

# HYDRAULIC NUT HMV..EBF

## INSTRUCTIONS FOR USE



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With You





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### 1. SAFETY INSTRUCTIONS

Inappropriate handling of hydraulic nuts of the type HMV..EBF can lead to serious injuries and compromise safety.



#### **CAUTION!**

The safety instructions provided must be adhered to!

- The operating staff must be authorised!
- The safety instructions and these operating instructions must be complied with in full. They have to be stored with the tools!
- The hydraulic nuts, pump with hydraulic pipe as well as all accessories must be carefully checked for damage before the initial operation - defective or worn parts pose a serious risk and may not be used under any circumstances!
- It must be ensured that there is no air in the hydraulic system - it must be completely bled before initial operation!
- The ring piston may never be moved out of the ring body further than up to the marking!
- A manometer must always be connected to check the work pressure!
- The hydraulic nut may only be operated with a manual pump!
- Dirt and oil residues must always be instantly removed!
- Protective goggles must always be worn!
- Changes to the components are not permitted!
- Only use NTN-SNR original spare parts!
- Always use clean pressure oil!



#### **CAUTION!**

Referring to chapter 2 of this operating instruction a different or additional use of the hydraulic nut is not intended. The manufacturer is not responsible for damage resulting from inappropriate use. The user retains the overall responsibility and is alone in bearing the risk.

## 2. PRODUCT DESCRIPTION

The hydraulic nut HMV..EBF is a tool that has been designed to permit the simple mounting and dismounting of rolling bearings with tapered bores. The parts to be installed can be moved into the desired position safely and without excessive use of force.

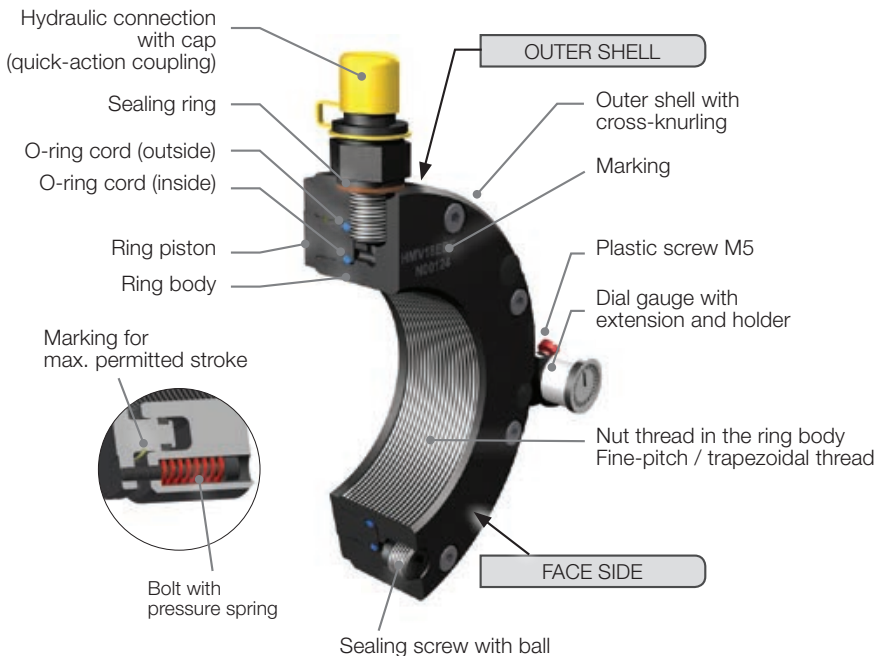
### Main area of application

Mounting of rolling bearings (bore taper 1:12 / 1:30) on tapered shafts, clamping sleeves or withdrawal sleeves.

### 2.1. STRUCTURE AND EQUIPMENT

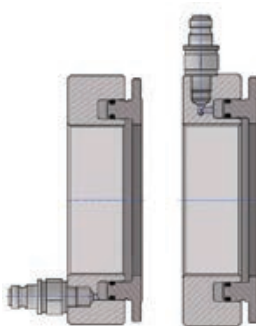
The hydraulic nut mainly consists of the ring body and ring piston. The ring body has an internal thread that is used to screw it onto a shaft or sleeve thread. The circumferential groove at the end face guides the ring piston. Hydraulic oil is evenly distributed in the open space between the piston and the ring body and presses onto the piston.

Two O-ring cords are inserted into the ring piston to seal the pressure space.



One G1/4 threaded hole is provided in the end face as well as in the outer shell to connect a hydraulic pipe. The threaded hole in the end face is closed at the factory with a sealing screw with ball (**Item 1**). A fast-action coupling (**Item 2**) is screwed into the threaded hole in the outer shell.

Cross-knurling is provided on the outer shell on the hydraulic nut to make it easier to screw it onto a shaft or sleeve thread.



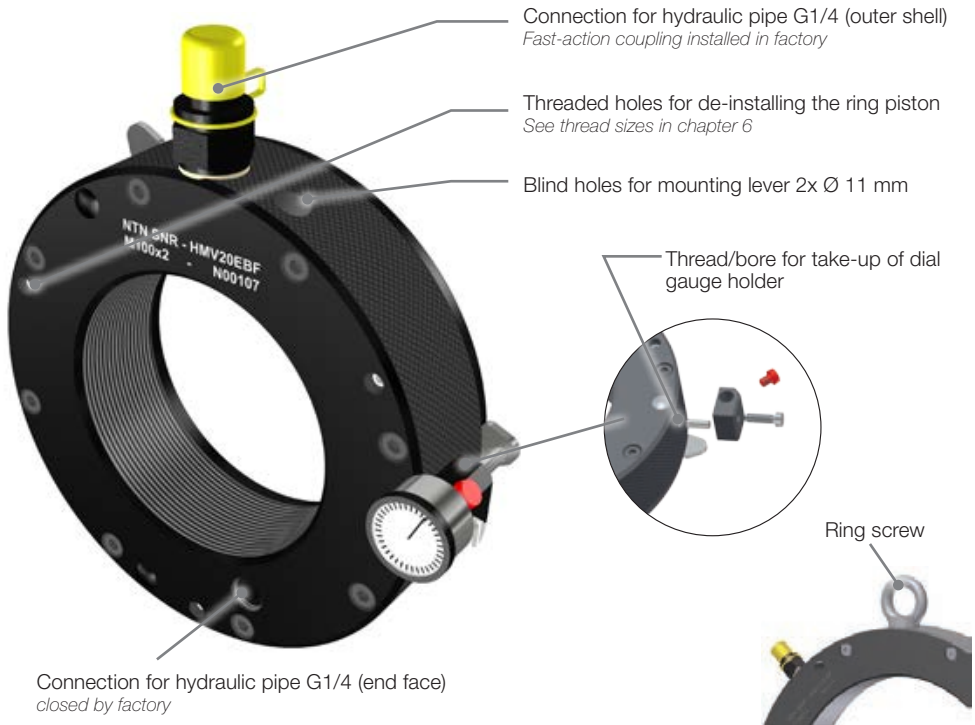
Optional connection at:  
Face side or Outer shell



Tommy bar

The attached, standard mounting lever (**Item 6**) can also be used for easy turning of the nut. It is an installation aid and is pushed into the blind holes in the outer shell. Bolts with pressure springs (**Item 10**) are circumferentially mounted within the hydraulic nut. They ensure that the piston is reset and help to return the oil into the reservoir of the pump. The piston does not need to be pushed back manually.

## 2.2. CONNECTIONS / BORES



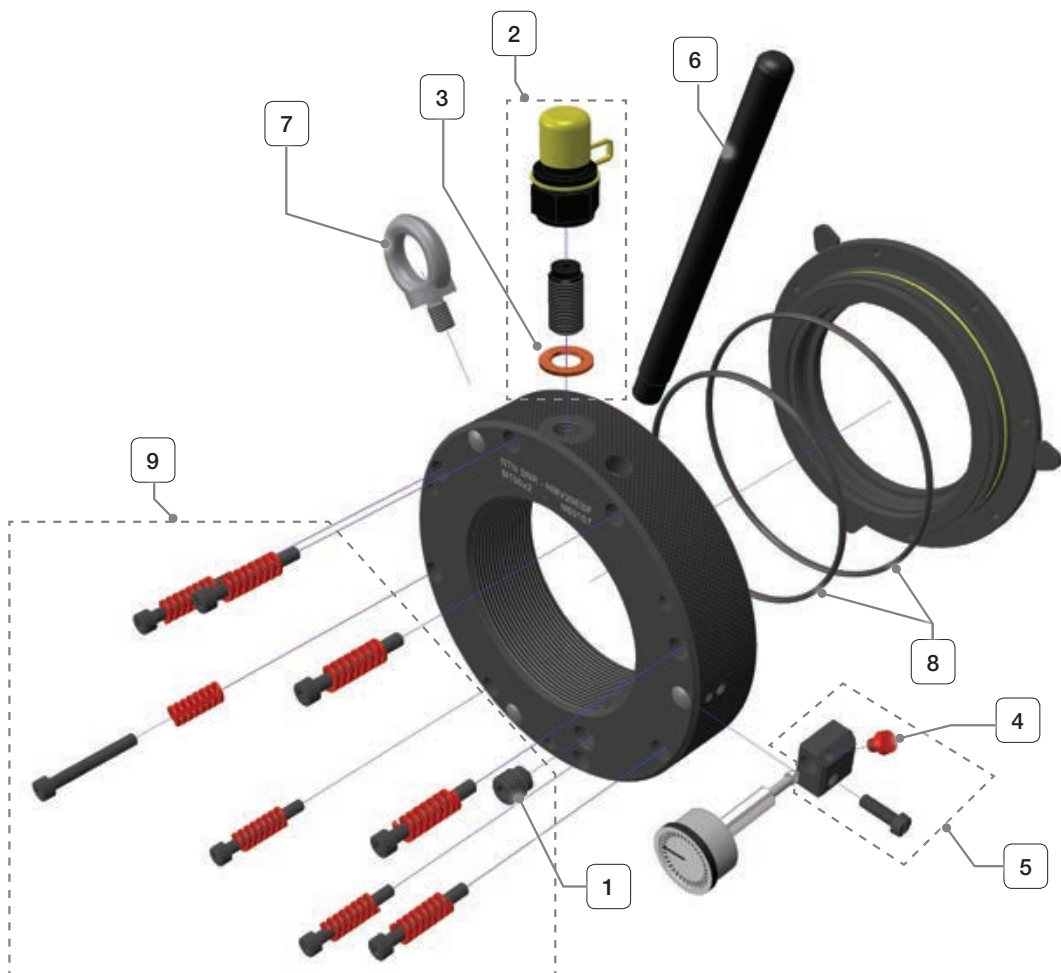
Hydraulic nuts from size HMV60EBF onwards are equipped with additional threaded holes in the outer shell. The ring screws included in the delivery can be installed there for better handling.

