

**Installation and Operating Instructions for
Internal Freewheels ZZ, ZZ...2RS, ZZ...P2RS, ZZ...P and ZZ...PP**

E 08.756 e



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Important

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.


These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or warranty; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others – either on its own or as part of a machine – to make it accessible to the user.

Safety Notice

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either we or an accredited agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

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1. General introduction

Internal Freewheels ZZ, ZZ...2RS, ZZ...P2RS, ZZ...P and ZZ...PP are machine elements with particular characteristics:

- In one direction of rotation there is no contact between the inner and outer ring; the freewheel is in freewheeling operation.
- In the other direction of rotation there is contact between the inner and outer ring; in this direction it is possible to transmit high torque.

Internal Freewheels ZZ, ZZ...2RS, ZZ...P2RS, ZZ...P and ZZ...PP are used as:

- Backstops
- Overrunning Clutches
- Indexing Freewheels



Caution!

As Freewheels can be used as safety components, it is important to observe these installation and operating instructions carefully.

2. Applications of Freewheels

2.1 Application as Backstop

Freewheels are used as backstops if reverse rotation of the operating direction is to be prevented. In many machines and installations, for technical safety or functional reasons, it is necessary to ensure that you are working in just one specified direction of rotation. This is why there are legal stipulations requiring a mechanical safety device for the operation of, e.g. conveyor systems.

The normal operating mode of a backstop is freewheeling operation; the locking (torque transmission) is performed at zero speed. The immediate engagement of the clamping elements ensures the required high operating safety.

2.2 Application as Overrunning Clutch

The overrunning clutch engages machines or machine parts and automatically interrupts their contact as soon as the driven part of the overrunning clutch is turned faster than the driving part. In many cases, this can replace a more expensive externally actuated clutch.

With overrunning clutches the engagement take place in the driving operation (torque transmission), while in freewheeling operation the torque transmission between the inner and outer ring is interrupted. In driving operation the speeds of the inner and outer ring are equal, while in freewheeling operation they are different.

2.3 Application as Indexing Freewheel

The indexing freewheel transmits a back-and-forth motion into a stepped rotation (indexed feed). The indexing freewheel works precisely and quietly and enables an infinitely adjustable setting of the feed.

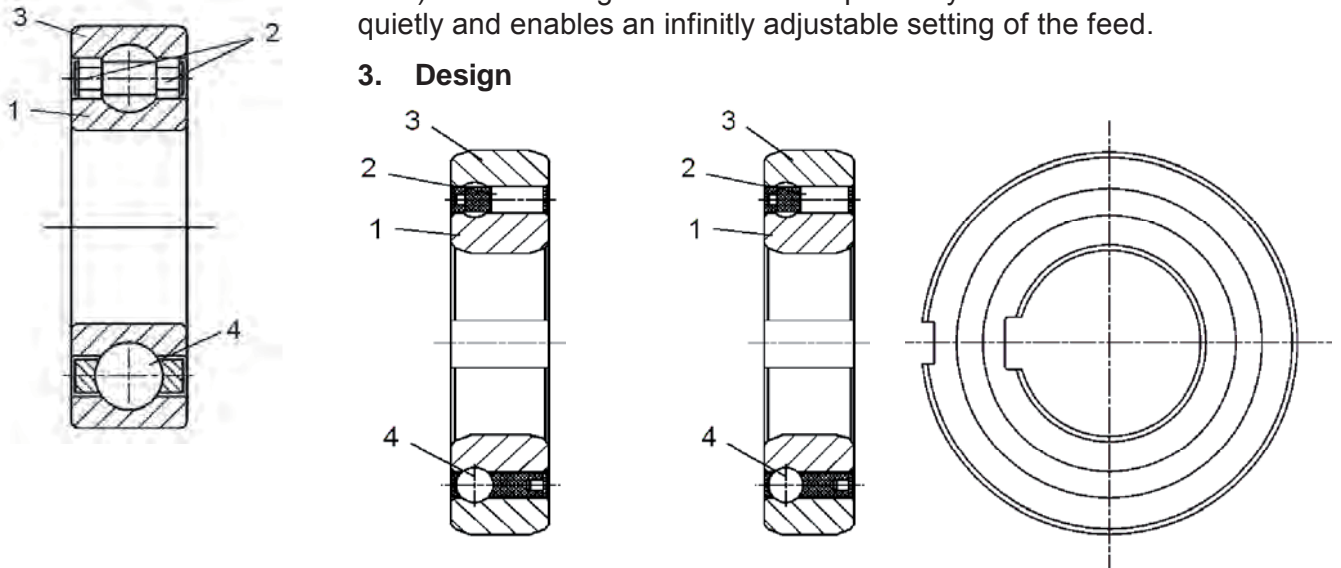


Fig. [1]: ZZ

Fig. [2] ZZ...P

Fig. [3] ZZ...PP

The Internal Freewheels ZZ, ZZ...P and ZZ...PP are designed as shown in Fig. [1] to [3]. The essential functional components are the inner ring (1), the sprags (2), the outer ring (3), the rolling elements (4) and the lubricant.

Internal Freewheels ZZ, ZZ...P and ZZ...PP are sprag freewheels with bearing support in the dimension of the ball bearing series 62 (Exceptions: ZZ 8, ZZ 40 P and ZZ 40 PP). The freewheels are equipped with cover washer and offer little protection against soiling with a particle size $>0,3$ mm.




