

1.) General Instruction:-

- Please give full attention to Safety Notes before installation.
- These instructions regarding installation will only valid, if the products meets the selection criteria before installation.
- Ignore & misconception of installation & operation instruction invalidate the product liabilities or warranty by the NMTG Mechtrans Private Limited; same applies if the product id taken apart or changed.

2.) Safety Criteria:

- Installation should be carried out by skilled person only.
- Replacement of any part should be carried out by NMTG only.
- If there is any problem detected in clutch or machine into which it is installed, stopped machine immediately.
- Make sure turning forces are not applied to Holdback or turning shaft of the equipment when conducting inspection or maintenance.
- Pay special attention to the back stopping application to prevent accidents.
- Frequent starting and stopping will apply excessive force on the mounting. Verify mounting strength.
- Inaccurate installation and mounting, various load conditions, wear and tear of parts, and life expectancy can all affect the performance of a Holdback. Inspect and maintain periodically and Install a safety devise on your equipment.
- Confirm rotational direction prior to installing.

3.) About NHB:

- 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.
- Main function of NHB:
 1. Backstop/Holdback
 2. Overrunning

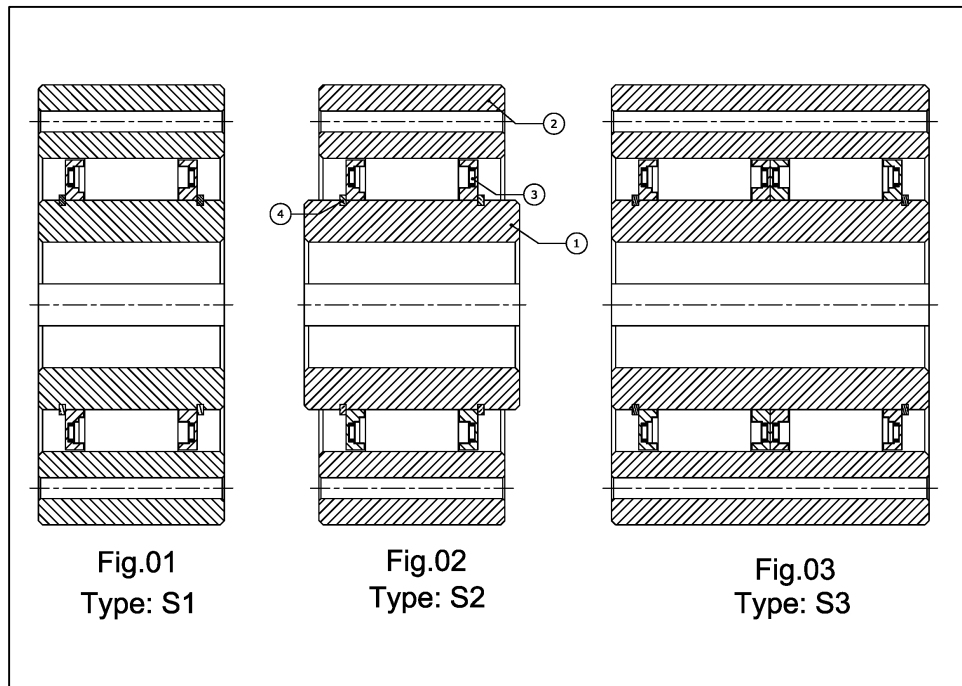
Function of NHB:

1. As a Backstop/Holdback:

Backstop function prevent reverse rotation when input drive is discontinue or power supply failure to input drive. Backstop clutch use to prevent damage caused by power supply failure.
2. As a Overrunning:

When drive member rotates faster than driving member, clutch gets disengage automatically. The highest overrunning speed is possible if outer race overruns. This ensures the best performance, reduce heat generation & wear which lead to increase life.

4.) Design:



No.	Nomenclature
1	Inner Race
2	Outer Race
3	Circlip
4	CLS Cam

5.) Installation:

- Before Installation make sure that right quantity and right grade bolts are selected for outer race mounting.
- The bore in the inner ring normally has a tolerance of ISO H7. The tolerance of the shaft in this case is ISO h6 or j6.
- Free running direction of clutch matches the direction of shaft.
- Provide proper cleaning on mounting surface and centring spigot for mounting of outer race and clean shaft for inner race.
- While unpacking clutch, don't pull outer race. Provide coating of acid-free, aging resistant, light machining oil to all parts.
- For easier mounting, it is acceptable for only inner race & cage may be heated up to 100°C.
- If any sealing component is provided between fastening surface and face of outer race then, make sure that it is applied evenly and sparingly.
- Push entire clutch on shaft until it is located against circlip mounted on shaft.
- During installation, apply pressure only on inner race. Never apply pressure on CLS cage assembly.
- When clutch is used as backstop, the drive must not be started in the direction opposite the free running direction, otherwise whole assembly may be destroyed.