## 2.3. FUNCTIONAL PRINCIPLE

Oil pressure inside the ring body is created by a hydraulic pump and ensures axial advance of the ring piston. This displacement pushes the rolling bearing onto its tapered seat. In order to ensure precise positioning of the rolling bearing, the travel path should be determined using a dial gauge.

The ring piston is automatically pushed back to the starting position when the pump pressure is released. The oil automatically flows back into the storage container of the pump.

### 3. SPARE PARTS, ACCESSORIES AND TECHNICAL DATA





### 3.1. HYDRAULIC NUT

| Pos | Article                                      |                                         | Notice                                                                                         |
|-----|----------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------|
| 1   | TOOL HMV BALL PLUG 1/4                       | Sealing screw with ball *               |                                                                                                |
| 2   | TOOL HMV NIPPLE 1/4                          | Hydraulic connection *                  | Consisting of:<br>1x quick-action coupling with cover<br>1x adapter thread<br>1x sealing ring  |
| 3   | TOOL HMV SW 1/4                              | Sealing ring for hydraulic connection * |                                                                                                |
| 4   | TOOL HMV PAS M5                              | Plastic screw for dial gauge locking *  |                                                                                                |
| 5   | TOOL HMV DG HOLDER                           | Dial gauge holder                       | Consisting of:<br>1x M5 plastic screw<br>1x M5 Knurled head screw<br>1x Holder with centre pin |
| 6   | TOOL HMV TBAR 11x150<br>TOOL HMV TBAR 16x200 | Tommy bar *                             | HMV10EBF - HMV58EBF: 11x150<br>HMV60EBF - HMV200EBF: 16x200                                    |
| 7   | TOOL HMV EBO M12<br>TOOL HMV EBO M16         | Ring screw DIN 580                      | HMV60EBF - HMV130EBF: M12<br>HMV134EBF - HMV200EBF: M16                                        |
| 8   | TOOL HMV... PISTON SEALS                     | Set of piston seals *                   | Consisting of:<br>1x O-ring cord (inside)<br>1x O-ring cord (outside)                          |
| 9   | TOOL HMV... SET-PSK                          | Set of pressure springs                 |                                                                                                |

\* Parts included in delivery

### 3.2. ACCESSORIES

| Order Number                                                               | Artikel                                                                                                                                                                                                          |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TOOL PUMP SET 700B-0.3L /<br>Pump with accessories                         | Hydraulic pump with 0.3 l oil volume<br>Incl. hydraulic hose, connection nipple, pressure<br>manometer (analogue), 0.3 l pre-filled with hydraulic oil<br>max. working pressure 700 bar                          |
| TOOL PUMP SET 700B-0.9L /<br>Pump with accessories                         | Hydraulic pump with 0.9 l oil volume<br>Incl. hydraulic hose, connection nipple, pressure manometer<br>(analogue), 0.9 l pre-filled with hydraulic oil<br>max. working pressure 700 bar                          |
| TOOL PUMP SET 1500B-2.5L /<br>Pump with accessories                        | Pump with accessoriesHydraulic pump with 2.55 l oil volume<br>Incl. hydraulic hose, connection nipple, pressure manometer<br>(analogue), 2.55 l pre-filled with hydraulic oil<br>max. working pressure 1,500 bar |
| TOOL PUMP GAUGE 700                                                        | Manometer up to max. 700 bar (analogue)                                                                                                                                                                          |
| TOOL HYDRAULIC OIL 1L                                                      | Hydraulic fluid 1.0 l                                                                                                                                                                                            |
| TOOL FEELER GAUGES 100<br>TOOL FEELER GAUGES 150<br>TOOL FEELER GAUGES 300 | Feeler gauge (length 100 mm)<br>Feeler gauge (length 150 mm)<br>Feeler gauge (length 300 mm)                                                                                                                     |
| TOOL DIAL GAUGE 050                                                        | Dial gauge for a displacement distance up to 5 mm                                                                                                                                                                |
| TOOL DIAL GAUGE 100                                                        | Dial gauge for a displacement distance up to 10 mm                                                                                                                                                               |
| TOOL DIAL EXTENSION SET                                                    | Extension adapter set for dial gauge                                                                                                                                                                             |

### 3.3. TECHNICAL DATA HMV..EBF

|                                                          |                                                                                                                                                                                                         |                                                                                |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Nut thread                                               | HMV 10 EBF to HMV 40 EBF<br>HMV 41 EBF to HMV 200 EBF                                                                                                                                                   | ISO 965/III-1980, Tolerance class 6H<br>ISO 2901-1977, Tolerance class 7H      |
| Required pump volume for hydraulic nuts                  | HMV 10 EBF to HMV 54 EBF<br>HMV 56 EBF to HMV 92 EBF<br>HMV 94 EBF to HMV 200 EBF                                                                                                                       | TOOL PUMP SET 700b-0,3L<br>TOOL PUMP SET 700b-0,9L<br>TOOL PUMP SET 1500B-2,5L |
| Thread size of ring screw                                | HMV 60 EBF to HMV 130 EBF<br>> HMV 130 EBF                                                                                                                                                              | M12<br>M16                                                                     |
| Fastening torque Sealing screw with ball                 |                                                                                                                                                                                                         | 45 Nm                                                                          |
| Max. permitted operating pressure* at max. piston stroke | HMV 10 EBF to HMV 25 EBF<br>HMV 26 EBF to HMV 40 EBF<br>HMV 41 EBF to HMV 60 EBF<br>HMV 62 EBF to HMV 100 EBF<br>HMV 102 EBF to HMV 120 EBF<br>HMV 126 EBF to HMV 160 EBF<br>HMV 170 EBF to HMV 200 EBF | 700 bar<br>550 bar<br>450 bar<br>400 bar<br>350 bar<br>300 bar<br>250 bar      |

\* The required operating pressure for mounting and dismounting of rolling bearings is depending on various factors such as size of the bearing, bearing seat quality, numbers of contact surfaces as well as the weight of the rolling bearing.

## 4. PROCEDURE FOR THE ASSEMBLY OF ROLLER BEARINGS

Push the bearing by hand as far as possible onto the cone-shaped seat and screw the hydraulic nut onto the thread of the shaft pin or the sleeve. Ensure that the inner and outer threads are aligned with each other when positioning the nut. It is recommended to use an assembly paste. The start of the thread is marked on the outer shell of the ring body to ease the positioning of larger hydraulic nuts (from HMV90EBF onwards).

**Caution:** Damage due to jamming must be avoided.

### 4.1. BLEEDING OF THE HYDRAULIC SYSTEM

**Note:**

*The hydraulic system must be bled when the nut is used for the first time and after each de-installation of a hydraulic connection.*

Screw the whole thread length of the hydraulic nut onto the shaft or sleeve thread and connect the hydraulic pipe to the appropriate hydraulic connection (Item 2).

Turn the sealing screw with ball (Item 1) to the highest position and loosen it slightly. Then pump oil, using the hydraulic pump, until the oil exits without bubbles. Thereafter, firmly close the sealing screw (max. fastening torque 45 Nm).

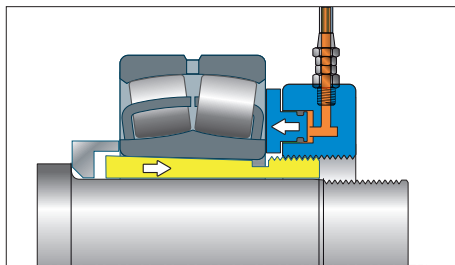
### 4.2. USE

Screw the hydraulic nut against the rolling bearing until the full annular piston bears evenly on the bearing. The piston must be in its start position and must be fully inserted in the annular body. To absorb the bearing forces that arise during the displacement operation via the thread, a minimum overlap with the mating thread of at least 85% must be guaranteed.

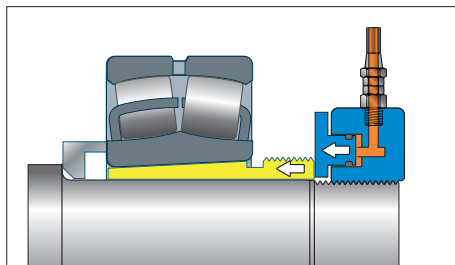
Thereafter, connect the hydraulic pipe to the appropriate hydraulic connection.

## 5. POSSIBLE MOUNTING / DISMOUNTING SITUATIONS FOR BEARINGS WITH SPHERICAL BORE

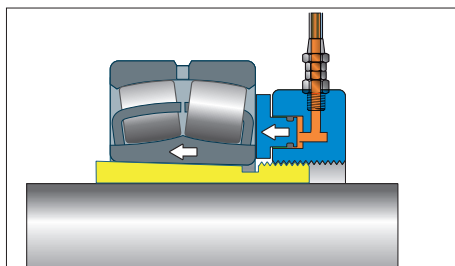
### Mounting



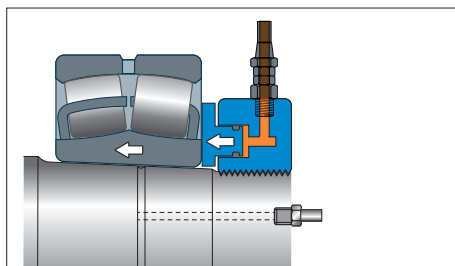
Mounting a rolling bearing on an adapter sleeve on a cylindrical shaft. The rolling bearing is supported against a stop ring or shaft shoulder.



