

Installation and Operation Instruction for Housing Freewheels FHD 1000 to FHD 18000

E 08.794e



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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 by RINGSPANN; 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 RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN 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.

RINGSPANN	Installation and Operation Instruction For Housing Freewheels FHD 1000 to FHD 18000	E 08.794e			
Issue: 21.12.2021	Version : 03	drawn: KISR	checked: HEUT	pages: 14	page: 3

Contents

1. General introduction
2. Applications of Freewheels
3. Design
4. Types
5. General instructions
6. Condition at delivery
7. Technical requirements for safe operation
8. Installation
 - 8.1 Installation for Housing Freewheels Series FH
9. Inspection prior to commissioning
 - 9.1 Inspection prior to commissioning
 - 9.2 Inspection during operation
10. Maintenance
 - 10.1 Monthly Check
 - 10.2 Examination after 12 Months
 - 10.3 Oil change in still standing conditions
 - 10.4 Oil change in running conditions
11. Lubricants
12. Additional equipment
 - 12.1 Hand operated disconnect clutch

RINGSPANN	Installation and Operation Instruction For Housing Freewheels FHD 1000 to FHD 18000	E 08.794e		
Issue: 21.12.2021	Version : 03	drawn: KISR	checked: HEUT	pages: 14 page: 4

1. General introduction

Housing Freewheels FHD 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.

Housing Freewheels FHD are used as:

- Overrunning Clutches



Caution!

