Hydraulic Nuts
HYDNUM..-E, HYDNUM..-E-INCH
User manual
**Foreword**

**New designation**  The new hydraulic nuts can be identified from the -E in the designation. The E stands for Enhanced and this means that some improvements have been made.

**Measuring the drive-up distance**  At first sight, it is not possible to identify the new piston form, but it is precisely this characteristic that gives a major advantage: the drive-up distance can be measured simply using a conventional dial gauge. This is fitted in the hole for the dial gauge and is located by hand using a knurled clamping screw made from plastic. The tip of the measuring pin lies flat on the new collar of the piston, which means that the stroke can be measured precisely.

**Marking**  The marking is also a new feature. Each hydraulic nut is marked with the maximum permissible pressure and the thread present. This facilitates reliable operation and damage-free mounting.

**Mounting and dismounting**  Mounting and dismounting is aided by the hand lever now supplied. This is inserted in a handling hole and, as a result, the hydraulic nut can be easily screwed and unscrewed.

If maintenance or repair becomes necessary at any time, the new dismounting screws made from corrosion-resistant steel give considerable benefit in dismounting. The annular piston can thus be unscrewed uniformly from the press ring.

The maximum stroke is indicated by a red O ring, thus reliably preventing excessive outward movement of the piston and all the resulting consequences. Simple visual inspection is sufficient during use.

**Current version**  A current version of this user manual can be found at [http://medien.schaeffler.com](http://medien.schaeffler.com) using the search term BA4.
Contents

About the user manual
Symbols ................................................................. 4
Availability ................................................................... 4
Legal guidelines .......................................................... 4
Original user manual .................................................... 4

General safety guidelines
Usage for the intended purpose ....................................... 5
Usage not for the intended purpose ................................... 5
Qualified personnel ....................................................... 5
Hazards ......................................................................... 5
Protective equipment ..................................................... 5
Safety regulations .......................................................... 6

Scope of delivery .......................................................... 7
Accessories ..................................................................... 8
Further information ....................................................... 8
Damage during transit .................................................... 8
Defects .......................................................................... 8

Description
Press ring ....................................................................... 9
Annular piston ............................................................... 9
Sealing rings .................................................................. 9
Red O ring ..................................................................... 9
Press ring ..................................................................... 10
Annular piston ............................................................... 14
Other components ........................................................ 15
Function ........................................................................ 17

Commissioning
Checking the hydraulic nut ............................................. 20
Lifting the hydraulic nut out of the transport container and
transporting the hydraulic nut ......................................... 21
Preparation for mounting ............................................... 23
Mounting the hydraulic nut ............................................. 25
<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying the mounting ring</td>
<td>32</td>
</tr>
<tr>
<td>Applying the intermediate ring</td>
<td>33</td>
</tr>
<tr>
<td>Selecting and mounting the dial gauge</td>
<td>34</td>
</tr>
<tr>
<td>Selecting the pressure generation device</td>
<td>37</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td>Drive-up distance</td>
<td>38</td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td>38</td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>39</td>
</tr>
<tr>
<td>Mounting the hydraulic hose</td>
<td>40</td>
</tr>
<tr>
<td>Bleeding</td>
<td>42</td>
</tr>
<tr>
<td>Pressing the component into place</td>
<td>44</td>
</tr>
<tr>
<td>Pressing back the annular piston HYDNUT50-E to HYDNUT190-E</td>
<td>47</td>
</tr>
<tr>
<td>Pressing back the annular piston HYDNUT200-E to HYDNUT1180-E</td>
<td>48</td>
</tr>
<tr>
<td>Decommissioning</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>54</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td></td>
</tr>
<tr>
<td>Maintenance plan</td>
<td>56</td>
</tr>
<tr>
<td>Ordering the seal</td>
<td>56</td>
</tr>
<tr>
<td>Replacing the seal</td>
<td>56</td>
</tr>
<tr>
<td>Dismounting the annular piston</td>
<td>57</td>
</tr>
<tr>
<td>Dismounting the seals</td>
<td>58</td>
</tr>
<tr>
<td>Cleaning the components</td>
<td>59</td>
</tr>
<tr>
<td>Mounting the seals</td>
<td>60</td>
</tr>
<tr>
<td>Mounting the annular piston</td>
<td>61</td>
</tr>
<tr>
<td>Disposal</td>
<td></td>
</tr>
<tr>
<td>Regulations</td>
<td>63</td>
</tr>
<tr>
<td>Technical data, accessories and replacement parts</td>
<td></td>
</tr>
<tr>
<td>Appendix</td>
<td>65</td>
</tr>
<tr>
<td>EC Declaration of Conformity</td>
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</tbody>
</table>
Hydraulic nuts
HYD-NUT..-E, HYDNU..-E-INCH

About the user manual
This user manual is part of the product and contains important information.

Symbols
The warning and hazard symbols are defined in accordance with ANSI Z535.6-2006.

WARNING
In case of non-compliance, death or serious injury may occur.

CAUTION
In case of non-compliance, minor or slight injury will occur.

NOTICE
In case of non-compliance, damage or malfunctions in the product or the adjacent construction will occur.

Availability
This user manual is supplied with each hydraulic nut and can also be ordered retrospectively. An electronic version (.pdf) is available in the Mediathek on the Schaeffler page of the Internet.

WARNING
Serious injuries may occur due to the escape under high pressure of hydraulic oil in the absence of important information for the user since the user manual is incomplete, illegible or absent. As the safety coordinator, you must ensure that this user manual is always complete and legible and that any persons using hydraulic nuts have the user manual available.

Legal guidelines
The information in this manual corresponded to the most recent status at the close of editing. The illustrations and descriptions cannot be used as grounds for any claims relating to devices that have already been delivered. Schaeffler Technologies AG & Co. KG accepts no liability for any damage or malfunctions if the device or accessories have been modified or used in an inappropriate manner.

Original user manual
The original user manual is taken to be a user manual in the German language. A user manual in another language is to be taken as a translation of the original user manual.
General safety guidelines

It describes how the hydraulic nut may be used, who may use the hydraulic nut and what must be observed in general during its use.

Usage for the intended purpose

In the case of hydraulic nuts, usage for the intended purpose comprises the mounting and dismounting of rolling bearings as well as the mounting and loosening of press fits such as ships’ propellers and rubber blades, shaft couplings and gears.

Usage not for the intended purpose

The hydraulic nut must not be used to lift loads. Unilateral loading is not possible, instead load must be applied uniformly over the circumference of the annular piston.

Usage not for the intended purpose can lead to injury or damage.

Qualified personnel

The hydraulic nut must only be used by suitably qualified personnel.

A person defined as qualified personnel:

■ has all the necessary knowledge
■ has been trained in working on rolling bearings and hydraulic tools
■ is aware of all the hazards and safety guidelines
■ is authorised to use a hydraulic nut by the safety co-ordinator
■ has fully read and understood this user manual.

Hazards

If a hydraulic nut is damaged, hydraulic oil may be sprayed out under high pressure. For this reason, only an undamaged hydraulic nut may be used and repairs to the hydraulic nut are therefore prohibited.