Mounting a bearing on a withdrawal sleeve on cylindrical shaft with thread. Bearing support against shaft shoulder.

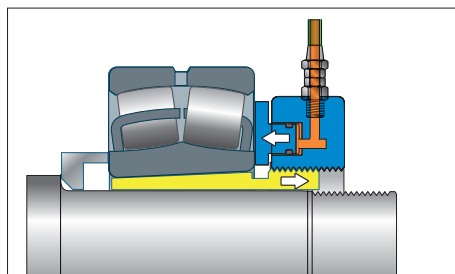


Mounting a bearing on an adapter sleeve on cylindrical shaft.

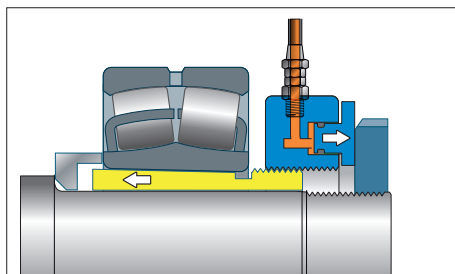


Mounting a bearing on tapered shaft seat

### Dismounting



Dismounting a rolling bearing on a withdrawal sleeve. The hydraulic nut is supported against the inner ring.



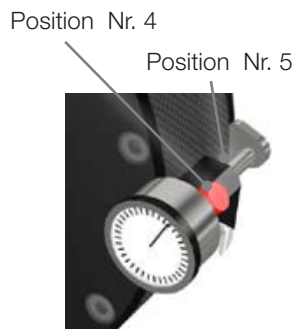
Dismounting a rolling bearing on a clamping sleeve. The hydraulic nut is supported against a support nut.

## 5.1. POSITIONING / AXIAL DISPLACEMENT

### 5.1.1. Use of a dial gauge

For the mounting process of a roller bearing a dial gauge can be used for measuring the axial displacement. Therefore a dial gauge holder (item 5) can be installed on the face side of the ring body.

(The holder is included to the scope of delivery)



### 5.1.2. Mounting the dial gauge with holder

The dial gauge holder (item 5) is to be installed only when the HMV is screwed on the thread and the ring piston rests fully against the bearing. This is to prevent injury while turning the nut and to avoid damages on the sensitive dial gauge.

The dial gauge holder is to be mounted radially with the knurled head screw (M5) in one of the three possible positions at the ring body. The dowel pin at the holder helps to secure the position. Insert the dial gauge with the extension into the bore of the holder until the tip of the extension contacts the measurement surface of the ring piston.

Lock the dial gauge with the plastic screw (M5) (Item 4) so that it cannot slide. Turn the adjustment ring of the dial gauge to the zero position and select the axial displacement.

#### Note

*The axial displacement depends on the series and the size of the roller bearing. The values for spherical roller-bearings are provided in the table of chapter 8.*

Hydraulic oil is now pumped into the hydraulic nut using a hand pump. The ring piston moves the roller bearing onto the sleeve or the cone-shaped bearing seat.

The pumping process is to be continued until the prescribed displacement has been reached. It is recommended to make a final inspection of the clearance in the final position after the pressure has been released (feeler gauge).



#### CAUTION!

A circumferential, yellow marking on the ring piston shows that the maximum permitted stroke has been reached. As soon as this marker is aligned with the edge of the ring body, the ring piston may not be pumped out of the ring body any further (risk of injury / damage to the hydraulic nut)

Open the reflux valve to de-install the nut. The annular piston automatically travels back to its starting position and presses the hydraulic oil out of the hydraulic nut and into the pump as it does so. The hydraulic nut can now be dismounted. The press-fitted assembly must thereafter be fastened with a shaft and a safety washer.

## 6. SERVICING AND MAINTENANCE

Dirt and oil residues must be removed from the surfaces after every use to ensure flawless and safe functioning of the hydraulic nut and the hydraulic components.

Hydraulic connections and threads must be checked for possible damage.

The hydraulic connections must be safely closed with covers after use and protected against the penetration of dirt.

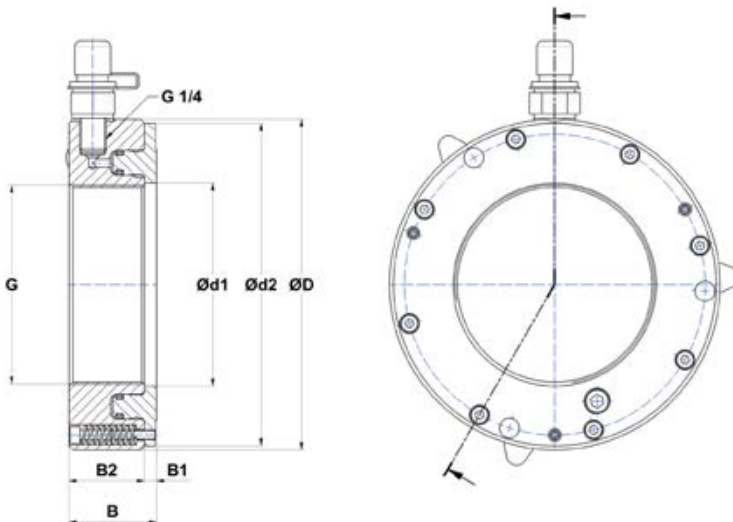
Make sure that the employed hydraulic oil is clean and complies with the required specifications (ISO 11158). The pump tank must always be filled with sufficient oil.

If hydraulic oil emerges from the hydraulic nut during use, the toroidal sealing rings may be defective.

For replacement of the toroidal sealing rings, please return the hydraulic nut to NTN-SNR.

For further information, please contact NTN-SNR.

## 7. MEASUREMENT TABLE



# Operating instructions

## NTN-SNR HYDRAULIC NUT HMV..EBF

| Size       | Thread   | External diameter<br>mm | Total width<br>mm | Piston diameter<br>mm | Permitted piston stroke<br>mm | Flange width<br>mm | Body width<br>mm | Diameter<br>mm | Piston surface area<br>mm² | Weight<br>kg |
|------------|----------|-------------------------|-------------------|-----------------------|-------------------------------|--------------------|------------------|----------------|----------------------------|--------------|
|            | G        | D                       | B                 | max. d2               |                               | B1                 | B2               | d1             |                            |              |
| HMV 10 EBF | M 50x1,5 | 114                     | 43                | 112                   | 5                             | 5                  | 38               | 52             | 2800                       | 2,8          |
| HMV 11 EBF | M 55x2   | 120                     | 43                | 118                   | 5                             | 5                  | 38               | 57             | 3100                       | 3,1          |
| HMV 12 EBF | M 60x2   | 125                     | 43                | 123                   | 5                             | 5                  | 38               | 62             | 3300                       | 3,3          |
| HMV 13 EBF | M 65x2   | 130                     | 43                | 128                   | 5                             | 5                  | 38               | 67             | 3500                       | 3,4          |
| HMV 14 EBF | M 70x2   | 135                     | 43                | 133                   | 5                             | 5                  | 38               | 72             | 3700                       | 3,6          |
| HMV 15 EBF | M 75x2   | 140                     | 43                | 138                   | 5                             | 5                  | 38               | 77             | 3900                       | 3,8          |
| HMV 16 EBF | M 80x2   | 145                     | 43                | 143                   | 5                             | 5                  | 38               | 82             | 4100                       | 3,9          |
| HMV 17 EBF | M 85x2   | 150                     | 43                | 148                   | 5                             | 5                  | 38               | 87             | 4300                       | 4,1          |
| HMV 18 EBF | M 90x2   | 156                     | 43                | 152                   | 5                             | 5                  | 38               | 92             | 4400                       | 4,3          |
| HMV 19 EBF | M 95x2   | 162                     | 43                | 158                   | 5                             | 5                  | 38               | 97             | 4800                       | 4,5          |
| HMV 20 EBF | M 100x2  | 166                     | 44                | 162                   | 5                             | 6                  | 38               | 102            | 4800                       | 4,7          |
| HMV 21 EBF | M 105x2  | 172                     | 44                | 168                   | 5                             | 6                  | 38               | 107            | 5200                       | 5,0          |
| HMV 22 EBF | M 110x2  | 178                     | 44                | 174                   | 5                             | 6                  | 38               | 112            | 5700                       | 5,3          |
| HMV 23 EBF | M 115x2  | 182                     | 44                | 178                   | 5                             | 6                  | 38               | 117            | 5600                       | 5,4          |
| HMV 24 EBF | M 120x2  | 188                     | 44                | 184                   | 5                             | 6                  | 38               | 122            | 6100                       | 5,6          |
| HMV 25 EBF | M 125x2  | 192                     | 44                | 188                   | 5                             | 6                  | 38               | 127            | 6000                       | 5,7          |
| HMV 26 EBF | M 130x2  | 198                     | 44                | 194                   | 5                             | 6                  | 38               | 132            | 6500                       | 6,0          |
| HMV 27 EBF | M 135x2  | 204                     | 44                | 200                   | 5                             | 6                  | 38               | 137            | 7000                       | 6,3          |
| HMV 28 EBF | M 140x2  | 208                     | 45                | 204                   | 5                             | 7                  | 38               | 142            | 6900                       | 6,5          |
| HMV 29 EBF | M 145x2  | 214                     | 46                | 210                   | 5                             | 7                  | 39               | 147            | 7400                       | 6,9          |
| HMV 30 EBF | M 150x2  | 220                     | 46                | 216                   | 5                             | 7                  | 39               | 152            | 7900                       | 7,3          |
| HMV 31 EBF | M 155x3  | 226                     | 46                | 222                   | 5                             | 7                  | 39               | 157            | 8500                       | 7,7          |
| HMV 32 EBF | M 160x3  | 232                     | 47                | 228                   | 6                             | 7                  | 40               | 162            | 9000                       | 8,2          |
| HMV 33 EBF | M 165x3  | 238                     | 47                | 234                   | 6                             | 7                  | 40               | 167            | 9600                       | 8,5          |
| HMV 34 EBF | M 170x3  | 244                     | 48                | 240                   | 6                             | 7                  | 41               | 172            | 10200                      | 9,0          |
| HMV 36 EBF | M 180x3  | 256                     | 48                | 252                   | 6                             | 7                  | 41               | 182            | 11400                      | 9,8          |
| HMV 38 EBF | M 190x3  | 270                     | 50                | 266                   | 7                             | 8                  | 42               | 192            | 12000                      | 11,3         |
| HMV 40 EBF | M 200x3  | 282                     | 51                | 278                   | 8                             | 8                  | 43               | 202            | 12500                      | 12,4         |
| HMV 41 EBF | Tr 205x4 | 288                     | 51                | 284                   | 8                             | 8                  | 43               | 209            | 12800                      | 12,8         |
| HMV 42 EBF | Tr 210x4 | 294                     | 52                | 290                   | 8                             | 8                  | 44               | 212            | 13100                      | 13,6         |
| HMV 43 EBF | Tr 215x4 | 300                     | 52                | 296                   | 8                             | 8                  | 44               | 219            | 13300                      | 14,0         |
| HMV 44 EBF | Tr 220x4 | 306                     | 52                | 302                   | 8                             | 8                  | 44               | 224            | 13600                      | 14,5         |
| HMV 45 EBF | Tr 225x4 | 312                     | 53                | 308                   | 8                             | 8                  | 45               | 229            | 13900                      | 15,2         |
| HMV 46 EBF | Tr 230x4 | 318                     | 53                | 314                   | 8                             | 8                  | 45               | 234            | 14200                      | 15,7         |
| HMV 47 EBF | Tr 235x4 | 326                     | 54                | 322                   | 9                             | 8                  | 46               | 239            | 15600                      | 16,8         |
| HMV 48 EBF | Tr 240x4 | 330                     | 55                | 326                   | 9                             | 9                  | 46               | 244            | 16400                      | 17,2         |
| HMV 50 EBF | Tr 250x4 | 342                     | 55                | 338                   | 9                             | 9                  | 46               | 254            | 17000                      | 18,2         |
| HMV 52 EBF | Tr 260x4 | 356                     | 56                | 352                   | 9                             | 9                  | 47               | 264            | 17500                      | 20,2         |
| HMV 54 EBF | Tr 270x4 | 368                     | 57                | 364                   | 10                            | 9                  | 48               | 274            | 18100                      | 21,7         |
| HMV 56 EBF | Tr 280x4 | 380                     | 58                | 376                   | 10                            | 9                  | 49               | 284            | 19800                      | 23,3         |
| HMV 58 EBF | Tr 290x4 | 390                     | 58                | 386                   | 10                            | 9                  | 49               | 294            | 20400                      | 24,0         |
| HMV 60 EBF | Tr 300x4 | 410                     | 61                | 406                   | 10                            | 10                 | 51               | 304            | 23900                      | 29,2         |



