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 E1E4 & NHBU E1E5:

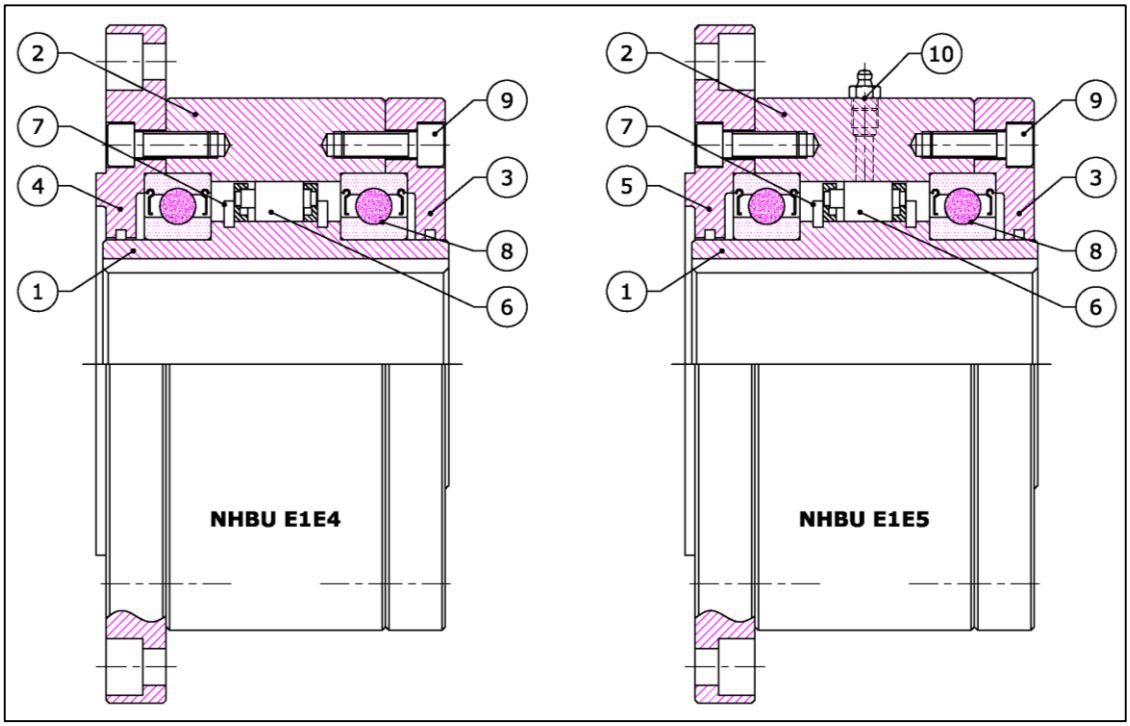
- NHBU E1E4 & NHBU E1E5 Freewheel One-way Clutches are precision built safety devices designed to protect inclined conveyors or vertical elevators, pump, motor, fan from the dangers of gravity accelerated reverse runway & suitable for Overrunning application.
- NHBU E1E4 is Centrifugal List off type Clutch having end cover - E1 type at one side & Flange cover - E4 Type at another side & NHBU E1E5 Clutch having end cover - E1 type at one side & Flange cover - E5 type cover at another side.
- NHBU E1E4 & NHBU E1E5 Freewheel One-way Clutch assemble on shaft with the inner race driven by a key and secured from axial movement along with shaft length by Circlip, Jack bolt and washer assembly.

4.) Function of NHBU.s E1E5:

- **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.

- **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	End Cover - E1 Type	4	Flange Cover - E4 Type
5	Flange Cover – E5 Type	6	CLS Assembly
7	Circlip	8	Bearing
9	Allen Cap Screws	10	Lubrication Screws/ Grease Nipple

6.) Pre-Installation:

➢ Shaft-Bore fit:

- Shaft should be free from burs and smooth & Tolerance must 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:

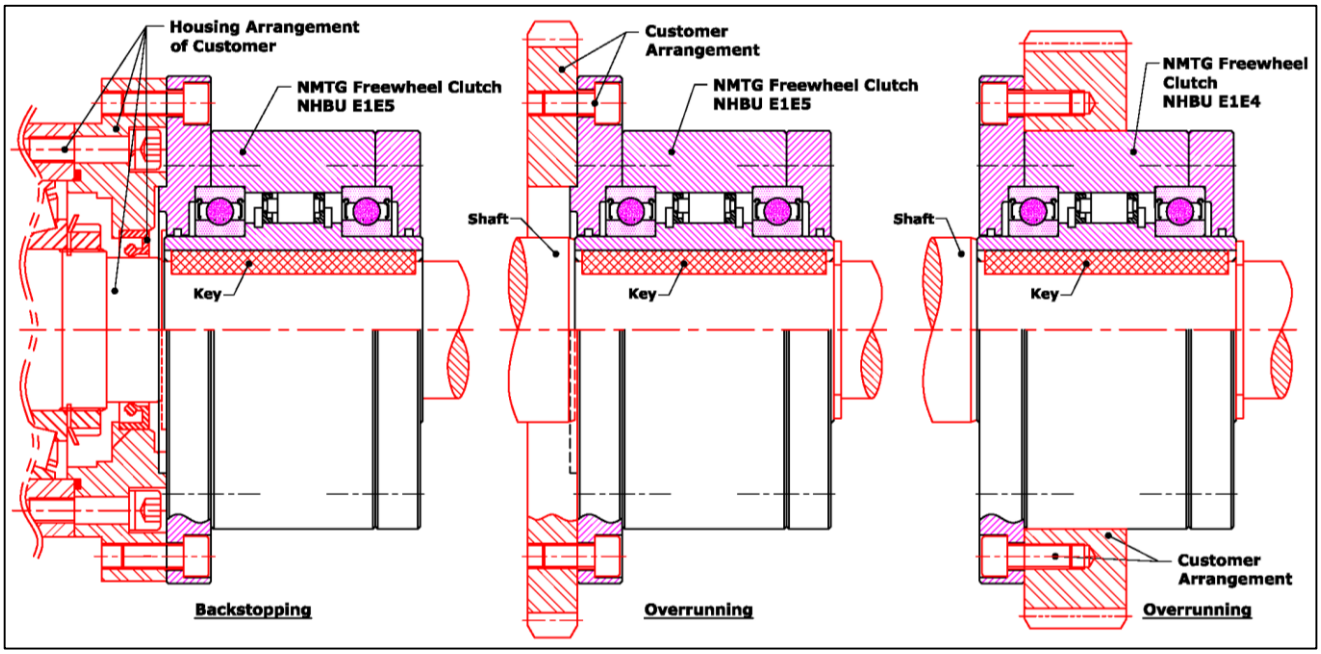
- Check the key fit with both the Freewheel One-way Clutch and shaft.
- To provide for adequate top of key Clearance, the straight keyway in the bore of the Freewheel One-way Clutch has been made slightly deeper than standard.
- Only a parallel key is recommended for Freewheel One-way Clutch fixing. 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, check if the direction of shaft rotation is the same as the inner race of NHBU E1E5 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.
- 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.
- Fix the Flange of NHBU E1E5 Freewheel One-way Clutch with allencap screws as per freewheel clutch arrangement of Customer. Refer to Figures for reference as per Freewheel Clutch function.
- When mounting the NHBU E1E5 Freewheel One-way Clutch, apply pressure only to an Inner race Freewheel One-way Clutch. When tapping the inner race, use a soft hammer in order to avoid damage on the Freewheel One-way Clutch Inner race end. **Do not hit the Freewheel One-way clutch side plate to avoid damage of clutch.**



8.) Change in direction of Rotation:

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

9.) Lubrication & Maintenance:

- Periodic change of grease is necessary after 7,500 to 10,000 hours of operation. The actual operation time between changes should be decided after considering the operating conditions. Inject new grease after draining and cleaning inside of the NHBU E1E4 / NHBU E1E5 freewheel clutch. When the

grease is to be changed, be sure to drain and clean the inside of the NHBU E1E4 / NHBU E1E5 freewheel clutch.

- Every two years, the freewheel should be dismantled, cleaned, inspected and re-lubricated.
- Uninstall the unit as an assembly.
- 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 approximately $^{1}/_{3}$ of the cage (30 to 40%) should be filled with grease. Apply grease particularly to the sprags and the inner diameter of the outer race.
- Reassemble unit following the guidelines in the Re-Installation of cage assembly, ensuring grease is applied to the grease pockets recessed into the inner diameter of the cover plates.
- Complete installation as described in the installation section.
- Grease sampling should be taken @ regular 12 month intervals depending on environmental & contamination conditions. Additional grease replacement might be needed during sampling if excessive liquid is removed, replace at least 50% more by volume than lost.
  (Note: Don't use grease which contains EP additives.)

Temp. Range	**-20°c to + 80°c**
Manufacturer	**Grease**
OKS	OKS 475
AGIP	AGIP GR MU 2
ARAL	ARALUB HL2
BP	ENERGREASE LS2
CASTROL	CASTROL BNS
KLUBER	ISOFLEX LDS 18 SPECIAL A
MOBIL	MOBILUX EP2
TEXACO	TEXANDO FO 20
INDIAN OIL	SERVOGEM 2 , SERVOGEM 3

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.