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 NHBU E1E8E9:

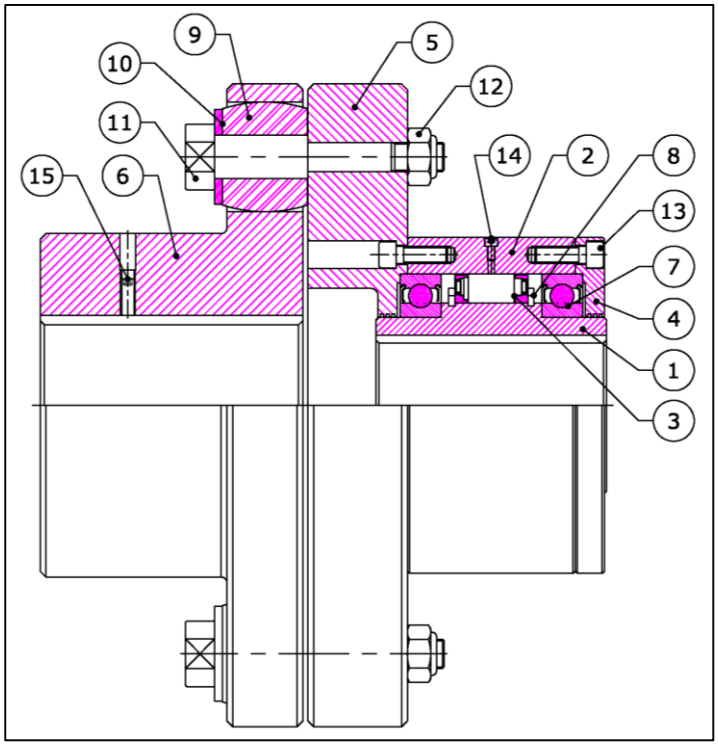
- NHBU E1E8E9 is with shielded type ball bearing support and Centrifugal lift-off sprag (CLS) type freewheel when the inner race is high speed overrunning.
- NHBU E1E8E9 Freewheel Clutch is self-contained unit designed for overrunning clutch applications.
- NHBU E1E8E9 is used in high overrunning speed of applications.

4.) Function of NHBU E1E8E9:

Overrunning:

- When drive member rotates faster than driving member, clutch gets disengage automatically. The inner race should be highest overrunning speed possible for this clutch. 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	CLS assembly	4	E1 type lever Arm
5	E8 Type Flange Cover	6	E9 Type Cover (Coupling)
7	ZZ type Bearing	8	Circlip
9	Rubber Bush	10	Washer
11	Bush Pin	12	Lock Nut
13	Allen cap Screw	14	Lubrication screw (as an optional designed)
15	Grub Screws		

6.) Pre-Installation:

➢ Shaft-Bore fit:

- Shaft should be free from burs and smooth. The tolerance of the shaft should be h6.
- 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, first obly remove Hex nuts from flanges connection of E8-E9 Cover of Freewheel One-way Clutch and separate the E9 Coupling part and other E8 Flange with Clutch part for further installed on shafts.
- Installed E9 Coupling part on Shaft with key, secure the clutch axially by tightening grub screws. Slide the Clutch part on the shaft, secure the clutch axially onto shaft by circlip, End washer & bolting arrangement.
- Interference fit and shrink fit are prohibited for Freewheel One-Way Clutch fixing.
- 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.
- When mounting the NHBU E1E8E9 Freewheel one-way clutch, apply pressure only on inner race 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.**
- Check if the direction of shaft rotation is the same as the inner race of NHBU E1E8E9 Freewheel One-way Clutch, which is shown by an arrow mark on the inner race end.
- The axial alignment of the clutch parts must be that space “S” is not exceeded under any circumstances during operation. *(refer “S” dimension as per drawing or datasheet)*
- Clamp together the Coupling & Clutch part & fastening by supplied bush pin into rubber bush & nut arrangement as per mounting reference of fig. 01. After the installation of clutch, gap “S” must be checked again.

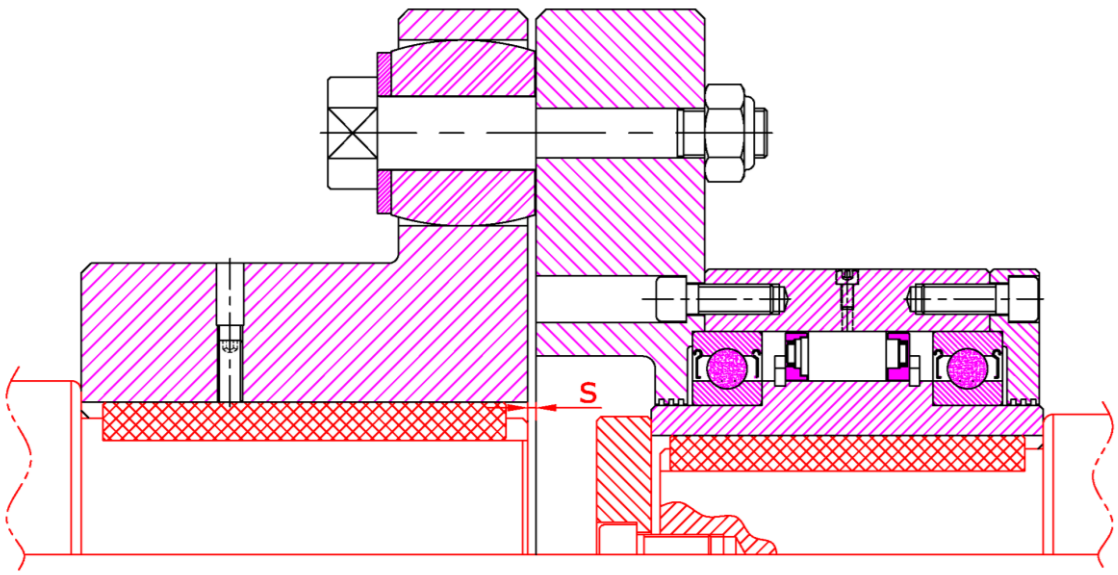


Fig.01

8.) Change in direction

- Change of the direction of rotation is achieved by exchanging Flange-coupling and end cover.

9.) Lubrication & Maintenance:

- Every two year the freewheel clutch should be dismantled, cleaned, inspected and re lubricated.
- After removing the covers, carefully remove the inner race, bearings and cage from the outer race.
- Clean all parts and examine them visually.
- On reassembly or re-lubricating approximately $^{1}/_{3}$ of the cage should be filled with grease. Else apply grease with a layer thickness of roughly 1 mm particularly to the sprags and the inner diameter of the outer race. Too much grease in clutch it will cause to run hot, interfere in clutch function and may bring to mechanical damage.
- Reassemble unit following the guidelines in the Re-Installation of cage assembly until half of the sprags inserted. For Install Cage assembly, Use O-ring on Sprags (become in lift-off condition) of cage.
- Apply remaining grease in free space the cage and the bearings, install ball bearing and insert Cover on clutch fasten by screws.
- Complete installation as described in the installation section.
- **Limit of Ambient Temperature: -40°C to +50°C,** When working temperature is above limit, then check lubrication regularly.
- **Max. Operating temperature: 70 °C**
  (Note: Don't use grease which contains EP additives.)

Temp. Range of Lubricant	**-50°c to +140°c**
Manufacturer	**Grease**
OKS	OKS 475
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.
- 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.