# Operating instructions

## NTN-SNR HYDRAULIC NUT HMV..EBF

| Size        | Thread    | External diameter<br>mm | Total width<br>mm | Piston diameter<br>mm | Permitted piston stroke<br>mm | Flange width<br>mm | Body width<br>mm | Diameter<br>mm | Piston surface area<br>mm² | Weight<br>kg |
|-------------|-----------|-------------------------|-------------------|-----------------------|-------------------------------|--------------------|------------------|----------------|----------------------------|--------------|
|             | G         | D                       | B                 | max. d2               |                               | B1                 | B2               | d1             |                            |              |
| HMV 62 EBF  | Tr 310x5  | 420                     | 62                | 416                   | 11                            | 10                 | 52               | 314            | 24600                      | 30,9         |
| HMV 64 EBF  | Tr 320x5  | 430                     | 63                | 426                   | 11                            | 10                 | 53               | 324            | 25300                      | 32,1         |
| HMV 66 EBF  | Tr 330x5  | 440                     | 63                | 436                   | 12                            | 10                 | 53               | 334            | 26000                      | 33,0         |
| HMV 68 EBF  | Tr 340x5  | 450                     | 64                | 446                   | 12                            | 10                 | 54               | 344            | 26700                      | 34,4         |
| HMV 69 EBF  | Tr 345x5  | 460                     | 64                | 456                   | 12                            | 10                 | 54               | 349            | 30200                      | 36,5         |
| HMV 70 EBF  | Tr 350x5  | 470                     | 66                | 466                   | 12                            | 10                 | 56               | 354            | 31000                      | 39,8         |
| HMV 72 EBF  | Tr 360x5  | 480                     | 66                | 476                   | 13                            | 10                 | 56               | 364            | 33400                      | 40,7         |
| HMV 73 EBF  | Tr 365x5  | 485                     | 68                | 481                   | 13                            | 11                 | 57               | 369            | 33800                      | 42,4         |
| HMV 74 EBF  | Tr 370x5  | 490                     | 68                | 486                   | 13                            | 11                 | 57               | 374            | 34300                      | 42,9         |
| HMV 76 EBF  | Tr 380x5  | 500                     | 69                | 496                   | 14                            | 11                 | 58               | 384            | 35100                      | 44,6         |
| HMV 77 EBF  | Tr 385x5  | 505                     | 69                | 501                   | 14                            | 11                 | 58               | 389            | 35500                      | 45,1         |
| HMV 80 EBF  | Tr 400x5  | 530                     | 71                | 526                   | 14                            | 11                 | 60               | 404            | 35300                      | 52,8         |
| HMV 82 EBF  | Tr 410x5  | 545                     | 72                | 541                   | 14                            | 11                 | 61               | 414            | 36900                      | 57,0         |
| HMV 84 EBF  | Tr 420x5  | 555                     | 72                | 551                   | 14                            | 11                 | 61               | 424            | 39300                      | 57,9         |
| HMV 86 EBF  | Tr 430x5  | 565                     | 73                | 561                   | 14                            | 11                 | 62               | 434            | 41700                      | 59,9         |
| HMV 88 EBF  | Tr 440x5  | 575                     | 73                | 571                   | 14                            | 12                 | 62               | 444            | 40900                      | 60,8         |
| HMV 90 EBF  | Tr 450x5  | 590                     | 75                | 586                   | 15                            | 12                 | 64               | 454            | 45100                      | 66,3         |
| HMV 92 EBF  | Tr 460x5  | 600                     | 76                | 596                   | 15                            | 12                 | 64               | 464            | 46000                      | 68,3         |
| HMV 94 EBF  | Tr 470x5  | 610                     | 77                | 606                   | 15                            | 12                 | 65               | 474            | 48600                      | 70,4         |
| HMV 96 EBF  | Tr 480x5  | 620                     | 77                | 616                   | 16                            | 12                 | 65               | 484            | 50400                      | 71,7         |
| HMV 98 EBF  | Tr 490x5  | 640                     | 78                | 636                   | 16                            | 12                 | 66               | 494            | 54300                      | 79,9         |
| HMV 100 EBF | Tr 500x5  | 650                     | 79                | 646                   | 16                            | 12                 | 67               | 504            | 55300                      | 82,4         |
| HMV 102 EBF | Tr 510x6  | 660                     | 80                | 656                   | 17                            | 12                 | 68               | 514            | 56300                      | 85,7         |
| HMV 104 EBF | Tr 520x6  | 670                     | 81                | 666                   | 17                            | 13                 | 68               | 524            | 57200                      | 88,3         |
| HMV 106 EBF | Tr 530x6  | 680                     | 82                | 676                   | 17                            | 13                 | 69               | 534            | 50500                      | 90,4         |
| HMV 108 EBF | Tr 540x6  | 690                     | 82                | 686                   | 17                            | 13                 | 69               | 544            | 52300                      | 91,9         |
| HMV 110 EBF | Tr 550x6  | 705                     | 83                | 701                   | 17                            | 13                 | 70               | 554            | 55200                      | 98,0         |
| HMV 112 EBF | Tr 560x6  | 715                     | 84                | 711                   | 18                            | 13                 | 71               | 564            | 56100                      | 100,3        |
| HMV 114 EBF | Tr 570x6  | 725                     | 85                | 721                   | 18                            | 13                 | 72               | 574            | 57000                      | 103,2        |
| HMV 116 EBF | Tr 580x6  | 735                     | 85                | 731                   | 18                            | 13                 | 72               | 584            | 57900                      | 104,8        |
| HMV 120 EBF | Tr 600x6  | 760                     | 86                | 756                   | 19                            | 13                 | 73               | 604            | 65200                      | 113,1        |
| HMV 126 EBF | Tr 630x6  | 790                     | 88                | 786                   | 19                            | 14                 | 74               | 634            | 68100                      | 120,8        |
| HMV 130 EBF | Tr 650x6  | 810                     | 89                | 806                   | 19                            | 14                 | 75               | 654            | 70100                      | 125,7        |
| HMV 134 EBF | Tr 670x6  | 840                     | 90                | 836                   | 22                            | 14                 | 76               | 674            | 80800                      | 139,6        |
| HMV 138 EBF | Tr 690x6  | 860                     | 91                | 856                   | 22                            | 14                 | 77               | 694            | 83000                      | 145,2        |
| HMV 142 EBF | Tr 710x7  | 880                     | 93                | 876                   | 23                            | 15                 | 78               | 714            | 85200                      | 152,9        |
| HMV 150 EBF | Tr 750x7  | 920                     | 94                | 916                   | 23                            | 15                 | 79               | 754            | 89600                      | 162,4        |
| HMV 160 EBF | Tr 800x7  | 970                     | 96                | 966                   | 25                            | 16                 | 80               | 804            | 95100                      | 175,6        |
| HMV 170 EBF | Tr 850x7  | 1030                    | 99                | 1026                  | 26                            | 16                 | 83               | 854            | 115600                     | 203,2        |
| HMV 180 EBF | Tr 900x7  | 1100                    | 103               | 1096                  | 28                            | 17                 | 86               | 904            | 153900                     | 247,5        |
| HMV 190 EBF | Tr 950x8  | 1150                    | 103               | 1146                  | 28                            | 17                 | 86               | 954            | 161800                     | 261,0        |
| HMV 200 EBF | Tr 1000x8 | 1200                    | 105               | 1196                  | 30                            | 17                 | 88               | 1004           | 169600                     | 279,0        |

