 61 012                                | 135                                      | 445       | 289       | 235       | 105       | 203       | 1829      | 216       | 276    |
|      | 63MA   | 205              | 85 417                                | 120                                      | 498       | 311       | 244       | 127       | 254       | 1981      | 244       | 381    |
|      | 90MA   | 235              | 122 024                               | 105                                      | 584       | 362       | 276       | 140       | 305       | 2083      | 270       | 520    |
|      | 135MA  | 265              | 183 035                               | 90                                       | 654       | 406       | 314       | 143       | 381       | 2235      | 308       | 690    |
|      | 180MA  | 300              | 244 047                               | 80                                       | 772       | 419       | 330       | 159       | 457       | 2388      | 349       | 966    |
|      | 240MA  | 360              | 325 396                               | 70                                       | 876       | 457       | 387       | 162       | 508       | 2540      | 413       | 1242   |
|      | 300MA  | 360              | 406 745                               | 70                                       | 876       | 457       | 413       | 162       | 508       | 2745      | 413       | 1720   |
|      | 375MA  | 460              | 508 432                               | 60                                       | 1041      | 584       | 445       | 203       | 622       | 3048      | 495       | 2760   |
|      | 540MA  | 540              | 732 142                               | 60                                       | 1194      | 673       | 527       | 257       | 692       | 3658      | 578       | 4140   |
|      | 720MA  | 540              | 976 271                               | 60                                       | 1194      | 673       | 552       | 257       | 692       | 3658      | 578       | 4545   |
|      | 940MA  | 540              | 1 274 600                             | 60                                       | 1220      | 700       | 584       | 257       | 692       | 3960      | 610       | 5455   |
|      | 1200MA | 600              | 1 626 000                             | 60                                       | 1320      | 750       | 625       | 267       | 762       | 4267      | 660       | 6591   |

NOTES

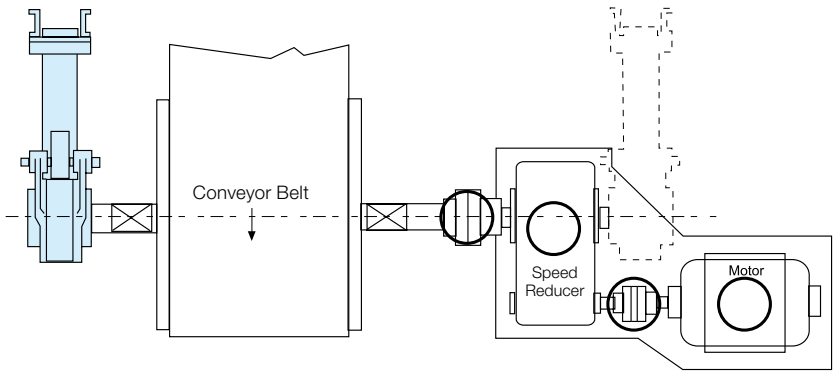
1)  $T_{max} = 1,75 \times T_{KN}$

Inch bore available on request  
Keyway to DIN 6885.1  
For size 1200MA TBD

For more details see separate catalog.

» Refer to mounting and maintenance instructions  
page 12 to 13

MOUNTING EXAMPLE

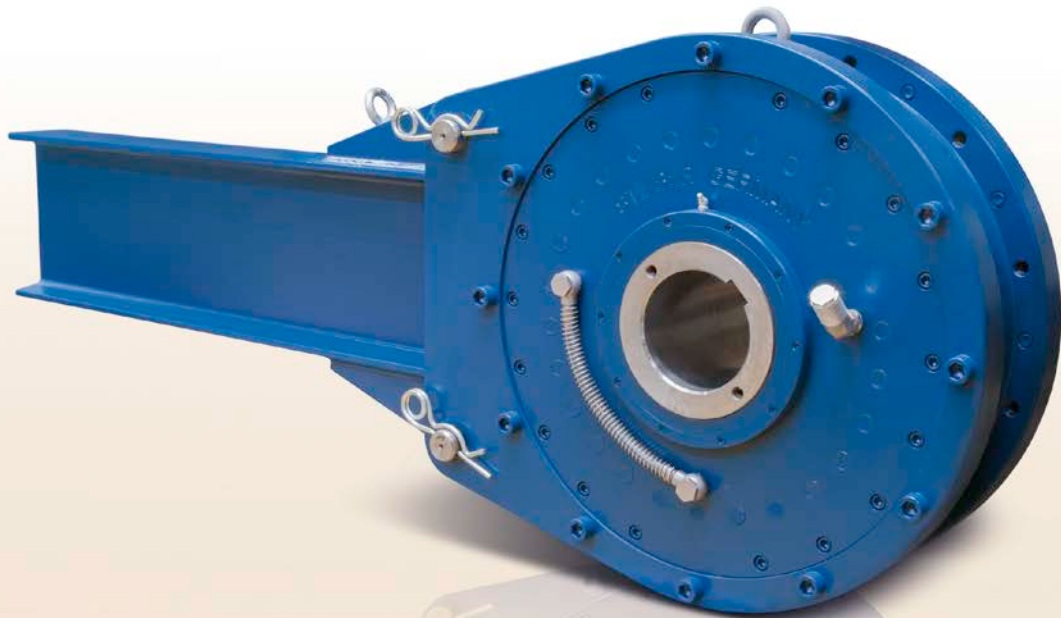


## Self-Contained Freewheels

# RDBR-E RDBR-E-H



TYPE



**B**ackstops type RDBR-E are directly mounted on the drive shaft, e.g. of heavy duty conveyer belts, mixing drum drives and chain conveyors, when torque limiting / load sharing or the release function is required.

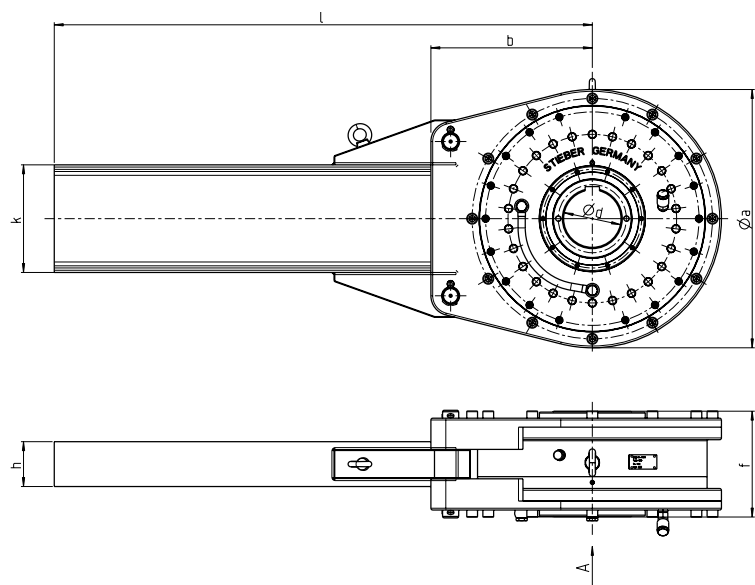
RDBR-E features a roller type backstop design with a fully bearing supported multidisc brake for the torque limiting function. The optional release function allows the tension of a jammed belt to be controlled released. Once the brake is fully opened, the capability of an unlimited rolling backwards makes maintenance safe and easy.

To activate the release function, a simple hydraulic hand pump or power pack can be used. A mechanical release is available on request. Backstops RDBR-E are self contained and oil lubricated.

A special sealing arrangement with grease packed labyrinth seal guarantees highest reliability under harsh conditions. The recommended shaft fit is H7/f6. The torque arm must not be rigidly fixed to the foundation. For security reasons a stopper in overrunning direction is recommended. When installed, the backstop must be axially secured.

# Self-Contained Freewheels

RDBR-E, RDBR-E-H



| Type                     | Size |                            |                     |                                        |                                         |           |           |           |           |           |           | Weight |
|--------------------------|------|----------------------------|---------------------|----------------------------------------|-----------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
|                          |      | $d_{max}^{H7\ 1)}$<br>[mm] | $T_r^{2)}$<br>[kNm] | $n_{max}^{3)}$<br>[min <sup>-1</sup> ] | $n_{rmax}^{4)}$<br>[min <sup>-1</sup> ] | a<br>[mm] | b<br>[mm] | h<br>[mm] | k<br>[mm] | f<br>[mm] | l<br>[mm] | [kg]   |
| RDBR...-E<br>RDBR...-E-H | 280  | 150                        | 50                  | 175                                    | 175                                     | 660       | 410       | 119       | 280       | 295       | 1500      | 690    |
|                          | 300  | 160                        | 75                  | 150                                    | 150                                     | 720       | 450       | 125       | 300       | 295       | 1500      | 840    |
|                          | 360  | 190                        | 120                 | 130                                    | 130                                     | 780       | 500       | 137       | 340       | 350       | 1800      | 1160   |
|                          | 420  | 240                        | 180                 | 120                                    | 120                                     | 880       | 550       | 149       | 380       | 360       | 2000      | 1400   |
|                          | 500  | 320                        | 330                 | 100                                    | 100                                     | 1075      | 670       | 170       | 450       | 390       | 2200      | 2390   |

Sizes with a higher torque capacity are available on request.

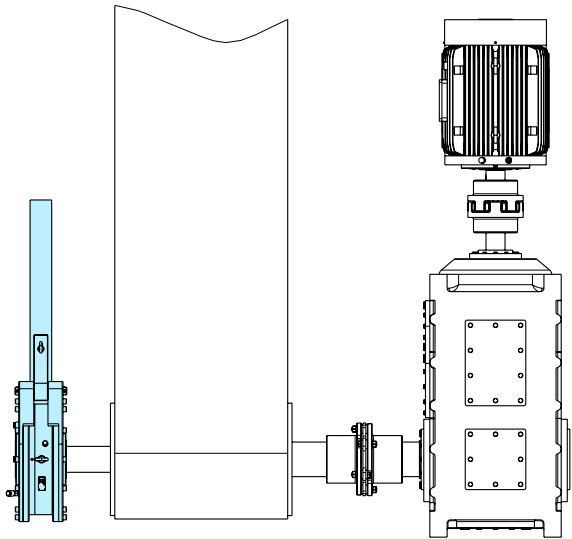
### NOTES

- 1) Keyway to DIN 6885.1
- 2) Maximal slipping torque.  
A lower slipping torque can be set.
- 3) Maximal overrunning speed
- 4) Maximal speed rolling backwards, internal brake opened

When ordering, please specify direction of rotating seen from arrow »A«.  
 »R« Inner race overruns in clockwise direction.  
 »L« Inner race overruns in counterclockwise Direction

Refer to mounting and maintenance instructions pages 12 to 13

### MOUNTING EXAMPLE



# RSCI 20-130



### TYPE



Type RSCI is a centrifugal lift off sprag type freewheel with the inner race rotating. Only the inner race is designed for freewheeling. It is a non self-supported type.

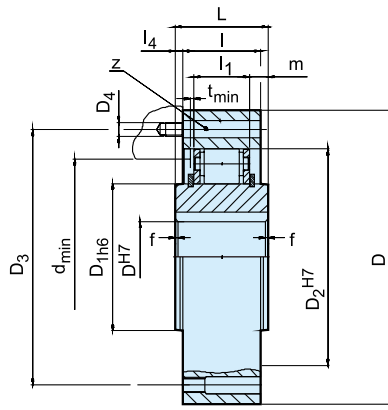
Bearings must be provided to ensure concentricity of the inner and outer races and support axial and radial loads, as shown overleaf. Concentricity and run-out limits must be observed. The RSCI type accepts all types of lubricant currently used in power transmission equipment.

