

FAG



Hydraulic Nut HYDNUT

SCHAEFFLER

Foreword

Application

FAG Hydraulic nuts HYDNUT are used to press parts with a tapered bore onto a tapered seat. They are mainly used if the drive-up forces required cannot be applied using other accessories, e.g. shaft nuts or pressure screws.

Hydraulic nuts are used mainly for the assembly of rolling bearings with a tapered bore. The rolling bearings can be seated directly on a tapered shaft, on an adapter sleeve or on a withdrawal sleeve. If the bearing is fitted using a withdrawal sleeve or an adapter sleeve, the hydraulic nut can also be used for removal.

A hydraulic nut is also suitable for the assembly and loosening of press-fit parts such as ship propellers, rudder blades, shaft couplings and toothed gears.

New features

The existing product range has been revised. It is now very easy to measure the displacement, as the annular piston features a bore for a dial gauge and the piston now has an attachment on which the measurement sensor can be placed. The maximum stroke is visually displayed by a red O-ring.

The markings indicate the maximum pressure and the available thread. The serial number on the annular piston and press ring enables clear identification of parts after disassembly, for example. The piston is easier to remove, such as when replacing seals. This is due to a change in the shape of the piston. Each hydraulic nut is also equipped with disassembly screws.

Overview of the most important changes:

- bore for dial gauge
- red O-ring
- marking
- piston easier to dismantle.

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Product overview Hydraulic nuts HYDNUT

Hydraulic nuts

With metric or
trapezoidal thread
With inch thread

HYDNUT...-E



HYDNUT...-INCH



Reinforced

HYDNUT...-HEAVY



Accessories

Replacement seals and
red O-ring

SEAL

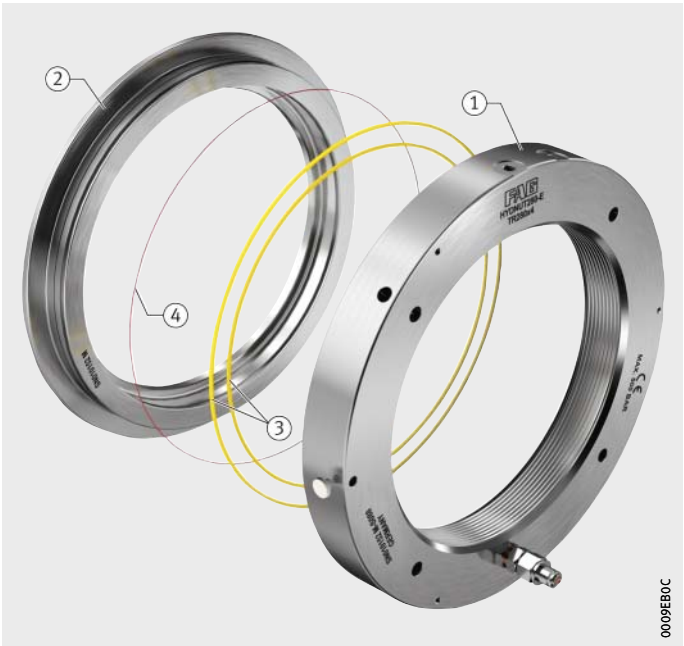


Hydraulic nuts HYDNUT

Features Hydraulic nuts HYDNUT consist of a steel annular piston within which a steel press ring can move, *Figure 1* and table. The press ring has two grooves for sealing rings and a flat groove for the red O-ring. There is a gap filled with hydraulic oil between the annular piston and the press ring. This is sealed with two seals.

- ① Annular piston
- ② Press ring
- ③ Sealing ring, PVC
- ④ Red O-ring

Figure 1
Hydraulic nut



The inner mantle surface of the press ring is available with a metric fine thread, a trapezoidal thread or an inch size thread. Reinforced hydraulic nuts without a thread can also be supplied, see table.

Available hydraulic nuts

Designation	Design	Application
HYDNUT50-E to HYDNUT200-E	With metric fine pitch thread in line with DIN 13	Standardised adapter and withdrawal sleeves
HYDNUT205-E to HYDNUT1180-E	With trapezoidal thread in line with DIN 103	With metric dimensions
HYDNUT90-E-INCH to HYDNUT530-E-INCH	With inch size thread in line with ABMA “Standards for Mounting Accessories, Section 8, Locknut Series N-00”	Sleeves with inch dimensions
HYDNUT100-HEAVY to HYDNUT900-HEAVY	Reinforced design without thread	For high mounting forces, for example in shipbuilding

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Special designs	Custom solutions can be produced on request, such as hydraulic nuts with a different thread diameter or a larger piston surface.
Pressure	The maximum permitted pressure is between 300 bar and 700 bar, and depends on the size of the hydraulic nut. The maximum permitted pressure is specified on the annular piston, see dimension tables.
Stroke	The stroke is designed such that the rolling bearings or other components with a tapered bore can be fitted in a single operation.
Marking	The annular piston and press ring are marked with a laser or pin marking system, <i>Figure 2</i>, page 7. To ensure unique identification, both components have the same serial number. The following information is also displayed on the annular piston: ■ type ■ thread ■ maximum pressure. Before assembly, the type and the thread details can be used to check that the correct hydraulic nut has been selected. The maximum pressure is specified directly on the annular piston, and the user can refer to this at any time to check at which maximum pressure the pressure generator can operate.