# Operating instructions

## NTN-SNR HYDRAULIC NUT HMV..EBF

| Size         | Thread | Gänge je | External diameter | Total width | Piston diameter | Permitted piston stroke | Flange width | Body width | Diameter | Piston surface area | Weight |
|--------------|--------|----------|-------------------|-------------|-----------------|-------------------------|--------------|------------|----------|---------------------|--------|
|              | inch   | inch     | inch              | inch        | inch            | inch                    | inch         | inch       | inch     | inch²               | lb     |
| HMVC ... EBF | G      |          | D                 | B           | max. d2         |                         | B1           | B2         | d1       |                     |        |
| 10           | 1,967  | 18       | 4,5               | 1,7         | 4,4             | 0,20                    | 0,20         | 1,5        | 2,0      | 4,4                 | 6,3    |
| 11           | 2,157  | 18       | 4,7               | 1,7         | 4,6             | 0,20                    | 0,20         | 1,5        | 2,2      | 4,8                 | 6,8    |
| 12           | 2,360  | 18       | 4,9               | 1,7         | 4,8             | 0,20                    | 0,20         | 1,5        | 2,4      | 5,1                 | 7,2    |
| 13           | 2,548  | 18       | 5,1               | 1,7         | 5,0             | 0,20                    | 0,20         | 1,5        | 2,6      | 5,4                 | 7,6    |
| 14           | 2,751  | 18       | 5,3               | 1,7         | 5,2             | 0,20                    | 0,20         | 1,5        | 2,8      | 5,8                 | 7,9    |
| 15           | 2,933  | 12       | 5,5               | 1,7         | 5,4             | 0,20                    | 0,20         | 1,5        | 3,0      | 6,1                 | 8,3    |
| 16           | 3,137  | 12       | 5,7               | 1,7         | 5,6             | 0,20                    | 0,20         | 1,5        | 3,2      | 6,4                 | 8,7    |
| 17           | 3,340  | 12       | 5,9               | 1,7         | 5,8             | 0,20                    | 0,20         | 1,5        | 3,4      | 6,7                 | 9,1    |
| 18           | 3,527  | 12       | 6,1               | 1,7         | 6,0             | 0,20                    | 0,20         | 1,5        | 3,6      | 6,8                 | 9,5    |
| 19           | 3,730  | 12       | 6,4               | 1,7         | 6,2             | 0,20                    | 0,20         | 1,5        | 3,8      | 7,5                 | 10,0   |
| 20           | 3,918  | 12       | 6,5               | 1,7         | 6,4             | 0,20                    | 0,24         | 1,5        | 4,0      | 7,5                 | 10,4   |
| 21           | 4,122  | 12       | 6,8               | 1,7         | 6,6             | 0,20                    | 0,24         | 1,5        | 4,2      | 8,1                 | 11,0   |
| 22           | 4,325  | 12       | 7,0               | 1,7         | 6,9             | 0,20                    | 0,24         | 1,5        | 4,4      | 8,8                 | 11,6   |
| 24           | 4,716  | 12       | 7,4               | 1,7         | 7,2             | 0,20                    | 0,24         | 1,5        | 4,8      | 9,4                 | 12,4   |
| 26           | 5,106  | 12       | 7,8               | 1,7         | 7,6             | 0,20                    | 0,24         | 1,5        | 5,2      | 10,1                | 13,2   |
| 28           | 5,497  | 12       | 8,2               | 1,8         | 8,0             | 0,20                    | 0,28         | 1,5        | 5,6      | 10,7                | 14,3   |
| 30           | 5,888  | 12       | 8,7               | 1,8         | 8,5             | 0,20                    | 0,28         | 1,5        | 6,0      | 12,3                | 16,0   |
| 32           | 6,284  | 8        | 9,1               | 1,9         | 9,0             | 0,24                    | 0,28         | 1,6        | 6,4      | 14,0                | 18,0   |
| 34           | 6,659  | 8        | 9,6               | 1,9         | 9,4             | 0,24                    | 0,28         | 1,6        | 6,8      | 15,8                | 19,9   |
| 36           | 7,066  | 8        | 10,1              | 1,9         | 9,9             | 0,24                    | 0,28         | 1,6        | 7,2      | 17,7                | 21,5   |
| 38           | 7,472  | 8        | 10,6              | 2,0         | 10,5            | 0,28                    | 0,31         | 1,7        | 7,6      | 18,5                | 24,9   |
| 40           | 7,847  | 8        | 11,1              | 2,0         | 10,9            | 0,31                    | 0,31         | 1,7        | 8,0      | 19,4                | 27,3   |
| 44           | 8,628  | 8        | 12,0              | 2,0         | 11,9            | 0,31                    | 0,31         | 1,7        | 8,8      | 21,1                | 31,9   |
| 46           | 9,125  | 8        | 12,5              | 2,1         | 12,4            | 0,31                    | 0,31         | 1,8        | 9,2      | 21,9                | 34,7   |
| 48           | 9,442  | 6        | 13,0              | 2,2         | 12,8            | 0,35                    | 0,35         | 1,8        | 9,6      | 25,4                | 37,8   |
| 52           | 10,192 | 6        | 14,0              | 2,2         | 13,9            | 0,35                    | 0,35         | 1,9        | 10,4     | 27,2                | 44,4   |
| 56           | 11,004 | 6        | 15,0              | 2,3         | 14,8            | 0,39                    | 0,35         | 1,9        | 11,2     | 30,7                | 51,4   |
| 60           | 11,785 | 6        | 16,1              | 2,4         | 16,0            | 0,39                    | 0,39         | 2,0        | 12,0     | 37,0                | 64,4   |
| 64           | 12,562 | 6        | 16,9              | 2,5         | 16,8            | 0,43                    | 0,39         | 2,1        | 12,8     | 39,2                | 70,8   |
| 68           | 13,339 | 5        | 17,7              | 2,5         | 17,6            | 0,47                    | 0,39         | 2,1        | 13,5     | 41,4                | 75,7   |
| 72           | 14,170 | 5        | 18,9              | 2,6         | 18,7            | 0,51                    | 0,39         | 2,2        | 14,3     | 51,8                | 89,7   |
| 76           | 14,957 | 5        | 19,7              | 2,7         | 19,5            | 0,55                    | 0,43         | 2,3        | 15,1     | 54,4                | 98,2   |
| 80           | 15,745 | 5        | 20,9              | 2,8         | 20,7            | 0,55                    | 0,43         | 2,4        | 15,9     | 54,8                | 116,4  |
| 84           | 16,532 | 5        | 21,9              | 2,8         | 21,7            | 0,55                    | 0,43         | 2,4        | 16,7     | 60,8                | 127,7  |
| 88           | 17,319 | 5        | 22,6              | 2,9         | 22,5            | 0,55                    | 0,43         | 2,4        | 17,5     | 63,4                | 134,1  |
| 92           | 18,107 | 5        | 23,6              | 3,0         | 23,5            | 0,59                    | 0,47         | 2,5        | 18,3     | 71,3                | 150,6  |
| 96           | 18,894 | 5        | 24,4              | 3,0         | 24,3            | 0,63                    | 0,47         | 2,6        | 19,1     | 78,2                | 158,0  |
| 100          | 19,682 | 5        | 25,6              | 3,1         | 25,4            | 0,63                    | 0,47         | 2,6        | 19,8     | 85,7                | 181,6  |
| 106          | 20,867 | 4        | 26,8              | 3,2         | 26,6            | 0,67                    | 0,51         | 2,7        | 21,0     | 78,3                | 199,4  |
| 112          | 22,048 | 4        | 28,1              | 3,3         | 28,0            | 0,71                    | 0,51         | 2,8        | 22,2     | 87,0                | 221,1  |
| 120          | 23,623 | 4        | 29,9              | 3,4         | 29,8            | 0,75                    | 0,51         | 2,9        | 23,8     | 101,0               | 249,2  |
| 126          | 24,804 | 4        | 31,1              | 3,5         | 30,9            | 0,75                    | 0,55         | 2,9        | 25,0     | 105,6               | 266,4  |
| 134          | 26,379 | 4        | 33,1              | 3,5         | 32,9            | 0,87                    | 0,55         | 3,0        | 26,5     | 125,3               | 307,8  |
| 142          | 27,961 | 3        | 34,6              | 3,7         | 34,5            | 0,91                    | 0,59         | 3,1        | 28,1     | 132,1               | 337,1  |
| 150          | 29,536 | 3        | 36,2              | 3,7         | 36,1            | 0,91                    | 0,59         | 3,1        | 29,7     | 138,9               | 358,1  |
| 160          | 31,504 | 3        | 38,2              | 3,8         | 38,0            | 0,98                    | 0,63         | 3,1        | 31,7     | 147,4               | 387,1  |
| 170          | 33,473 | 3        | 40,6              | 3,9         | 40,4            | 1,02                    | 0,63         | 3,3        | 33,6     | 179,2               | 448,0  |
| 180          | 35,441 | 3        | 43,3              | 4,1         | 43,1            | 1,10                    | 0,67         | 3,4        | 35,6     | 238,6               | 545,6  |
| 190          | 37,410 | 3        | 45,3              | 4,1         | 45,1            | 1,10                    | 0,67         | 3,4        | 37,6     | 250,8               | 575,3  |

