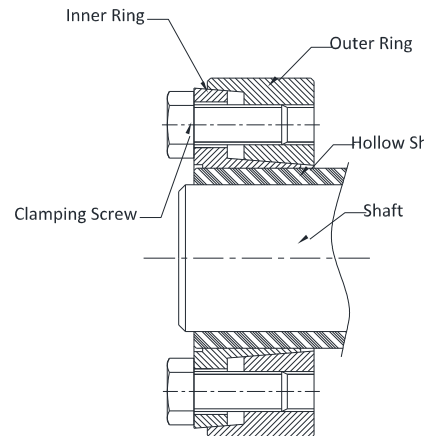


**1) About Two parts Shrink disc & Function:**

- The stepped taper outer ring is pulled onto the stepped taper inner ring by tightening the clamping screws. A radial clamping force is generated by the taper surfaces, The radial clamping force presses the hollow shaft onto the shaft and creates a frictional bonded connection at the contact surfaces between the shaft and the hollow shaft. Thereby, torque / axial force can be transmitted between the shaft and the hollow shaft.

**2) Nomenclature:****3) Technical Requirement for safe operation:**

- The fitting tolerance for the outside diameter of the hollow shaft must not exceed tolerance class f7.

| $d_w$                      | Tolerance |
|----------------------------|-----------|
| $\varnothing d_w < 160$    | H7/h6     |
| $\varnothing d_w \geq 160$ | H7/g6     |

Where  $d_w$  = Solid shaft diameter

- Failure to adhere to these fitting tolerances may cause changes in transmissible torques and/or axial forces and render proper installation impossible.
- The contact surfaces of the shaft ends and hollow shaft must have a mean Roughness depth of  $R_a \leq 3.2 \mu\text{m}$ .
- Note:**

- Don't use oil containing molybdenum sulphide or high-pressure additives or grease of any kind.
- For Tightening of screws, Torque wrench must be used. Do not use Allen keys otherwise required Technical parameters will not be achieved

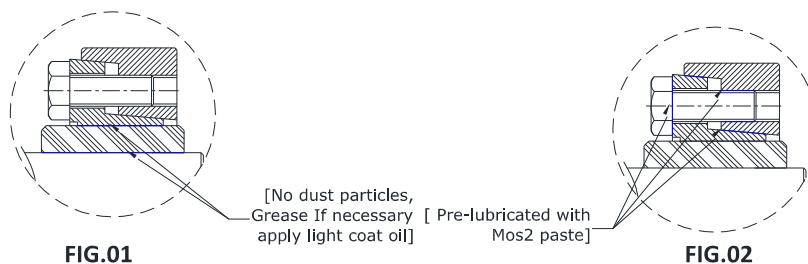
**4) Installation:**

FIG.01

FIG.02

- Our supplied NSD Shrink Disc is with applied prelubricated on the tapped surface of the shrink disc. Before Installation be ensure that contact surface of coupling hollow shaft, outer radii of hollow shaft at where shrink disc is mounted and shaft are properly clean (No dust particles).
- apply light coat of grease on the hollow shaft OD & the Shrink Disc ID surface during installation of the shrink disc.
- Insert the shaft into the hollow shaft.
- Push the shrink disc onto the hollow shaft. (as shown in FIG.03)

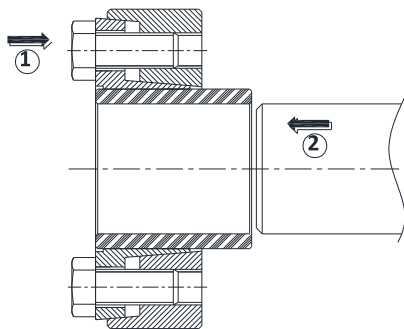


FIG.03

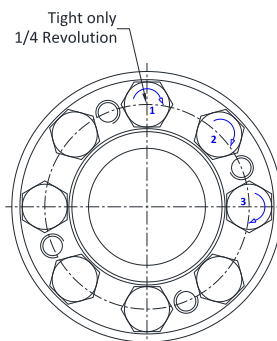


FIG.04

- **A shaft must always be inserted in the hollow shaft when mounting the shrink disc!**
- At a time tighten screws by 1/4 revolution with help of torque Wrench for several passes (Set torque wrench for 1<sup>st</sup> pass : 1/3 Ta ; 2<sup>nd</sup> pass: 2/3 Ta ; 3<sup>rd</sup> pass : Full Ta or 5% more).  
**Where Ta = Recommended Tightening torque, please refer Ta as per NMTG drawing or NMTG Shrink Disc Catalogue (as per Model & Size).**