- ① Serial number
- ② Type
- ③ Thread
- ④ Maximum pressure

Figure 2
Marking



Hydraulic nuts HYDNUT

Hydraulic nuts with thread

The inner mantle surface of the press ring is available with a metric fine thread, a trapezoidal thread or an inch size thread, *Figure 3*. A threaded bore for connection of the pressure generator is provided on the end face G¹/₄". A threaded bore is also provided on the outer surface G¹/₄". This enables the hydraulic nut to be vented after commissioning.

- ① Thread on inside surface
- ② Threaded hole G¹/₄"
- ③ Handling hole

Figure 3
Fastening and connection



Handling holes are always available in pairs, one in the end face and the other on the outside surface. The hand lever included in the delivery is inserted into a bore to turn the hydraulic nut. The number and position depend on the size of the hydraulic nut used, see table.

Handling holes

Designation		Pairs of holes	
		Number	Diameter mm
From	Up to		
HYDNUT50-E	HYDNUT190-E	2	10
HYDNUT90-E-INCH	HYDNUT190-E-INCH	2	10
HYDNUT200-E	HYDNUT395-E	4	12
HYDNUT200-E-INCH	HYDNUT380-E-INCH	4	12
HYDNUT400-E	HYDNUT1180-E	6	16
HYDNUT400-E-INCH	HYDNUT530-E-INCH	6	16

Hydraulic nuts without thread

The reinforced versions (-HEAVY) do not have a thread on the inside surface of the annular piston and are pushed into place until the press ring is resting against the end face of the inner ring. There are two threaded holes G1/4" in the outside surface, *Figure 4*. There are no handling holes.

① Threaded hole G1/4"

Figure 4
Hydraulic nuts without thread



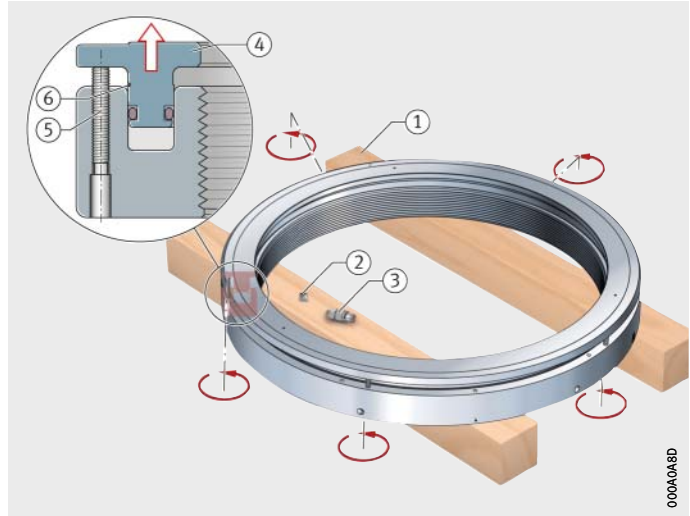
Hydraulic nuts HYDNUT

Dismantling the press ring

The press ring can be easily dismantled when you need to replace the seals, for example. To remove the press ring, screw in the grub screws in turn by one rotation each, until the red O-ring is visible, *Figure 5*.

- ① Support surface
- ② Screw plug
- ③ Valve nipple
- ④ Press ring
- ⑤ Grub screw
- ⑥ Red O-ring

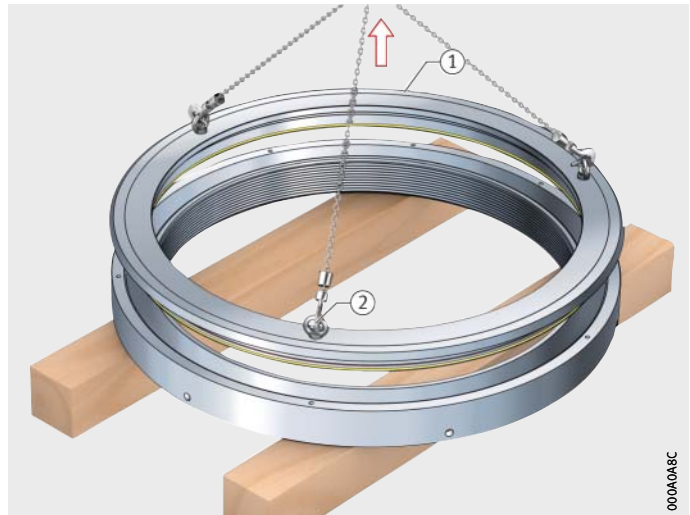
Figure 5
Push out the press ring



From HYDNUT400, eye bolts can be screwed into the press ring and a crane can be used to lift and transport the dismantled annular piston, *Figure 6*.

