Installation and Maintenance Instructions Freewheel Type DC

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:

DC-Freewheels are sprag-type clutch elements with a double cage and individually energised sprags.

The sprags are guided and retained by the inner cage, outer cage and the ribbon spring.

They are completed with inner and outer races. The sprag cage assembly moves with the outer race.

The driving speed is restricted, as the sprags centrifugally disengage at high speed. STIEBER can supply outer races secured by bolts, a keyway or a press fit. The inner races can have double, single or no bearing seats if separate bearing support is provided by the customer.

DC units may be used as backstops, overrunning clutches or indexing freewheels with either the inner or outer races overrunning.

Prior to Installation:

With STIEBER supplied races the shaft for the inner race should be to h7 tolerance, the housing for the outer race should be to H7 tolerance.
Ensure that the run-out between the inner and outer races is within the specified limits.

Installation:

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

- Push the freewheel element from the races (if supplied by STIEBER) by hand.
- Fit the inner race on to the shaft, and the outer race into the housing.
- Push the freewheel element into the annular gap between inner and outer race, whilst slightly rotating in freewheeling direction.
- Use a circlip or suitable retainer, for axial location. The retainer should act only on the outer cage of the sprag assembly.
- Careful handling of the cage assembly is essential during installation to prevent sprags being dislodged from the cage.
- If a sprag does fall from the cage it can be replaced, with care, by re-insertion from the inside of the assembly. Ensure correct orientation of the sprag (they are asymmetric).
- Do Not use excessive force, the ribbon spring is easily broken.
- Wrongly installed sprags will lead to difficulty in fitting the cage assembly, malfunction, and possible destruction of the freewheel and adjacent components.

After Installation:

After installation ensure smooth rotation in freewheeling direction.

If reversal of freewheeling direction is required, turn the sprag cage assembly through 180°.

Ensure the correct volume and grade of lubricant is present prior to use.

Dismantling:

For dismantling, follow the installation instructions in reverse sequence.

Technical data of DC freewheels

DC-Type	Max. Torque [Nm]	Run-out T.I.R [mm]	Max. Driving Speed [rpm]	Max. overrunning Speed [1] [rpm]	
				Inner Race	Outer race
DC2222G	125	0,15	5000	8600	4300
DC2776	235	0,15	4200	6900	3400
DC3034	245	0,15	4000	6300	3100
DC3175(3C)	320	0,15	3800	6000	3000
DC3809A	550	0,15	3200	5000	2500
DC4127(3C)	450	0,15	3150	4600	2300
DC4445A	720	0,15	2800	4300	2100
DC4972(4C)	620	0,15	2700	3800	1900
DC5476A	1050	0,15	2400	3500	1700
DC5476A(4C)	1050	0,15	2400	3500	1700
DC5476B(4C)	1550	0,15	2200	3500	1700
DC5476C(4C)	2000	0,15	2175	3500	1700
DC5776A	1200	0,15	2300	3300	1600
DC6334B	1600	0,15	1800	3000	1500
DC7221(5C)	1350	0,15	2000	2600	1300
DC7221B	2550	0,15	1600	2600	1300
DC7221B(5C)	2550	0,15	1600	2600	1300
DC7969C(5C)	4100	0,15	1600	2400	1200
DC8334C	4100	0,15	1500	2300	1100
DC8729A	2500	0,15	1600	2200	1100
DC10323A(3C)	3250	0,15	1400	1800	900
DC12334C4)	9600	0,15	1100	1500	750
DC12388C(11C)	9800	0,2	[2]	1500	750

[1] Splash lubrication. For use with grease lubrication the max. overrunning speed has to be reduced to 40%.
[2] Not disengaging sprags

Lubrication and Maintenance:

We recommend the lubricants listed in the table below.

When the unit is used as an indexing freewheel, we recommend oils with a kinetic viscosity of about 10mm²/s at the operating temperature are used.

If ambient temperatures below minus 20°C or greater than 100°C are expected, please refer to STIEBER technical department.

Lubricants containing slip additives such as Molykote and Graphite may inhibit operation of the clutch, and are not recommended.

Splash Lubrication

If using splash lubrication, the oil level should be to a depth of 30 to 50% of the inner diameter of the outer race.

- First oil change should be made after about 10 hours operation.
- Further oil changes should be made after every 2000 operating hours. In arduous applications every 1000 operation hours.
- If the clutch is using the oil supply of a gearbox, the instructions for the gear box should apply.

Pressure Lubrication

A 50 to 80% increase in the stated overrunning speed can be achieved using pressure fed lubricant.

We recommend an oil flow of 1 to 3 l/min, depending on freewheel size.

Ideally, the oil flow should be directed through the inner race via 3 equispaced holes in the centre of the sprag path.

Grease Lubrication

With grease lubrication, 30 to 40% of the free space of the freewheel should be grease filled. Excessive grease may lead to malfunction of the clutch.

Recommended Lubricants

	Ambient temperature				
	-40°C to- 15°C	-15°C to +15°C	+15°C to +30°C	+30°C to +50°C	
	Operating temperature				
	-20°C to +20°C	+10°C to +50°C	+40°C to +70°C	+50°C to +85°C	
	Oil				Grease
ISO - VG DIN 51519	10	22	46	100	
ARAL	SUMOROL CM10	SUMOROL CM22	MOTANOL HK46	DEGOL CL100T	ARALUB HL2
BP	ENERGOL CS10	ENERGOL CS22	ENERGOL CS46	ENERGOL RC100	ENERGREASE LS2
DEA	ASTRON HL10	ASTRON HL22	ASTRON HL46	ASTRON HL100	GLISSANDO 20
ESSO	NUTTO H10 SINESSO 10	NUTTO H22 SPINESSO 22	NUTTO H46 TERESSO 46	NUTTO H100	BEACON 2
FUCHS	RENOLIN MR3	RENOLIN DTA22	RENOLIN DTA46	RENOLIN MR30	RENOLIT LZR2
KLÜBER	CRUCOLAN 10	CRUCOLAN 22	CRUCOLAN 46	CRUCOLAN 100	POLYLUB WH2
MOBIL	VELOCITE No6	VELOCITE No10	VACTRA MEDIUM VG46	VACTRA HEAVY VG100	MOBILUX2
SHELL	MORLINA 10	MORLINA 22	MORLINA 46	MORLINA 100	ALVANIA G2
TOTAL	AZZOLA ZS10	AZZOLA ZS22	AZZOLA ZS46	AZZOLA ZS100	MULTIS 2

The ambient temperature is to be taken as a guide line. The operating temperature is determinant for the choice of the viscosity.

Corrosion inhibitor: Rivolta KSP

Time of protection: 6 to 12 months

Recommendation: Prior to use, remove corrosion inhibitor using flushing oil.