Protective equipment

Personal protective equipment is intended to protect operating personnel against health hazards. This comprises safety goggles, safety shoes and gloves and these must be used in the interests of personal safety.
Hydraulic nuts
HYD-NUT..-E, HYDNUM..-E-INCH

Safety regulations

The following safety specifications must be observed when working with the hydraulic nut. Further guidelines on hazards and specific operating procedures can be found, for example, in the descriptions of the operation of hydraulic nuts, see page 38.

Safety specifications for the pressure generation device can be found in the user manual of the pressure generation device.

Transport

If the ambient conditions during transport differ to a large extent from the ambient conditions specified for its operation, usage of the hydraulic nut must be stopped immediately.

The hydraulic nut must always be stored and operated under the ambient conditions described. Before storage, preservative must be applied to the hydraulic nut in order to give protection against corrosion.

Unsuitable ambient conditions can endanger the health of the operating personnel.

The hydraulic nut must not be operated at a pressure greater than the maximum permissible operating pressure.

These ambient conditions are as follows:

- humidity max. 65%, non-condensing
- no aggressive chemicals in the environment
- temperature from +5 °C to +40 °C
- clean environment.

Maintenance

The hydraulic nut must undergo regular maintenance, see page 56.

Only original replacement parts may be used.

Conversion

The hydraulic nut must not be converted.
The scope of delivery comprises the hydraulic nut, accessories and user manual, see table and Figure 1.

### Hydraulic nut HYDNUT

<table>
<thead>
<tr>
<th>Component</th>
<th>Designation</th>
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</thead>
<tbody>
<tr>
<td>Hydraulic nut</td>
<td>HYDNUT</td>
<td>1</td>
</tr>
<tr>
<td>Clamping screw</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Screw plug (G1/4)</td>
<td>HYDNUT.PLUG</td>
<td>2</td>
</tr>
<tr>
<td>Dismounting screw</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Valve nipple (G1/4)</td>
<td>PUMP1000.VALVE-NIPPLE</td>
<td>1</td>
</tr>
<tr>
<td>Hand lever1)</td>
<td>HYDNUT-HANDHEBEL-D10.PRT</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>HYDNUT-HANDHEBEL-D12.PRT</td>
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<td></td>
<td>HYDNUT-HANDHEBEL-D16.PRT</td>
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<tr>
<td>Seal set</td>
<td>HYDNUT...SEAL</td>
<td>1</td>
</tr>
<tr>
<td>(replacement outer seal,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>replacement inner seal and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>red O ring)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User manual</td>
<td>–</td>
<td>1</td>
</tr>
</tbody>
</table>

1) Allocation, see tables, page 12.

2) Allocation, see tables, page 11.

![Figure 1](image)

**Figure 1**
Scope of delivery HYDNUT...E(-INCH)
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Accessories
Hydraulic nuts are supplied with the appropriate replacement seals. Other accessories are available, see page 64.

Further information
The scope of delivery does not include the following documents:
- TPI 195, FAG Pressure Generation Devices
- TPI 196, Hydraulic Nuts HYDNU
- MH 1, Mounting of Rolling Bearings
- WL 80110, Reduction in Radial Internal Clearance in Mounting of FAG Spherical Roller Bearings with Tapered Bore.

Damage during transit
Any damage during transit must be reported as a complaint to the carrier.

Defects
Any defects must be reported promptly to Schaeffler Technologies AG & Co. KG.
**Description**

All hydraulic nuts are of a similar design. They have a metric, trapezoidal or inch size thread on the inner cylindrical surface of the annular piston. Accessories are necessary for operation. A hydraulic nut comprises a press ring, in which a movable annular piston is located. Between these two components is a ring gap filled with hydraulic oil. This is sealed by means of two seals, *Figure 2*.

---

**Press ring**
The single piece press ring made from steel supports the movable annular piston.

**Annular piston**
The single piece annular piston is made from steel. The annular piston has two slots for sealing rings and one flat slot for the red O ring.

**Sealing rings**
Two sealing rings made from soft PVC are inserted in corresponding slots in the annular piston and seal off the ring gap between the annular piston and the press ring. This prevents escape of the hydraulic oil in the ring gap.

**Red O ring**
The red O ring is made from PVC and indicates that the annular piston may only be moved out as far as this position.

---

*Figure 2*
Hydraulic nut

1. Press ring
2. Annular piston, hardened
3. Sealing ring, PVC
4. Red O ring
**Hydraulic nuts**

**HYD-NUT..-E, HYDNUT..-E-INCH**

**Press ring**

The single piece press ring supports the movable annular piston and has a thread on the inner cylindrical surface, *Figure 3.*

1. Thread on inner cylindrical surface
2. Threaded hole for folding clevis
3. Folding clevis
4. Handling hole
5. Threaded hole for dismounting screw
6. Dismounting screw
7. Threaded hole G1/4
8. Screw plug, SW 6
9. Hole for dial gauge, diameter 8 mm
10. Threaded hole for clamping screw
11. Clamping screw, M4

*Figure 3*

Press ring

**Thread on inner cylindrical surface**

In order to allow mounting on the thread of a shaft, withdrawal sleeve or adapter sleeve, the inner cylindrical surface has a metric fine pitch thread, a trapezoidal thread or an inch size thread.

**Threaded hole for folding clevis**

A suitable folding clevis can be screwed into this threaded hole in the outer cylindrical surface.

**Folding clevis**

The complete hydraulic nut can be transported using a folding clevis of sufficient load carrying capacity (not included in the scope of delivery).

Alternatively, a round sling or steel rope of sufficient load carrying capacity can be used for transport. The steel rope may only be wrapped around the outer cylindrical surface of the press ring.
Handling holes

Depending on the size, there are two, four or six pairs of handling holes. In each case, two holes are always arranged opposite each other, with one hole in the end face and the other in the outer cylindrical surface. If the hand lever is inserted in the handling hole, the press ring can be rotated more easily.

### HYDNUT..E

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<tr>
<th>Designation</th>
<th>Quantity</th>
<th>Diameter mm</th>
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<tbody>
<tr>
<td>HYDNUT50-E</td>
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<td>10</td>
</tr>
<tr>
<td>HYDNUT200-E</td>
<td>4 × 2</td>
<td>12</td>
</tr>
<tr>
<td>HYDNUT400-E</td>
<td>6 × 2</td>
<td>16</td>
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### HYDNUT..-E-INCH

<table>
<thead>
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<th>Diameter mm</th>
</tr>
</thead>
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<td>2 × 2</td>
<td>10</td>
</tr>
<tr>
<td>HYDNUT200-E-INCH</td>
<td>4 × 2</td>
<td>12</td>
</tr>
<tr>
<td>HYDNUT400-E-INCH</td>
<td>6 × 2</td>
<td>16</td>
</tr>
</tbody>
</table>

A hand lever made from steel is included in the scope of delivery.

**NOTICE**

Damage to the handling holes and thus irreparable damage to the press ring due to the use of an unsuitable hand lever. Only use hand levers that are of precisely the stated diameter and up to the maximum stated length.

