

## **Installation and Maintenance Instructions Freewheel Type RIZ / RINZ**

**To avoid premature failure of the freewheel or possible machine malfunction, installation of the freewheel should be carried out by suitably qualified personnel and according to the following instructions.**

**STIEBER will not accept liability in cases of non-compliance with these instructions!**

### **Description:**

Freewheels of type RIZ or RINZ, are designed to be grease lubricated and may be used as either backstops or overrunning clutches.

The main components are: Inner race, outer race, cage assembly with sprags which lift off centrifugally and two grease lubricated sealed bearings.

The basic unit (RIZ or RINZ) may be fitted with two covers, each having a labyrinth seal, or one cover and a flexible coupling. If supplied by STIEBER, the covers will be of type G1, G2, G3, G4, G5, or G7 (F1Z to F7Z in case of RIW) and the flexible couplings of type ELG or ESG. RIZ and RINZ freewheels must be installed so that the inner race overruns.

The maximum permissible overrunning speed quoted in the following table must not be exceeded.

To ensure that the sprags are fully disengaged during overrunning, the overrunning speed must not fall below the minimum quoted in the table.

When used in dual drive applications the maximum driving speed quoted in the table must not be exceeded.

### **Prior to Installation:**

Care must be taken that the ball bearings are not loaded radially or axially during installation.

- The inner race should be fitted to a shaft of h6 or j6 tolerance.
- The mounting register for the outer race, should be to H7 or G7 tolerance.
- The freewheeling direction should be checked prior to installation.
- To reverse the freewheeling direction of a unit fitted with cover plates, simply remove the cover plates and re-install at opposite ends of the freewheel.
- When using the freewheel as a backstop with cover G3, the outer race must have a clearance both axially and radially.
- The torque reaction pin of cover G3 should protrude into a rigid support and must have axial clearance and a clearance of 1% to 2% of the pin diameter on each side of the pin.

### **CAUTION: RISK OF INJURY**

**When cover plates are removed, the freewheel should always be held so that the bore is horizontal, otherwise the inner race and bearings may slip from the outer race.**

### Installation General:

The freewheels should be unpacked and installed in a clean dry working environment.

If a G4 cover is fitted, this must be removed prior to installation, in all other cases the unit should be installed as an assembly.

Install the inner race onto the shaft, ensuring alignment of the keyways. Apply any axial load exclusively to the inner race. The inner race must be retained axially on the shaft. - Circlips are suitable.

If a G3 cover is fitted, ensure the torque reaction bolt is correctly located.

When installing RINZ units, the outer race should be pressed into its housing by applying load exclusively to the outer race. Ensure alignment of the keyways.

When fitting G1 and G7 covers, use bolts of 8.8 quality and tighten to the torque specified in the table below.

When fitting G4 covers use bolts of 10.9 quality and tighten to the torque specified in the table below.

Size	Thread In Outer Race	Tightening Torque [Nm]		Removal Thread Cage
		8.8	10.9	
30	M 6	10	14	M3
35	M 6	10	14	M3
40	M 8	25	34	M3
45	M 8	25	34	M3
50	M 8	25	34	M3
55	M10	48	68	M3
60	M10	48	68	M4
70	M10	48	68	M4
80	M10	48	68	M4
90	M12	84	118	M4
100	M16	200	290	M5
130	M16	200	290	M5

### Installation with Coupling:

Install freewheel and fitted coupling half onto shaft as an assembly as described above.

Pull the hub half of the coupling on to its shaft. (Heating of the hub to about 80°C will ease fitting.)

Adjust the position of freewheel and hub to achieve the specified gap between the two coupling halves. Ensure angular and parallel alignment of both shafts is within limits specified for the coupling used.

### After Installation:

After installation, ensure the unit freewheels in the required direction.

The drag torque produced when freewheeling is about  $\frac{1}{1000}$  of the nominal torque.

### Dismantling:

To dismantle the unit please follow the installation section in reverse sequence.

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### Removal of Cage Assembly:

If the cage assembly is to be removed from the inner race, the following method should be used:

- Remove the inner race, bearings and cage assembly from the unit.
- Draw off the ball bearings from the inner race.
- Remove the retaining circlips from the inner race.
- Fit extractor bolts (see table) into the removal holes in the cage - the thickness of the cage wall should be checked first. Do not allow extractor bolts to contact the sprags.
- Using the extractor bolts, pull the cage from the inner race whilst slightly rotating the inner race in the freewheeling direction.

### Reinstallation of Cage Assembly:

Slide the cage onto the inner race, whilst slightly rotating the inner race in the direction of freewheeling, until cage assembly is located between both circlip grooves.

- Install both circlips, ensuring that the drive pins on either side of the sprag cage assembly are located in the gap between the ends of the circlip.
- Install both bearings following the installation recommendations of the bearing manufacturer.
- Fit the inner race, cage assembly and bearings into the outer race whilst slightly rotating the inner race in the freewheeling direction. This procedure is simplified if the sprags are rotated to their disengaged position and held in this position by means of an 'O' ring.
- Reinstall assembled unit following the guidelines in the installation section.

### Lubrication and Maintenance:

Type RIZ and RINZ freewheels produce negligible heat if the operating conditions are as specified in table below.

If the ambient temperature does not exceed 50°C the freewheel can operate without maintenance for approximately 2 years. Freewheels of type RIZ and RINZ are factory lubricated with Polylub WH2 grease from Klüber.

Every two years the freewheel should be dismantled, cleaned, inspected and relubricated.

- Deinstall the unit as an assembly.
- After removing the covers, carefully remove the inner race, bearings and cage from the outer race.
- Clean all parts and examine them visually.
- On reassembly approximately  $\frac{1}{3}$  of the cage should be filled with grease. Apply grease particularly to the sprags and the inner diameter of the outer race.
- Reassemble unit following the guidelines in the Re-Installation of cage assembly, ensuring grease is applied to the grease pockets recessed into the inner diameter of the cover plates.
- Complete installation as described in the installation section.

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**Technical data RIZ / RINZ:**

Size	max. Torque [Nm]	Overrunning Speed [rpm]		max. Driving Speed [rpm]	Grease [g]
		min.	max.		
30	625	780	9000	350	10
35	750	740	8500	320	15
40	1550	720	7500	315	20
45	1750	665	6600	285	25
50	2800	610	6000	265	35
55	3250	600	5600	255	40
60	3750	490	5300	200	75
70	5600	480	4500	210	100
80	9000	450	4000	190	125
90	11500	420	3000	180	175
100	19000	455	2700	200	275
130	33750	415	2400	180	400