## 8. TABLE FOR RADIAL CLEARANCE REDUCTION / AXIAL DISPLACEMENT

| Nominal dimensions of bearing bore |      | Radial play before mounting of air unit |       |       |       |       |       | Reduction of radial play |       | Displacement at taper 1 : 12 |      |        |      | Displacement at taper 1 : 30 |      |        |      | Control value of smallest radial play after mounting |       |       |
|------------------------------------|------|-----------------------------------------|-------|-------|-------|-------|-------|--------------------------|-------|------------------------------|------|--------|------|------------------------------|------|--------|------|------------------------------------------------------|-------|-------|
|                                    |      | normal                                  |       | C3    |       | C4    |       |                          |       | Shaft                        |      | Sleeve |      | Shaft                        |      | Sleeve |      | Air unit                                             |       |       |
| over                               | bis  | min                                     | max   | min   | max   | min   | max   | min                      | max   | min                          | max  | min    | max  | min                          | max  | min    | max  | normal                                               | C3    | C4    |
| mm                                 |      | mm                                      |       | mm    |       | mm    |       | mm                       |       | mm                           |      | mm     |      | mm                           |      | mm     |      | mm                                                   |       |       |
| 30                                 | 40   | 0,035                                   | 0,05  | 0,05  | 0,065 | 0,065 | 0,085 | 0,02                     | 0,025 | 0,35                         | 0,4  | 0,35   | 0,45 |                              |      |        |      | 0,015                                                | 0,025 | 0,04  |
| 40                                 | 50   | 0,045                                   | 0,06  | 0,06  | 0,08  | 0,8   | 0,1   | 0,025                    | 0,03  | 0,4                          | 0,45 | 0,45   | 0,5  |                              |      |        |      | 0,02                                                 | 0,03  | 0,05  |
| 50                                 | 65   | 0,055                                   | 0,075 | 0,075 | 0,095 | 0,095 | 0,12  | 0,03                     | 0,04  | 0,45                         | 0,6  | 0,5    | 0,7  |                              |      |        |      | 0,025                                                | 0,035 | 0,055 |
| 65                                 | 80   | 0,07                                    | 0,095 | 0,095 | 0,12  | 0,12  | 0,15  | 0,04                     | 0,05  | 0,6                          | 0,75 | 0,7    | 0,85 |                              |      |        |      | 0,025                                                | 0,04  | 0,07  |
| 80                                 | 100  | 0,08                                    | 0,11  | 0,11  | 0,14  | 0,14  | 0,18  | 0,045                    | 0,06  | 0,7                          | 0,9  | 0,75   | 1    | 1,7                          | 2,2  | 1,8    | 2,4  | 0,035                                                | 0,05  | 0,08  |
| 100                                | 120  | 0,1                                     | 0,135 | 0,135 | 0,17  | 0,17  | 0,22  | 0,05                     | 0,07  | 0,7                          | 1,1  | 0,8    | 1,2  | 1,9                          | 2,7  | 2      | 2,8  | 0,05                                                 | 0,065 | 0,1   |
| 120                                | 140  | 0,12                                    | 0,16  | 0,16  | 0,2   | 0,2   | 0,26  | 0,065                    | 0,09  | 1,1                          | 1,4  | 1,2    | 1,5  | 2,7                          | 3,5  | 2,8    | 3,6  | 0,055                                                | 0,08  | 0,11  |
| 140                                | 160  | 0,13                                    | 0,18  | 0,18  | 0,23  | 0,23  | 0,3   | 0,075                    | 0,1   | 1,2                          | 1,6  | 1,3    | 1,7  | 3                            | 4    | 3,1    | 4,2  | 0,055                                                | 0,09  | 0,13  |
| 160                                | 180  | 0,14                                    | 0,2   | 0,2   | 0,26  | 0,26  | 0,34  | 0,08                     | 0,11  | 1,3                          | 1,7  | 1,4    | 1,9  | 3,2                          | 4,2  | 3,3    | 4,6  | 0,06                                                 | 0,1   | 0,15  |
| 180                                | 200  | 0,16                                    | 0,22  | 0,22  | 0,29  | 0,29  | 0,37  | 0,09                     | 0,13  | 1,4                          | 2    | 1,5    | 2,2  | 3,5                          | 4,5  | 3,6    | 5    | 0,07                                                 | 0,1   | 0,16  |
| 200                                | 225  | 0,18                                    | 0,25  | 0,25  | 0,32  | 0,32  | 0,41  | 0,1                      | 0,14  | 1,6                          | 2,2  | 1,7    | 2,4  | 4                            | 5,5  | 4,2    | 5,7  | 0,08                                                 | 0,12  | 0,18  |
| 225                                | 250  | 0,2                                     | 0,27  | 0,27  | 0,35  | 0,35  | 0,45  | 0,11                     | 0,15  | 1,7                          | 2,4  | 1,8    | 2,6  | 4,2                          | 6    | 4,6    | 6,2  | 0,09                                                 | 0,13  | 0,2   |
| 250                                | 280  | 0,22                                    | 0,3   | 0,3   | 0,39  | 0,39  | 0,49  | 0,12                     | 0,17  | 1,9                          | 2,6  | 2      | 2,9  | 4,7                          | 6,7  | 4,8    | 6,9  | 0,1                                                  | 0,14  | 0,22  |
| 280                                | 315  | 0,24                                    | 0,33  | 0,33  | 0,43  | 0,43  | 0,54  | 0,13                     | 0,19  | 2                            | 3    | 2,2    | 3,2  | 5                            | 7,5  | 5,2    | 7,7  | 0,11                                                 | 0,15  | 0,24  |
| 315                                | 355  | 0,27                                    | 0,36  | 0,36  | 0,47  | 0,47  | 0,59  | 0,15                     | 0,21  | 2,4                          | 3,4  | 2,6    | 3,6  | 6                            | 8,2  | 6,2    | 8,4  | 0,12                                                 | 0,17  | 0,26  |
| 355                                | 400  | 0,3                                     | 0,4   | 0,4   | 0,52  | 0,52  | 0,65  | 0,17                     | 0,23  | 2,6                          | 3,6  | 2,9    | 3,9  | 6,5                          | 9    | 6,8    | 9,2  | 0,13                                                 | 0,19  | 0,29  |
| 400                                | 450  | 0,33                                    | 0,44  | 0,44  | 0,57  | 0,57  | 0,72  | 0,2                      | 0,26  | 3,1                          | 4,1  | 3,4    | 4,4  | 7,7                          | 10   | 8      | 10,4 | 0,13                                                 | 0,2   | 0,31  |
| 450                                | 500  | 0,37                                    | 0,49  | 0,49  | 0,63  | 0,63  | 0,79  | 0,21                     | 0,28  | 3,3                          | 4,4  | 3,6    | 4,8  | 8,2                          | 11   | 8,4    | 11,2 | 0,16                                                 | 0,23  | 0,35  |
| 500                                | 560  | 0,41                                    | 0,54  | 0,54  | 0,68  | 0,68  | 0,87  | 0,24                     | 0,32  | 3,7                          | 5    | 4,1    | 5,4  | 9,2                          | 12,5 | 9,6    | 12,8 | 0,17                                                 | 0,25  | 0,36  |
| 560                                | 630  | 0,46                                    | 0,6   | 0,6   | 0,76  | 0,76  | 0,98  | 0,26                     | 0,35  | 4                            | 5,4  | 4,4    | 5,9  | 10                           | 13,5 | 10,4   | 14   | 0,2                                                  | 0,29  | 0,41  |
| 630                                | 710  | 0,51                                    | 0,67  | 0,67  | 0,85  | 0,85  | 1,09  | 0,3                      | 0,4   | 4,6                          | 6,2  | 5,1    | 6,8  | 11,5                         | 15,5 | 12     | 16   | 0,21                                                 | 0,31  | 0,45  |
| 710                                | 800  | 0,57                                    | 0,75  | 0,75  | 0,96  | 0,96  | 1,22  | 0,34                     | 0,45  | 5,3                          | 7    | 5,8    | 7,6  | 13,3                         | 17,5 | 13,6   | 18   | 0,23                                                 | 0,35  | 0,51  |
| 800                                | 900  | 0,64                                    | 0,84  | 0,84  | 1,07  | 1,07  | 1,37  | 0,37                     | 0,5   | 5,7                          | 7,8  | 6,3    | 8,5  | 14,3                         | 19,5 | 14,8   | 20   | 0,27                                                 | 0,39  | 0,57  |
| 900                                | 1000 | 0,71                                    | 0,93  | 0,93  | 1,19  | 1,19  | 1,52  | 0,41                     | 0,55  | 6,3                          | 8,5  | 7      | 9,4  | 15,8                         | 21   | 16,4   | 22   | 0,3                                                  | 0,43  | 0,64  |
| 1000                               | 1120 | 0,78                                    | 1,02  | 1,02  | 1,3   | 1,3   | 1,65  | 0,45                     | 0,6   | 6,8                          | 9    | 7,6    | 10,2 | 17                           | 23   | 18     | 24   | 0,32                                                 | 0,48  | 0,7   |
| 1120                               | 1250 | 0,86                                    | 1,12  | 1,12  | 1,42  | 1,42  | 1,8   | 0,49                     | 0,65  | 7,4                          | 9,8  | 8,3    | 11   | 18,5                         | 25   | 19,6   | 26   | 0,34                                                 | 0,54  | 0,77  |

Push the rolling bearing onto the conical bearing seat and manually screw the hydraulic nut onto the thread of the shaft or sleeve until there is a form-fit connection between the components. The hydraulic nut will be in its starting position. The hydraulic nut is in the starting position. Connect the hydraulic pump to the hydraulic nut and push the rolling bearing into the corresponding end position by means of hydraulic pressure. After reaching the end point the radial clearance of the bearing should be checked with a feeler gauge in any case. Therefore release the oil pressure at the pump until the ring piston is back in its starting position.