### Hand lever for HYDNUT..E

<table>
<thead>
<tr>
<th>Designation</th>
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<th>Diameter mm</th>
</tr>
</thead>
<tbody>
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<td>HYDNUT200-E</td>
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<td>HYDNUT400-E</td>
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<td>16</td>
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</table>

### Hand lever for HYDNUT..-E-INCH

<table>
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<tr>
<th>Designation</th>
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</tr>
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<td>HYDNUT400-E-INCH</td>
<td>300</td>
<td>16</td>
</tr>
</tbody>
</table>
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

Threaded holes for dismounting screws
The press ring has three or five threaded holes for dismounting screws. If all dismounting screws are uniformly tightened, the annular piston is pressed out of the press ring, see page 57.

Dismounting screws
At the time of delivery, dismounting screws with flat end to ISO 4026, DIN 913 are screwed into the dismounting holes and are used for dismounting of the annular piston. The material selected was corrosion-resistant steel, in order to prevent problems due to corrosion.

<table>
<thead>
<tr>
<th>HYDNUT..-E</th>
<th>Quantity</th>
<th>Thread</th>
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<tr>
<td>from to</td>
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<tr>
<td>HYDNUT50-E</td>
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<td>HYDNUT195-E</td>
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<td>HYDNUT200-E</td>
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<td>M6</td>
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<tr>
<td>HYDNUT395-E</td>
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<tr>
<td>HYDNUT400-E</td>
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<td>M8</td>
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<td>HYDNUT715-E</td>
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<td>HYDNUT720-E</td>
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<td>M10</td>
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<td>HYDNUT1180-E</td>
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<table>
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<th>Quantity</th>
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<tbody>
<tr>
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<td>HYDNUT530-E-INCH</td>
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</table>

Threaded holes G¹/₄
The press ring has two oil ducts. The extension of each oil duct has a threaded hole G¹/₄.

At an offset of 15° to the threaded hole for the folding clevis, the outer cylindrical surface has a radial threaded hole G¹/₄. During operation, the hole is used for bleeding. At the time of delivery, a valve nipple is screwed in at this point.

At an offset of 180° to this hole, the end face has a second threaded hole G¹/₄. During operation, the valve nipple is screwed into these holes. At the time of delivery, the screw plug is screwed in at this point.
**Screw plug**

One of the two threaded holes G\(\frac{1}{4}\) can be fitted with the screw plug supplied. At the time of delivery, the screw plug is screwed into the axial threaded hole G\(\frac{1}{4}\).

**Hole for dial gauge**

The hole through the press ring is used to locate a dial gauge and has a diameter of 8 mm.

**Threaded hole for clamping screw**

At an angle of 90° to the hole for the dial gauge is a threaded hole for locating a clamping screw.

**Clamping screw**

The clamping screw made from plastic is knurled and can be tightened or loosened without the use of a tool. It locates the clamping shank of the mounted dial gauge. The material of the screw was selected such that the clamping shank is not damaged by the screw.

**HYDNUT...-E**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Length from mm</th>
<th>Length to mm</th>
<th>Thread</th>
</tr>
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<tbody>
<tr>
<td>HYDNUT50-E</td>
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<td>HYDNUT195-E</td>
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<td>HYDNUT930-E</td>
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<td>HYDNUT1180-E</td>
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**HYDNUT...-E-INCH**

<table>
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<td>HYDNUT190-E-INCH</td>
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<td>HYDNUT200-E-INCH</td>
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<td>HYDNUT530-E-INCH</td>
<td>M4</td>
</tr>
</tbody>
</table>
**Hydraulic nuts**  
**HYD-NUT..-E, HYDNUT..-E-INCH**

**Annular piston**  
The single piece annular piston is made from steel. The annular piston has two slots for sealing rings and one flat slot for the red O ring. At or above a stipulated size, there are three threaded holes in the annular piston, *Figure 4*.

*Figure 4*  
Annular piston

1. Slot for sealing ring  
2. Slot for red O ring  
3. Threaded hole for eye bolt

**Slots for sealing rings**  
Two slots support the sealing rings made from soft PVC.

**Slot for red O ring**  
A flat slot supports the red O ring made from PVC.

**Threaded holes for eye bolts**  
In the case of hydraulic nuts HYDNUT410 or larger, there are threaded holes in the annular piston. At the pitch circle, the holes have a spacing of 120° to each other. If eye bolts are screwed into these threaded holes, the annular piston can be transported by means of a lifting device, see page 58.

<table>
<thead>
<tr>
<th>HYDNUT..-E</th>
<th>Designation</th>
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<tbody>
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</table>

<table>
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<th>Designation</th>
<th>Thread</th>
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</thead>
<tbody>
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<td>to</td>
<td></td>
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<tr>
<td>HYDNUT410-E-INCH</td>
<td>HYDNUT530-E-INCH</td>
<td>3×M6</td>
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</table>
Other components

For operation, the hydraulic nut requires a hydraulic line and a pressure generation device filled with hydraulic oil, *Figure 5*.

Hydraulic line

The points stated below are only a selection. Ensure that all guidelines from the manufacturer of the hydraulic line are observed.

- must fulfil all legal requirements valid at the point of use
- must be checked before each use
- must not be damaged
- must be approved for the operating pressure
- must be suitable for the hydraulic oil used
- must not exceed the maximum permissible operating period.

Further information on the hydraulic line used is given in the documentation for the hydraulic line.
Hydraulic nuts  
HYD-NUT..-E, HYD-NUT..-E-INCH

**Pressure generation device**  The points stated below are only a selection. Ensure that all guidelines from the manufacturer of the pressure generation device are observed.

The pressure generation device:
- must fulfil all legal requirements valid at the point of use
- must be checked before each use
- must not be damaged
- may only be operated at a pressure that is lower than the maximum permissible pressure of the hydraulic nut
- must have a sufficiently large tank, see page 37.

Further information on the pressure generation device used is given in the documentation for the pressure generation device.

**Hydraulic oil**  The hydraulic oil used must correspond to a particular viscosity class, see page 64.
**Function**

The end face threaded hole G\(\frac{1}{4}\) is used for a screwed-in valve nipple G\(\frac{1}{4}\). The pressure generation device and valve nipple are then connected with each other by means of a hydraulic line. In the pressure generation device, hydraulic oil is placed under high pressure and flows into the hydraulic nut. When oil without air bubbles escapes from the second (upper) threaded hole G\(\frac{1}{4}\), the hydraulic nut has been bled.

The screw plug is then screwed into the upper threaded holes G\(\frac{1}{4}\). This creates a closed pressure chamber.

In the pressure generation device, hydraulic oil is placed under high pressure and flows into the pressure chamber. The annular piston undergoes movement, *Figure 6*.

---

1. Pressure generation device
2. Hydraulic line
3. Hydraulic nut, threaded hole G\(\frac{1}{4}\)
4. Valve nipple G\(\frac{1}{4}\)
5. Pressure chamber
6. Screw plug
7. Direction of movement of annular piston

*Figure 6*

Functional principle
Hydraulic nuts
HYD-NUT...-E, HYD-NUT...-E-INCH

Mounting

In the mounting of rolling bearings, the end face of the annular piston presses on the end face of the bearing inner ring, withdrawal sleeve or mounting plate, Figure 7.