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

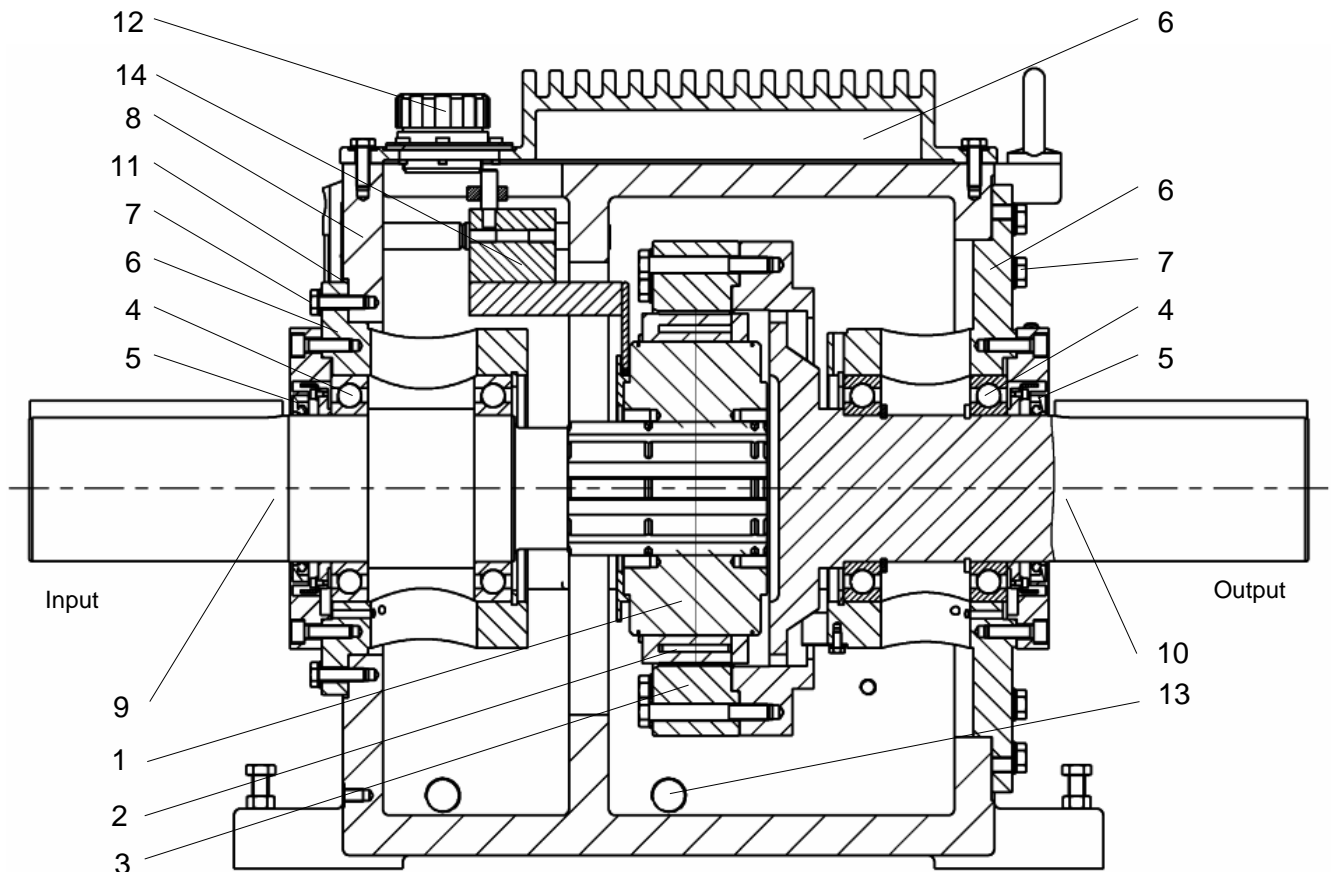
2. Applications of Freewheels

Application as Overrunning Clutch

The overrunning clutch engages machines or machine parts and automatically interrupts that 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.

3. Design



Size FHD 1000 to FHD 18000
Fig. [1]

The Housing Freewheels FHD 1000 to 18000 are designed as shown in Fig.[1]. The essential functional components are the inner ring (1), the roller cage with the rollers (2), the outer ring (3), the bearings (4), the seals (5), the cover (6), the screws (7), the housing (8), the input shaft (9), the output shaft (10), the oil-level indicator (11), the oil filling and venting plug (12), the oil drain (13), the disconnect clutch (14), and the lubricant.

4. Types

Housing Freewheels FHD are available in the type with roller cages. This type is characterized by very low power loss at high speed Operation.



Please note!

Further information especially on design, function and selection, permissible torques as well the lifting speeds and maximum drive speeds of these freewheels is provided in RINGSPANN E-sheet E08.096. Please contact RINGSPANN GmbH if you need assistance.

5. General instruction

The Housing Freewheels FH are mounted in a rugged cast iron housing in which the input and output shaft are supported. The housing serves as an oil reservoir.

The input and output shaft should be connected via suitable separate shaft couplings with the machine or the drive



Caution!

The maximum permissible freewheel torque must not be exceeded due to torque peaks in specific applications. To avoid torque peaks that could harm the freewheel, we recommend the use of torsionally stiff shaft couplings.

The maximum freewheel torque should be calculated according to RINGSPANN E-sheet E08.096. Please consult with RINGSPANN if you need assistance.

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



Caution!

If the system is exposed to axial and/or radial loads, the roller bearings in the freewheel should be checked with reference to the rules for calculation provided by the bearing manufacturer. It is essential to ensure that bearings will not be damaged.

Bearing damage can result in overheating and the impairment of freewheel function!

**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!

**Caution!**

Seals must be correctly installed during the entire service life of the freewheel and must not be excessively worn.
Seals should be replaced as needed.

Seal damage can result in overheating and the impairment of freewheel function!

**Caution!**

The Housing Freewheel must when installed to be grounded.

In the absence of grounding can cause static charges!

6. Condition at delivery

The Housing Freewheels are delivered without oil filling.

During storage, the shaft ends must be rotated monthly. The freewheel must be cleaned with flushing oil after one year of storage. After that the freewheel can be refilled with oil (oil quality and oil quantity of oil according to our specification).

The housings are equipped with 2 eyebolts these must be used for transportation and installation.

7. Technical requirements for safe operation

The shaft ends front are provided with a center bore acc. to DIN 332, page 2.

Key and keyway are designed according to ASME B17.1.

RINGSPANN	Installation and Operation Instruction For Housing Freewheels FHD 1000 to FHD 18000	E 08.794e		
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8. Installation

8.1 Installation for Housing Freewheels Series FHD

The direction of Housing Freewheel rotation must be determined prior to installation!

On the input side of the housing are an arrow for the driving direction and a sign for "input" attached. The installation shall be such that the engine is connected to the input shaft.

Housing Freewheels FHD are foot mounting type. The housing should be fastened to the base frame with 4 suitable screws or bolts and nuts. To level the housing, 4 leveling screws are placed in the housing feet. To compensate the differences between the housing feet and the ground sheet metal can be used.

We recommend torsionally stiff gear couplings with teeth on both sides to connect the shafts to the driver and driven machine. Tighten the clutch hubs of the shaft couplings with bolts on the shaft, which are screwed into the central threaded holes in the ends of shafts.



Caution!

The clutch hubs may not be driven onto the shaft by applying hammer blows, as the in the freewheel built-in roller bearings may be damaged in the process. Do not heat up the coupling hubs over 100°C for mounting because the lip seal can be damaged.

The shaft couplings must be accurately aligned, that there is no undue bearing loads arise.

Bearing damage can result in overheating and the impairment of Housing Freewheel function!

