

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 Freewheel One-way Clutch 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 NRHD:

- NRHD backstops are precision built safety devices designed to protect inclined conveyors, pumps, and bucket elevators from the dangers of gravity accelerated reverse runaway.
- NRHD is sprag type clutch as External Clamping Freewheel One-way Clutch device.
- NRHD Freewheel Clutch assemble on shaft with the inner race driven by a key and secured from axial movement along with shaft.

4.) Functions of NRHD:

- **As a Backstop/Holdback:**
Backstop function prevent reverse rotation when input drive is discontinue or power supply failure to input drive. Freewheel One-Way clutch use to prevent damage caused by power supply failure.

5.) Pre-Installation:

➤ Shaft-Bore fit:

- Shaft should be free from burs and smooth. The tolerance of the shaft should be h6 or 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:

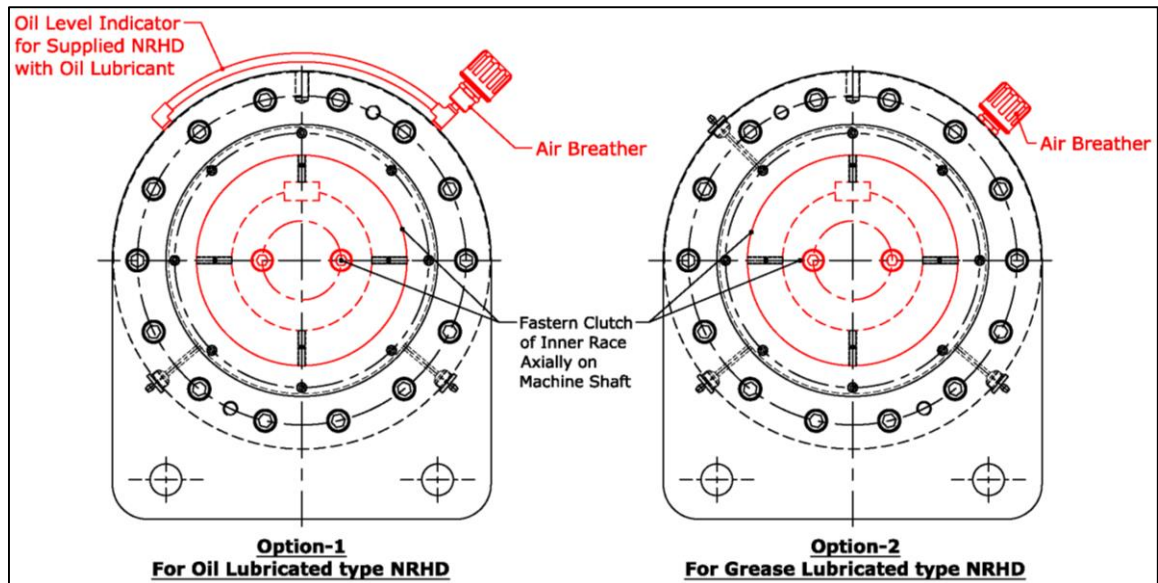
- Check the key fit with both the backstop and shaft.
- To provide for adequate top of key Clearance, the straight keyway in the bore of the backstop has been made slightly deeper than standard.
- Only a parallel key is recommended for holdback fixing. Do not use a tapered key. And there must be clearance 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.
- Freewheel One-way Clutches are manufactured for clearance fit on shafts; therefore, it is important to utilize the inner race set screws to prevent the backstop from “walking” on the shaft during operation.
- If freewheel clutch is shaft lock screws type, Set screws are shipped in the inner race of clutch.
- Confirm set screws are not extending into the bore area prior to mounting the backstop.
- The Inner race must be retained axially on shaft by suitable arrangements clamping and washer assembly or other arrangements used to fix axial position.