Mounting on and dismounting from an adapter sleeve can be carried out using the oil pressure method. In this method, an additional pressure generation device is used to press hydraulic oil between the fit surfaces of the sleeve and bearing inner ring as well as between the sleeve and shaft.

1. Mounting on shaft
2. Mounting on adapter sleeve, oil pressure method
3. Mounting on withdrawal sleeve
4. Mounting on withdrawal sleeve, oil pressure

Figure 7
Mounting method
Dismounting

If the rolling bearing is mounted on an adapter sleeve or withdrawal sleeve, the bearing can be dismounted from the sleeve using the hydraulic nut, *Figure 8*.

If mounting is carried out directly on the shaft, the hydraulic nut cannot be used for dismounting. However, the hydraulic nut can remain on the shaft in dismounting and intercepts the bearing when it abruptly becomes loose in dismounting.

*Figure 8*
Dismounting method

① Dismounting with withdrawal sleeve
② Dismounting with adapter sleeve
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

**Commissioning**
Commissioning is divided into the following actions:
- checking the hydraulic nut
- lifting the hydraulic nut out of the transport container and transporting the hydraulic nut
- preparation for mounting
- mounting the hydraulic nut
- applying the mounting ring, optional
- applying the intermediate ring, optional
- selecting and mounting the dial gauge
- selecting the pressure generation device.

**Checking the hydraulic nut**
Before use, it is advisable to check whether the hydraulic nut is suitable for the thread present. The press ring has the diameter and thread information engraved on the surface, *Figure 9*.

Check also whether the thread is damaged. A hydraulic nut with a damaged thread must not be used, since it can damage the thread on the shaft.
Lifting the hydraulic nut out of the transport container and transporting the hydraulic nut

A hydraulic nut can be delivered lying flat either in a rigid box or a wooden crate. Smaller hydraulic nuts can be lifted out of the box and carried due to their low mass. Larger and thus heavier hydraulic nuts must be lifted using a suitable lifting tool. Lifting must always be carried out by the press ring, the threads of the annular piston are not suitable for transport of the complete hydraulic nut.

**WARNING**
If a hydraulic nut with threaded holes in the annular piston is lifted by the annular piston and transported horizontally, the press ring may become loose and fall. A falling press ring can cause serious injury.

Always transport hydraulic nuts vertically.

**CAUTION**
If a small hydraulic nut is carried horizontally with the annular piston facing down, the annular piston may become loose and fall. A falling annular piston can cause injury to legs and feet.

Hydraulic nuts should always be transported with the annular piston facing up or vertically.

**WARNING**
If the annular piston is moved out further than the red O ring, it may become loose during transport. The falling annular piston can cause injury.

Before transport, press in the annular piston until the red O ring is no longer visible.

**WARNING**
An unsuitable lifting tool can fail. A falling hydraulic nut can cause injury.

Use a suitable lifting tool that can safely support the mass of the hydraulic nut. Ensure that nobody is underneath the hydraulic nut at any time during transport. Secure the hazard area.
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

WARNING
Serious injury caused by a falling hydraulic nut due to failure of an unsuitable clevis.
Only use a clevis that is suitable for all lifting positions (angles), Figure 10.

1. Screw a folding clevis into the threaded hole for the clevis in the outer cylindrical surface of the press ring.
2. Hang a hook in the clevis or thread in a carrying sling.
3. Fit the securing belt.
4. Slowly lift the hydraulic nut until it hangs vertical, Figure 11.

Figure 10
Lifting positions

1. Hydraulic nut, lying flat
2. Hydraulic nut, lifted halfway
3. Hydraulic nut, suspended

Figure 11
Delivered condition

1. Wooden crate
2. Hydraulic nut
3. Valve nipple
4. Clevis
5. Hook
6. Securing belt

► Transport the hydraulic nut without shocks or vibration.
Preparation for mounting

The valve nipple is checked as follows:

- Check optically whether the thread of the valve nipple is damaged. If the thread is damaged, use a new valve nipple, Figure 12.

![Figure 12: Valve nipple](image)

1. Valve nipple
2. Seal

- Check optically whether the seal is undamaged, Figure 13. Replace any damaged seal.

![Figure 13: Sealing](image)

1. New
2. Damaged

A seal with the following characteristics is suitable:

- **type:**
  - CEJN rubber/metal seal
- **operating pressure:**
  - 1500 bar
- **dimensions:**
  - G1/4 (20,57 mm × 13,74 mm × 3 mm)
- **material:**
  - high grade steel/fluoro rubber (FKM).
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Before mounting a hydraulic nut with thread, the shaft or sleeve must be secured so that it cannot rotate. In addition, the threads of the shaft or sleeve must be checked, Figure 14.

**NOTICE**

Damage to the mating thread during screw mounting if a thread is damaged.

Check the thread of the shaft or sleeve. Repair any damaged thread if possible. A hydraulic nut must not be screwed onto a damaged thread.

**NOTICE**

Damage to the thread through scoring if a lubricant is not used.

Apply lubricant to the thread of the hydraulic nut, for example using ARCANOL-MOUNTING-PASTE.

---

1. Damaged thread
2. Undamaged thread
3. Lubricant

*Figure 14*
Preparation
**Mounting the hydraulic nut**

In mounting, the method used depends on the mass of the hydraulic nut.

**Mounting a light hydraulic nut**

A light hydraulic nut can be mounted manually, *Figure 15*:

- Rotate the hydraulic nut until the start of the thread on the hydraulic nut and the start of the thread on the shaft journal or sleeve coincide.
- Align the hydraulic nut exactly parallel and concentrically to the shaft.

**WARNING**

Injuries due to a hydraulic nut becoming loose from the shaft and falling because too few thread turns were engaged.

At least half the thread width must be engaged.

**NOTICE**

If the thread of the shaft journal or sleeve is subjected during mounting to the mass of the hydraulic nut, scoring may occur in the thread.

Lift the hydraulic nut slightly and prevent the thread from being subjected to load by the whole mass of the hydraulic nut.

- Screw the hydraulic nut into place (right hand thread) until the end face of the annular piston is in contact with the end face of the bearing inner ring.
- Loosen the hydraulic nut as necessary until the radial threaded hole G1/4 is in the upper position.
- If necessary, apply a mounting ring, see page 32.
- The hydraulic nut is mounted and can be bled.

---

1. Shaft
2. Hydraulic nut
3. Rotary motion
4. Half thread width of press ring
5. Radial threaded hole G1/4, upper position
6. Annular piston, end face
7. Inner ring, end face

*Figure 15*

Mounting
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Mounting a heavy hydraulic nut
A heavy hydraulic nut cannot be mounted manually. A mounting aid should be used on which the hydraulic nut is supported with the facility for rotation and axial displacement.

⚠️ WARNING
If the hydraulic nut tilts or falls from the mounting aid, this can cause serious crushing of body parts.

Use an auxiliary device for screw mounting that has sufficient load carrying capacity and tilting rigidity. During mounting, secure the hydraulic nut against tilting and falling.