- ① Press ring
- ② Eye bolt

Figure 6
Removing the press ring



Design and safety guidelines

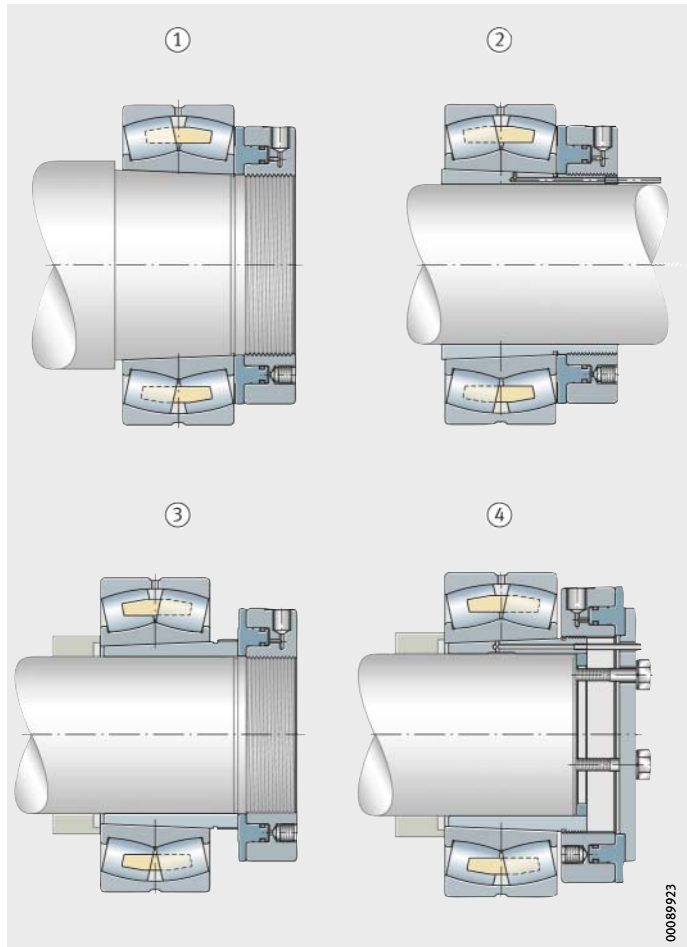
In the simplest case, the rolling bearing is slid onto the tapered shaft in a dry state. When assembling and disassembling with an adapter sleeve, a hydraulic process can be used. In this procedure, an additional pressure generator is used to squeeze hydraulic oil between the contact surfaces of the sleeve and the inner bearing ring as well as between the sleeve and the shaft to reduce the required forces. Refer to the Mounting Handbook MH 1.

Fitting

When fitting rolling bearings, the end face of the press ring is pushed onto the end face of the inner bearing ring, the withdrawal sleeve or the mounting plate, *Figure 7*.

- ① Mounting on shaft
- ② Mounting on adapter sleeve, hydraulic process
- ③ Mounting on withdrawal sleeve
- ④ Mounting on withdrawal sleeve, hydraulic process

Figure 7
Fitting



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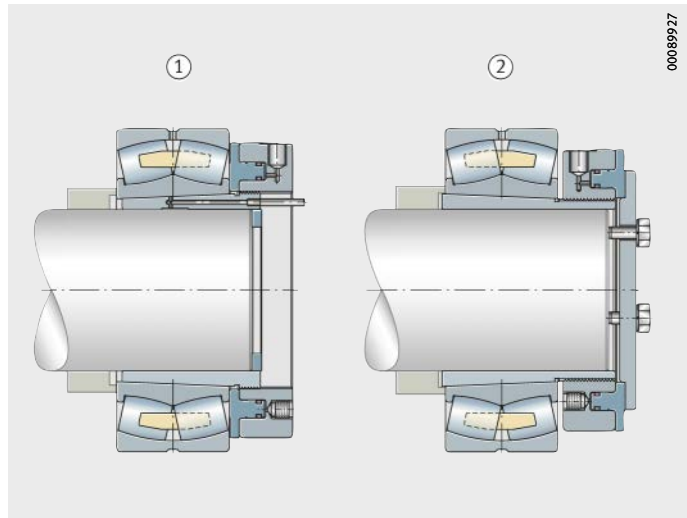
Removal

If the rolling bearing is fitted on an adapter sleeve or withdrawal sleeve, the bearing can be removed with the help of the hydraulic nuts, *Figure 8*.

If the rolling bearing is fitted directly on the shaft, the hydraulic nut cannot be used for removal. The hydraulic nut can, however, remain on the shaft during removal and can catch the bearing if it suddenly becomes loose during the removal process.

- ① Removal with withdrawal sleeve
- ② Removal with adapter sleeve

Figure 8
Removal

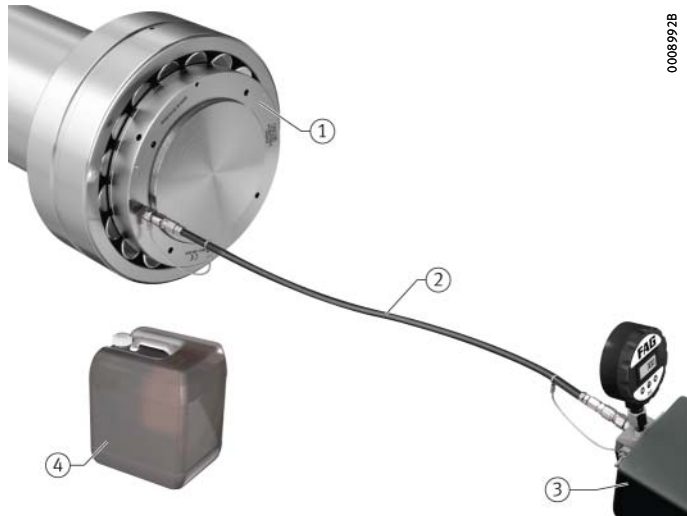


Additional components

In addition to the hydraulic nuts, a hydraulic line and a pressure generator filled with hydraulic oil are required for operation, *Figure 9*.