It is possible to mount these freewheels directly in gear-boxes without separate lubrication. An oil mist is generally sufficient. Grease lubrication may be acceptable if the unit works mostly in overrunning condition, as on E-motors.

When used as a backstop, it must be checked that the overrunning speed will not go below the minimum speed given in the characteristics table. Please refer to page 74 (RSCI 180–300) for further information.

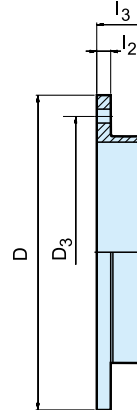
# Centrifugally Lift Off Sprags Freewheels

RSCI



RSCI 20-130

F8



| Type | Size                    |                         | Speeds                                  |                                         |                                         |                         |                          |                                      |                        |                        | Number |           |           |                        |                        |               |                          |           |                          |                        |                        |              |            | Weight |  |
|------|-------------------------|-------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-------------------------|--------------------------|--------------------------------------|------------------------|------------------------|--------|-----------|-----------|------------------------|------------------------|---------------|--------------------------|-----------|--------------------------|------------------------|------------------------|--------------|------------|--------|--|
| RSCI | d <sup>H7</sup><br>[mm] | T <sup>1)</sup><br>[Nm] | n <sup>2)</sup><br>[min <sup>-1</sup> ] | n <sup>3)</sup><br>[min <sup>-1</sup> ] | n <sup>4)</sup><br>[min <sup>-1</sup> ] | D <sup>5)</sup><br>[mm] | D <sub>1H6</sub><br>[mm] | D <sub>2</sub> <sup>H7</sup><br>[mm] | D <sub>3</sub><br>[mm] | D <sub>4</sub><br>[mm] | z      | L<br>[mm] | l<br>[mm] | l <sub>1</sub><br>[mm] | l <sub>4</sub><br>[mm] | f×45°<br>[mm] | d <sub>min</sub><br>[mm] | m<br>[mm] | t <sub>min</sub><br>[mm] | l <sub>2</sub><br>[mm] | l <sub>3</sub><br>[mm] | RSCI<br>[kg] | F8<br>[kg] |        |  |
|      | 20                      | 212                     | 315                                     | 750                                     | 15000                                   | 90                      | 36                       | 66                                   | 78                     | M6                     | 6      | 35        | 35        | 25                     | 0                      | 0,8           | 52                       | 5         | 1                        | 8                      | 16                     | 1,5          | 0,3        |        |  |
|      | 25                      | 319                     | 300                                     | 725                                     | 14000                                   | 95                      | 40                       | 70                                   | 82                     | M6                     | 6      | 35        | 35        | 25                     | 0                      | 1,0           | 56                       | 5         | 1                        | 8                      | 16                     | 1,6          | 0,4        |        |  |
|      | 30                      | 375                     | 290                                     | 700                                     | 11000                                   | 100                     | 45                       | 75                                   | 87                     | M6                     | 6      | 35        | 35        | 25                     | 0                      | 1,5           | 62                       | 5         | 1                        | 8                      | 16                     | 1,8          | 0,4        |        |  |
|      | 35                      | 550                     | 280                                     | 670                                     | 11000                                   | 110                     | 50                       | 80                                   | 96                     | M6                     | 8      | 35        | 35        | 25                     | 0                      | 1,5           | 66                       | 5         | 1                        | 8                      | 16                     | 2,1          | 0,5        |        |  |
|      | 40                      | 800                     | 260                                     | 630                                     | 8000                                    | 125                     | 60                       | 90                                   | 108                    | M8                     | 8      | 35        | 35        | 25                     | 0                      | 1,5           | 76                       | 5         | 1                        | 10                     | 21                     | 2,7          | 0,7        |        |  |
|      | 45                      | 912                     | 255                                     | 610                                     | 7000                                    | 130                     | 65                       | 95                                   | 112                    | M8                     | 8      | 35        | 35        | 25                     | 0                      | 1,5           | 82                       | 5         | 1                        | 10                     | 21                     | 2,9          | 0,9        |        |  |
|      | 50                      | 1400                    | 235                                     | 560                                     | 6000                                    | 150                     | 80                       | 110                                  | 132                    | M8                     | 8      | 40        | 40        | 25                     | 0                      | 1,5           | 100                      | 7,5       | 1                        | 10                     | 21                     | 4,3          | 1          |        |  |
|      | 60                      | 2350                    | 210                                     | 510                                     | 6000                                    | 175                     | 85                       | 125                                  | 155                    | M10                    | 8      | 60        | 50        | 36                     | 5                      | 2,0           | 110                      | 12        | 2                        | 12                     | 35                     | 6,5          | 1,8        |        |  |
|      | 70                      | 3050                    | 195                                     | 470                                     | 4000                                    | 190                     | 100                      | 140                                  | 165                    | M10                    | 12     | 60        | 50        | 36                     | 5                      | 2,0           | 120                      | 12        | 2                        | 12                     | 35                     | 8,6          | 1,9        |        |  |
|      | 80                      | 4500                    | 180                                     | 440                                     | 4000                                    | 210                     | 120                      | 160                                  | 185                    | M10                    | 12     | 70        | 60        | 36                     | 5                      | 2,0           | 140                      | 17        | 3                        | 12                     | 35                     | 12,5         | 2,6        |        |  |
|      | 80M                     | 5800                    | 155                                     | 375                                     | 4000                                    | 210                     | 120                      | 160                                  | 185                    | M10                    | 12     | 70        | 60        | 46                     | 5                      | 2,0           | 140                      | 12        | 2                        | 12                     | 35                     | 13,1         | 2,6        |        |  |
|      | 90                      | 5600                    | 170                                     | 410                                     | 3000                                    | 230                     | 140                      | 180                                  | 206                    | M12                    | 12     | 80        | 70        | 36                     | 5                      | 2,5           | 165                      | 22        | 3                        | 12                     | 35                     | 17,4         | 3,0        |        |  |
|      | 90M                     | 8700                    | 145                                     | 350                                     | 3000                                    | 245                     | 140                      | 180                                  | 206                    | M12                    | 12     | 80        | 70        | 46                     | 5                      | 2,5           | 160                      | 17        | 2                        | 12                     | 35                     | 18,3         | 3,0        |        |  |
|      | 100                     | 10500                   | 145                                     | 355                                     | 3000                                    | 290                     | 140                      | 210                                  | 258                    | M16                    | 12     | 90        | 80        | 52,6                   | 5                      | 2,5           | 180                      | 18,6      | 3                        | 15                     | 37                     | 28           | 5,0        |        |  |
|      | 100M                    | 16000                   | 140                                     | 340                                     | 2400                                    | 290                     | 170                      | 210                                  | 258                    | M16                    | 12     | 90        | 80        | 63                     | 5                      | 2,5           | 200                      | 13,5      | 2                        | 12                     | 35                     | 30           | 5,0        |        |  |
| 130  | 15750                   | 135                     | 330                                     | 2400                                    | 322                                     | 170                     | 240                      | 278                                  | M16                    | 12                     | 90     | 80        | 52,6      | 5                      | 3,0                    | 210           | 18,6                     | 3         | 15                       | 37                     | 35                     | 6,0          |            |        |  |

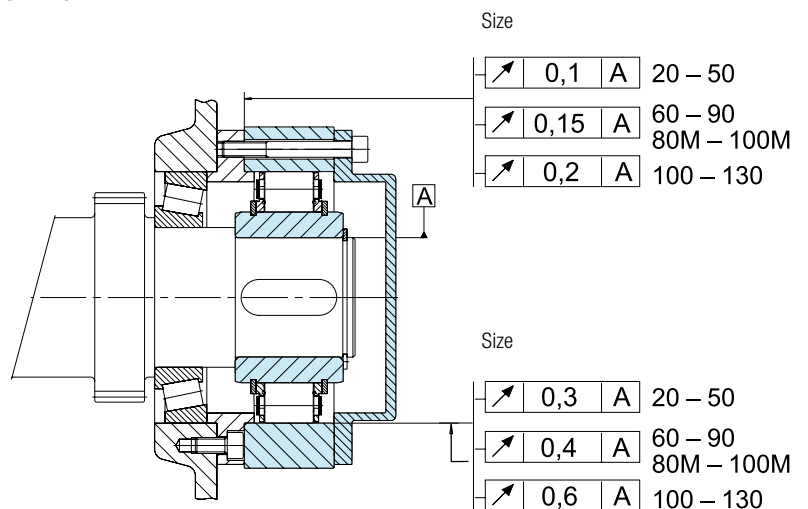
## NOTES

- $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque
- This minimum allowable overrun speed  $n_{min}$  should not be reduced under continuous operation. Possible reduction of this minimum speed on request
- Inner race overruns  
Keyway to DIN 6885.1
- Tolerance +1

Cover F8 must be ordered separately  
» Refer to mounting and maintenance instructions page 12 to 13

Other bore diameters on request

## MOUNTING EXAMPLE



# RSCI 180-300



### TYPE



Type RSCI is a centrifugal lift off sprag type freewheel with the inner race rotating. Only the inner race is designed for freewheeling.

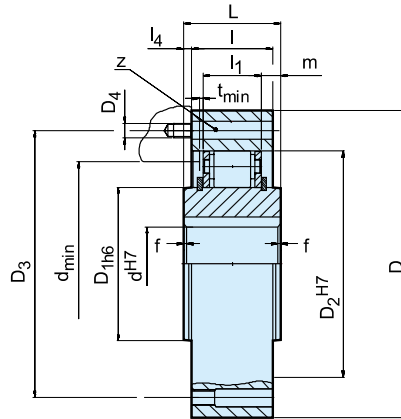
Primarily designed as a backstop, this type can be also used as an overrunning clutch in crawl drives, where

the overrunning speed is high but the driving speed is low and does not exceed the maximum driving speed shown in the table. Centering of the outer race must use the inner bore. The centering spigot must not contact the sprag cage. Please refer to page 72 (RSCI 20-130) for further information.