Check that the disconnect clutch is in operating position (see section 12) and remove the keys from the safety lock. These should be kept safe by authorized persons.

Filling the Housing Freewheel with specified oil quantity and quality as shown in section 11!

9. Inspection prior to commissioning

9.1 Inspection prior to commissioning

Housing Freewheels FHD are provided with two oil-level gages. One is installed on the housing input side and indicates the minimum running oil-level (see Fig. [4]).

The second oil-level gage is installed below the housing side and indicates the static oil-level (see Fig. [3]).

The static oil level must be checked prior to initial operation of the freewheel. (see Fig. [3]).

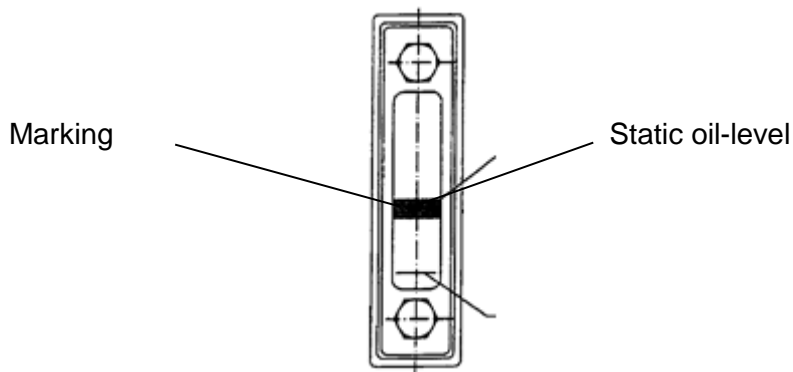


Fig. [3]

9.2 Inspection during operation

During operation of the freewheel the running oil-level must be checked (see Fig. [4]).

The oil level is shown in the running oil-level indicator.

During operation the oil-level should be at the running oil-level marking or higher.

Running oil-level gage

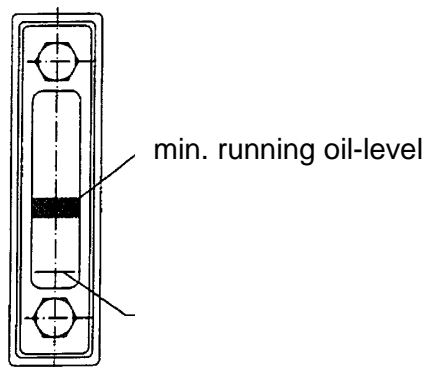


Fig. [4]

**Caution!**

During operation rise the oil-level of the running oil-level indicator, caused by the rotation of the freewheel. After app. 10 minutes the oil-level will be set.

**Caution!**

During the operation oil can, after removing the oil filler and vent screw, be added to the oil level as shown in Fig. 4!

If it is necessary in the application to change the direction of the oil drain, it is possible after draining the oil and unfasten the fitting.

**Caution!**

An excessively high or low oil level can result in increased operating temperature and damage of the Housing Freewheel.

The maximum operating temperature must not 100 °C exceed!

**Caution!**

Make sure that the functional area of the freewheel (inside of the housing) is free of foreign objects.

Foreign objects in the functional area can result in excessive warming up and the impairment of the freewheel!

RINGSPANN	Installation and Operation Instruction For Housing Freewheels FHD 1000 to FHD 18000	E 08.794e			
Issue: 21.12.2021	Version : 03	drawn: KISR	checked: HEUT	pages: 14	page: 11

10. Maintenance

10.1 Monthly Check

The oil level must be checked. Oil levels must be in the area of the top of the mark on the oil sight glass. If necessary, add oil. The refilling operation can be made as described below, during operation.

10.2 Examination after 12 Month

After intervals of 12 months, the oil must be changed



Caution!

The oil change can be performed at a standstill of the plant.

The oil change may also performed at an operating plant but **only while the free-wheel is in driving operation.**

10.3 Oil change at still standing Housing Freewheels FHD

The oil change is as follows:

- Remove oil filler and venting screw.
- Drain the oil.
- Refill oil as long through the hole until the oil level is in accordance with Fig. 3.
- Replace oil filler and venting screw.
- After 10 minutes operating time, check the oil level again and correct if necessary.

10.4 Oil change at running Housing Freewheels FHD

The oil change is as follows:

- Remove oil filler and venting screw.
- Drain the oil in the shortest possible time.
- Refill the same quantity oil as drained through the hole until the oil level is in accordance with Fig. 4.
- Replace oil filler and venting screw.
- Check the static oil-level [Fig.3] at the next stop of the plant and correct if necessary.