Fig. [4] ZZ...2RS

Fig. [5] ZZ...P2RS

The Internal Freewheels ZZ...2RS and ZZ...P2RS are designed as shown in Fig. [4] and Fig. [5]. The essential functional components are the inner ring (1), the sprags (2), the outer ring (3), the rolling elements (4), the seals (5) and the lubricant.

Internal Freewheels ZZ...2RS and ZZ...P2RS are sprag freewheels with bearing support in the dimension of the ball bearing series 62. The 2RS-seals protect the freewheels against spray

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water and moderate pollution. Therewith is the width of freewheels larger than that of ball bearings series 62

4. Types

Internal Freewheels ZZ, ZZ...2RS, ZZ...P2RS, ZZ...P and ZZ...PP are available in the standard type.



Please note!

Further information especially on design, function and selection, permissible torques or permissible speeds of these freewheels is provided in Catalog 84 "Freewheels". Please contact us if you need assistance.

5. General instructions



Caution!

Reliable torque transmission between the freewheel is guaranteed only if the maximum permissible speed in driving operation of the freewheel is not exceeded.

Operation at speeds in excess of the speeds permitted for the different operating modes can result in damage and overheating of the freewheel!



Caution!

The maximum permissible freewheel torque must not be exceeded due to torque peaks in specific applications.

The maximum freewheel torque should be calculated according to catalog 84. Please contact us if you need assistance.

Freewheel damage resulting by excessive torque peaks impair component function and can result in excessive overheating of the freewheel!



Danger to life and limb!

When freewheels are used as backstops, it is essential to ensure that they can be released only when the machine or system is standing still and load-free.

Release of the freewheel under load conditions results in uncontrolled reverse movement of the system.



Caution!

Torsion vibrations (amplitudes and frequencies which result in engagement and release of the freewheel in rapid succession) must be avoided.

Torsion vibrations can result in overheating and the impairment of freewheel function!

6. Condition at delivery

The freewheels are delivered ready for installation with grease filling. They are packed in anti-corrosion paper.

7. Technical requirements for safe operation

When installing internal freewheels **ZZ** and **ZZ ...2RS** the inner ring of the freewheel must be attached with an press fit on the shaft. The tolerance of the shaft must be in this case ISO n6.

In order to transmit the torques in the table of Catalog 84 („Freewheels“), the outer ring must be pressed in a housing with the minimum outside diameter in this Catalog. The housing is made of steel or grey cast iron in the minimum quality GG-20. The tolerance of the housing bore must be ISO N6.




Caution!

The tolerance of the shaft from ISO n6 and the housing bore from ISO N6 must be complied with mandatory.


Risk of loss function!

For the installation from internal freewheels **ZZ ...P2RS** und **ZZ ...P** is for customer shaft tolerance ISO k6 to use.

The key must have back play and may have only minimal width oversize, as otherwise the inner ring may be deformed

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In order to transmit the torques in the table of Catalog 84 („Freewheels“), the outer ring must be pressed in a housing with the minimum outside diameter in this Catalog. The housing is made of steel or grey cast iron in the minimum quality GG-20. The tolerance of the housing bore must be ISO N6.

	<p>Caution!</p> <p>The tolerance of the housing bore to ISO N6 must be complied with mandatory.</p> <p>Risk of loss function!</p>
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From the internal freewheels **ZZ ...PP** is the torque on the inner and outer ring transferred with a key.

The key must have back play and may have only minimal width oversize, as otherwise the inner or the outer ring may be deformed.

In order to transmit the torques in the table of Catalog 84 („Freewheels“), the outer ring must be pressed in a housing with the minimum outside diameter in this Catalog. The housing is made of steel or grey cast iron in the minimum quality GG-20.


8. Installation

Carefully clean the housing bore for the outer ring and the surface of the shaft for the inner ring.


The direction of machine or system rotation must be determined prior to freewheel installation.

Mark this direction with an arrow on the shaft to which the inner ring of the freewheel is to be mounted.

Ensure that the freewheeling direction of the freewheel matches the direction marked on the shaft.

	<p>Caution!</p> <p>When a freewheel is used as a backstop, the drive must not be started in the direction opposite the freewheeling direction of the freewheel, as otherwise the freewheel may be destroyed!</p>
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Installation of the freewheel on the shaft or into the housing bore must be made by a front-side even pressure on the inner and outer ring.

	<p>Caution!</p> <p>Inner and outer ring of the freewheel may not be axially braced against each other.</p>
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**Caution!**

When installed the plastic cage and the protection disc of the freewheel allowed not touch the customer attachment part.

9. Inspection prior to commissioning

The light load operation of the freewheel must be tested before use.

Internal Freewheels ZZ, ZZ ...P and ZZ ...PP

The freewheel must be protected against pollution and sprayed water.

**Caution!**

The permitted operating temperature range is:

for Internal Freewheels ZZ:

– 40°C to +80°C.

for Internal Freewheels ZZ...P und ZZ...PP:

+6°C to +60°C

**Please note !**

At higher operating temperatures, please consult us.
Perhaps alternatively be provided an oil lubrication.

Internal Freewheels ZZ ... 2RS and ZZ ...P2RS

**Caution!**

The permitted operating temperature range is +6°C to +60°C

10. Maintenance

The freewheels are supplied grease-filled for normal operating conditions and are maintenance-free. A lubrication is not required.