# Centrifugally Lift Off Sprags Freewheels

## RSCI 180-300

RSCI



| Type     | Size            | Torque                        | Speeds                         |                                |                                 |                 |                  |                              |                |                | Number |      |       |                |                |         |                  |      |                  |      |  | Weight |
|----------|-----------------|-------------------------------|--------------------------------|--------------------------------|---------------------------------|-----------------|------------------|------------------------------|----------------|----------------|--------|------|-------|----------------|----------------|---------|------------------|------|------------------|------|--|--------|
| RSCI     | d <sup>H7</sup> | T <sup>1)</sup> <sub>KN</sub> | n <sup>2)</sup> <sub>max</sub> | n <sup>3)</sup> <sub>min</sub> | n <sup>4)</sup> <sub>imax</sub> | D <sup>5)</sup> | D <sub>1h6</sub> | D <sub>2</sub> <sup>H7</sup> | D <sub>3</sub> | D <sub>4</sub> | z      | L    | l     | l <sub>1</sub> | l <sub>4</sub> | f × 45° | d <sub>min</sub> | m    | t <sub>min</sub> |      |  |        |
|          | [mm]            | [Nm]                          | [min <sup>-1</sup> ]           | [min <sup>-1</sup> ]           | [min <sup>-1</sup> ]            | [mm]            | [mm]             | [mm]                         | [mm]           |                |        | [mm] | [mm]  | [mm]           | [mm]           | [mm]    | [mm]             | [mm] | [mm]             | [kg] |  |        |
|          | 180             | 31500                         | 115                            | 285                            | 1300                            | 412             | 240              | 310                          | 360            | M20            | 12     | 90   | 80    | 53             | 5              | 3,5     | 280              | 18,6 | 3                | 59   |  |        |
|          | 180 M           | 50000                         | 90                             | 220                            | 1300                            | 422             | 240              | 310                          | 370            | M20            | 18     | 120  | 120   | 83             | 0              | 4       | 280              | 18,5 | 2                | 92   |  |        |
|          | 180 II          | 63000                         | 115                            | 285                            | 1300                            | 412             | 240              | 310                          | 360            | M20            | 24     | 160  | 160   | 118            | 0              | 3,5     | 280              | 22   | 3                | 116  |  |        |
|          | 180 II-M        | 100000                        | 90                             | 220                            | 1300                            | 425             | 240              | 310                          | 370            | M24            | 24     | 240  | 240   | 176            | 0              | 4       | 280              | 31   | 3                | 190  |  |        |
|          | 220             | 42500                         | 110                            | 265                            | 1100                            | 470             | 290              | 360                          | 410            | M20            | 16     | 105  | 80    | 60             | 12,5           | 4       | 330              | 19,5 | 3                | 90   |  |        |
|          | 220 M           | 68000                         | 85                             | 205                            | 1100                            | 480             | 290              | 360                          | 410            | M24            | 16     | 120  | 120   | 83             | 0              | 4       | 330              | 18,5 | 2                | 109  |  |        |
|          | 220 II          | 85000                         | 110                            | 265                            | 1100                            | 480             | 290              | 360                          | 430            | M24            | 18     | 160  | 160   | 130            | 0              | 4       | 330              | 15   | 3                | 159  |  |        |
|          | 220 II-M        | 136000                        | 85                             | 205                            | 1100                            | 490             | 290              | 360                          | 425            | M30            | 20     | 240  | 240   | 176            | 0              | 4       | 330              | 32   | 2                | 249  |  |        |
|          | 240             | 52000                         | 105                            | 250                            | 1100                            | 500             | 320              | 390                          | 440            | M20            | 16     | 105  | 90    | 60             | 7,5            | 4       | 360              | 15   | 2                | 95   |  |        |
|          | 240 M           | 83000                         | 80                             | 195                            | 1100                            | 520             | 320              | 390                          | 440            | M24            | 16     | 120  | 120   | 83             | 0              | 4       | 360              | 18,5 | 2                | 137  |  |        |
|          | 240 II          | 104000                        | 105                            | 250                            | 1100                            | 520             | 320              | 390                          | 440            | M24            | 24     | 180  | 180   | 132            | 0              | 4       | 360              | 24   | 2                | 191  |  |        |
|          | 240 II-M        | 166000                        | 80                             | 195                            | 1100                            | 530             | 320              | 390                          | 455            | M30            | 24     | 240  | 240   | 181            | 0              | 4       | 360              | 32   | 2                | 250  |  |        |
|          | 260             | 65000                         | 100                            | 240                            | 1000                            | 550             | 360              | 430                          | 500            | M24            | 16     | 105  | 105   | 60             | 0              | 4       | 400              | 22,5 | 2                | 130  |  |        |
|          | 260 M           | 100000                        | 75                             | 185                            | 1000                            | 580             | 360              | 430                          | 500            | M24            | 24     | 125  | 125   | 83             | 0              | 4       | 400              | 21   | 2                | 183  |  |        |
|          | 260 II          | 130000                        | 100                            | 240                            | 1000                            | 580             | 360              | 430                          | 500            | M24            | 24     | 210  | 210   | 132            | 0              | 4       | 400              | 39   | 2                | 262  |  |        |
|          | 260 II-M        | 200000                        | 75                             | 185                            | 1000                            | 580             | 360              | 430                          | 500            | M30            | 24     | 250  | 250   | 176            | 0              | 4       | 400              | 37   | 2                | 369  |  |        |
|          | 300             | 78000                         | 90                             | 225                            | 1000                            | 630             | 410              | 480                          | 560            | M24            | 24     | 105  | 105   | 60             | 0              | 4       | 460              | 22,5 | 3                | 174  |  |        |
|          | 300 M           | 125000                        | 70                             | 175                            | 1000                            | 630             | 410              | 480                          | 560            | M24            | 24     | 125  | 125   | 83             | 0              | 4       | 460              | 21   | 3                | 210  |  |        |
| 300 II   | 156000          | 90                            | 225                            | 1000                           | 630                             | 410             | 480              | 560                          | M24            | 24             | 210    | 210  | 134   | 0              | 4              | 460     | 38               | 3    | 351              |      |  |        |
| 300 II-M | 250000          | 70                            | 175                            | 1000                           | 630                             | 410             | 480              | 560                          | M30            | 24             | 250    | 250  | 182,6 | 0              | 4              | 460     | 33,7             | 3    | 457              |      |  |        |

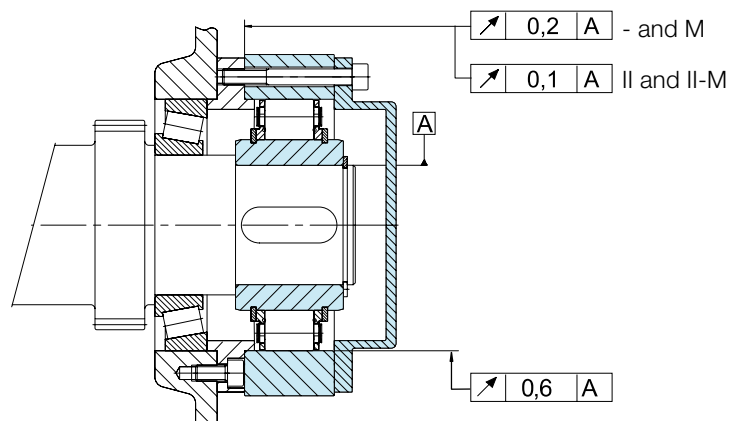
### NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- 2) This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque
- 3) This minimum allowable overrunning speed  $n_{imin}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request
- 4) Inner race overruns  
Keyway to DIN 6885.1
- 5) Tolerance +1

Cover F8 must be ordered separately  
» Refer to mounting and maintenance instructions  
page 12 to 13

Other bore diameters on request

### MOUNTING EXAMPLE



# RSXM



### TYPE



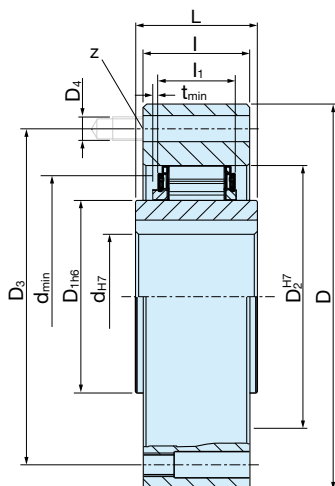
The series RSXM completes the small to medium backstop range, which commenced with the highly successful RSCI programme. Type RSXM is a centrifugal lift off sprag type freewheel with the inner race rotating. Only the inner race is designed for freewheeling. It is a non self-supported type. Bearings must be provided to ensure concentricity of the inner and outer races and support axial and radial loads, as shown overleaf. Concentricity and run-out limits must be observed.

The RSXM type accepts all types of lubricant currently used in power transmission equipment. It is possible to mount these freewheels directly in gearboxes without separate lubrication. An oil mist is generally sufficient. Grease lubrication may be acceptable if the unit works mostly in overrunning condition, as on E-motors. When used as a backstop, it must be checked that the overrunning speed will not go below the minimum speed given in the characteristic table.

# Centrifugally Lift Off Sprags Freewheels

**RSXM**

**RSXM**



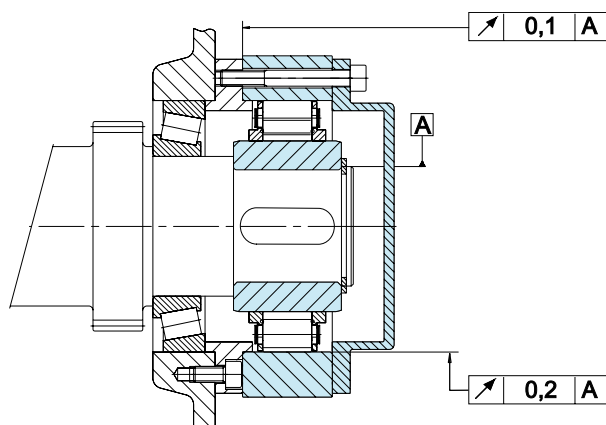
| Type        | Size | Bore dia.        | Torque                | Overrunning speeds                     |                                        |                                         |                  |                   |                    | Number        |               |             |             |             |               |                   |                   | Weight |
|-------------|------|------------------|-----------------------|----------------------------------------|----------------------------------------|-----------------------------------------|------------------|-------------------|--------------------|---------------|---------------|-------------|-------------|-------------|---------------|-------------------|-------------------|--------|
|             |      | $d^{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{max}^{2)}$<br>[min <sup>-1</sup> ] | $n_{min}^{3)}$<br>[min <sup>-1</sup> ] | $n_{imax}^{4)}$<br>[min <sup>-1</sup> ] | $D^{5)}$<br>[mm] | $D_{1h6}$<br>[mm] | $D_2^{H7}$<br>[mm] | $D_3$<br>[mm] | $D_4$<br>[mm] | $z$<br>[nb] | $L$<br>[mm] | $I$<br>[mm] | $I_1$<br>[mm] | $t_{min}$<br>[mm] | $d_{min}$<br>[mm] | [kg]   |
| <b>RSXM</b> | 31   | 20*              | 100                   | 340                                    | 820                                    | 20000                                   | 85               | 31                | 55                 | 70            | M6            | 6           | 24          | 25          | 17            | 1                 | 41                | 0,75   |
|             | 38   | 25*              | 135                   | 320                                    | 770                                    | 18500                                   | 90               | 38                | 62                 | 75            | M6            | 6           | 24          | 25          | 17            | 1                 | 50                | 0,95   |
|             | 46   | 25,30            | 425                   | 300                                    | 530                                    | 13500                                   | 95               | 46                | 70                 | 82            | M6            | 6           | 35          | 35          | 25            | 1                 | 53                | 1,4    |
|             | 51   | 30,35            | 525                   | 220                                    | 525                                    | 12500                                   | 105              | 51                | 75                 | 90            | M6            | 6           | 35          | 35          | 25            | 1                 | 62                | 1,8    |
|             | 56   | 35,40            | 625                   | 210                                    | 500                                    | 11500                                   | 110              | 56                | 80                 | 96            | M6            | 8           | 35          | 35          | 25            | 1                 | 70                | 1,8    |
|             | 61   | 35,40            | 420                   | 265                                    | 640                                    | 14000                                   | 120              | 61                | 85                 | 105           | M8            | 6           | 25          | 27          | 17            | 2                 | 73                | 1,8    |
|             | 66   | 35,40,45         | 850                   | 200                                    | 480                                    | 10000                                   | 132              | 66                | 90                 | 115           | M8            | 8           | 35          | 35          | 25            | 1                 | 78                | 2,7    |
|             | 76   | 40,45,50         | 1100                  | 190                                    | 460                                    | 9000                                    | 140              | 76                | 100                | 125           | M8            | 8           | 35          | 35          | 25            | 1                 | 90                | 3,1    |
|             | 86   | 45,50            | 1450                  | 180                                    | 440                                    | 8000                                    | 150              | 86                | 110                | 132           | M8            | 8           | 40          | 40          | 25            | 1                 | 100               | 4,2    |
|             | 101  | 45,55,60,70      | 1950                  | 175                                    | 420                                    | 6500                                    | 175              | 101               | 125                | 155           | M10           | 8           | 50          | 50          | 25            | 1                 | 117               | 7,3    |

## NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
  - 2) This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque.
  - 3) This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation. Possible reduction of this minimum speed in request.
  - 4) Inner race overruns.  
Keyway to DIN 6885.1  
\*Keyway to DIN 6885.3
  - 5) Tolerance +1
- » Refer to mounting and maintenance instructions page 12 to 13.