9. SELECTION TABLE FOR HYDRAULIC NUT

9.1. FOR DISMOUNTING / MOUNTING WITH WITHDRAWAL SLEEVE

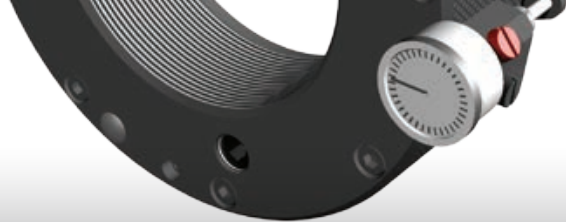
| Size | HMV.. EBF | Thread        | Shaft-Ø | Bore     | WITHDRAWAL SLEEVE |          |         |          |  |  |  |  |  |  |
|------|-----------|---------------|---------|----------|-------------------|----------|---------|----------|--|--|--|--|--|--|
|      |           | Hydraulic Nut |         |          |                   |          |         |          |  |  |  |  |  |  |
|      |           |               | mm      | mm       |                   |          |         |          |  |  |  |  |  |  |
| 10   | M50x1,5   | 40            | 45      | AH2309   | AH309             |          |         |          |  |  |  |  |  |  |
| 11   | M55x2     | 45            | 50      | AHX2310  | AHX310            |          |         |          |  |  |  |  |  |  |
| 12   | M60x2     | 45            | 50      | AH2310   | AH310             |          |         |          |  |  |  |  |  |  |
| 12   | M60x2     | 50            | 55      | AHX2311  | AHX311            |          |         |          |  |  |  |  |  |  |
| 13   | M65x2     | 50            | 55      | AH2311   | AH311             |          |         |          |  |  |  |  |  |  |
| 13   | M65x2     | 55            | 60      | AHX2312  | AHX312            |          |         |          |  |  |  |  |  |  |
| 14   | M70x2     | 55            | 60      | AH2312   | AH312             |          |         |          |  |  |  |  |  |  |
| 14   | M70x2     | 60            | 65      | AHX2313G | AHX313G           |          |         |          |  |  |  |  |  |  |
| 15   | M75x2     | 60            | 65      | AH2313   | AH313             |          |         |          |  |  |  |  |  |  |
| 15   | M75x2     | 65            | 70      | AHX2314G | AHX314G           |          |         |          |  |  |  |  |  |  |
| 16   | M80x2     | 65            | 70      | AHX2314  | AH314             |          |         |          |  |  |  |  |  |  |
| 16   | M80x2     | 70            | 75      | AHX2315G | AHX315G           |          |         |          |  |  |  |  |  |  |
| 17   | M85x2     | 65            | 70      | AH2314   |                   |          |         |          |  |  |  |  |  |  |
| 17   | M85x2     | 70            | 75      | AHX2315  | AH315             |          |         |          |  |  |  |  |  |  |
| 18   | M90x2     | 70            | 75      | AH2315   |                   |          |         |          |  |  |  |  |  |  |
| 18   | M90x2     | 75            | 80      | AHX2316  | AH316             |          |         |          |  |  |  |  |  |  |
| 19   | M95x2     | 75            | 80      | AH2316   |                   |          |         |          |  |  |  |  |  |  |
| 19   | M95x2     | 80            | 85      | AHX2317  | AHX317            |          |         |          |  |  |  |  |  |  |
| 20   | M100x2    | 80            | 85      | AH2317   | AH317             |          |         |          |  |  |  |  |  |  |
| 20   | M100x2    | 85            | 90      | AHX2318  | AHX318            | AHX3218  |         |          |  |  |  |  |  |  |
| 21   | M105x2    | 85            | 90      | AH2318   | AH318             |          |         |          |  |  |  |  |  |  |
| 21   | M105x2    | 90            | 95      | AHX2319  | AHX319            |          |         |          |  |  |  |  |  |  |
| 22   | M110x2    | 90            | 95      | AH2319   | AH319             |          |         |          |  |  |  |  |  |  |
| 22   | M110x2    | 95            | 100     | AHX2320  | AHX320            | AHX3120  | AHX3220 |          |  |  |  |  |  |  |
| 23   | M115x2    | 95            | 100     | AH320    |                   |          |         |          |  |  |  |  |  |  |
| 23   | M115x2    | 105           | 110     | AH24122  |                   |          |         |          |  |  |  |  |  |  |
| 24   | M120x2    | 95            | 100     | AH2320   |                   |          |         |          |  |  |  |  |  |  |
| 24   | M120x2    | 105           | 110     | AHX2322G | AHX3122           | AHX3222G |         |          |  |  |  |  |  |  |
| 25   | M125x2    | 100           | 110     | AH3122   |                   |          |         |          |  |  |  |  |  |  |
| 25   | M125x2    | 105           | 110     | AHX2322  | AHX3222           |          |         |          |  |  |  |  |  |  |
| 25   | M125x2    | 115           | 120     | AH24024  |                   |          |         |          |  |  |  |  |  |  |
| 26   | M130x2    | 100           | 110     | AH2322   | AH322             |          |         |          |  |  |  |  |  |  |
| 26   | M130x2    | 110           | 120     | AH3024   |                   |          |         |          |  |  |  |  |  |  |
| 26   | M130x2    | 115           | 120     | AHX2324G | AH24124           | AHX3024  | AHX3124 | AHX3224G |  |  |  |  |  |  |
| 27   | M135x2    | 115           | 120     | AHX2324  | AHX3224           |          |         |          |  |  |  |  |  |  |
| 27   | M135x2    | 125           | 130     | AH24026  |                   |          |         |          |  |  |  |  |  |  |
| 28   | M140x2    | 110           | 120     | AH2324   | AH3124            |          |         |          |  |  |  |  |  |  |
| 28   | M140x2    | 120           | 130     | AH3026   |                   |          |         |          |  |  |  |  |  |  |
| 28   | M140x2    | 125           | 130     | AHX2326G | AH24126           | AHX3026  | AHX3126 | AHX3226G |  |  |  |  |  |  |
| 29   | M145x2    | 125           | 130     | AHX2326  | AHX3226           |          |         |          |  |  |  |  |  |  |
| 29   | M145x2    | 135           | 140     | AH24028  |                   |          |         |          |  |  |  |  |  |  |
| 30   | M150x2    | 120           | 130     | AH2326   | AH3126            |          |         |          |  |  |  |  |  |  |
| 30   | M150x2    | 130           | 140     | AH3028   |                   |          |         |          |  |  |  |  |  |  |

| Size | HMV.. EBF<br>Thread<br>Hydraulic Nut | mm<br>Shaft-Ø | mm<br>Bore | WITHDRAWAL SLEEVE |          |           |          |           |          |         |          |         |          |  |  |
|------|--------------------------------------|---------------|------------|-------------------|----------|-----------|----------|-----------|----------|---------|----------|---------|----------|--|--|
|      |                                      |               |            |                   |          |           |          |           |          |         |          |         |          |  |  |
| 30   | M150x2                               | 135           | 140        | AHX2328G          | AH24128  | AHX3028   | AHX3128  | AHX3228G  |          |         |          |         |          |  |  |
| 31   | M155x3                               | 135           | 140        | AHX2328           | AHX3228  |           |          |           |          |         |          |         |          |  |  |
| 31   | M155x3                               | 145           | 150        | AH24030           |          |           |          |           |          |         |          |         |          |  |  |
| 32   | M160x3                               | 130           | 140        | AH2328            | AH3128   |           |          |           |          |         |          |         |          |  |  |
| 32   | M160x3                               | 140           | 150        | AH3030            |          |           |          |           |          |         |          |         |          |  |  |
| 32   | M160x3                               | 145           | 150        | AHX2330G          | AH24130  | AHX3030   | AHX3130G | AHX3230G  |          |         |          |         |          |  |  |
| 33   | M165x3                               | 145           | 150        | AHX2330           | AHX3130  | AHX3230   |          |           |          |         |          |         |          |  |  |
| 34   | M170x3                               | 140           | 150        | AH2330            | AH3130   |           |          |           |          |         |          |         |          |  |  |
| 34   | M170x3                               | 150           | 160        | AH2332G           | AH24032  | AH24132   | AH3032   | AH3132G   | AH3232G  |         |          |         |          |  |  |
| 36   | M180x3                               | 150           | 160        | AH2332            | AH3132   | AH3232    |          |           |          |         |          |         |          |  |  |
| 36   | M180x3                               | 160           | 170        | AH2334G           | AH24034  | AH24134   | AH3034   | AH3134G   | AH3234G  |         |          |         |          |  |  |
| 38   | M190x3                               | 160           | 170        | AH2334            | AH3134   | AH3234    |          |           |          |         |          |         |          |  |  |
| 38   | M190x3                               | 170           | 180        | AH2336G           | AH2336G  | AHX2336G  | AH24036  | AH24136   | AH3036   | AH3136G | AH3236G  |         |          |  |  |
| 40   | M200x3                               | 170           | 180        | AH2236            | AH2336   | AH3136    | AH3236   |           |          |         |          |         |          |  |  |
| 40   | M200x3                               | 180           | 190        | AH2338G           | AH2338G  | AH24038   | AH24138  | AH3038G   | AH3138G  | AH3238G |          |         |          |  |  |
| 41   | Tr205x4                              | 180           | 190        | AH3038            |          |           |          |           |          |         |          |         |          |  |  |
| 42   | Tr210x4                              | 180           | 190        | AH2238            | AH2338   | AH3138    | AH3238   |           |          |         |          |         |          |  |  |
| 42   | Tr210x4                              | 190           | 200        | AH24040           | AH24140  | AH3040G   |          |           |          |         |          |         |          |  |  |
| 43   | Tr215x4                              | 190           | 200        | AH3040            |          |           |          |           |          |         |          |         |          |  |  |
| 44   | Tr220x4                              | 190           | 200        | AH2240            | AH2340   | AH3140    | AH3240   |           |          |         |          |         |          |  |  |
| 46   | Tr230x4                              | 200           | 220        | AOH24044          | AOH24144 | AH3044G   | AOH3044G |           |          |         |          |         |          |  |  |
| 47   | Tr235x4                              | 200           | 220        | AH3044            | AOH3044  |           |          |           |          |         |          |         |          |  |  |
| 48   | Tr240x4                              | 200           | 220        | AH2244            | AOH2244  | AH2344    | AOH2344  | AH3144    | AOH3144  |         |          |         |          |  |  |
| 50   | Tr250x4                              | 220           | 240        | AOH24048          |          |           |          |           |          |         |          |         |          |  |  |
| 52   | Tr260x4                              | 220           | 240        | AH2248            | AOH2248  | AH2348    | AOH2348  | AOH24148  | AH3048   | AOH3048 | AH3148   | AOH3148 |          |  |  |
| 54   | Tr270x4                              | 240           | 260        | AOH24052          |          |           |          |           |          |         |          |         |          |  |  |
| 56   | Tr280x4                              | 240           | 260        | AH2252G           | AOH2252G | AH2352G   | AOH2352G | AOH24052G | AOH24152 | AH3052  | AOH3052  | AH3152G | AOH3152G |  |  |
| 58   | Tr290x4                              | 240           | 260        | AH2252            | AOH2252  | AH2352    | AOH2352  | AH3152    | AOH3152  |         |          |         |          |  |  |
| 58   | Tr290x4                              | 260           | 280        | AOH24056          |          |           |          |           |          |         |          |         |          |  |  |
| 60   | Tr300x4                              | 260           | 280        | AH2256G           | AOH2256G | AH2356G   | AOH2356G | AOH24056G | AOH24156 | AH3056  | AOH3056  | AH3156G | AOH3156G |  |  |
| 62   | Tr310x5                              | 260           | 280        | AH2256            | AOH2256  | AH2356    | AOH2356  | AH3156    | AOH3156  |         |          |         |          |  |  |
| 62   | Tr310x5                              | 280           | 300        | AOH24060          |          |           |          |           |          |         |          |         |          |  |  |
| 64   | Tr320x5                              | 280           | 300        | AH2260G           | AOH2260G | AOH24060G | AOH24160 | AH3060    | AOH3060  | AH3160G | AOH3160G | AH3260G | AOH3260G |  |  |
| 66   | Tr330x5                              | 280           | 300        | AH2260            | AOH2260  | AH3160    | AOH3160  | AH3260    | AOH3260  |         |          |         |          |  |  |
| 66   | Tr330x5                              | 300           | 320        | AOH24064          |          |           |          |           |          |         |          |         |          |  |  |
| 68   | Tr340x5                              | 300           | 320        | AH2264G           | AOH2264G | AOH24064G | AOH24164 | AH3064G   | AOH3064G | AH3164G | AOH3164G | AH3264G | AOH3264G |  |  |
| 69   | Tr345x5                              | 300           | 320        | AH3064            | AOH3064  |           |          |           |          |         |          |         |          |  |  |
| 70   | Tr350x5                              | 300           | 320        | AH2264            | AOH2264  | AH3164    | AOH3164  | AH3264    | AOH3264  |         |          |         |          |  |  |
| 72   | Tr360x5                              | 320           | 340        | AOH24068          | AOH24168 | AH3068G   | AOH3068G | AH3168G   | AOH3168G | AH3268G | AOH3268G |         |          |  |  |
| 73   | Tr365x5                              | 320           | 340        | AH3068            | AOH3068  |           |          |           |          |         |          |         |          |  |  |
| 74   | Tr370x5                              | 320           | 340        | AH3168            | AOH3168  | AH3268    | AOH3268  |           |          |         |          |         |          |  |  |
| 76   | Tr380x5                              | 340           | 360        | AOH24072          | AOH24172 | AH3072G   | AOH3072G | AH3172G   | AOH3172G | AH3272G | AOH3272G |         |          |  |  |
| 77   | Tr385x5                              | 340           | 360        | AH3072            | AOH3072  |           |          |           |          |         |          |         |          |  |  |