11. Lubricants

MOBIL	Multi-Purpose ATF (DEXRON III)
TEXACO	Havoline ATF (DEXRON III)
CHEVRON	Chevron ATF (DEXRON III)
SHELL	DONAX TGATF (DEXRON III)
CONOCO	Hydroclear ATF (DEXRON III)

Required oil quality DEXRON III ATF

Oil quantity:	Freewheel FH	1000	– ca.	6,6 Liter
	Freewheel FH	2000	– ca.	11,3 Liter
	Freewheel FH	4000	– ca.	14,2 Liter
	Freewheel FH	8000	– ca.	15,8 Liter
	Freewheel FH	12000	– ca.	20,0 Liter
	Freewheel FH	18000	– ca.	40,0 Liter

The specified oil quantities are only default values, the housing freewheel must always be filled up to the level mark at the static oil level gage.

12. Additional equipment

12.1 Hand operated disconnect clutch

The driving machine can completely disconnected from the driven machine by using the disconnect clutch (see Fig. [1] , [2] and. [3]). This allows service work on the driving machine.



Caution!

It is important that the driver is switched off in accordance with the OSHA requirements (disconnected from the mains) and secured against unauthorized switching on.



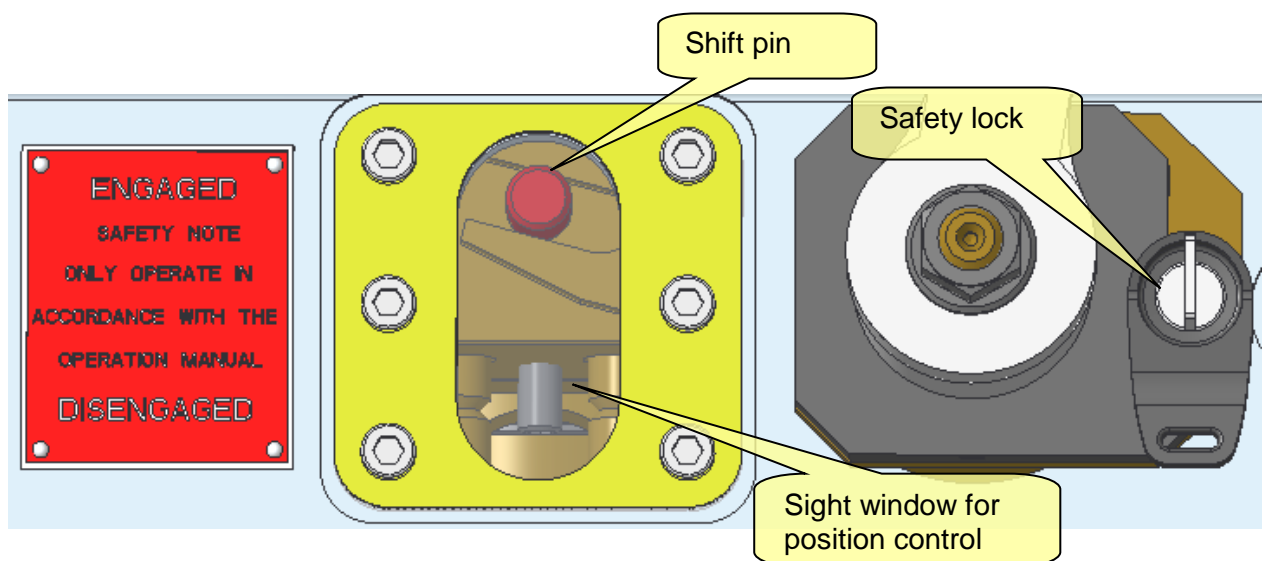
Caution!

The disconnect clutch may only be operated in overrunning mode (drive is switched off, driven machine is running).



Caution!

Before starting any service activity and before restarting the driver, the disconnect clutch must be secured with the safety lock against unauthorized operation.



Disconnect:

To do this, open the safety lock on the shift lever and remove it. Move the shift lever counterclockwise to the disconnect position. This can be verified by the position of the shift pin in the sight window. Now attach the safety lock again and close it. Do not start any service work before this is done and it is assured that the driving machine is completely switched off.