Other bore diameters on request.

## MOUNTING EXAMPLE



## Centrifugally Lift Off Sprags Freewheels

# RSRV RSRT



TYPE



The types RSRV and RSRT are centrifugally lift-off sprag type high speed backstops with integral torque limiter. Please refer to the RSCI design on catalogue pages 72 to 75 for complementary information on Stieber centrifugally lift-off sprag type backstops.

The high quality oil through-impregnated friction linings ensure a consistent and reliable slip torque even when not in operation for a long length of time. The slip torque is factory pre-set to the application requirements.

These assemblies are primarily intended for installation on multiple drives where two or more backstops share the reverse load, such as on large inclined conveyors.

The RSRV is the pure load-sharing version. No maintenance and adjustments are necessary.

In addition, the RSRT can be progressively released under load by a mechanical device. Alternatively we can offer a hydraulic release solution for a fully controlled safe release procedure.

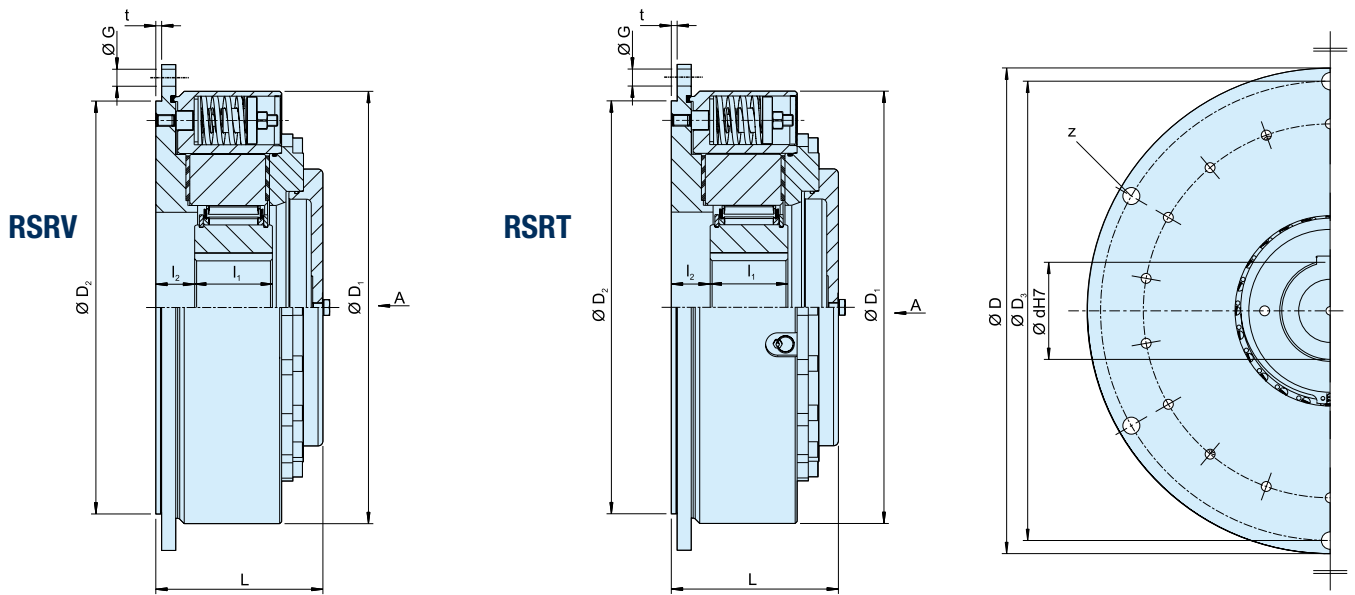
The slip torque should be set 20% higher than the maximum static return torque including overload conditions.

These units are not bearing supported internally. The outer member must be centred on the machine housing.

Concentricity and run-out limits must be observed.

# Centrifugally Lift Off Sprags Freewheels

## RSRV, RSRT



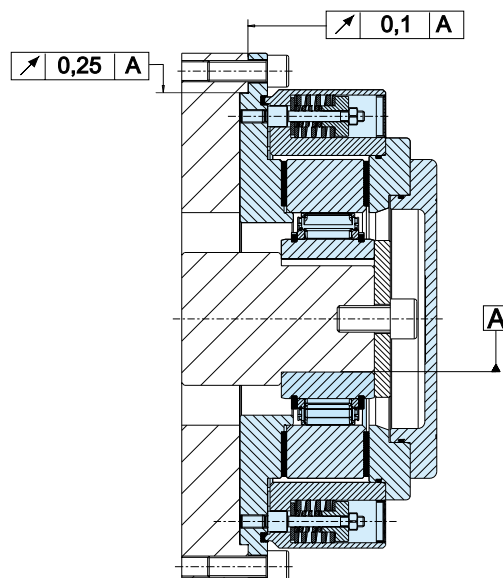
| Type         | Size | d <sup>H7</sup><br>[mm] | T <sup>1)</sup><br>[Nm] | n <sub>min</sub> <sup>2)</sup><br>[min <sup>-1</sup> ] | n <sub>max</sub> <sup>3)</sup><br>[min <sup>-1</sup> ] | D<br>[mm] | D <sub>1</sub><br>[mm] | D <sub>2 H7</sub><br>[mm] | D <sub>3</sub><br>[mm] | t<br>[mm] | z  | L<br>[mm] | l <sub>1</sub><br>[mm] | l <sub>2</sub> <sup>4)</sup><br>[mm] | G   | Weight<br>[kg] |
|--------------|------|-------------------------|-------------------------|--------------------------------------------------------|--------------------------------------------------------|-----------|------------------------|---------------------------|------------------------|-----------|----|-----------|------------------------|--------------------------------------|-----|----------------|
| RSRV<br>RSRT | 85   | 50, 60                  | 1400                    | 490                                                    | 5300                                                   | 330       | 286                    | 280                       | 308                    | 6         | 6  | 135       | 60                     | 29                                   | M12 | 50             |
|              | 100  | 60, 70                  | 2300                    | 480                                                    | 4100                                                   | 350       | 308                    | 300                       | 328                    | 6         | 6  | 140       | 60                     | 31                                   | M12 | 60             |
|              | 120  | 70, 80                  | 3400                    | 370                                                    | 3600                                                   | 400       | 345                    | 340                       | 373                    | 6         | 6  | 150       | 70                     | 31                                   | M16 | 80             |
|              | 140  | 65, 90                  | 4500                    | 420                                                    | 2700                                                   | 430       | 375                    | 375                       | 403                    | 6         | 6  | 150       | 70                     | 31                                   | M16 | 95             |
|              | 170  | 90, 100                 | 8000                    | 400                                                    | 2400                                                   | 500       | 445                    | 425                       | 473                    | 6         | 6  | 170       | 80                     | 40                                   | M16 | 150            |
|              | 200  | 130, 150                | 12500                   | 370                                                    | 2400                                                   | 555       | 500                    | 495                       | 528                    | 6         | 6  | 170       | 80                     | 40                                   | M16 | 180            |
|              | 240  | 150, 180                | 21 500                  | 310                                                    | 1300                                                   | 710       | 630                    | 630                       | 670                    | 8         | 12 | 185       | 90                     | 50                                   | M20 | 350            |
|              | 260  | 150, 190                | 30 000                  | 275                                                    | 1000                                                   | 750       | 670                    | 670                       | 710                    | 8         | 12 | 205       | 105                    | 50                                   | M20 | 420            |

### NOTES

- 1) Maximal slipping torque.  
A lower slipping torque can be set.
  - 2) This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request.
  - 3) Maximal speed, inner race overruns  
Keyway to DIN 6885.1
  - 4) Tolerance +2
- When ordering, please specify direction of rotating seen from arrow »A«.
- »R« Inner race overruns in clockwise direction.  
»L« Inner race overruns in counterclockwise direction.

» Refer to mounting and maintenance instructions pages 12 to 13

### MOUNTING EXAMPLE



## Centrifugally Lift Off Sprags Freewheels

# RDBK RDBK-H



### TYPE



The type RDBK is a centrifugally lift-off sprag RSCI high speed backstop (Please refer to pages 72 to 75) equipped with integral torque limiter. The latter limits the backstop transmissible torque to a value that is factory set-up according to customer request.

This design will be used mostly as backstop in multi-drive systems, such as on large inclined conveyors, where two or more backstops share the reverse load.

The torque limiting function is performed through a multi-disc brake working in oil. This solution provides not only for a high torque density of the complete unit, but also insures that the set slip torque remains constant over the working life time regardless of the environmental conditions.

