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, stop 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 backstopping application to prevent accidents.
- Frequent starting and stopping will apply excessive force on the mounting. Verify mounting strength.
- In accurate installation and mounting, various load conditions, wear and tear of parts, and life expectancy can all affect the performance of a Holdback.
- It is necessary to wear Personal Protective Equipment (such as safety shoes, gloves, goggles, etc.) while handling machine in which Freewheel One way Clutch is installed.
- **Confirm rotational direction prior to installing**.

3.) About NB:

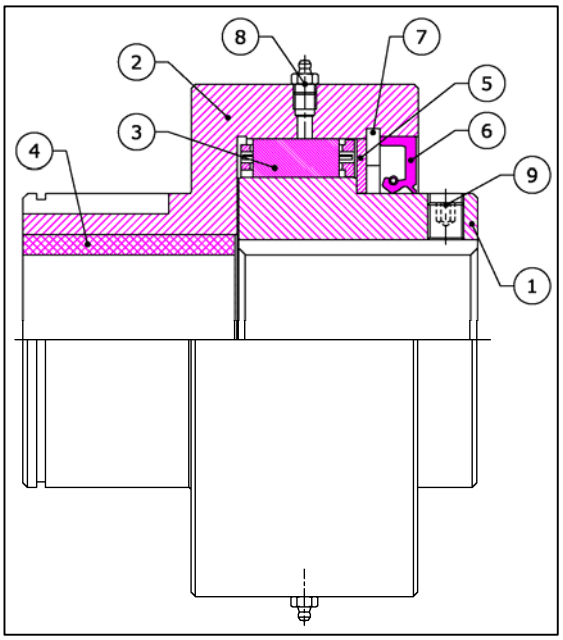
- In one direction of rotation there is no contact between the inner and outer ring, the freewheel is in freewheeling operation.
- In the other direction of rotation there is contact between the inner and outer ring; in this direction it is possible to transmit high torque.
- Main function of NB:
  Indexing/Feeding
  Overrunning

4.) Function of NB:

1. **As a Indexing Function:**
   Indexing function allows the conversion of reciprocating motion applied to the driving race of the clutch into unidirectional intermittent motion of the driven race.

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.

5.) Design:



No.	Nomenclature	No.	Nomenclature
1	Inner Race	2	Outer Race
3	Sprag Assembly	4	Bushing
5	Washer	6	Oil Seal
7	Clirclip	8	Lubrication screws
9	Shaft lock screws		

6.) Pre-Installation:

➢ Shaft-Bore fit:

- Shaft should be free from burs and smooth & Tolerance must be h6/j6.
- Provide coating on shaft with anti-seizing agent for easy mounting and easy removal of Freewheel One-Way Clutch.
  Shaft should not tapered and bore are finished to size for an “easy push fit” on a straight shaft.

➢ Key and keyway:

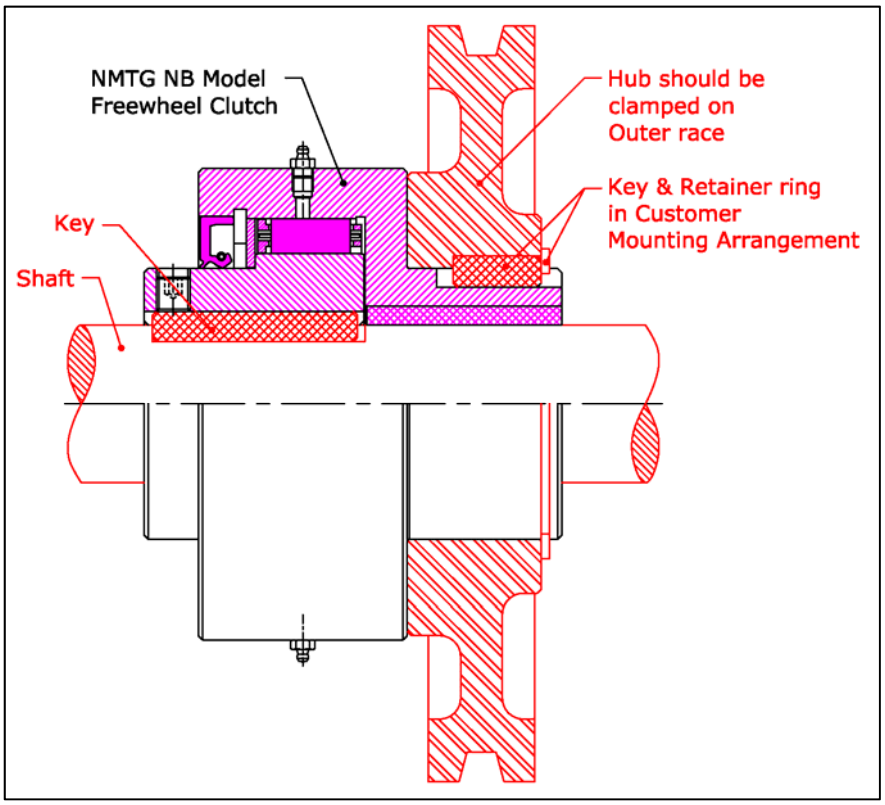
- Check the key fit with both the Freewheel One-way Clutch and shaft.
- To provide for adequate top of key Clearance, the straight keyway in the bore of the Freewheel One-way Clutch has been made slightly deeper than standard.
- Only a parallel key is recommended for Freewheel One-way Clutch fixing. Do not use a tapered key. And there must be clearance between clutch keyway and key top. The key should be in accordance with DIN 6885.1.
- Check key will slide through the backstop keyway and corner radius is clear for fitment.

➢ Axial Retention:

- Freewheel One-way Clutches are manufactured for clearance fit on shafts. So The Inner race must be retained axially on shaft – Circlips are suitable or Jack bolt & washer assembly is used to fix position.

7.) Installation Process:

- Before installation, check if the direction of shaft rotation is the same as the inner race of NB Freewheel One-way Clutch, which is shown by an arrow mark on the inner race end.
- Interference fit and shrink fit are prohibited for Freewheel One-way Clutch fixing.
- Tolerance for mating Outer race sleeve (Hub) should be **H6/H7**. Insert shaft with proper controlled within **h6**.
- Width of key, within js9 & height (refer to shaft dia.) H-t1 (ref. Din 6885 sheet 1). Key must be very carefully fitted to prevent any differential movement.
- During installation, apply pressure only on inner race or side face of outer race keyway. Never apply pressure on sealing or sprag assembly.
- It is impossible to use Freewheel Clutch as a coupling by installing inner race and outer race to the right and left shaft separately and respectively.
- If using the Clutch between medium to high speed operation range, be careful of heat generation caused by overrunning. In the case the temperature of the Clutch outer race portion becomes 70℃ or higher, the Clutch cannot be expected to have a long operating life. In this case, either select different series or change the condition of use.
- If thrust load is directly applied to the clutch, set up structure to receive thrust load.



8.) Change in Freewheeling direction of Rotation:

- Change of the freewheeling direction of rotation is not possible to change on the site installation for NB model, kindly confirm required freewheeling direction to NMTG before supplied.

9.) Lubrication & Maintenance:

Oil Lubrication:

- Initially change oil after 10 hours of operation. Fill the clutch with oil every month and every half month in a dirty environment. Oil level and oil condition as well as rotating seals should be checked regularly.
- **Note: Don't use oil containing molybdenum sulphide or high-pressure additives or grease of any kind.**
- For working temperature below -40°C and above +50°C, Please contact us.
- For indexing application, oil with kinematic viscosity 10 mm^2/s at normal working condition.
- **Do not use Grease lubricant for indexing application (Use Oil only).**
- We recommended the following lubrication for when re-lubricating or changing the Lubrication.