- ① Hydraulic nut
- ② Hydraulic line
- ③ Pressure generation device
- ④ Hydraulic oil

Figure 9
Equipment



Fitting method

Bearings with a tapered bore are fitted either directly on the tapered shaft or journal or by means of an adapter sleeve or withdrawal sleeve on the cylindrical shaft. The internal clearance is set either by measurement of the axial displacement using a dial gauge, or by conventional means using feeler gauges.

Mounting Manager Software

The Mounting Manager program provides assistance with selecting the correct mounting of bearings and offers the following options:

- It shows various mechanical and hydraulic mounting methods.
- It calculates the data required for mounting in relation to reduction in radial internal clearance, drive-up distance and start pressure.
- It gives advice on mounting.
- It generates a list of the accessories and tools required.

Additional information

The Mounting Manager program is available online at <http://mountingmanager.schaeffler.com/startApp.do>.

Measurement of the axial drive-up distance

The Mounting Manager is used to determine the pressure for reaching the start position. The bearing is placed in its start position on the tapered bearing seat using a hydraulic nut. The start pressure, which is defined for each bearing, is checked using a digital manometer on the pressure generation device. A dial gauge is fitted and the pressure is increased until the dial gauge displays the required displacement, *Figure 10*.



Figure 10
Measuring
the axial drive-up distance

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Advantages	The advantages of measuring based on the displacement are the simplified installation, increased safety and accuracy, and the added ability to install sealed rolling bearings correctly.
Simplified installation	To measure the bearing clearance using feeler gauges, sufficient space must be available for the feeler gauge and the operator's hand. When using a dial gauge, even the most restricted spaces are no longer a problem.
Safety and accuracy	Measuring the bearing clearance correctly using feeler gauges requires a great deal of experience. Measuring the displacement with a dial gauge almost completely eradicates the risk of incorrect measurements.
Sealed bearings	The seal prevents the use of feeler gauges for measurement of the radial clearance. In some types of rolling bearings, the seal can be removed to measure the radial clearance. However, this can cause contamination of the grease and damage to the seal, both of which reduce the service life of the bearing considerably.
Measurement of radial internal clearance	The existing radial clearance is measured before fitting, <i>Figure 11</i> . Measurement is carried out using a feeler gauge.



Figure 11
Measuring
the radial internal clearance

Reduction in radial internal clearance

When the bearing is pushed onto the tapered seat, the inner ring is expanded and the radial internal clearance is thereby reduced. This reduction in radial internal clearance can be used as a measure of the tight fit of the bearing, *Figure 12* and tables from page 16. It is measured by means of a feeler gauge.



Figure 12
Measuring
reduced radial clearance

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Reduction
in radial internal clearance
of FAG cylindrical rolling bearings
with tapered bore

Nominal bearing bore diameter d mm		Radial internal clearance before mounting Internal clearance group					
		Group N mm		Group 3 mm		Group 4 mm	
over	up to	min.	max.	min.	max.	min.	max.
24	30	0,035	0,06	0,045	0,07	0,055	0,08
30	40	0,04	0,065	0,055	0,08	0,07	0,095
40	50	0,045	0,075	0,06	0,09	0,075	0,105
50	65	0,05	0,08	0,07	0,1	0,09	0,12
65	80	0,06	0,095	0,085	0,12	0,11	0,145
80	100	0,07	0,105	0,095	0,13	0,12	0,155
100	120	0,09	0,13	0,115	0,155	0,14	0,18
120	140	0,1	0,145	0,13	0,175	0,16	0,205
140	160	0,11	0,16	0,145	0,195	0,18	0,23
160	180	0,125	0,175	0,16	0,21	0,195	0,245
180	200	0,14	0,195	0,18	0,235	0,22	0,275
200	225	0,155	0,215	0,2	0,26	0,245	0,305
225	250	0,17	0,235	0,22	0,285	0,27	0,335
250	280	0,185	0,255	0,24	0,31	0,295	0,365
280	315	0,205	0,28	0,265	0,34	0,325	0,4
315	355	0,225	0,305	0,29	0,37	0,355	0,435
355	400	0,255	0,345	0,33	0,42	0,405	0,495
400	450	0,285	0,385	0,37	0,47	0,455	0,555
450	500	0,315	0,425	0,41	0,52	0,505	0,615
500	560	0,35	0,47	0,455	0,575	0,56	0,68
560	630	0,38	0,5	0,5	0,62	0,62	0,74
630	710	0,435	0,575	0,565	0,705	0,695	0,835
710	800	0,485	0,645	0,63	0,79	0,775	0,935
800	900	0,54	0,71	0,7	0,87	0,86	1,03
900	1000	0,6	0,79	0,78	0,97	0,96	1,15
1000	1120	0,665	0,875	0,865	1,075	1,065	1,275
1120	1250	0,73	0,97	0,96	1,2	1,2	1,44
1250	1400	0,81	1,07	1,07	1,33	1,33	1,59

1) Applies only to solid steel shafts and hollow shafts with a bore no larger than half the shaft diameter.

Note: Bearings with a radial internal clearance before fitting in the upper half of the tolerance range are fitted using the larger value for the reduction in radial internal clearance or the axial displacement distance, while bearings in the lower half of the tolerance range are fitted using the smaller value for the reduction in radial internal clearance or the axial displacement distance.