The RDBK sub-assembly which rotate backwards under overload is fully bearing supported. The unit is

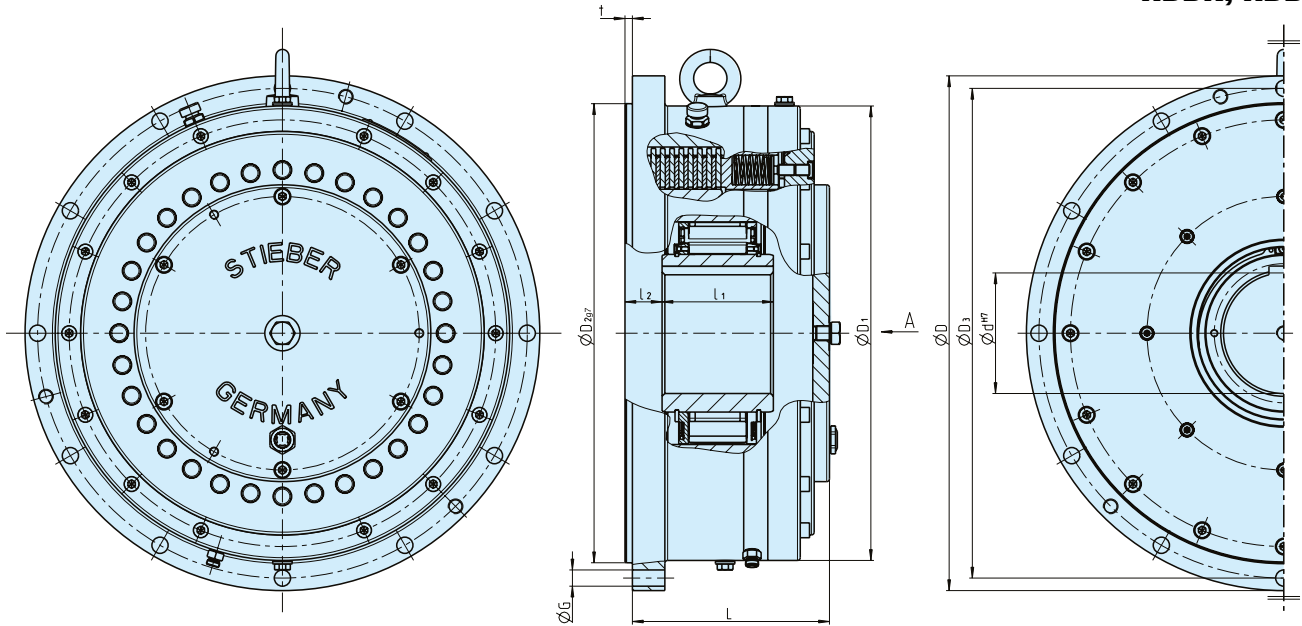
capable of performing as many reverse rotations as may be required (within the limits of energy dissipation) to completely unload the conveyor prior to maintenance work being carried out. Within some time intervals this type can rotate regularly backwards damage free.

The option of a release function manually actuated is also available. A hydraulic solution is the preferred one, nevertheless a full mechanical one can be supplied. The release is performed using a simple hand pump to actuate the internal hydraulic cylinder; progressively releasing the backstop.

The backstop function is of the built-in design. The outer part must be centered and fixed on the machine housing. The run-out and squareness tolerances must be respected.

# Centrifugally Lift Off Sprags Freewheels

## RDBK, RDBK-H

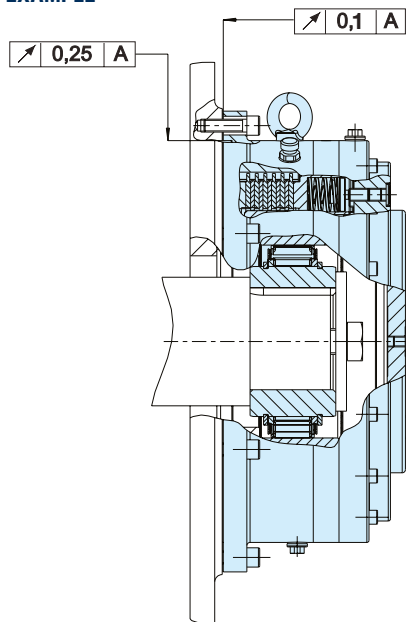


| Type                    | Size   |                        |                  |                                        |                                        |                                         |             |               |                   |               |             |             |               |                    | Number |             | Weight |
|-------------------------|--------|------------------------|------------------|----------------------------------------|----------------------------------------|-----------------------------------------|-------------|---------------|-------------------|---------------|-------------|-------------|---------------|--------------------|--------|-------------|--------|
|                         |        | $d_{H7}^{max}$<br>[mm] | $T^{1)}$<br>[Nm] | $n_{min}^{2)}$<br>[min <sup>-1</sup> ] | $n_{max}^{3)}$<br>[min <sup>-1</sup> ] | $n_{rmax}^{4)}$<br>[min <sup>-1</sup> ] | $D$<br>[mm] | $D_1$<br>[mm] | $D_{297}$<br>[mm] | $D_3$<br>[mm] | $t$<br>[mm] | $L$<br>[mm] | $I_1$<br>[mm] | $I_2^{5)}$<br>[mm] | $Z$    | $G$<br>[mm] | [kg]   |
| <b>RDBK<br/>RDBK..H</b> | 125-63 | 60                     | 5500             | 360                                    | 6000                                   | 270                                     | 330         | 285           | 280               | 308           | 6           | 158         | 90            | 29                 | 6      | M12         | 65     |
|                         | 180-58 | 100                    | 12500            | 290                                    | 3000                                   | 220                                     | 430         | 375           | 375               | 403           | 6           | 170         | 80            | 31                 | 6      | M16         | 115    |
|                         | 210-63 | 130                    | 19000            | 270                                    | 2400                                   | 205                                     | 500         | 438           | 425               | 473           | 6           | 190         | 90            | 40                 | 6      | M16         | 170    |
|                         | 240-83 | 130                    | 30000            | 260                                    | 2400                                   | 195                                     | 555         | 490           | 495               | 528           | 8           | 215         | 120           | 40                 | 12     | M16         | 250    |
|                         | 280-83 | 150                    | 40000            | 235                                    | 2000                                   | 175                                     | 660         | 580           | 580               | 620           | 8           | 230         | 120           | 40                 | 12     | M20         | 380    |
|                         | 280-96 | 150                    | 50000            | 220                                    | 2000                                   | 165                                     | 660         | 580           | 580               | 620           | 8           | 230         | 120           | 40                 | 12     | M20         | 380    |
|                         | 310-83 | 180                    | 60000            | 220                                    | 1300                                   | 165                                     | 710         | 630           | 630               | 670           | 8           | 235         | 120           | 40                 | 12     | M20         | 450    |
|                         | 310-96 | 180                    | 70000            | 210                                    | 1300                                   | 160                                     | 710         | 630           | 630               | 670           | 8           | 235         | 120           | 40                 | 12     | M20         | 450    |
|                         | 360-83 | 230                    | 82000            | 200                                    | 1100                                   | 150                                     | 780         | 700           | 700               | 740           | 8           | 245         | 120           | 40                 | 16     | M20         | 570    |
|                         | 360-96 | 230                    | 102000           | 190                                    | 1100                                   | 145                                     | 780         | 700           | 700               | 740           | 8           | 245         | 120           | 40                 | 16     | M20         | 570    |
|                         | 460-96 | 300                    | 180000           | 170                                    | 1000                                   | 130                                     | 975         | 870           | 850               | 925           | 10          | 275         | 120           | 63                 | 16     | M30         | 950    |

### NOTES

- 1) Maximal slipping torque.  
A lower slipping torque can be set.
  - 2) This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request.
  - 3) Maximal speed, inner race overruns  
Keyway to DIN 6885.1
  - 4) Maximum speed rolling backwards,  
internal brake open
  - 5) Tolerance +2
- When ordering, please specify direction of rotating seen from arrow »A«.
- »R« Inner race overruns in clockwise direction.  
»L« Inner race overruns in counterclockwise direction.
- » Refer to mounting and maintenance instructions pages 12 to 13

### MOUNTING EXAMPLE



# Centrifugally Lift Off Sprags Freewheels

# RIZ RINZ



TYPE



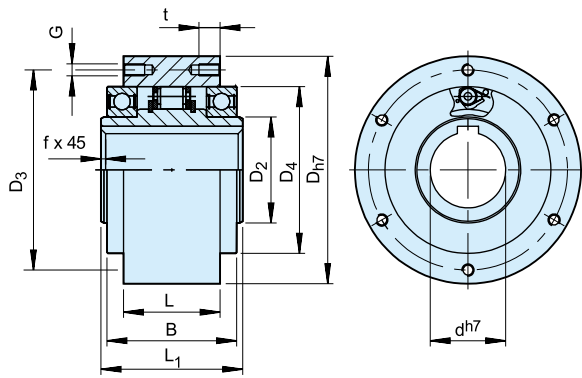
Types RIZ, RINZ are centrifugal lift off sprag type freewheels with the inner race rotating. Suitable for backstop, or overrunning clutch applications. Only the inner race is designed for freewheeling.

These units are part of the Stieber modular system. They are bearing supported using series 60.. bearings, grease lubricated and fitted with ZZ seals. Units are delivered as standard lubricated with grease and ready

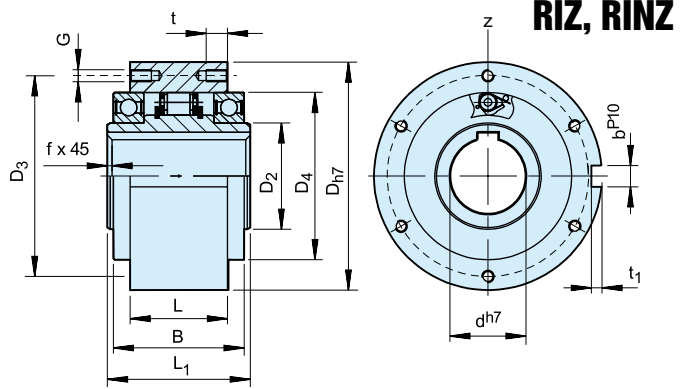
to install in either a horizontal or vertical position. Types RIZ, RINZ are designed to be used with G series covers. The following pages give further important information for use of this type unit.

If the unit is to be installed inside a housing where oil lubrication is available, please specify type RIW, RIWN. The F series covers from type GFR, GFRN are then used without shaft seals.