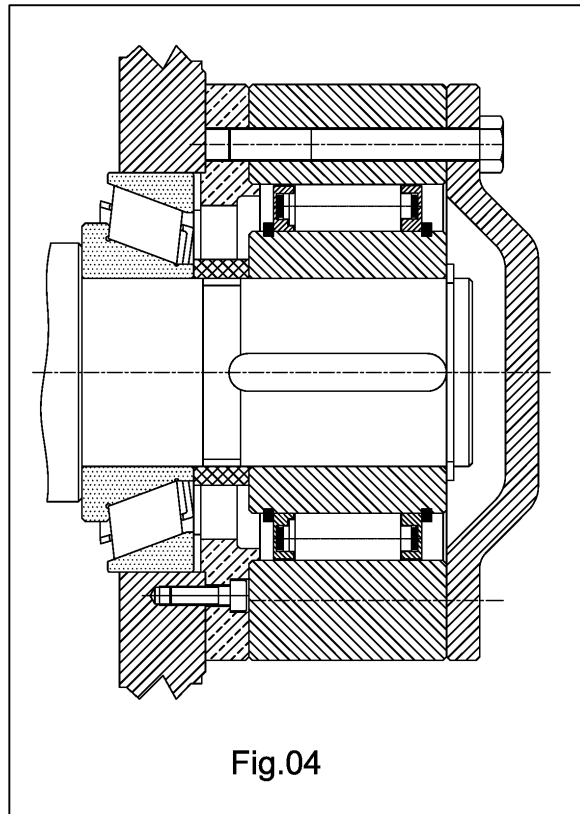


Fig.04

• **For pulling off outer race :**

- The outer race must be separated from inner race as shown in fig. 05
- Stop removing the outer ring if minimum of 20 mm of the cls sprag are left in the bore.
- Set the o-ring around the sprag and tight them.
- Now the outer race is free for remove.
- **Note: When outer race has been removed apart of cage without o-ring, all sprags must be turned against the spring force in lift-off position and be fixed with o-ring. Assembling the outer race onto the cage while the CLS sprags are turned free by spring is not possible.**
- This method can also be used for the Type S1 or S2. Use instead of the trammel, a suitable stretchable band like an O-ring or the like.