9.2. FOR DISMOUNTING / MOUNTING WITH ADAPTER SLEEVE

| Size | HMV.. EBF<br>Thread<br>Hydraulic Nut | Saff-Ø<br>mm | Bore<br>mm | ADAPTER SLEEVE |        |         |         |         |         |         |         |          |          |         |  |
|------|--------------------------------------|--------------|------------|----------------|--------|---------|---------|---------|---------|---------|---------|----------|----------|---------|--|
|      |                                      |              |            | [H200]         | [H300] | [H2300] | [H3900] | [H3000] | [H3100] | [H3200] | [H39]   | [H30]    | [H31]    | [H32]   |  |
| 10   | M50x1,5                              | 45           | 50         | H210           | H310   | H2310   |         |         |         |         |         |          |          |         |  |
| 11   | M55x2                                | 50           | 55         | H211           | H311   | H2311   |         |         |         |         |         |          |          |         |  |
| 12   | M60x2                                | 55           | 60         | H212           | H312   | H2312   |         |         |         |         |         |          |          |         |  |
| 13   | M65x2                                | 60           | 65         | H213           | H313   | H2313   |         |         |         |         |         |          |          |         |  |
| 14   | M70x2                                | 60           | 70         | H214           | H314   | H2314   |         |         |         |         |         |          |          |         |  |
| 15   | M75x2                                | 65           | 75         | H215           | H315   | H2315   |         |         |         |         |         |          |          |         |  |
| 16   | M80x2                                | 70           | 80         | H216           | H316   | H2316   |         |         |         |         |         |          |          |         |  |
| 18   | M90x2                                | 80           | 90         | H218           | H318   | H2318   |         |         |         |         |         |          |          |         |  |
| 19   | M95x2                                | 85           | 95         | H219           | H319   | H2319   |         |         |         |         |         |          |          |         |  |
| 20   | M100x2                               | 90           | 100        | H220           | H320   | H2320   |         |         | H3120   |         |         |          |          |         |  |
| 21   | M105x2                               | 95           | 105        | H221           | H321   | H2321   |         |         |         |         |         |          |          |         |  |
| 22   | M110x2                               | 100          | 110        | H222           | H322   | H2322   |         |         | H3122   |         |         |          |          |         |  |
| 24   | M120x2                               | 110          | 120        |                |        | H2324   |         | H3024   | H3124   |         |         |          |          |         |  |
| 26   | M130x2                               | 115          | 130        |                |        | H2326   |         | H3026   | H3126   |         |         |          |          |         |  |
| 28   | M140x2                               | 125          | 140        |                |        | H2328   |         | H3028   | H3128   |         |         |          |          |         |  |
| 30   | M150x2                               | 135          | 150        |                |        | H2330   |         | H3030   | H3130   |         |         |          |          |         |  |
| 32   | M160x3                               | 140          | 160        |                |        | H2332   |         | H3032   | H3132   |         |         |          |          |         |  |
| 36   | M180x3                               | 150          | 170        |                |        | H2334   |         | H3034   | H3134   |         |         |          |          |         |  |
| 36   | M180x3                               | 160          | 180        |                |        | H2336   | H3936   | H3036   | H3136   |         |         |          |          |         |  |
| 38   | M190x3                               | 170          | 190        |                |        | H2338   | H3938   | H3038   | H3138   |         |         |          |          |         |  |
| 48   | Tr240x4                              | 220          | 240        |                |        | H2348   | H3948   | H3048   | H3148   |         |         |          |          |         |  |
| 56   | Tr280x4                              | 260          | 280        |                |        | H2356   | H3956   | H3056   | H3156   |         |         |          |          |         |  |
| 60   | Tr300x4                              | 280          | 300        |                |        |         | H3960   | H3060   | H3160   | H3260   |         |          |          |         |  |
| 64   | Tr320x5                              | 300          | 320        |                |        |         | H3964   | H3064   | H3164   | H3264   |         |          |          |         |  |
| 72   | Tr360x5                              | 340          | 360        |                |        |         | H3972   | H3072   | H3172   | H3272   |         |          |          |         |  |
| 76   | Tr380x5                              | 360          | 380        |                |        |         | H3976   | H3076   | H3176   | H3276   |         |          |          |         |  |
| 80   | Tr400x5                              | 380          | 400        |                |        |         | H3980   | H3080   | H3180   | H3280   |         |          |          |         |  |
| 84   | Tr420x5                              | 400          | 420        |                |        |         | H3984   | H3084   | H3184   | H3284   |         |          |          |         |  |
| 88   | Tr440x5                              | 410          | 440        |                |        |         | H3988   | H3088   | H3188   | H3288   |         |          |          |         |  |
| 92   | Tr460x5                              | 430          | 460        |                |        |         | H3992   | H3092   | H3192   | H3292   |         |          |          |         |  |
| 96   | Tr480x5                              | 450          | 480        |                |        |         | H3996   | H3096   | H3196   | H3296   |         |          |          |         |  |
| 100  | Tr500x5                              | 470          | 500        |                |        |         |         |         |         |         | H39/500 | H30/500  | H31/500  | H32/500 |  |
| 106  | Tr530x6                              | 500          | 530        |                |        |         |         |         |         |         | H39/530 | H30/530  | H31/530  | H32/530 |  |
| 112  | Tr560x6                              | 530          | 560        |                |        |         |         |         |         |         | H39/560 | H30/560  | H31/560  | H32/560 |  |
| 120  | Tr600x6                              | 560          | 600        |                |        |         |         |         |         |         | H39/600 | H30/600  | H31/600  | H32/600 |  |
| 126  | Tr630x6                              | 600          | 630        |                |        |         |         |         |         |         | H39/630 | H30/630  | H31/630  | H32/630 |  |
| 134  | Tr670x6                              | 630          | 670        |                |        |         |         |         |         |         | H39/670 | H30/670  | H31/670  | H32/670 |  |
| 150  | Tr750x7                              | 710          | 750        |                |        |         |         |         |         |         | H39/750 | H30/750  | H31/750  | H32/750 |  |
| 160  | Tr800x7                              | 750          | 800        |                |        |         |         |         |         |         | H39/800 | H30/800  | H31/800  | H32/800 |  |
| 170  | Tr850x7                              | 800          | 850        |                |        |         |         |         |         |         |         | H30/850  | H31/850  |         |  |
| 180  | Tr900x7                              | 850          | 900        |                |        |         |         |         |         |         |         | H30/900  | H31/900  |         |  |
| 190  | Tr950x8                              | 900          | 950        |                |        |         |         |         |         |         |         | H30/950  | H31/950  |         |  |
| 200  | Tr1000x8                             | 950          | 1000       |                |        |         |         |         |         |         |         | H30/1000 | H31/1000 |         |  |

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



# HYDRAULIC NUT

## HMV..EBF



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