

## Installation and Maintenance Instructions Freewheel Type RSBI

**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:

The main components of RSBI backstops are: Outer race, inner race, and cage assembly with sprags which centrifugally disengage at normal running speed. RSBI backstops must be installed so that the inner race overruns.

The maximum permissible overrunning speed quoted in the 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.

Please refer to STIEBER if this may occur.

All limits quoted in the table should be met to ensure trouble free operation.

### Prior to Installation:

Ensure that the specified concentricity between inner and outer race is maintained.

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.

If reversal of the freewheeling direction is required, simply reverse unit on shaft. (See removal of cage.)

When installing the outer race, use bolts of 8.8 quality or better, and tighten to the torque level specified in the table below.

### Caution: Risk of Injury!

**When the transport safety device is removed, the backstop should always be held so that the bore is horizontal, otherwise the outer race may slip from the cage.**

### Installation:

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

Ensure no debris enters the unit during installation.

#### Installation as a complete assembly: (Preferred)

- Fit the inner race on to the shaft, ensuring alignment of the keyways.
- Any axial loading used should be applied only to the inner race.
- The inner race must be retained axially on the shaft - circlips are suitable.
- Fit the outer race to its register using the specified bolts.

**Inner and Outer race installed separately: (Due to size of unit)**

- First install the inner race and cage onto the shaft as described above.
- Position the outer race over the inner assembly whilst slightly rotating the inner race in the freewheeling direction.  
This procedure is simplified if the sprags are rotated to their disengaging position and held there by means of an O-Ring.
- Fit the outer race to its register using the specified bolts.

Size	Thread In Outer Race	Tightening Torque [Nm]	Removal Thread Cage
20	M6	10	M3
25	M6	10	M3
30	M6	10	M3
35	M6	10	M3
40	M8	25	M3
45	M8	25	M3
50	M8	25	M3
55	M8	25	M3
60	M10	48	M4
70	M10	48	M4
80	M10	48	M4
90	M12	84	M4
100	M16	200	M5
130	M16	200	M5
150	M16	200	M5
180	M16	200	M5
190	M16	200	M8
220	M16	200	M8
240	M16	200	M8

**After installation:**

After installation, ensure that the backstop can be rotated in the required direction.

The drag torque produced when freewheeling, is about 1/1000 of the torque capacity of the backstop.

**Removal of cage assembly from inner race / Installation:**

Because of maintenance, or reversal of freewheeling direction on units with non-standard asymmetric inner races, it may be necessary to remove the sprag cage from the inner race.

**Removal:**

- Remove circlip from inner race.
- Screw suitable bolts into the removal holes in of the cage disk. Do not use bolts which are long enough to contact sprags!
- Using the removal bolts pull the cage from the inner race, whilst slightly rotating the cage in the freewheeling direction.

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**Installation:**

- Slide the cage assembly on to the inner race, slightly rotating the cage in the freewheeling direction.
- Ensure that the driver pin on the face of the cage disk locates in the gap formed by the ends of the circlip.  
The cage can be installed without removal of the outer race if the inner race, shaft and cage can be rotated whilst the cage is slid along the inner race.
- Reinstall second circlip, ensuring the gap formed by its ends accommodates the driver pin on the face of the cage disk.

**Dismantling:**

Dismantling / removal is achieved by following the installation procedure in reverse sequence.

**Lubrication and Maintenance (When overrunning speed exceeds the specified minimum):**

Below 100mm bore size no additional lubrication is required if the acceleration and deceleration time is less than 20 seconds.

Above 100mm bore size, or if acceleration and deceleration time exceeds 20 seconds, oil or grease lubrication should be provided.

All gear and hydraulic oils with a minimum viscosity of at least 32mm<sup>2</sup>/s are suitable.

In general, where the shaft is horizontal, an oil level which immerses the outer diameter of the sprag cage to a depth of 2mm is sufficient.

If the shaft is not horizontal please contact STIEBER.

If grease lubrication is used, greases of consistency class II, or softer are recommended.

The grease should be replaced after a maximum period of two years whether or not in operation.

For grease replacement the freewheel must be removed, cleaned, inspected, greased and reinstalled.

Backstops which do not require lubrication need to be protected against corrosion.

All common corrosion inhibitors provide sufficient lubrication.

**RSBI Technical data:**

Size	max. Torque [Nm]	Overrunning Speed [rpm]		max. Driving Speed [rpm]	max. Concentricity Error [mm]	Grease [g]
		min.	max.			
20	300	875	14500	380	0,2	7
25	460	825	14300	355	0,22	8
30	625	780	11400	350	0,22	10
35	750	740	10500	320	0,25	15
40	1125	720	7600	315	0,27	20
45	1275	665	6600	285	0,27	30
50	2050	610	6100	265	0,29	35
55	2200	600	5500	255	0,3	40
60	2750	490	6100	200	0,31	75
70	4000	480	4500	210	0,33	100
80	6250	450	4000	190	0,37	125
90	8250	420	3000	180	0,4	175
100	14500	455	2700	200	0,54	275
130	21250	415	2400	180	0,56	400
150	40650	365	1300	160	0,56	500
180	40750	365	3450	160	0,56	500
190	50000	340	4200	145	0,56	550
220	67500	325	3600	140	0,56	650
240	76500	310	3100	135	0,56	800