2) The actual value of the radial internal clearance must not be smaller than the control value. In the case of bearings with a small diameter, this may be difficult to determine.

Reduction in radial internal clearance ¹⁾		Drive-up distance on taper 1:12 ¹⁾				Control value for radial internal clearance after fitting ²⁾		
		Shaft		Sleeve		Group N	Group 3	Group 4
		mm		mm		mm	mm	mm
min.	max.	min.	max.	min.	max.	min.	min.	min.
0,015	0,02	0,3	0,35	0,3	0,4	0,02	0,025	0,035
0,02	0,025	0,35	0,4	0,35	0,45	0,02	0,025	0,04
0,025	0,03	0,4	0,45	0,45	0,5	0,02	0,03	0,045
0,03	0,035	0,45	0,55	0,5	0,65	0,02	0,035	0,05
0,035	0,04	0,55	0,6	0,65	0,7	0,025	0,04	0,07
0,04	0,045	0,6	0,7	0,65	0,8	0,03	0,05	0,075
0,045	0,055	0,7	0,85	0,8	0,95	0,045	0,065	0,085
0,055	0,065	0,85	1	0,95	1,1	0,045	0,07	0,095
0,06	0,075	0,9	1,2	1,1	1,3	0,05	0,075	0,105
0,065	0,085	1	1,3	1,3	1,5	0,06	0,08	0,11
0,075	0,095	1,2	1,5	1,4	1,7	0,065	0,09	0,125
0,085	0,105	1,3	1,6	1,6	1,8	0,07	0,1	0,14
0,095	0,115	1,5	1,8	1,7	2	0,075	0,105	0,155
0,105	0,125	1,6	2	1,9	2,3	0,08	0,125	0,17
0,115	0,14	1,8	2,2	2,2	2,4	0,09	0,13	0,185
0,13	0,16	2	2,5	2,5	2,7	0,095	0,14	0,195
0,14	0,17	2,2	2,6	2,6	2,9	0,115	0,165	0,235
0,15	0,185	2,3	2,8	2,8	3,1	0,135	0,19	0,27
0,16	0,195	2,5	3	3,1	3,4	0,155	0,215	0,31
0,17	0,215	2,7	3,4	3,5	3,8	0,18	0,24	0,345
0,185	0,24	2,9	3,7	3,6	4,2	0,195	0,26	0,38
0,2	0,26	3,1	4,1	3,9	4,7	0,235	0,305	0,435
0,22	0,28	3,4	4,4	4,3	5,3	0,26	0,35	0,495
0,24	0,31	3,7	4,8	4,8	5,5	0,3	0,39	0,55
0,26	0,34	4,1	5,3	5,2	6,2	0,34	0,44	0,62
0,28	0,37	4,4	5,8	5,7	7	0,385	0,5	0,7
0,31	0,41	4,8	6,4	6,3	7,6	0,42	0,55	0,79
0,34	0,45	5,3	7	0,3	8,3	0,47	0,62	0,85

Hydraulic nuts HYDNUT

**Reduction
in radial internal clearance
of FAG spherical rolling bearings
with tapered bore**

Nominal bearing bore diameter d mm		Radial internal clearance before mounting Internal clearance group					
		Group N mm		Group 3 mm		Group 4 mm	
over	up to	min.	max.	min.	max.	min.	max.
24	30	0,03	0,04	0,04	0,055	0,055	0,075
30	40	0,035	0,05	0,05	0,065	0,065	0,085
40	50	0,045	0,06	0,06	0,08	0,08	0,1
50	65	0,055	0,075	0,075	0,095	0,095	0,12
65	80	0,07	0,095	0,095	0,12	0,12	0,15
80	100	0,08	0,11	0,11	0,14	0,14	0,18
100	120	0,1	0,135	0,135	0,17	0,17	0,22
120	140	0,12	0,16	0,16	0,2	0,2	0,26
140	160	0,13	0,18	0,18	0,23	0,23	0,3
160	180	0,14	0,2	0,2	0,26	0,26	0,34
180	200	0,16	0,22	0,22	0,29	0,29	0,37
200	225	0,18	0,25	0,25	0,32	0,32	0,41
225	250	0,2	0,27	0,27	0,35	0,35	0,45
250	280	0,22	0,3	0,3	0,39	0,39	0,49
280	315	0,24	0,33	0,33	0,43	0,43	0,54
315	355	0,27	0,36	0,36	0,47	0,47	0,59
355	400	0,3	0,4	0,4	0,52	0,52	0,65
400	450	0,33	0,44	0,44	0,57	0,57	0,72
450	500	0,37	0,49	0,49	0,63	0,63	0,79
500	560	0,41	0,54	0,54	0,68	0,68	0,87
560	630	0,46	0,6	0,6	0,76	0,76	0,98
630	710	0,51	0,67	0,67	0,85	0,85	1,09
710	800	0,57	0,75	0,75	0,96	0,96	1,22
800	900	0,64	0,84	0,84	1,07	1,07	1,37
900	1000	0,71	0,93	0,93	1,19	1,19	1,52
1000	1120	0,78	1,02	1,02	1,3	1,3	1,65
1120	1250	0,86	1,12	1,12	1,42	1,42	1,8
1250	1400	0,94	1,22	1,22	1,55	1,55	1,96

¹⁾ Applies only to solid steel shafts and hollow shafts with a bore no larger than half the shaft diameter.