- Align the mounting aid at 90° and concentrically to the axis, Figure 16.

Figure 16
Aligning the mounting aid
**WARNING**

Serious crushing in setting down of the hydraulic nut.

When setting down the hydraulic nut, ensure that no body parts are located in the gap between the hydraulic nut and shaft or adjacent construction.

- Set down the hydraulic nut carefully on the mounting aid using a crane, *Figure 17*.

*Figure 17*
Setting down the hydraulic nut

- Remove the securing belt.
Hydraulic nuts
HYD-NUT..-E, HYDNUM..-E-INCH

Adjustment of the mounting aid requires precise action.

**NOTICE**

If the thread of the shaft or sleeve is subjected during mounting to the entire mass of the hydraulic nut, scoring may occur in the thread. Adjust the height of the mounting aid so that the thread of the shaft or sleeve is not subjected to load by the entire mass of the hydraulic nut.

► Adjust the height of the mounting aid.
► Align the hydraulic nut exactly parallel and concentrically to the shaft.
► Remove the hook.
► Remove the load hook.
► Rotate the hydraulic nut until the start of the thread on the hydraulic nut and the start of the thread on the shaft journal or sleeve coincide, *Figure 18*.

![Figure 18](image_url)

Start position

① Mounting aid
② Hydraulic nut, start of thread
③ Shaft, start of thread

*Figure 18*
When displacing the hydraulic nut, there is an increased risk of injury, especially to the hands.

**WARNING**
Serious crushing in displacement of the hydraulic nut.
When displacing the hydraulic nut, ensure that no body parts are located in the gap between the hydraulic nut and shaft or adjacent construction.<br>
 ► Move the hydraulic nut in the direction of the shaft until the start of the thread on the hydraulic nut and the start of the thread on the shaft journal or sleeve are in contact, *Figure 19*.

*Figure 19*
Displacing the hydraulic nut
Hydraulic nuts
HYD-NUT..-E, HYDNU..-E-INCH

Repeat the following operations as often as necessary until the end face of the annular piston is in contact with the end face of the part to be pressed into place, Figure 20:

► Insert the hand lever into the lower handling hole.
► Rotate the hydraulic nut until the next handling hole is in the lower position.
► Move the hand lever into the lower handling hole.

⚠️ WARNING
Injuries due to a hydraulic nut becoming loose from the shaft and falling because too few thread turns were engaged.
At least half the thread width must be engaged.

![Figure 20: Mounting](image)

1. Shaft
2. Hydraulic nut
3. Mounting aid
4. Rotary motion
5. Hand lever
6. Half thread width of press ring
7. Annular piston, end face
8. Inner ring, end face

Figure 20
Mounting
The following operation must only be carried out once:

- Loosen the hydraulic nut as necessary until the radial threaded hole G\(^{1/4}\) is in the upper position, Figure 21.
- If necessary, apply a mounting ring, see page 32.
- The hydraulic nut is mounted and can be bled.

![Figure 21](image)

Loosening the hydraulic nut slightly

Radial threaded hole G\(^{1/4}\)

*Figure 21*

Loosening the hydraulic nut slightly
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

Applying a mounting ring
A mounting ring is necessary if the hydraulic nut cannot be screwed far enough onto the shaft journal or sleeve.

**NOTICE**
If there is too little interference, the hydraulic nut may buckle and be destroyed.
If there is an interference of less than 90%, a mounting ring must be used.

- Measure the interference.
- Produce the mounting ring. For the diameter tolerance to be observed, please contact us in advance.
- Apply the mounting ring, *Figure 22*.

*Figure 22*
Mounting ring
Applying an intermediate ring

Depending on the nature of the rolling bearing, it may be necessary to apply an intermediate ring.

**NOTICE**

Without an intermediate ring, the hydraulic nut and bearing may be damaged.

If a rolling bearing is mounted which has a projecting cage or if its outer ring can be axially displaced or tilted too much, an intermediate ring must be applied.

- Measure the necessary width.
- Produce the intermediate ring. For the tolerance to be observed, please contact us in advance.
- Apply the intermediate ring, *Figure 23*.

---

1. Cage projection
2. Maximum tilting

*Figure 23*  
Intermediate ring
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Selecting and mounting the dial gauge

The dial gauge used is selected depending on the dimensions of the hydraulic nut used.

No tools are required for mounting of the dial gauge.

Selecting the dial gauge

Depending on the hydraulic nut used, the suitable dial gauge is selected. For some hydraulic nuts, it is necessary to use an extension, Figure 24.

A suitable dial gauge has the following characteristics:

- diameter of clamping shank:
  - 8 mm
- repeat precision:
  - 0,01 mm or higher
- interchangeable measuring pin
- oiltight and watertight.

Depending on the hydraulic nut used, the dial gauge must be of certain dimensions and have a suitable measurement range. For some hydraulic nuts, it is necessary to use an extension, see table, page 35.
### Characteristics of the dial gauge

<table>
<thead>
<tr>
<th>Designation</th>
<th>Length of dial gauge</th>
<th>Measurement range</th>
<th>Extension</th>
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Mounting the dial gauge

A dial gauge can be used for precise measurement of the drive-up distance in the mounting of rolling bearings with a tapered bore. This is clamped in a hole in the press ring and measures the drive-up distance of the annular piston. A conventional dial gauge can be used, Figure 25.

After mounting, the measuring pin must be able to move by at least the drive-up distance. This is dependent on the bearing and can be found, for example, in TPI 196.

▶ Loosen the plastic clamping screw.
▶ Insert the dial into the locating hole for the dial gauge until the tip of the measuring pin is in contact with the annular piston.
▶ Slide the dial gauge in by at least the requisite drive-up distance.
▶ Lightly tighten the clamping screw.

*Figure 25*  
Mounting the dial gauge
Selecting the pressure generation device

A suitable pressure generation device must have certain characteristics, see page 16. It must have a sufficiently large tank containing at least the requisite oil quantity, since it is not possible to refill with hydraulic oil during operation.

Oil quantity

For the maximum drive-up distance, a certain oil quantity is required, see table.

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</table>

¹) Assuming usage of a hydraulic line with a length of 1 m and an inside diameter of 4 mm.
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

Operation
After bleeding, the pressure is built up in order to mount or dismount the component. The oil pressure method can be used for easier mounting and dismounting.

Drive-up distance
In the mounting of rolling bearings with a tapered bore, the internal clearance is reduced if the inner ring is driven up onto the shaft or sleeve and is thus expanded. The length of the drive-up distance determines the degree to which the internal clearance is reduced.

If the internal clearance is set incorrectly, this will reduce the life of the rolling bearing or the rolling bearing will be damaged.
Please observe the specifications of the rolling bearing manufacturer.

Hydraulic oil
The hydraulic oil used in operation must be clean and of the specified viscosity class, see page 64.

Severe burns due to ignition of hydraulic oil.
Avoid sources of ignition, including in particular cutting, welding and soldering work, in the vicinity of escaping hydraulic oil.