| Torque wrench torque | No. of Pass                                                             | Bolt Sequence  | Tightening of screws |
|----------------------|-------------------------------------------------------------------------|----------------|----------------------|
| 1/3 Ta               | P <sub>1</sub> , P <sub>2</sub> , P <sub>3</sub> , P <sub>4</sub> ,...n | 1,2 ,3 ,4, ... | By 1/4 Revolution    |
| 2/3 Ta               | P <sub>1</sub> , P <sub>2</sub> , P <sub>3</sub> , P <sub>4</sub> ,...n | 1,2 ,3 ,4, ... | By 1/4 Revolution    |
| Ta or 5% more        | P <sub>1</sub> , P <sub>2</sub> , P <sub>3</sub> , P <sub>4</sub> ,...n | 1,2 ,3 ,4, ... | By 1/4 Revolution    |

- Replace missing or damaged clamping screw with screw of quality as per mentioned below
  - For models NSD 20, 21, 22, 23 Hex Head Screw, DIN EN ISO 4014/4017 – 10.9 Grade.
  - For models NSD 28: Hex Head Screw, DIN EN ISO 4014/4017 – 12.9 Grade.

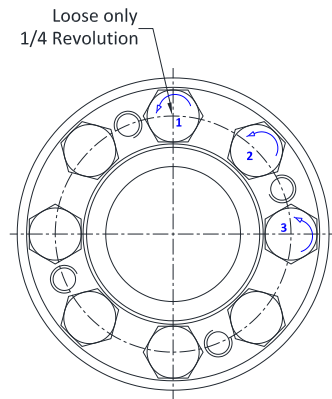
### Tightening Torque:

| Model      | NSD 20  | NSD 21  | NSD 22  | NSD 23  | NSD 28  |
|------------|---------|---------|---------|---------|---------|
| Screw Size | Ta (Nm) | Ta (Nm) | Ta (Nm) | Ta (Nm) | Ta (Nm) |
| M6         | 12      | -       | 12      | -       | -       |
| M8         | 29      | -       | 29      | -       | 35      |
| M10        | -       | -       | 58      | -       | 70      |
| M12        | -       | 100     | 100     | -       | 121     |
| M14        | -       | 160     | 160     | -       | 193     |
| M16        | -       | 240     | 240     | 240     | 295     |
| M20        | -       | 470     | 470     | 470     | 570     |
| M24        | -       | 820     | 820     | 820     | 900     |
| M27        | -       | -       | 1210    | 1210    | 1310    |
| M30        | -       | -       | -       | 1640    | -       |

- Above mention value of tightening torque is maximum. Please refer drawing for actual value of tightening torque as per your application.

### 5.) Removal:

- Loosen the clamping screws uniformly in multiple steps by  $\frac{1}{4}$  revolution for each step to prevent misalignment of the clamping surfaces and breaking of screws. (as shown in FIG.05)
- Loosen all screws till the shrink disk is completely released. For reuse of shrink disk re-lubricate taper surface and clean hub bore & shaft diameter, etc. or store.
- **Do not remove clamping screws completely from threaded bores under any Circumstances, as this poses the risk of injury.**
- Do not separate the two rings directly. Instead, remove as many clamping screws as threaded press-off bores in the stepped tapered inner ring and turn them into the press-off bores uniformly until the stepped tapered inner ring is pressed free of the stepped tapered inner ring. Remove the shrink disc from the hollow shaft.



**FIG.05**

### 6.) Reuse:

- For reuse of shrink disc, to re-lubricate inner ring, outer ring and clamping screws. If any damage found in parts of shrink disc, then replacement of whole shrink disc required. Before reuse of shrink disc's screws please check screws length because of during operating condition if they have been elongated so they cannot be used further so replace with same size and grade.

### 7.) Maintenance:

- Completely dismantle the shrink disc and clean, re-lubricate inner ring, outer ring and safety nuts as per below table. Also pay attention on information provided by the lubricant manufacturers.

| Lubricant          | Lubricant Type       | Applying on Hydraulic Shrink Disc Part |
|--------------------|----------------------|----------------------------------------|
| Molykote D 321R    | Bonded coating/spray | Use on taper surface of inner ring     |
| Molykote G Rapid + | Paste                | Use on taper surface of outer ring     |
|                    |                      | Use on thread area of clamping screws  |

- Shrink discs are maintenance free. We therefore recommend to check tightening torque of the clamping screws each time maintenance is performed on the machine.

*(All Figures shown in instructions are for easy understanding of installation and removal processes.)*

### 8.) Storage Preservation and Instruction:

- NMTG Product is supplied with an oil film as Rust & Corrosion Protection 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.