Note: Bearings with a radial internal clearance before fitting in the upper half of the tolerance range are fitted using the larger value for the reduction in radial internal clearance or the axial displacement distance, while bearings in the lower half of the tolerance range are fitted using the smaller value for the reduction in radial internal clearance or the axial displacement distance.

²⁾ The actual value of the radial internal clearance must not be smaller than the control value. In the case of bearings with a small diameter, this may be difficult to determine.

Reduction in radial internal clearance ¹⁾ mm		Drive-up distance on								Control value for radial internal clearance after fitting ²⁾		
		Tapered 1:12 ¹⁾				Tapered 1:30 ¹⁾						
		Shaft mm		Sleeve mm		Shaft mm		Sleeve mm		Group N mm	Group 3 mm	Group 4 mm
		min.	max.	min.	max.	min.	max.	min.	max.			
0,015	0,02	0,3	0,35	0,3	0,4	–	–	–	–	0,015	0,02	0,035
0,02	0,025	0,35	0,4	0,35	0,45	–	–	–	–	0,015	0,025	0,04
0,025	0,03	0,4	0,45	0,45	0,5	–	–	–	–	0,02	0,03	0,05
0,03	0,04	0,45	0,6	0,5	0,7	–	–	–	–	0,025	0,035	0,055
0,04	0,05	0,6	0,75	0,7	0,85	–	–	–	–	0,025	0,04	0,07
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
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
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
0,075	0,1	1,2	1,6	1,3	1,7	3	4	3,1	4,2	0,055	0,09	0,13
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
0,09	0,13	1,4	2	1,5	2,2	3,5	4,5	3,6	5	0,07	0,1	0,16
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
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
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
0,13	0,19	2	3	2,2	3,2	5	7,5	5,2	7,7	0,11	0,15	0,24
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
0,17	0,23	2,6	3,6	2,9	3,9	6,5	9	5,8	9,2	0,13	0,19	0,29
0,2	0,26	3,1	4,1	3,4	4,4	7,7	10	8	10,4	0,13	0,2	0,31
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
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
0,26	0,35	4	5,4	4,4	5,9	10	13,5	10,4	14	0,2	0,29	0,41
0,3	0,4	4,6	6,2	5,1	6,8	11,5	15,5	12	16	0,21	0,31	0,45
0,34	0,45	5,3	7	5,8	7,6	13,3	17,5	13,6	18	0,23	0,35	0,51
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
0,41	0,55	6,3	8,5	7	9,4	15,8	21	16,4	22	0,3	0,43	0,64
0,45	0,6	6,8	9	7,6	10,2	17	23	18	24	0,32	0,48	0,7
0,49	0,65	7,4	9,8	8,3	11	18,5	25	19,6	26	0,34	0,54	0,77
0,55	0,72	8,3	10,8	9,3	12,1	21	27	22,2	28,3	0,36	0,59	0,84

Hydraulic nuts HYDNUT

**Reduction
in radial internal clearance
of FAG toroidal rolling bearings
with tapered bore**

Nominal bearing bore diameter d mm		Radial internal clearance before mounting Internal clearance group					
		Group N mm		Group 3 mm		Group 4 mm	
over	up to	min.	max.	min.	max.	min.	max.
24	30	0,035	0,055	0,05	0,065	0,065	0,085
30	40	0,045	0,065	0,06	0,08	0,08	0,1
40	50	0,05	0,075	0,07	0,095	0,09	0,12
50	65	0,06	0,09	0,085	0,115	0,11	0,15
65	80	0,075	0,11	0,105	0,14	0,135	0,18
80	100	0,095	0,135	0,13	0,175	0,17	0,22
100	120	0,115	0,155	0,155	0,205	0,2	0,255
120	140	0,135	0,18	0,18	0,235	0,23	0,295
140	160	0,155	0,215	0,21	0,27	0,265	0,34
160	180	0,17	0,24	0,235	0,305	0,3	0,385
180	200	0,19	0,26	0,26	0,33	0,325	0,42
200	225	0,21	0,29	0,285	0,365	0,36	0,46
225	250	0,235	0,315	0,315	0,405	0,4	0,515
250	280	0,255	0,345	0,34	0,445	0,44	0,56
280	315	0,28	0,38	0,375	0,485	0,48	0,62
315	355	0,315	0,42	0,415	0,545	0,54	0,68
355	400	0,35	0,475	0,47	0,6	0,595	0,755
400	450	0,38	0,525	0,525	0,655	0,65	0,835
450	500	0,435	0,575	0,575	0,735	0,73	0,915
500	560	0,47	0,64	0,63	0,81	0,8	1,01
560	630	0,53	0,71	0,7	0,89	0,88	1,11
630	710	0,59	0,78	0,77	0,99	0,98	1,23
710	800	0,67	0,86	0,86	1,1	1,1	1,38
800	900	0,73	0,96	0,95	1,22	1,21	1,53
900	1000	0,81	1,04	1,04	1,34	1,34	1,67
1000	1120	0,89	1,17	1,16	1,5	1,49	1,88
1120	1250	0,97	1,28	1,27	1,64	1,63	2,06
1250	1400	1,08	1,41	1,41	1,79	1,78	2,25
1400	1600	1,2	1,55	1,55	1,99	1,99	2,5
1600	1800	1,32	1,69	1,69	2,18	2,18	2,73

- ¹⁾ Applies only to solid steel shafts and hollow shafts with a bore no larger than half the shaft diameter.

