NMTG Mechtrans Techniques Pvt. Ltd.

Installation & Maintenance Instruction

Freewheel One-Way Clutch - NHSM

DOC NO: N-DD-IM-FA301-02 **Rev: 00** **Rev Date:**

Address : A2 behind C.E.D., Near Systronics, GIDC Estate, Phase-1, Naroda, Ahmedabad-382330

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**.

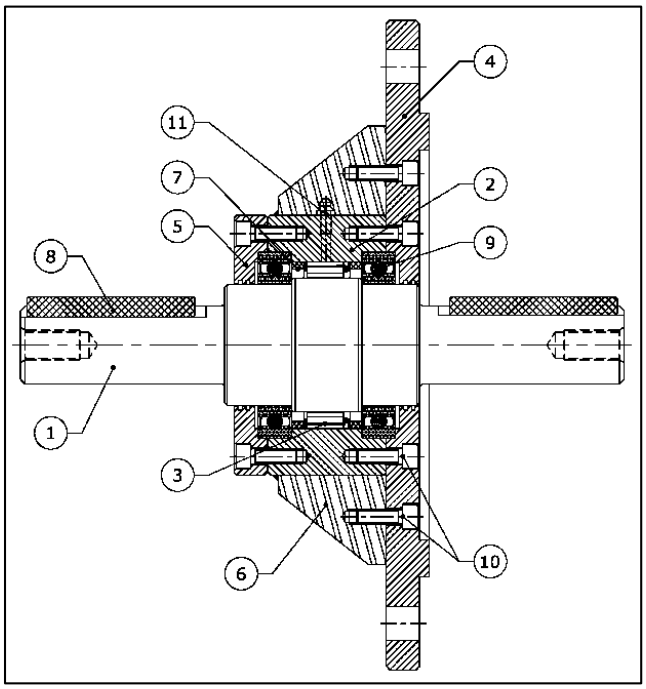
3.) About NHSM:

- NMTG NHSM designed with Sprag type and shielded type ball bearing support with single side Flange arrangement.
- NHSM Backstop designed as precision built safety devices to protect Equipment or mounting at where Backstopping function required.
- NHSM backstops are directly mounted on Gear unit at Flange Side & another side of shaft to mount for Customer Equipment arrangement.
- This type Holdback suitable for high speed application.

4.) Functions of NHSM:

- **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.

5.) Design:



No.	Nomenclature	No.	Nomenclature
1	Inner Race (Shaft)	2	Outer Race
3	Sprag Cage Assembly	4	Flange Cover (Male Part)
5	End Cover	6	Rib Plate
7	Washer	8	Key
9	Sealed Ball Bearing	10	Allencap Screws
11	Grease Nipple		

6.) Pre-Installation:

➢ Shaft-Bore fit:

- Shaft should be free from burs and smooth. Bore tolerance should be controlled as per clearance fit with respect NHSM series models.
- Provide coating on shaft with anti-seizing agent for easy mounting and easy removal of backstop. 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.

7.) Installation Process:

- Before installation, check if the direction of shaft rotation is the same as the inner race of NHSM holdback, which is shown by an arrow mark on the inner race end.
- NHSM will be installed in between Hollow part of equipment (Geared unit etc.) & Customer equipment arrangement. Shaft which is Flange Cover side of NHSM will be inserted into Hollow part of Equipment & another end of shaft which is for to mount for Customer equipment to transmit power transmission.
- Interference fit and shrink fit are prohibited for Freewheel One-Way Clutch fixing.
- Key must be very carefully fitted to prevent any differential movement.
- Mount Clutch axially into the Hollow part of Equipment unit & mount Spigot Flange cover then fit bolt on face of Flange.
- Buyer have to arrange concentric alignment for equipment Flange and Spigot diameter of Flange cover. The Tolerance of spigot diameter of Customer attached Flange must be **maximum H7 for Female Spigot**.
- **Use 10.9 Grade Bolt only for Mounting.**
- When mounting the NHSM Freewheel one-way clutch, apply pressure only on inner race/shaft of clutch. When tapping the inner race, use a soft hammer in order to avoid damage on the holdback inner race end. **Do not hit the Clutch side plates to avoid damage of clutch.**

8.) Change in direction:

- Before Order, please confirm required freewheeling direction of NHSM Holdback.
- Direction of Freewheeling can be changed by following step
  - ❖ Remove the clamping screws of End cover & Remove the cover from NHSM
  - ❖ Apply Force on shafting of Clutch in opposite direction to pull-out bearing from Clutch part.
  - ❖ After removal of bearing & shafting, remove snap ring, washer & at last remove Sprag cage assembly from Clutch.
  - ❖ After removed Sprag Cage Assembly then flipped 180° or turning the Freewheel cage assembly to achieved required freewheeling direction changing.
  - ❖ Before re-installed clean the inner race / shaft & outer race as well as the lateral guide or support parts for the sprag cage assembly mounting. If assembly is contamination, the assembly must be cleaned with a thin oil.
  - ❖ Install cage assembly after clean and dry surfaces where assembly should be fitted.
  - ❖ Before assembly, check the direction of shaft & inner race rotation is same of sprag cage assembly, which is shown by an arrow mark on sprag cage assembly.
  - ❖ Install the cage assembly into outer race with specified freewheeling direction of rotation and after the inner race is pushed into sprag cage assembly in freewheeling direction with slightly rotation.
  - ❖ Re-installed washer, snap ring & end cover onto Clutch & fix that removed all clamping screws.

9.) Lubrication & Maintenance:

- After first Installation, change Lubrication after 1 year & then periodically change after 2 years. The actual operation time between changes should be decided after considering the operating conditions. Inject new grease after draining and cleaning inside of the Clutch. When the grease is to be changed, be sure to drain and clean the inside of the Clutch.

- Every two years, the freewheel should be dismantled, cleaned, inspected and re-lubricated.
- Uninstall the unit as an assembly. Clean all parts and examine them visually.
- When Freewheel clutch assembly re-lubricate with grease, the free space of freewheel assembly should be filled by 30 to 40% or approx. 1/3 space. Apply grease particularly to the sprags.
  Kindly note, sprags not to be kept out from cage assembly, otherwise sprags will be lead to be malfunction, and possible destruction of Freewheel One-way Clutch.
- Excessive amount of grease may lead to malfunction of clutch.

(Note: Don't use grease which contains EP additives.)

- 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**
OKS	OKS 475 HS
KLUBER	ISOFLEX LDS 18 SPECIAL A
MOLYKOTE	MOLYKOTE G-1023
BP	ASV RBL 33

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.