Hydraulic oil can cause irritation to skin and respiratory organs.
Avoid skin contact if possible. Wear gloves. Protect uncovered skin by means of skin cream. Do not inhale vapours or fumes.

Contaminated hydraulic oil can damage seals. Damaged seals must be replaced promptly.
Only use clean hydraulic oil.
Maximum pressure

The maximum permissible pressure must be observed throughout operation.

**WARNING**

Serious injuries due to the spraying of hydraulic oil under high pressure and damage to the hydraulic nut if the maximum permissible pressure is exceeded.

Measure the operating pressure continuously. The operating pressure must never exceed the maximum permissible pressure, Figure 26.

Technical data such as dimensions and the permissible pressure for hydraulic nuts can be found in a Technical Product Information. This is available as a PDF file on the Internet under the address http://www.schaeffler.de, menu item Mediathek.

Further information □ TPI 196, Hydraulic Nuts.
Hydraulic nuts
HYD-NUT...-E, HYD-NUT...-E-INCH

Mounting the hydraulic hose
Mounting of the hydraulic hose connects the pressure generation device and hydraulic nut with each other.
The following accessories are required:
■ hose fasteners
■ tool for mounting hose fasteners, see instructions for hose fasteners
■ allen key SW 6 for removing screw plug
■ tool for mounting valve nipple on the pressure generation device, see instructions for pressure generation devices.

WARNING
Serious injuries due to the spraying of hydraulic oil as a result of an unsuitable, damaged or old hydraulic hose.
Only mount a hydraulic hose that is approved for use with the pressure generation device. The hydraulic hose must be free from damage. Observe the storage life date of the hydraulic hose.

NOTICE
Damage to the pressure generation device and seals in the hydraulic nut due to contaminants.
Remove any contaminants from the pressure generation device, hydraulic hose and hydraulic nut. All work must be carried out under extreme cleanliness.

Mounting the hydraulic hose:
► Remove the screw plug from the axial threaded hole G1/4 in the hydraulic nut.
► Remove the valve nipple from the radial threaded hole.

WARNING
Serious injuries due to the spraying of hydraulic oil under high pressure due to the loosening of a screw connection.
Observe the maximum tightening torque for the threaded hole G1/4 (oil connector) in the hydraulic nut, see page 64.
Observe the maximum tightening torque for the oil connector on the pressure generation device.
Screw the valve nipple (CEJN series 116), which was removed from the radial hole, into the axial threaded hole, *Figure 27*.

Screw the valve nipple (CEJN series 116), which was removed from the radial hole, into the axial threaded hole, *Figure 27*.

Slide the collar of the hydraulic hose onto the valve nipple.

Slide the collar of the hydraulic hose onto the valve nipple of the pressure generation device, *Figure 28*.

Apply the hose fasteners.

**WARNING**
Serious injuries due to detached hose whipping back and forth.
Mount hose fasteners in order to prevent whipping by the hydraulic hose. ⚠️

**WARNING**
Serious injuries due to hydraulic oil spraying out of torn hose under high pressure because the hose was laid with an excessively small bending radius.
Lay the hydraulic hose with the specified bending radius to the pressure generation device.
Observe the instructions for the hydraulic hose. ⚠️
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Bleeding

Bleeding is necessary since compressed air will endanger the safety of the user. The hydraulic oil escaping during bleeding must be collected and disposed of correctly in accordance with the regional regulations.

- Check whether the oil volume in the pressure generation device is adequate to bleed the pressure generation device, hydraulic hose and hydraulic nut. Furthermore, the oil volume must be sufficient for the drive-up distance of the annular piston. Where necessary, hydraulic oil must be refilled before bleeding, since refilling during operation is not permissible.

**WARNING**

Blinding or injury to eyes due to spraying out of hydraulic oil under high pressure.

Ensure that the plug-in coupling is securely connected and the hose fasteners are fitted. Always wear safety goggles.

- Ensure that the radial threaded hole G\(^1/4\) is at the top, *Figure 29, page 43*.
- Apply the device for collection of hydraulic oil.
- Remove the screw plug from the upper threaded hole G\(^1/4\).
- Start the pressure generation device.
- Wait until the hydraulic oil escapes without air bubbles.
- Stop the pressure generation device.
- Screw the screw plug back into the upper threaded hole G\(^1/4\) and observe the tightening torque, see page 64.
- Remove the collector device.
- Dispose of the collected hydraulic oil correctly or send for recycling.
1 Screw plug, threaded hole G\(\frac{1}{4}\) at top
2 Collector device
3 Pressure generation device
4 Manometer

Figure 29
Bleeding
**Hydraulic nuts**  
**HYD-NUT..-E, HYDNUT..-E-INCH**

**Pressing the component into place**  
Pressing into place can be carried out either with or without the oil pressure method. The oil pressure method is explained in the Mounting Handbook MH 1.

**Oil pressure method**  
In order to reduce the pressing force, the oil pressure method can be used. In the oil pressure method, an additional pressure generation device is used to press hydraulic oil between the fit surfaces of the component and shaft or sleeve, *Figure 30*.

![Figure 30: Oil pressure method](image)

1. Additional pressure generation device, connection
2. Rolling bearing inner ring
3. Shaft
4. Fit surface

**Red O ring**  
The maximum drive-up distance of the press ring is indicated by a red O ring. The press ring can only be pressed out while the red O ring is visible, *Figure 31*.

![Figure 31: Red O ring](image)

1. Annular piston
2. Press ring
3. Red O ring
4. Drive-up distance, maximum
**Pressure build-up**

As a result of pressure build-up, the component is pressed off the hydraulic nut.

- When using the oil pressure method, pressure is first built up using the additional pressure generation device and then maintained during the whole mounting procedure.

**WARNING**

Serious injuries due to spraying out of hydraulic oil under high pressure.

The reasons for this may be as follows: missing screw plug, defective seal, overshoot of maximum operating pressure, excessive pressing out of the press ring.

Screw in the screw plug in the radial threaded hole G₁/₄.

Measure the operating pressure continuously. The operating pressure must never exceed the maximum pressure, Figure 32.

Operate the hydraulic nut only while the red O ring is visible, see page 44.

**WARNING**

Serious injuries due to bursting or loosening of hydraulic nut in case of component failure.

Stand to one side, not directly behind the hydraulic nut.

- Build up pressure in the hydraulic nut. Press the requisite volume into the hydraulic nut until the requisite drive-up distance is reached.
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Pressure decrease in oil pressure method
The following steps are only carried out if the oil pressure method is used:
► Switch the pressure generation device for the oil pressure method to unpressurised.
► Wait 5 min.
► Measure the radial or axial internal clearance.
► Wait 30 min so that the oil can escape.

Pressure decrease in hydraulic nut
The following steps are always carried out:
► Switch the pressure generation device for the hydraulic nut to unpressurised.
► Measure the radial or axial internal clearance.
Pressing back the piston HYDNUT50-E to HYDNUT190-E

Once mounting or dismounting of smaller hydraulic nuts is complete, switch the pressure generation device to unpressurised and press the annular piston completely into the press ring by rotation until it stops. The hydraulic oil will run back into the pressure generation device.