Note: Bearings with a radial internal clearance before fitting in the upper half of the tolerance range are fitted using the larger value for the reduction in radial internal clearance or the axial displacement distance, while bearings in the lower half of the tolerance range are fitted using the smaller value for the reduction in radial internal clearance or the axial displacement distance.

- ²⁾ The actual value of the radial internal clearance must not be smaller than the control value. In the case of bearings with a small diameter, this may be difficult to determine.

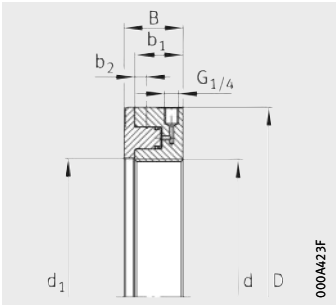
Reduction in radial internal clearance ¹⁾		Drive-up distance on				Control value for radial internal clearance after fitting ²⁾		
		Tapered 1:12 ¹⁾		Tapered 1:30 ¹⁾				
		Shaft mm		Shaft mm		Group N mm	Group 3 mm	Group 4 mm
min.	max.	min.	max.	min.	max.	min.	min.	min.
0,01	0,017	0,24	0,29	0,61	0,72	0,025	0,035	0,048
0,014	0,021	0,3	0,34	0,76	0,84	0,031	0,041	0,059
0,018	0,028	0,37	0,42	0,91	1,04	0,033	0,046	0,062
0,024	0,035	0,46	0,5	1,14	1,24	0,036	0,054	0,075
0,03	0,046	0,55	0,61	1,37	1,53	0,045	0,065	0,09
0,04	0,056	0,67	0,73	1,68	1,83	0,056	0,08	0,114
0,049	0,069	0,79	0,89	1,98	2,23	0,066	0,093	0,131
0,06	0,083	0,91	1,05	2,29	2,62	0,075	0,105	0,147
0,072	0,095	1,04	1,21	2,59	3,02	0,083	0,123	0,17
0,081	0,107	1,16	1,36	2,9	3,41	0,089	0,137	0,193
0,09	0,121	1,28	1,52	3,2	3,81	0,1	0,15	0,204
0,101	0,134	1,43	1,68	3,58	4,2	0,109	0,162	0,226
0,113	0,151	1,59	1,88	3,96	4,69	0,123	0,177	0,249
0,126	0,168	1,77	2,08	4,42	5,19	0,129	0,186	0,273
0,142	0,188	1,98	2,31	4,95	5,78	0,138	0,203	0,292
0,16	0,211	2,23	2,59	5,56	6,47	0,155	0,221	0,329
0,18	0,238	2,5	2,9	6,25	7,26	0,17	0,251	0,357
0,203	0,268	2,81	3,26	7,01	8,15	0,178	0,279	0,382
0,225	0,3	3,11	3,66	7,78	9,14	0,21	0,3	0,43
0,25	0,335	3,48	4,05	8,69	10,13	0,22	0,325	0,465
0,285	0,375	3,9	4,52	9,76	11,31	0,245	0,355	0,505
0,32	0,42	4,39	5,08	10,98	12,69	0,27	0,38	0,56
0,36	0,475	4,94	5,71	12,35	14,27	0,31	0,425	0,625
0,405	0,535	5,55	6,42	13,88	16,05	0,325	0,46	0,675
0,45	0,605	6,16	7,21	15,4	18,03	0,36	0,49	0,735
0,505	0,67	6,89	8	17,23	20	0,385	0,545	0,82
0,565	0,75	7,69	8,95	19,21	22,37	0,41	0,58	0,88
0,63	0,84	8,6	9,98	21,5	24,94	0,45	0,64	0,94
0,72	0,94	9,82	11,16	24,55	27,9	0,48	0,685	1,05
0,81	1,07	11,04	12,74	27,6	31,85	0,51	0,705	1,11

Hydraulic nuts HYDNUT

Ordering examples	When ordering a hydraulic nut, you only need to provide the designation. The designation can be taken from the table of measurements. The ordering designation for replacement seals can be derived from the designation of the hydraulic nut. Ordering designations for additional spare parts can be found in the operating manual.
Examples	The ordering examples show the structure of an ordering designation for replacement seals.
Ordering example 1	Replacement seals (set) for Hydraulic nut HYDNUT200-E with metric fine pitch thread.
Ordering designation	HYDNUT200-E.SEAL
Ordering example 2	Replacement seal (set) for hydraulic nut HYDNUT100-E-INCH with thread in inch dimensions.
Ordering designation	HYDNUT100-E.SEAL
Ordering example 3	Replacement seals (set) for hydraulic nut HYDNUT600-HEAVY without thread.
Ordering designation	HYDNUT600-HEAVY.SEAL