# Centrifugally Lift Off Sprags Freewheels



**RIZ**



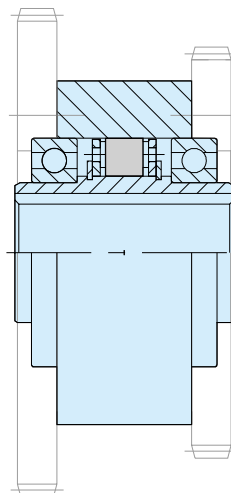
**RINZ**

| Type                | Size             | Speeds                |                                        |                                        |                                         |                  | Number        |               |               |     |     |               |             |             |             |             | Weight        |                   |      |
|---------------------|------------------|-----------------------|----------------------------------------|----------------------------------------|-----------------------------------------|------------------|---------------|---------------|---------------|-----|-----|---------------|-------------|-------------|-------------|-------------|---------------|-------------------|------|
|                     | $d_{h7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{max}^{2)}$<br>[min <sup>-1</sup> ] | $n_{min}^{3)}$<br>[min <sup>-1</sup> ] | $n_{imax}^{4)}$<br>[min <sup>-1</sup> ] | $D_{h7}$<br>[mm] | $D_2$<br>[mm] | $D_4$<br>[mm] | $D_3$<br>[mm] | $G$ | $z$ | $L_1$<br>[mm] | $L$<br>[mm] | $B$<br>[mm] | $t$<br>[mm] | $f$<br>[mm] | $t_1$<br>[mm] | $b^{P10}$<br>[mm] | [kg] |
| <b>RIZ<br/>RINZ</b> | 30               | 375                   | 290                                    | 700                                    | 9000                                    | 100              | 45            | 75            | 87            | M6  | 6   | 68            | 43          | 60          | 10          | 1,0         | 4             | 8                 | 2,3  |
|                     | 35               | 550                   | 280                                    | 670                                    | 8500                                    | 110              | 50            | 80            | 96            | M6  | 6   | 74            | 45          | 63          | 12          | 1,0         | 5             | 10                | 3,2  |
|                     | 40               | 800                   | 260                                    | 630                                    | 7500                                    | 125              | 55            | 90            | 108           | M8  | 6   | 86            | 53          | 73          | 14          | 1,5         | 5             | 12                | 4,8  |
|                     | 45               | 912                   | 255                                    | 610                                    | 6700                                    | 130              | 60            | 95            | 112           | M8  | 8   | 86            | 53          | 73          | 14          | 1,5         | 5,5           | 14                | 5,0  |
|                     | 50               | 1400                  | 235                                    | 560                                    | 6000                                    | 150              | 70            | 110           | 132           | M8  | 8   | 94            | 64          | 86          | 14          | 1,5         | 5,5           | 14                | 7,5  |
|                     | 60               | 2350                  | 210                                    | 510                                    | 5300                                    | 170              | 80            | 125           | 150           | M10 | 10  | 114           | 78          | 105         | 16          | 2,0         | 7             | 18                | 12,7 |
|                     | 70               | 3050                  | 195                                    | 470                                    | 4000                                    | 190              | 90            | 140           | 165           | M10 | 10  | 134           | 95          | 124         | 16          | 2,5         | 7,5           | 20                | 14,5 |
|                     | 80               | 5800                  | 155                                    | 375                                    | 4000                                    | 210              | 105           | 160           | 185           | M10 | 10  | 144           | 100         | 124         | 16          | 2,5         | 9             | 22                | 19,0 |
|                     | 90               | 8700                  | 145                                    | 350                                    | 3000                                    | 230              | 120           | 180           | 206           | M12 | 10  | 158           | 115         | 143         | 20          | 3,0         | 9             | 25                | 29,5 |
|                     | 100              | 16000                 | 140                                    | 340                                    | 2400                                    | 270              | 140           | 210           | 240           | M16 | 10  | 182           | 120         | 153         | 24          | 3,0         | 10            | 28                | 42,5 |
|                     | 130              | 23000                 | 130                                    | 320                                    | 2400                                    | 310              | 160           | 240           | 278           | M16 | 12  | 212           | 152         | 194         | 24          | 3,0         | 11            | 32                | 70   |

## NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
  - 2) This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque
  - 3) This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request
  - 4) Inner race overruns  
Keyway to DIN 6885.1
- » Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



## Centrifugally Lift Off Sprags Freewheels

# RIZ..G1G2, RIZ..G2G7 RINZ..G5G5



Back of  
RIZ..G1G2

## TYPE

RIZ..G1G2

RINZ.. G5G5



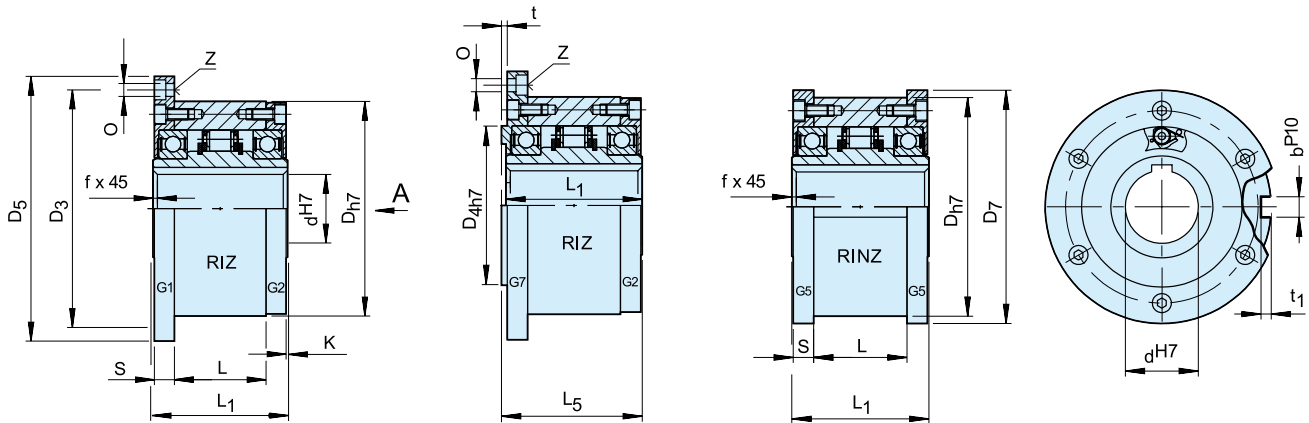
Types RIZ..G1G2/G7G2, RINZ..G5G5 are centrifugal lift off sprag type freewheels with the inner race rotating. Only the inner race is designed for freewheeling.

These are self-contained units designed for overrunning clutch applications. Typically used in crawl drives, where the overrunning speed is high but the drive

speed is low and does not exceed the maximum driving speed specified in the table. They are type RIZ, RINZ (see page 82 for more information) equipped with G type covers featuring a grease pocket and contact free seal. When ordered complete, the unit is delivered grease lubricated, ready for either horizontal or vertical installation.

# Centrifugally Lift Off Sprags Freewheels

## RIZ..G1G2, RIZ..G2G7, RINZ..G5G5



**RIZ...G1G2**

**RIZ...G2G7**

**RINZ...G5G5**

| Type                | Size             | Speeds                |                                        |                                         |                                         |                  | Number        |                   |               |               |     |     |             |               |             |               | Weight      |               |                   |             |      |
|---------------------|------------------|-----------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|------------------|---------------|-------------------|---------------|---------------|-----|-----|-------------|---------------|-------------|---------------|-------------|---------------|-------------------|-------------|------|
|                     | $d_{H7}$<br>[mm] | $T_{KN}^{1)}$<br>[Nm] | $n_{max}^{2)}$<br>[min <sup>-1</sup> ] | $n_{imin}^{3)}$<br>[min <sup>-1</sup> ] | $n_{imax}^{4)}$<br>[min <sup>-1</sup> ] | $D_{H7}$<br>[mm] | $D_3$<br>[mm] | $D_{4H7}$<br>[mm] | $D_5$<br>[mm] | $D_7$<br>[mm] | $O$ | $z$ | $S$<br>[mm] | $L_1$<br>[mm] | $L$<br>[mm] | $L_5$<br>[mm] | $t$<br>[mm] | $t_1$<br>[mm] | $b^{P10}$<br>[mm] | $f$<br>[mm] | [kg] |
| <b>RIZ<br/>RINZ</b> | 30               | 375                   | 290                                    | 700                                     | 9000                                    | 100              | 114           | 75                | 128           | 109           | 6,6 | 6   | 11,5        | 68            | 43          | 70            | 3           | 4             | 8                 | 1,0         | 3,9  |
|                     | 35               | 550                   | 280                                    | 670                                     | 8500                                    | 110              | 124           | 80                | 140           | 119           | 6,6 | 6   | 13,5        | 74            | 45          | 76            | 3,5         | 5             | 10                | 1,0         | 4,9  |
|                     | 40               | 800                   | 260                                    | 630                                     | 7500                                    | 125              | 142           | 90                | 160           | 135           | 9   | 6   | 15,5        | 86            | 53          | 88            | 3,5         | 5             | 12                | 1,5         | 7,5  |
|                     | 45               | 912                   | 255                                    | 610                                     | 6700                                    | 130              | 146           | 95                | 165           | 140           | 9   | 8   | 15,5        | 86            | 53          | 88            | 3,5         | 5,5           | 14                | 1,5         | 7,8  |
|                     | 50               | 1400                  | 235                                    | 560                                     | 6000                                    | 150              | 166           | 110               | 185           | 160           | 9   | 8   | 14          | 94            | 64          | 96            | 4           | 5,5           | 14                | 1,5         | 10,8 |
|                     | 60               | 2350                  | 210                                    | 510                                     | 5300                                    | 170              | 192           | 125               | 214           | 182           | 11  | 10  | 17          | 114           | 78          | 116           | 4           | 7             | 18                | 2,0         | 16,8 |
|                     | 70               | 3050                  | 195                                    | 470                                     | 4000                                    | 190              | 212           | 140               | 234           | 202           | 11  | 10  | 18,5        | 134           | 95          | 136           | 4           | 7,5           | 20                | 2,5         | 20,8 |
|                     | 80               | 5800                  | 155                                    | 375                                     | 4000                                    | 210              | 232           | 160               | 254           | 222           | 11  | 10  | 21          | 144           | 100         | 146           | 4           | 9             | 22                | 2,5         | 27   |
|                     | 90               | 8700                  | 145                                    | 350                                     | 3000                                    | 230              | 254           | 180               | 278           | 242           | 14  | 10  | 20,5        | 158           | 115         | 160           | 4,5         | 9             | 25                | 3,0         | 40   |
|                     | 100              | 16000                 | 140                                    | 340                                     | 2400                                    | 270              | 305           | 210               | 335           | 282           | 18  | 10  | 30          | 182           | 120         | 184           | 5           | 10            | 28                | 3,0         | 67   |
|                     | 130              | 23000                 | 130                                    | 320                                     | 2400                                    | 310              | 345           | 240               | 380           | 322           | 18  | 12  | 29          | 212           | 152         | 214           | 5           | 11            | 32                | 3,0         | 94   |

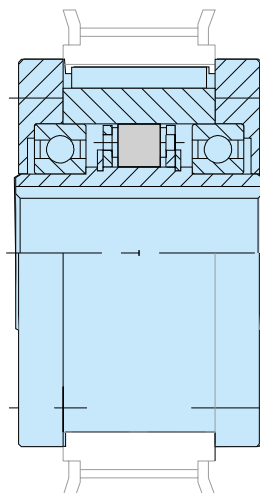
### NOTES

- 1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11
- 2) This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque
- 3) This minimum allowable overrunning speed  $n_{imin}$  should not be reduced under continuous operation. Possible reduction of this minimum speed on request
- 4) Inner race overruns  
Keyway to DIN 6885.1

When ordering, please specify direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

» Refer to mounting and maintenance instructions page 12 to 13

### MOUNTING EXAMPLE



## Centrifugally Lift Off Sprags Freewheels

# RIZ..G2G3 RIZ..G3G4



TYPE



RIZ..G2G3

RIZ..G3G4

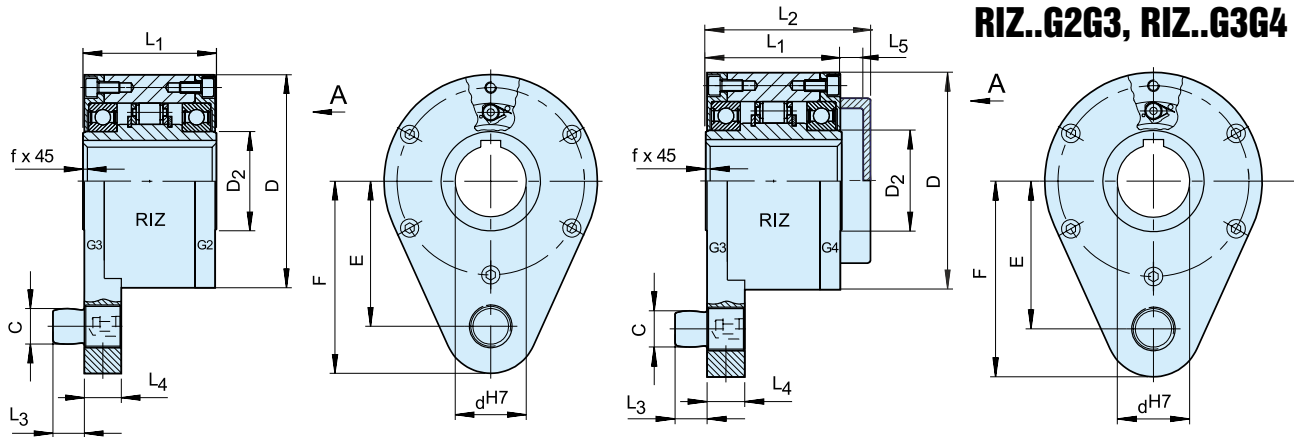
Types RIZ..G2G3/G3G4 are centrifugal lift off sprag type freewheels with the inner race rotating. Only the inner race is designed for freewheeling.