**CAUTION**

Risk of slippage and contamination of the environment with hydraulic oil if oil is prevented from returning to the tank of the pressure generation device.

Ensure the return of oil to the tank of the pressure generation device.

**WARNING**

Serious injuries due to spraying out of hydraulic oil if the pressure generation device is not switched to unpressurised and a hydraulic hose is detached.

A hydraulic may only be detached after switching to unpressurised.

- Switch the system to unpressurised, see the user manual of the pressure generation device.
- Screw the hydraulic nut on further until the annular piston is completely pressed back, Figure 33.
- The hydraulic oil is pressed back into the pressure generation device.

[Diagram showing the process]

Figure 33

Pressing back the annular piston

- Loosen the hose fastener.
- Remove the hydraulic hose.
- The hydraulic nut can now be removed and transported away.
Pressing back the piston
HYDNUT200-E to HYDNUT1180-E

In the case of larger hydraulic nuts, the hydraulic nut is transported after completion of mounting or dismounting to a suitable location, at which the annular piston is pressed back completely into the press ring using suitable tools until it stops.

Checking the stroke

If the annular piston has been pressed out further than the red O ring, the hydraulic nut must not be transported. In this case, the annular piston must be pressed back while the hydraulic nut nut is still on the shaft.

► Check optically how far the annular piston has been extended, Figure 34.

► If the annular piston has been extended too far, omit the following sections and go directly to page 53.

Removing the hydraulic hose

Before transporting the hydraulic nut, the hydraulic hose is removed. The pressure generation device and hydraulic hose are connected again before the annular piston is pressed back.

⚠️ WARNING
Serious injuries due to spraying out of hydraulic oil if the pressure generation device is not switched to unpressurised and a hydraulic hose is detached.

A hydraulic may only be detached after switching to unpressurised.

► Switch the system to unpressurised, see the user manual of the pressure generation device.

► Undo the hose fastener on the hydraulic nut, then remove the hose.
Detaching the hydraulic nut from the shaft

The hydraulic nut is first detached from the shaft and then transported.

**WARNING**

Risk of crushing due to a falling hydraulic nut because this was loosened too quickly.

When unscrewing the last thread turn, rotate the hydraulic nut very slowly.

Repeat the following operations as often as necessary until the hydraulic nut is no longer screwed onto the shaft, *Figure 35*:

- As necessary, position the mounting aid at the end of the shaft.
- Insert the hand lever into the lower handling hole.
- Rotate the hydraulic nut until the next handling hole is in the lower position.
- The hydraulic nut is now on the smooth end of the shaft or mounting aid.

The following operation must only be carried out once:

- Rotate the hydraulic nut until the threaded hole for the folding clevis is in the upper position.

*Figure 35*

Unscrewing the hydraulic nut

1. Shaft
2. Mounting aid
3. Rotary motion
4. Radial threaded hole G1/4, position above
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INOCH

Transporting the hydraulic nut

The hydraulic nut is prepared for transport as follows, *Figure 36*:

- Screw a folding clevis into the threaded hole for the clevis in the outer cylindrical surface of the press ring.
- Hang a hook in the clevis or thread in a carrying sling.
- Fit the securing belt.
- The hydraulic nut can now be transported.

*Figure 36*
Preparation for transport
Transport the hydraulic nut without shocks or vibration, *Figure 37.*

1. Hydraulic nut
2. Clevis
3. Securing belt

*Figure 37*

Transport
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

Pressing back the annular piston

Once the hydraulic nut with the annular piston facing up has been deposited on wooden beams of sufficient load carrying capacity, the annular piston can be pressed back.

⚠️ CAUTION
Risk of slippage and contamination of the environment with hydraulic oil if oil is prevented from returning to the tank of the pressure generation device.

Ensure the return of oil to the tank of the pressure generation device.

► Connect the hose and the unpressurised pressure generation device again.

► Press in the annular piston by means of screw clamps until it stops, Figure 38.

► The hydraulic oil is pressed back into the pressure generation device.

► Remove the hydraulic hose.

► The hydraulic nut can now be transported away.

Figure 38
Pressing back the annular piston

1 Screw clamp
2 Rotary motion
Pressing back the annular piston at the mounting location

The annular piston can only be pressed out while the red O ring is visible. If the annular piston has been pressed out too far, the hydraulic nut must not be transported. The annular piston must then be pressed back on site.

In the case of larger hydraulic nuts, the friction can be so great that the annular piston cannot be pressed back through rotation by hand. In this case, suitable tools such as screw clamps can be used.

- Loosen the hydraulic nut until there is sufficient space for suitable tools such as screw clamps, Figure 39.
- Connect the unpressurised pressure generation device and ensure that hydraulic oil can flow back into the pressure generation device.
- Press the annular piston back until the red O ring is no longer visible.
- Once the annular piston has been pressed back far enough that the red O ring is no longer visible, the hydraulic nut can be transported.

Figure 39
Pressing back the annular piston

1 Screw clamp
2 Hydraulic line
3 Pressure generation device
Hydraulic nuts
HYD-NUT..-E, HYD-NUT..-E-INCH

Decommissioning
If the hydraulic nut will not be used for an extended period, it should be decommissioned:
- Press the annular piston in completely.
- Screw in the screw plug and valve nipple.
- Clean the hydraulic nut using cold cleaner or paraffin oil.
- Oil the surface of the hydraulic nut, for example using ARCANOL-ANTICORROSIONOIL-400G.

**WARNING**
Disease of the respiratory organs through inhalation of vapours of the cleaning agent used.
Observe the safety and environmental guidelines of the cleaning agent manufacturer.

Storage
All parts should be stored under the specified conditions, see page 6.

**NOTICE**
The press ring of the hydraulic nut may become deformed due to its own weight if it is stored standing up. As a result of storage standing up, the hydraulic nut may thus become unusable.
Store the hydraulic nut lying flat with the annular piston facing up in the delivery packaging, *Figure 40*.

![Figure 40](image)

1. Hydraulic nut
2. Box or wooden transport crate

Alternatively, a hydraulic nut can be stored lying on wooden ledges and covered.
Malfunctions become apparent in operation of the hydraulic nut. Once the malfunction has been eliminated, the hydraulic nut is normally ready for use again.

### Troubleshooting

#### Hydraulic nut

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic oil escaping in the area of the seal</td>
<td>Seals damaged</td>
<td>Replace seals, see page 56</td>
</tr>
<tr>
<td>Hydraulic oil is contaminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annular piston jammed</td>
<td>Annular piston tilted</td>
<td>Do not use force. Collect the escaping hydraulic oil. Loosen the screw plug, then press the annular piston back into the press ring</td>
</tr>
</tbody>
</table>

If the defect cannot be eliminated, please contact Schaeffler Customer Service.