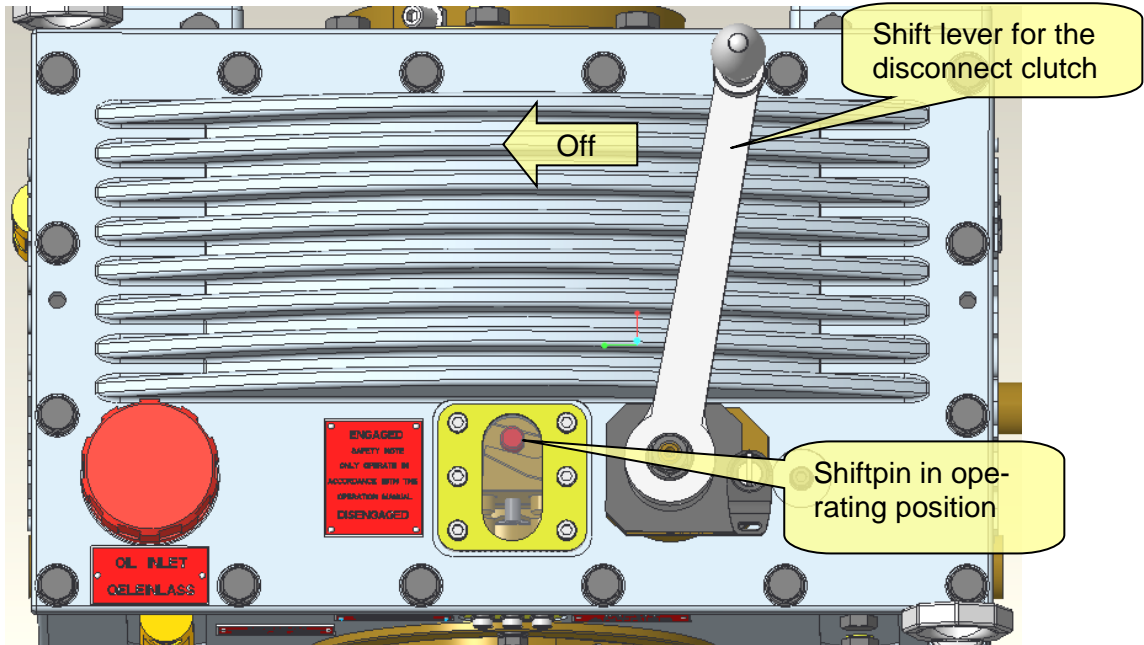


Fig. [2]

Connect:

Ensure that the driving shaft stand still. The output shaft must rotate in freewheeling direction. Now remove the safety lock and move the shift lever clockwise in the operating position. The right position can be checked again by the position of the shift pin. Now the safety lock can be closed again.

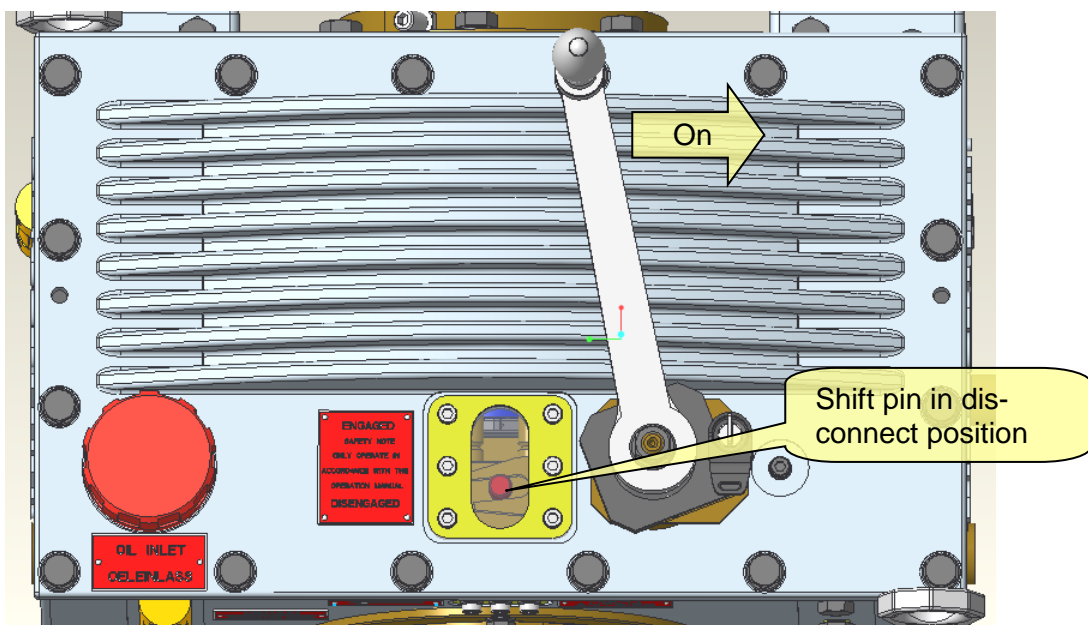


Fig. [3]