They are self-contained units designed for backstop applications. The overrunning speed must not be less than the minimum specified in the table. This must be considered if using a variable speed drive. The torque bolt must be fitted into a slot on a fixed part of the

machine. The radial clearance should be 1–3 % of the bolt diameter. The torque arm and bearings must not be axially loaded.

They are a type RIZ, (see page 82) equipped with G type covers featuring grease pockets and contact free seals. When ordered complete, the unit is delivered grease lubricated, ready for either horizontal or vertical installation.

# Centrifugally Lift Off Sprags Freewheels



**RIZ...G2G3**

**RIZ...G3G4**

| Type                   | Size            |                               | Speeds                          |                                 |      |                |      |                |                |                |                |      |      |                |      | Weight |
|------------------------|-----------------|-------------------------------|---------------------------------|---------------------------------|------|----------------|------|----------------|----------------|----------------|----------------|------|------|----------------|------|--------|
| RIZ..G2G3<br>RIZ..G3G4 | d <sup>H7</sup> | T <sub>KN</sub> <sup>1)</sup> | n <sub>imin</sub> <sup>2)</sup> | n <sub>imax</sub> <sup>3)</sup> | D    | D <sub>2</sub> | C    | L <sub>1</sub> | L <sub>2</sub> | L <sub>3</sub> | L <sub>4</sub> | F    | E    | L <sub>5</sub> | f    |        |
|                        | [mm]            | [Nm]                          | [min <sup>-1</sup> ]            | [min <sup>-1</sup> ]            | [mm] | [mm]           | [mm] | [mm]           | [mm]           | [mm]           | [mm]           | [mm] | [mm] | [mm]           | [mm] | [kg]   |
|                        | 30              | 375                           | 700                             | 9000                            | 100  | 45             | 16   | 68             | 88             | 14             | 18             | 92   | 68   | 15             | 1,0  | 4,5    |
|                        | 35              | 550                           | 670                             | 8500                            | 110  | 50             | 20   | 74             | 96             | 18             | 25             | 102  | 76   | 17             | 1,0  | 5,6    |
|                        | 40              | 800                           | 630                             | 7500                            | 125  | 55             | 20   | 86             | 109            | 18             | 25             | 112  | 85   | 18             | 1,5  | 8,5    |
|                        | 45              | 912                           | 610                             | 6700                            | 130  | 60             | 25   | 86             | 109            | 22             | 25             | 120  | 90   | 18             | 1,5  | 8,9    |
|                        | 50              | 1400                          | 560                             | 6000                            | 150  | 70             | 25   | 94             | 116            | 22             | 25             | 135  | 102  | 18             | 1,5  | 12,8   |
|                        | 60              | 2350                          | 510                             | 5300                            | 170  | 80             | 32   | 114            | 139            | 25             | 30             | 145  | 112  | 20             | 2,0  | 19,3   |
|                        | 70              | 3050                          | 470                             | 4000                            | 190  | 90             | 38   | 134            | 168            | 30             | 35             | 175  | 135  | 26             | 2,5  | 23,5   |
|                        | 80              | 5800                          | 375                             | 4000                            | 210  | 105            | 38   | 144            | 178            | 30             | 35             | 185  | 145  | 26             | 2,5  | 32     |
|                        | 90              | 8700                          | 350                             | 3000                            | 230  | 120            | 50   | 158            | 192            | 40             | 45             | 205  | 155  | 26             | 3,0  | 47,2   |
| 100                    | 16000           | 340                           | 2400                            | 270                             | 140  | 50             | 182  | 217            | 40             | 45             | 230            | 180  | 26   | 3,0            | 76   |        |
| 130                    | 23000           | 320                           | 2400                            | 310                             | 160  | 68             | 212  | 250            | 55             | 60             | 268            | 205  | 28   | 3,0            | 110  |        |

## NOTES

1)  $T_{max} = 2 \times T_{KN}$   
» Refer to Selection page 7 to 11

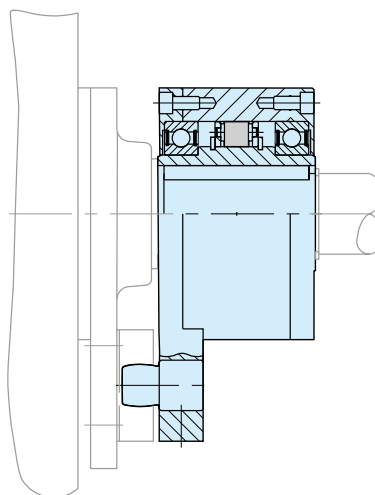
2) This minimum allowable overrunning speed  $n_{imi}$  should not be reduced under continuous operation. Possible reduction of this minimum speed on request.

3) Inner race overruns  
Keyway to DIN 6885.1

When ordering, please specify direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

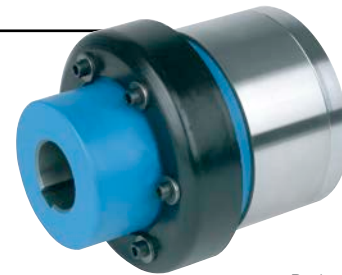
» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



## Centrifugally Lift Off Sprags Freewheels

# RIZ..ESG2



Back of  
RIZ..ESG2

### TYPE



**T**ype RIZ..ESG2 is a centrifugal lift off sprag type freewheel when the inner race is overrunning. Only this race is designed for freewheeling.

It is a self-contained unit designed for overrunning clutch applications. Typically used in crawl drives where the overrunning speed is high, but the drive speed is low and does not exceed the maximum driving speed specified in the table.

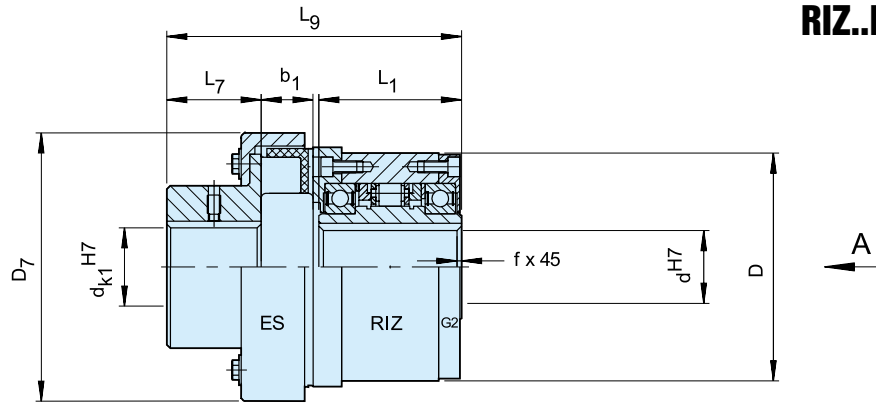
It is a type RIZ (see page 82 for further information) equipped with an ES elastic coupling and a cover G2. The ES type is a rugged coupling, economical and suitable for many applications.

The inner race must overrun and will be connected to the driven machine shaft. When ordered complete, the unit is delivered grease lubricated, ready for either horizontal or vertical installation.

# Centrifugally Lift Off Sprags Freewheels

**RIZ..ESG2**

**RIZ..ESG2**



Coupling half: keyway tolerance P9

| Type             | Type                  |      |                  | Speeds                                 |                                        |                                        |                       |           |                        |                        |                        |                        |                        | Weight |
|------------------|-----------------------|------|------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------|-----------|------------------------|------------------------|------------------------|------------------------|------------------------|--------|
|                  | $d_{K1}^{H7}$<br>[mm] | ES   | $T_{KN}$<br>[Nm] | $n_{max}^{1)}$<br>[min <sup>-1</sup> ] | $n_{min}^{2)}$<br>[min <sup>-1</sup> ] | $n_{max}^{3)}$<br>[min <sup>-1</sup> ] | $d_{K1}^{H7}$<br>[mm] | D<br>[mm] | L <sub>1</sub><br>[mm] | D <sub>7</sub><br>[mm] | L <sub>7</sub><br>[mm] | L <sub>9</sub><br>[mm] | b <sub>1</sub><br>[mm] | [kg]   |
| <b>RIZ..ESG2</b> | 30                    | 10   | 80               | 290                                    | 700                                    | 9000                                   | 10.. 45               | 100       | 68                     | 117                    | 48                     | 133,5                  | 17                     | 5,0    |
|                  | 35                    | 16   | 250              | 280                                    | 670                                    | 8500                                   | 10.. 50               | 110       | 74                     | 129                    | 52                     | 143,5                  | 19                     | 6,6    |
|                  | 40                    | 25   | 400              | 260                                    | 630                                    | 7500                                   | 15.. 55               | 125       | 86                     | 134                    | 57                     | 163,5                  | 22                     | 9,9    |
|                  | 45                    | 40   | 625              | 255                                    | 610                                    | 6700                                   | 20.. 60               | 130       | 86                     | 155                    | 61                     | 171,5                  | 26                     | 11,3   |
|                  | 50                    | 63   | 1000             | 235                                    | 560                                    | 6000                                   | 20.. 70               | 150       | 94                     | 175                    | 67                     | 194                    | 30                     | 16,7   |
|                  | 60                    | 100  | 1600             | 210                                    | 510                                    | 5300                                   | 25.. 75               | 170       | 114                    | 196                    | 75                     | 227                    | 35                     | 24,0   |
|                  | 70                    | 160  | 2500             | 195                                    | 470                                    | 4000                                   | 30.. 80               | 190       | 134                    | 223                    | 82                     | 261,5                  | 41                     | 32,5   |
|                  | 80                    | 400  | 5000             | 155                                    | 375                                    | 4000                                   | 45.. 100              | 210       | 144                    | 290                    | 97                     | 305                    | 56                     | 52     |
|                  | 90                    | 630  | 7500             | 145                                    | 350                                    | 3000                                   | 60.. 120              | 230       | 158                    | 330                    | 116                    | 346,5                  | 64                     | 78     |
|                  | 100                   | 1000 | 12500            | 140                                    | 340                                    | 2400                                   | 75.. 140              | 270       | 182                    | 378                    | 140                    | 386                    | 75                     | 136    |
|                  | 130                   | 1600 | 20000            | 130                                    | 320                                    | 2400                                   | 90.. 160              | 310       | 212                    | 432                    | 160                    | 442                    | 85                     | 199    |

## NOTES

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

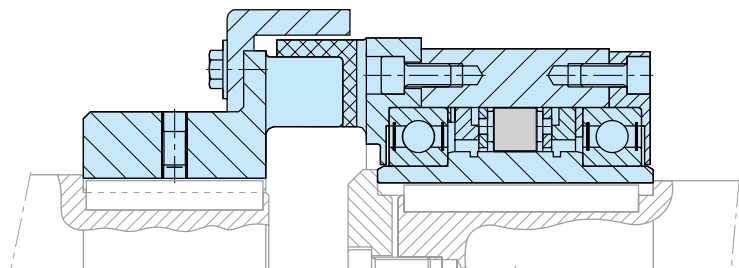
2) Inner race  
This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request

3) Inner race  
Keyway to DIN 6885.11

When ordering, please specify  $d_k$  bore diameter and direction of rotation seen from arrow „A“: „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



# RIZ..ELG2



Back of  
RIZ..ELG2

## TYPE



Type RIZ..ELG2 is a centrifugal lift off sprag type freewheel when the inner race is overrunning. Only this race is designed for freewheeling. It is a self-contained unit designed for overrunning clutch applications.