Oil			
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 [mm2/s]**	**32 [mm2/s]**	**10 [mm2/s]**
AGIP	OSO 46/68	OSO 32	OSO 10
ARAL	VITAM GF 46/68	VITAM GF 32	VITAM GF 10
BP	ENERGOL HLP 46/68	ENERGOL HLP 32	AERO HYDRAULIC 1
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
KLÜBER	LAMORA HLP 46/68	LAMORA HLP 32	Klübeoil 4 UH1-15
MOBIL	D.T.E. 25/26	D.T.E. 24	AERO HF A
SHELL	TELLUS OIL 46/68	TELLUS OIL 32	TELLUS OIL 10
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

Grease Lubrication:

- Change grease lubrication of Freewheel Clutch within every 6 Months as per Operating Condition. For re-lubricate clean & drain old lubricant as per Maintenance instruction.
- When NB Freewheel clutch used in grease lubricant, the free space of freewheel assembly should be filled by 30 to 40% or approx. 1/3 space.
- Excessive amount of grease may lead to malfunction of clutch.

- **For working temperature below -50°C and above 100°C, Please contact us.**
- When working temperature is above 80°c, then check lubrication regularly.

Temp. Range	**-50° C to +140° C**
Manufacturer	**Grease**
OKS	OKS 475
KLUBER	ISOFLEX LDS 18 SPECIAL A
MOLYKOTE	MOLYKOTE G-1023
BP	ASV RBL 33

Oil Level:

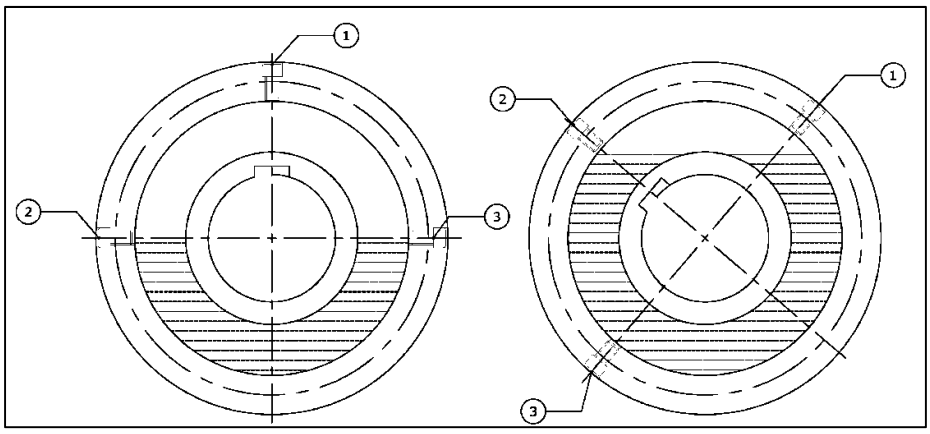
- Oil lubrication is provided with particular oil mention in above table.
- Check oil level every month or 160 Hr. of operation, which take place first. For indexing application where operating speed is above 160 strokes per minute require frequent oil level inspection.

➢ **For overrunning and backstopping:**

- First rotate clutch as shown in fig. 01.
- Remove oil screw 2 & 1 or 3 & 1 and add oil through lubrication hole 1 until oil starts flow from hole 2 or 3.(Fill ½ of free space).
- Tight lubrication screw 2 & 1 or 3 & 1 with washer to prevent leakage.

➢ **For indexing:**

- First rotate clutch as shown in fig. 02.
- Remove lubrication screw 2 & 1 and add oil from hole 2 until oil starts flow from hole 1. (Fill 7/8 of free space)
- Tight lubrication screw 2 & 1 with washer to prevent leakage.



Oil/Grease change:

- Rotate clutch till the lubrication screw reached at bottom position.
- Remove lubrication screw to drain oil from clutch. After oil drainage, fill whole clutch with mineral spirits and tight lubrication screw.
- Rotate clutch for some time to break up and dissolve any oily residue.
- Remove mineral spirits by removing lubrication screw and tight screw.

- Lubricate clutch with specified oil/grease.
- When replacing of oil take place, drain whole oil and clean clutch with mineral spirits. Do not mix oil with any solvent containing carbon sulphide.
- Wipe all grease form clutch.
- Fill new grease into all fittings until clean grease flows out around the oil seal of the clutch.
- Fill lubrication at normal working temperature condition.

10.) Preservation & Storage Instruction:

- NMTG Product is supplied with an oil film as Rust & Corrosion Protection as per below instruction for Short term storage.
- 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.