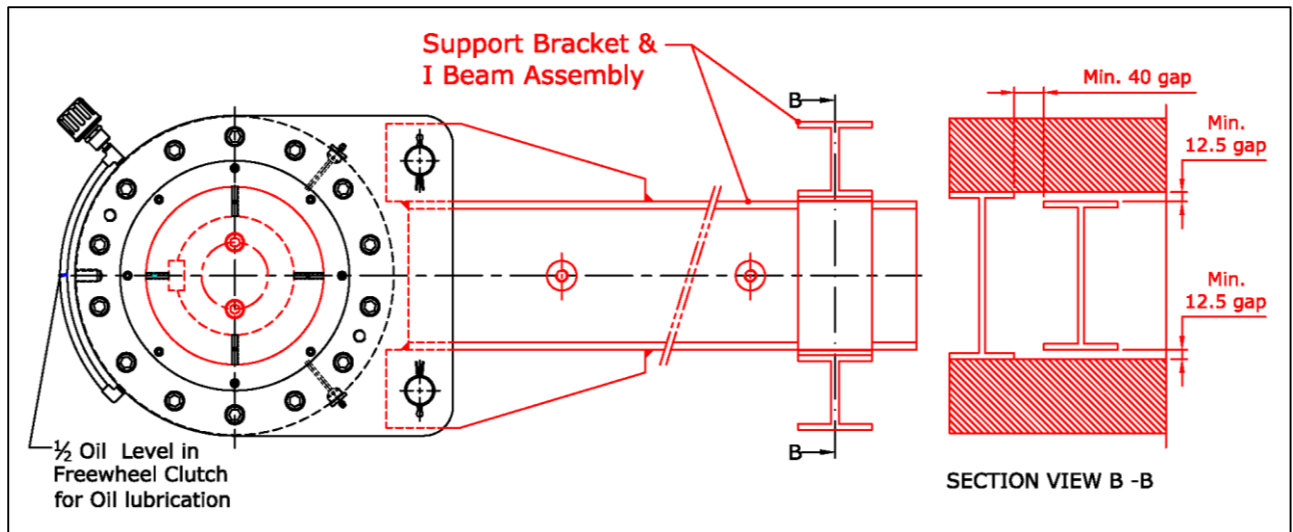
6.) Installation Process:

- Our supplied NRHD Freewheel clutch is with applied light coat oil on the surface of the clutch, please remove the light coat oil & apply anti-rust agent on the clutch ID surface & shaft surface during installation of the NRHD freewheel clutch.
- Before installation, check lubrication level and maintain sufficient Lubrication level in NRHD freewheel One-way Clutch.
- First, check if the direction of shaft rotation is the same as the inner race of NRHD Freewheel One-way Clutch, which is shown by an arrow mark on the inner race end.
- 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.
- Interference fit and shrink fit are prohibited for holdback fixing.
- When mounting the NRHD-Head Part of Freewheel Clutch, apply pressure only on Inner race of Freewheel One-way Clutch Head Part. When tapping the inner race, use a soft hammer in order to avoid damage on the holdback inner race end. **Do not hit the side plate of freewheel One-way Clutch to avoid damage of clutch.** Secure axially retained Head Part of Freewheel Clutch on shaft both side.
- Please refer and follow below steps sequentially,
 - Installation of Oil lever indicator/Air Breather on Head Part of Freewheel Clutch
 - Installation of Torque arm on Head part of Freewheel Clutch, and
 - Fixing Position of Arm.