#### Pressure generation device

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annular piston moves out abruptly</td>
<td>Air in system</td>
<td>Bleed oil circuit</td>
</tr>
<tr>
<td>Pressure does not increase</td>
<td>Escape valve is open</td>
<td>Close escape valve</td>
</tr>
<tr>
<td>Other malfunction</td>
<td>–</td>
<td>See the user manual of the pressure generation device</td>
</tr>
</tbody>
</table>

If the defect cannot be eliminated, please contact Customer Service at the manufacturer of the pressure generation device.
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

**Maintenance**
The hydraulic nut must be checked before every use.

**NOTICE**
Damage to the hydraulic nut in the case of defective maintenance.
If seals are damaged, contamination can reach the pressure chamber of the hydraulic nut.
If oil is lost, replace the seals immediately.

**Maintenance plan**
The maintenance items are stated in the maintenance plan, see tables.

<table>
<thead>
<tr>
<th>Before every use</th>
<th>Subassembly</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic nut</td>
<td></td>
<td>Visual inspection – check for wear and damage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After every use</th>
<th>Subassembly</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press ring and annular piston</td>
<td></td>
<td>Clean using cold cleaner or paraffin oil Apply oil (rust protection)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Every 2 years</th>
<th>Subassembly</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal</td>
<td></td>
<td>Replacement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>As necessary</th>
<th>Subassembly</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal</td>
<td></td>
<td>Replace if oil is lost</td>
</tr>
</tbody>
</table>

**Ordering the seal**
Order suitable replacement seals before replacement is carried out.
The ordering designation of the seal set is the designation of the hydraulic nut, plus .SEAL. The seal set for the hydraulic nut HYTNUT100-E has the following ordering designation.

**Ordering designation**
HYDNUT100-E.SEAL

**Replacing the seal**
Before replacing the seals, check whether suitable replacement seals are available.
The replacement of seals comprises the following operations:
- Dismount the annular piston.
- Dismount the seals.
- Clean the components.
- Mount the seals.
- Mount the annular piston.
Dismounting the annular piston

During dismounting, ensure that the annular piston is not positioned obliquely.

- Provide support of sufficient load carrying capacity and tilting rigidity.
- Deposit the hydraulic nut on the prepared support with the annular piston facing up, Figure 41.
- Remove the screw plug and valve nipple.
- Screw in the dismounting screws consecutively until these are in contact with the annular piston.
- Screw in each dismounting screw in turn by one revolution until the red O ring is visible.
- If the annular piston is positioned obliquely, strike the raised point lightly using a plastic hammer.

Figure 41
Pressing out the annular piston
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

**Note** Starting from HYDNUT400, eye bolts can be screwed into the annular piston and a crane can be used to lift and transport the dismounted annular piston.

- Remove the annular piston, *Figure 42*.

---

**Dismounting the seals**

When removing the seals, ensure that the seal slots remain undamaged. For dismounting, use a soft tool made from wood or plastic.

- Lever the seals out of the seal slots, *Figure 43*.

---

*Figure 42*
Removing the annular piston

*Figure 43*
Dismounting the seals

1. Annular piston
2. Eye bolt
3. Seal
4. Seal slot
5. Wooden or plastic tool
Cleaning the components

As cleaning agents, cold cleaners and paraffin oil have proved effective.

- Clean the press ring and annular piston. Carry out particularly thorough cleaning of the seal slots, piston surface and piston guide face, Figure 44.

1. Press ring
2. Annular piston
3. Seal slots
4. Piston surface
5. Piston guide face

Figure 44
Cleaning the components
**Hydraulic nuts**
**HYD-NUT..-E, HYDNUT..-E-INCH**

### Mounting the seals

During mounting, ensure that the seals remain undamaged.

- Oil both seal slots using hydraulic oil, *Figure 45*.
- Insert new seals in the annular piston, *Figure 46*.

---

*Figure 45*
Oiling the seal slots

1. Seal slot
2. Hydraulic oil

*Figure 46*
Mounting the seals

1. Seal
2. Piston guide face
Oil the piston guide face using hydraulic oil, *Figure 47*.

**Figure 47**
Oiling the piston guide faces

**Mounting the annular piston**
During mounting, ensure that the annular piston is fitted straight, *Figure 48*.

**Figure 48**
Mounting
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

► Position the annular piston above the press ring.
► Oil the sealing rings using hydraulic oil.
► Carefully lower the annular piston until this is lying on the press ring.
► Press the annular piston into the press ring uniformly using three screw clamps until both seals have disappeared in the press ring, Figure 49.

► Remove the screw clamps.
► Strike the annular piston lightly using a plastic hammer at a spacing of 120°, until the annular piston is completely in contact with the press ring.

Figure 49
Mounting the annular piston

1 Annular piston
2 Screw clamp
3 Seal
**Disposal**  A hydraulic nut can be returned to Schaeffler for disposal.

**CAUTION**  
Risk of injury due to skin contact with hydraulic oil. 
Wear gloves when dismantling the hydraulic nut.

After dismounting, the press ring and annular piston can be disposed of together with other steel parts. The seals are made from plastic (PVC). Hydraulic oil must be collected and disposed of correctly or recycled. Aids such as oil-soaked cleaning cloths must be disposed of correctly.

**Regulations**  Disposal must be carried out in accordance with locally applicable regulations.
Hydraulic nuts
HYD-NUT..-E, HYDNUT..-E-INCH

Technical data, accessories and replacement parts

The technical data give information that is valid for each hydraulic nut. Accessories and replacement parts are available, see tables.

Technical data

<table>
<thead>
<tr>
<th>Designation</th>
<th>Max. tightening torque</th>
<th>Hydraulic oil, viscosity class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nm</td>
<td>mm²/s</td>
</tr>
<tr>
<td></td>
<td>from to</td>
<td></td>
</tr>
<tr>
<td>HYDNUT..-E</td>
<td>45</td>
<td>46-68</td>
</tr>
</tbody>
</table>

1) The maximum tightening torque is valid for threaded holes G1/4 in the press ring.

Accessories

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCANOL-MOUNTINGPASTE-70G</td>
<td>Mounting paste</td>
<td>0,1</td>
</tr>
<tr>
<td>ARCANOL-MOUNTINGPASTE-250G</td>
<td>Mounting paste</td>
<td>0,3</td>
</tr>
</tbody>
</table>

Replacement parts

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
<th>Mass kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDNUT.PLUG_G1_4.PRT</td>
<td>Screw plug</td>
<td>0,05</td>
</tr>
<tr>
<td>HYDNUT..SEAL</td>
<td>Replacement seals, set</td>
<td>0,2</td>
</tr>
<tr>
<td>HYDNUT-HANDHEBEL-D10.PRT</td>
<td>Hand lever, Ø 10</td>
<td>0,2</td>
</tr>
<tr>
<td>HYDNUT-HANDHEBEL-D12.PRT</td>
<td>Hand lever, Ø 12</td>
<td>0,3</td>
</tr>
<tr>
<td>HYDNUT-HANDHEBEL-D16.PRT</td>
<td>Hand lever, Ø 16</td>
<td>0,4</td>
</tr>
</tbody>
</table>

Only use FAG original accessories.
Appendix

This appendix contains the Declaration of Conformity for hydraulic nuts.

EC Declaration of Conformity

EC Declaration of Conformity for hydraulic nuts HYDNUT.-E, Figure 50.

Figure 50
EC Declaration of Conformity