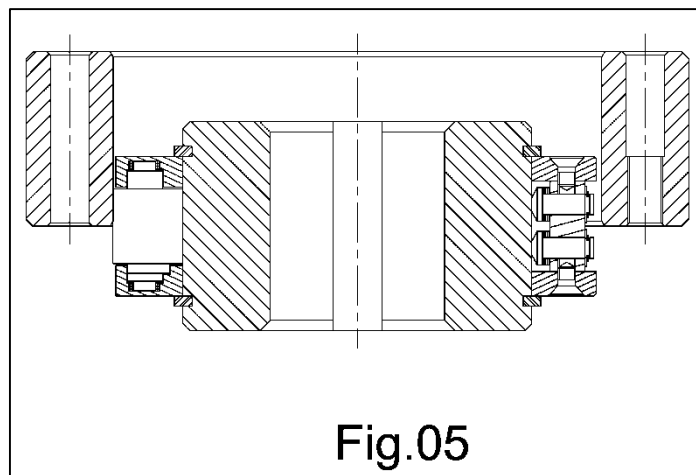
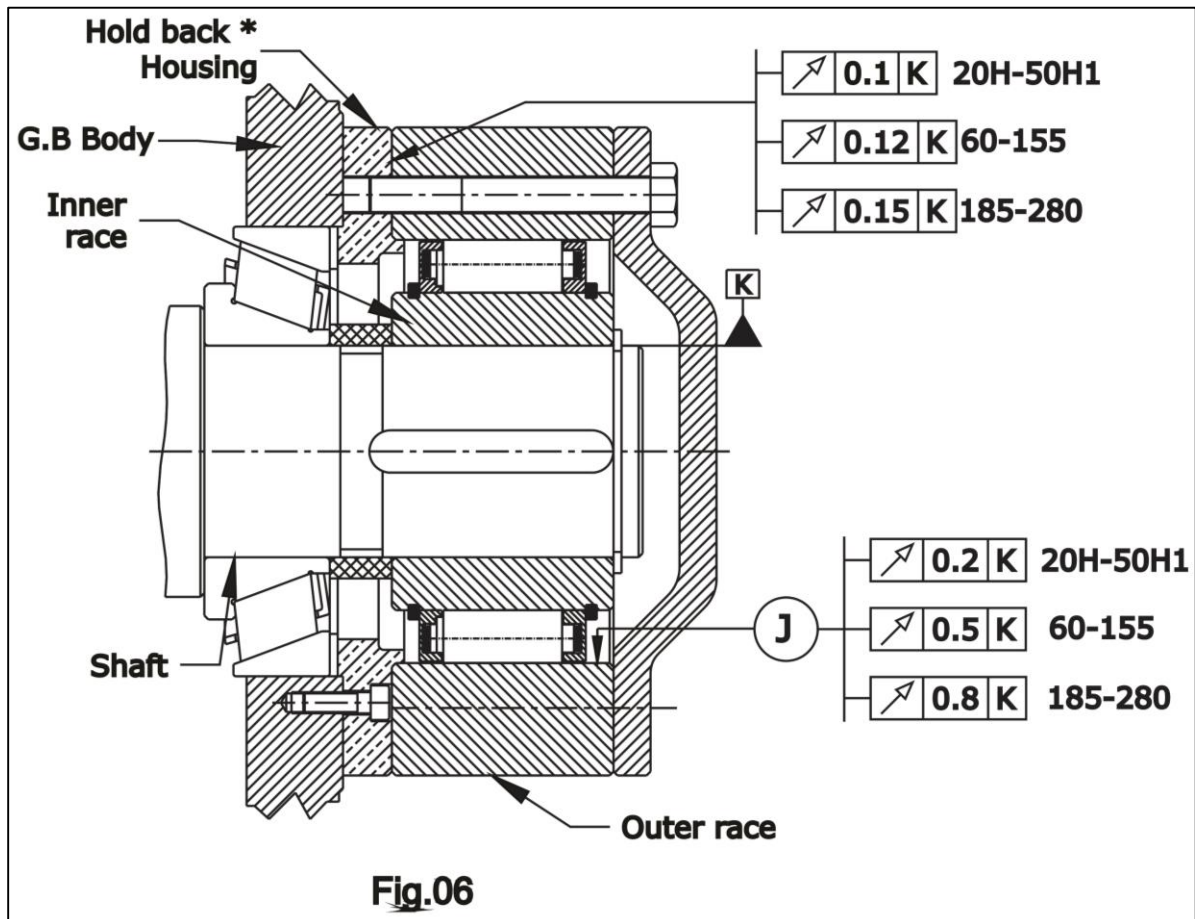


Fig.05

- **For Checking the Eccentricity:**



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- The most reliable check of existing run-out between Shaft and Outer Race can only be carried out when both the Outer and Inner Race parts are mounted. The cover should not be assembled at this point but Outer Race must be drawn along its whole mounting face against the fastening surface with the fastening screws.
- **There are several methods for checking run-out:**
- Fasten a dial gauge to the Inner Race and locate the sensor of the dial gauge against the bore of the Outer Race (point J in Fig.).
- Slowly turn the shaft 360° and determine the maximum run-out (TIR) whilst ensuring (particularly in the case of taper or sleeve bearing applications) that the bearing play is included in the run-out.
- Compare this run-out value with the permissible value given in the documents of the machine.
- Alternative the maximum radial run-out (TIR) can be determined by measuring the distance between the (1) Inner Race and (2) Outer Race. The measurement has to be done all 90° at the circumference with an internal measuring device e.g. "Inside Dial Indicator". The largest difference of the result of measurement lying in a line is the run-out (TIR).
- By applying pressure on outer race, may lead to damage of bearing. To remove dust particles and other unwanted things, it is acceptable for oil lubricated clutch to be immersed in hot, clean oil before mounting.

6.) Tightening Torque

Tightening Torque (Nm)		
SIZE	Gr. 8.8	Gr. 10.9
M6	10	14
M8	25	34
M10	48	68
M12	84	118
M16	206	290
M20	415	592
M24	714	1017

Note:

- I. Use bolt with grade 8.8 or 10.9
- II. Required machine shaft Tolerance : h6

7.) Lubrication:

Oil table				Grease
Ambient temperature	For ambient temperatures from 0° to 50° C	For ambient temperatures from - 15° to + 15° C	For ambient temperatures from - 40° to 0° C	
Kinematic Viscosity at 40° C, ISO-VG	46/68 [mm ² /s]	32 [mm ² /s]	10 [mm ² /s]	
AGIP	OSO 46/68	OSO 32	OSO 10	
ARAL	VITAM GF 46/68	VITAM GF 32	VITAM GF 10	ARALUB HL2
BP	ENERGOL HLP 46/68	ENERGOL HLP 32	AERO HYDRAULIC 1	ENERGREASE LS2
CASTROL	VARIO HDX	VARIO HDX	ALPHASYNTH 15	
CHEVRON	EP HYDRAULIC OIL 46/68	EP HYDRAULIC OIL 32	HYJET IV	
DEA	ASTRON HLP 46	ASTRON HLP 32	ASTRON HLP 10	
ELF	ELFOLNA 46	ELFOLNA 32	ELF AVIATION HYDRAULIC OIL 20	
ESSO	NUTO H 46/68	NUTO H 32	UNIVIS J 13	BEACON 2
KLÜBER	LAMORA HLP 46/68	LAMORA HLP 32	Klüberoil 4 UH1-15	ISOFLEX LDS 18 Special A POLYLUB WH 2
MOBIL	D.T.E. 25/26	D.T.E. 24	AERO HF A	MOBILUX 2
SHELL	TELLUS OIL 46/68	TELLUS OIL 32	TELLUS OIL 10	ALVANIA RL2
Other manufacturers	Gearbox- or hydraulic oils without solid lubricants ISO-VG 46/68	Gearbox- or hydraulic oils without solid lubricants ISO-VG 32; Automatic transmission fluids [ATF]	Gearbox- or hydraulic oils without solid lubricants ISO-VG 10; Note setting point! Aviation hydraulic oils ISO-VG 10	

8.) Inspection prior to commissioning:

- Before operating the freewheel you have to make sure, that the shaft can be easily and evenly turned in freewheeling direction.

9.) Maintenance:

- When freewheeling with speed above the lift-off speed, the freewheels operate in maintenance free mode and do not require any lubrication. Protection against corrosion should be provided.
- For the starting and stopping operation (running time max. 20 s below lift-off speed) splash lubrication of the races is sufficient. Is oil mist existing, so is this sufficient.
- If not oil will reach the outer ring race, a grease lubrication is to carry as follows
- Thickness of film approx. 0.5 mm.
- With a mineral lithium-based lubricant of NLGI classes 000 to 2 with a maximum base viscosity of 42 mm²/s at 40 °C (low temperature grease such as “LBZ” lubricant by Mobil or “ISOFLEX LDS 18 special A” by Kluber).
- **Note: To much grease will lead to malfunction of the freewheel.**
- With frequent or constant operation below the Lift-off speed (please. contact NMTG India directly with NMTG part No. if available or see specific order documentation) either an oil bath or an oil supply between Cage and Outer Race is necessary. The corresponding volume flow can be found in Table 1. However, the service life under such conditions is limited!
- ***If Holdback is working permanent under cycle below lift-off speed then oil lubrication must be maintained up to 10 mm (max.) to an inside diameter of Outer race.***

No.	Type of FWC	Quantities of Oil
1	Type NHB.....S1	50 Cm ³ / Min
2	Type NHB.....S2	100 Cm ³ / Min
3	Type NHB.....S3	200 Cm ³ / Min

10.) Preservation & Storage Instruction:

- NMTG Product is supplied with an oil film as Rust & Corrosion Protection as per below instruction.
- This protection is renewed at regular intervals which depends on Environmental condition at Storage site. (Temperature, Atmosphere, etc.)

➤ **Maximum Storage period is 6 Months for Short-term Storage.**

Please follow Instruction for Preservation & Storage of NMTG Products:

- Once NMTG Product is used then clean all its parts with clean cloth.
- Lubricate all parts with rust preventive oil S-VCI 415 or equivalent & assemble as it was & packed in plastic bag.
- After wrapping in plastic bag, Material is packed by S-VCI 131 or equivalent rust preventive paper & store.
- Keep it in dry place and free from dust.
- Do not expose to open or corrosive environment.
- Keep away from direct Sunlight.

- Avoid Mechanical Shock & Vibration.
- Storage Temperature: -10 to +60°C.
- Relative Humidity: Maximum 95%, non-condensing.

For Long term Storage (1 Year):

Please follow Instruction for Preservation & Storage of NMTG Products:

- Once NMTG Product is used then clean all its parts with clean cloth.
- Lubricate all parts with rust preventive oil S-VCI 415 or equivalent & assemble as it was & packed in special Vacuum bag.
- After wrapping in Vacuum bag, Material is packed & store.
- Keep it in dry place and free from dust.
- Do not expose to open or corrosive environment.
- Keep away from direct Sunlight.
- Avoid Mechanical Shock & Vibration.
- Storage Temperature: -10 to +60°C.
- Relative Humidity: Maximum 95%, non-condensing.