Typically used in crawl drives where the overrunning speed is high, but the drive speed is low and does not exceed the maximum driving speed specified in the table. It is a type RIZ (see page 82 for further information)

equipped with an EL elastic coupling and a cover G2.

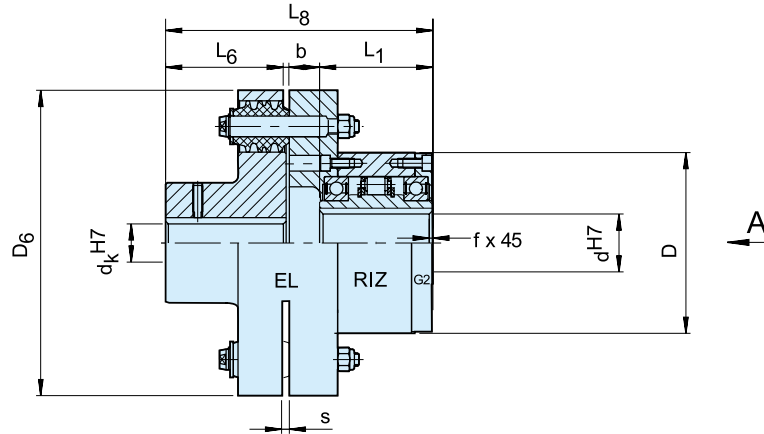
The EL type is a high performance coupling used to damp torsional vibrations and to accept misalignment without excess bearing load.

The inner race must overrun and will be connected to the driven machine shaft. When ordered complete, the unit is delivered grease lubricated, ready for either horizontal or vertical installation. The torques given in the table are determined by the freewheel capacity.

# Centrifugally Lift Off Sprags Freewheels

**RIZ..ELG2**

**RIZ..ELG2**



| Type             | Size               |    |                  | Speeds                                 |                                        |                                        |                    |           |                        |                        |                        |                        |           |           |           |  | Weight |
|------------------|--------------------|----|------------------|----------------------------------------|----------------------------------------|----------------------------------------|--------------------|-----------|------------------------|------------------------|------------------------|------------------------|-----------|-----------|-----------|--|--------|
|                  | $d_K^{H7}$<br>[mm] | EL | $T_{KN}$<br>[Nm] | $n_{max}^{1)}$<br>[min <sup>-1</sup> ] | $n_{min}^{2)}$<br>[min <sup>-1</sup> ] | $n_{max}^{3)}$<br>[min <sup>-1</sup> ] | $d_K^{H7}$<br>[mm] | D<br>[mm] | L <sub>1</sub><br>[mm] | D <sub>6</sub><br>[mm] | L <sub>6</sub><br>[mm] | L <sub>8</sub><br>[mm] | b<br>[mm] | s<br>[mm] | f<br>[mm] |  | [kg]   |
| <b>RIZ..ELG2</b> | 30                 | 5  | 375              | 290                                    | 700                                    | 9000                                   | 20...55            | 100       | 68                     | 160                    | 60                     | 147,5                  | 19,5      | 2         | 1         |  | 11     |
|                  | 35                 | 6  | 550              | 280                                    | 670                                    | 8500                                   | 25...75            | 110       | 74                     | 190                    | 75                     | 166,5                  | 17,5      | 2         | 1         |  | 17     |
|                  | 40                 | 6  | 800              | 260                                    | 630                                    | 7500                                   | 25...75            | 125       | 86                     | 190                    | 75                     | 176,5                  | 15,5      | 2         | 1,5       |  | 19     |
|                  | 45                 | 6  | 912              | 255                                    | 610                                    | 6700                                   | 25...75            | 130       | 86                     | 190                    | 75                     | 176,5                  | 15,5      | 2         | 1,5       |  | 19     |
|                  | 50                 | 7  | 1400             | 235                                    | 560                                    | 6000                                   | 30...85            | 150       | 94                     | 225                    | 90                     | 208,5                  | 24,5      | 2,5       | 1,5       |  | 31     |
|                  | 60                 | 8  | 2350             | 210                                    | 510                                    | 5300                                   | 35...100           | 170       | 114                    | 270                    | 100                    | 244                    | 30        | 3         | 2         |  | 49     |
|                  | 70                 | 10 | 3050             | 195                                    | 470                                    | 4000                                   | 45...120           | 190       | 134                    | 340                    | 140                    | 312,5                  | 38,5      | 3         | 2,5       |  | 90     |
|                  | 80                 | 11 | 5800             | 155                                    | 375                                    | 4000                                   | 55...145           | 210       | 144                    | 380                    | 160                    | 340                    | 36        | 3         | 2,5       |  | 107    |
|                  | 90                 | 12 | 8700             | 145                                    | 350                                    | 3000                                   | 65...165           | 230       | 158                    | 440                    | 180                    | 388                    | 50        | 3,5       | 3         |  | 170    |
|                  | 100                | 14 | 16000            | 140                                    | 340                                    | 2400                                   | 75...170           | 270       | 182                    | 500                    | 200                    | 422,5                  | 40,5      | 3,5       | 3         |  | 230    |
|                  | 130                | 16 | 23000            | 130                                    | 320                                    | 2400                                   | 85...180           | 310       | 212                    | 560                    | 220                    | 482                    | 50        | 4         | 3         |  | 330    |

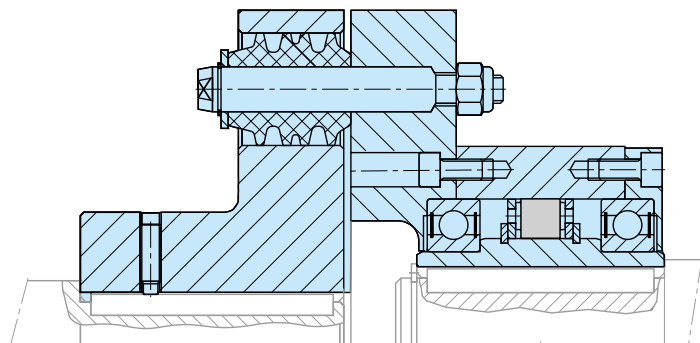
## NOTES

- 1) This maximum allowable torque transmission speed  $n_{max}$  must not be exceeded when transmitting torque
- 2) This minimum allowable overrunning speed  $n_{min}$  should not be reduced under continuous operation.  
Possible reduction of this minimum speed on request
- 3) Inner race overruns  
Keyway to DIN 6885.1

When ordering, please specify  $d_K$  bore diameter and direction of rotation seen from arrow „A“. „R“ Inner race overruns in clockwise direction, „L“ Inner race overruns in counterclockwise direction

» Refer to mounting and maintenance instructions page 12 to 13

## MOUNTING EXAMPLE



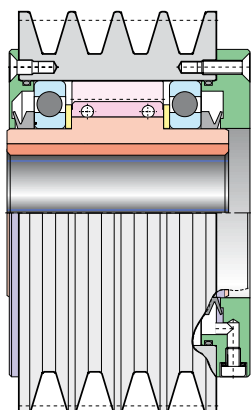
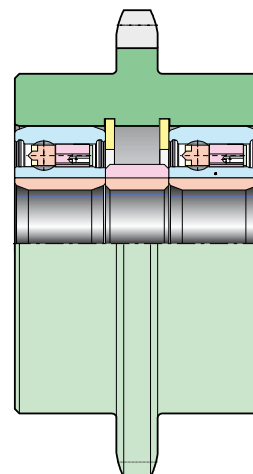
# Special Designs

## Anything is Possible



Stainless steel indexing clutch  
for use in the food processing industry

Self-contained freewheels CSK..P  
and roller chain sprocket assembly



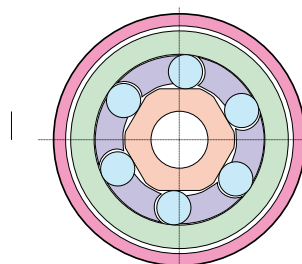
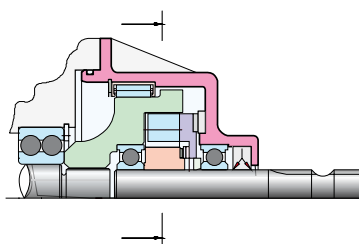
Self-contained freewheel  
and v-belt pulley assembly

High performance indexing clutch  
for use on an offset printing machine



Indexing clutch and  
backstop combination for  
high voltage switch-gear

Overrunning clutch for two directions  
of rotation, automatic change of direction



A

AA

AE

AL/ALP

AL..F2D2/F4D2

AL..G

AL..KEED2

AL..KMSD2

ALP../ALMP..F7D7

AS (NSS)

ASK

ASNU (NFS)

AV

26

24

48

50

64

56

54

52

20

18

22

40

B

BC MA

CEUS

CSK/CSK..P

CSK..2RS

CSK..P-2RS

68

66

14-16

14

16

C

DC

DC-Races

32

34

D

FS/FSO/HPI

FSO/FSO-GR/HPI

62

60

E

Combined bearing/freewheel

Built-in freewheels

Self-contained freewheels

Centrifugally lift off sprags

F

GFR/GFRN

GFR..F1F2

GFR..F2F3

GFR..F2F7

GFR..F3F4

GFRN..F5F6

42

44

46

44

46

44

G

NF

NFR

28

36

H

RINZ..G5G5

RIZ/RINZ

RIZ..ELG2

RIZ..ESG2

RIZ..G1G2/..G2G7

RIZ..G2G2/..G3G4

RDBK

RSBW

RDBR-E

RSCI 20-130

RSCI 180-300

RSRV

RSRT

RSXM

84

82

90

88

84

86

80

38

70

72

74

78

78

76

I

S200

SMZ

30

58

NEW PRODUCT NAMES

The table overleaf gives the status of Stieber designations not listed in the catalogue.

| Designation | Status                      |
|-------------|-----------------------------|
| ALB..M      | on request                  |
| ALZ         | on request                  |
| ANG/ANR     | superseded through NFR      |
| BAT/BATS    | still available             |
| CLA         | superseded through RIW, RIZ |
| CLV         | still available             |
| CR          | still available             |
| CRA         | superseded through RSCI     |
| CRLA        | superseded through RIW, RIZ |
| GFK         | on request                  |

| Designation | Status                        |
|-------------|-------------------------------|
| BW-cages    | superseded through DC.. cages |
| ETK         | still available               |
| KK          | superseded through CSK        |
| NFS         | superseded through ASNU       |
| NSS         | superseded through AS         |
| RIW         | still available. See also RIZ |
| RSBF        | still available up to size 70 |
| RSBI        | superseded through RSCI       |