➤ **Installation of Oil level Indicator/Air Breather:**

- Rotate the freewheel clutch in the shaft until which plugs on outer dia. of Outer Race to be unscrewed are above centre line.
- **Option-1: For Oil Lubricated NRHD Clutch**
 - Remove two plugs and fit the Pipe Elbows with Teflon thread sealer. Tighten the Elbows and orient position as shown in figure.
 - Fix the Transparent rubber tube in pipe clamps and mount these attachment fit on Elbows.
 - Rotate the Freewheel Clutch to the end position and the Transparent rubber tube clearly indicates the Oil level of freewheel one-way clutch.
 - Attach the Torque arm on clutch. (refer steps of Torque arm Attachment)
 - Check oil level in Freewheel Clutch after installation and before start-up.
 - The tube should display an oil level at the shaft centreline. **Oil level must have approximated to Centreline of shaft.**
 - If not have oil level, then add or remove oil from Freewheel One-way Clutch and necessary to obtain half-full oil level in Freewheel Clutch.
 - Remove the plug near the top of clutch and install air breather with threaded elbow and Teflon thread sealer.
- **Option-2: For Grease lubricated NRHD Clutch**
 - Attach the Torque arm on clutch. (refer steps of Torque arm Attachment)
 - Remove the plug near the top of clutch and install air breather with Teflon thread sealer on the Freewheel One-way Clutch.
- **Installation of Torque Arm:**
 - For attach torque arm, remove Hold Pins & Cotter pins from Cover Plates of Freewheel Clutch.
 - Use a suitable lifting strap to choke the torque arm. Lift it into position between Cover Plates of clutch.
 - Fix the Torque arm on Freewheel Clutch by Installing the Hold pins and Cotter pins.
 - Do not fasten the torque arm rigidly to Framework in angular or axial Position.



➤ **Fixing Position of Arm:**

- The Head of Freewheel One-way Clutch and end of Torque arm must have align with centreline of stirrup. Attach Support bracket & I-Beam assembly (Frame) on Torque arm to prevent rotation of torque arm when Clutch torque is applied.
- Allowable clearance minimum 12.5 mm between Toque arm of clutch and Frame as shown in Figure.
- Torque Arm of Clutch can be fix position in Frame at any angle. However, Mounting the Freewheel Clutch in straight vertical position isn't recommended. Maintain minimum 10° from straight Vertical Position of Torque Arm.

7.) Change in direction

- Changing of the direction of rotation is achieved by turning the Freewheel Clutch.

8.) Lubrication & Maintenance:

Maintenance:

- Lubrication maintenance of Freewheel Clutch should be not performed while equipment is in Operation.
- Completely clean around fitting of Air breather and after, Remove the filter as Air breather without removing elbow from Freewheel One-way Clutch. Replace breather element if dirty.
- Remove bottom plug and drain Lubricant from Freewheel Clutch. Clamp these drain plug on Freewheel Clutch.
- Add a quantity of mineral spirits For Flushing.
- Remove again drain plug to drain flushing old lubricant.
- Replace drain plug and fill lubrication into Clutch. Follow oil/grease lubrication table.
- Attach breather on Clutch.
- Retighten Clamping screws of Cover plate of freewheel One-way Clutch after first week of operation.

Oil Lubrication:

- 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	Klüberoil 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

- Note: Don't use oil containing molybdenum sulphide or high-pressure additives or grease of any kind.**
- Change oil lubrication of Freewheel Clutch within every 3 to 6 Months as per Operating Condition.
- For re-lubricate the freewheel clutch, Replace drain plug and fill lubrication from Elbow (which placed at Air breather fitted).
- Don't Mix Oils.** When switching one brand oil to another type, drain oil and flush the Freewheel One-way Clutch with mineral spirits.
- NMTG Recommend to use Oil Lubrication. Before Operating, Oil level inside Clutch should be at least 1/2 of the Clutch height.*

Grease Lubrication:

- Change grease lubrication of Freewheel Clutch within every 3 Months as per Operating Condition. For re-lubricate clean & drain old lubricant as per Maintenance instruction.
- On re-lubrication approximately $\frac{1}{3}$ of the clutch should be filled with grease. Fill grease manually or with low pressure grease gun. **(Note: Don't use grease which contains EP additives.)**
- Complete installation as described in the installation section.

- **For working temperature below -40°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
OXS	OXS 475
KLUBER	ISOFLEX LDS 18 SPECIAL A
MOLYKOTE	MOLYKOTE G-1023
BP	ASV RBL 33

9.) 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.