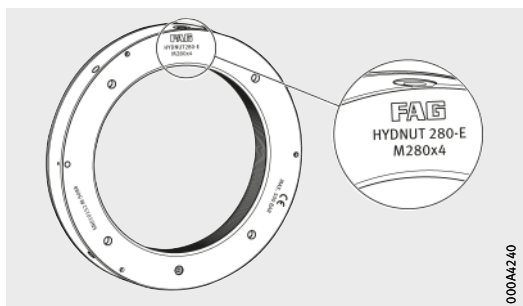
Hydraulic nut

Metric thread



Dimensions

Dimension table · Dimensions in mm						
Designation	Thread d mm	Mass m			Dimensions	
		Total	Press ring	Annular piston	D	B
		≈ kg	≈ kg	≈ kg		
HYDNUT50-E	M50×1,5	2,4	0,5	1,7	110	40
HYDNUT55-E	M55×2	2,8	0,5	2,1	118	40
HYDNUT60-E	M60×2	3	0,6	2,1	125	40
HYDNUT65-E	M65×2	3,3	0,7	2,4	132	40
HYDNUT70-E	M70×2	3,7	0,8	2,6	140	40
HYDNUT75-E	M75×2	3,9	0,8	2,8	145	40
HYDNUT80-E	M80×2	4	0,9	2,9	150	40
HYDNUT85-E	M85×2	4,2	0,9	3	155	40
HYDNUT90-E	M90×2	4,5	1	3,2	160	41
HYDNUT95-E	M95×2	4,7	1,1	3,4	165	41
HYDNUT100-E	M100×2	4,9	1,1	3,5	170	41
HYDNUT105-E	M105×2	5,3	1,2	3,8	175	43
HYDNUT110-E	M110×2	5,5	1,3	3,9	180	43
HYDNUT115-E	M115×2	5,6	1,3	4	185	43
HYDNUT120-E	M120×2	5,8	1,4	4,1	190	43
HYDNUT125-E	M125×2	6,2	1,5	4,4	195	44
HYDNUT130-E	M130×2	6,4	1,5	4,6	200	44
HYDNUT135-E	M135×2	6,5	1,6	4,6	205	44
HYDNUT140-E	M140×2	6,7	1,6	4,8	210	44
HYDNUT145-E	M145×2	6,9	1,7	4,9	215	44
HYDNUT150-E	M150×2	7,1	1,8	5,1	220	44
HYDNUT155-E	M155×3	7,3	1,9	5,2	225	44
HYDNUT160-E	M160×3	8,7	2,1	6,2	235	47
HYDNUT165-E	M165×3	8,9	2,2	6,4	240	47
HYDNUT170-E	M170×3	9,1	2,3	6,5	245	47
HYDNUT180-E	M180×3	9,6	2,4	6,9	255	47
HYDNUT190-E	M190×3	11,5	2,9	8,2	270	50
HYDNUT200-E	M200×3	12	3	8,6	280	50

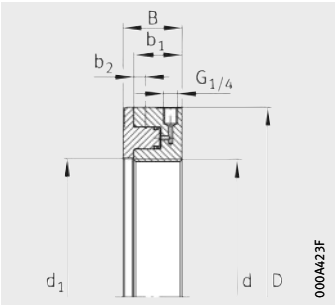


M: metric thread

d ₁	b ₁	Stroke length	Piston surface	Oil volume	Max. pressure	Drive-up force
		b ₂ mm	cm ²	l	bar	kN
51	36	4	31	0,5	700	214
56	36	4	31	0,5	700	219
61	36	4	32	0,5	700	222
66	36	4	36	0,5	700	249
71	36	4	41	0,5	700	286
76	36	4	45	0,5	700	314
81	36	4	49	0,5	700	343
86	36	4	49	0,5	700	345
91	37	5	49	0,5	700	346
96	37	5	52	0,5	700	364
101	37	5	54	0,5	700	381
106	37	5	57	0,5	600	340
111	37	5	59	0,5	600	352
116	37	5	61	0,5	600	365
121	37	5	63	0,5	600	378
126	37	5	65	0,5	600	391
131	37	5	65	0,5	600	387
136	37	5	67	0,5	600	399
141	37	5	69	0,5	600	414
146	37	5	71	0,5	600	424
151	37	5	75	0,5	600	452
156	37	5	82	0,5	600	491
161	40	6	87	0,5	600	523
166	40	6	92	0,5	600	554
171	40	6	95	0,5	600	568
181	40	6	103	0,5	600	618
191	42	8	116	0,5	600	695
201	42	8	125	0,5	600	750

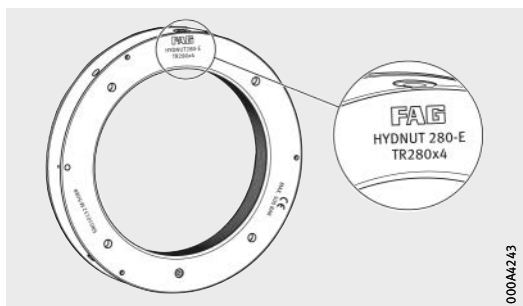
Hydraulic nut

Trapezoidal thread



Dimensions

Dimension table · Dimensions in mm						
Designation	Thread d mm	Mass m			Dimensions	
		Total ≈ kg	Press ring ≈ kg	Annular piston ≈ kg	D	B
HYDNUT205-E	Tr205×4	13	3,3	9,3	290	50
HYDNUT210-E	Tr210×4	13,8	3,5	9,9	295	52
HYDNUT215-E	Tr215×4	14,1	3,6	10,1	300	52
HYDNUT220-E	Tr220×4	14,5	3,8	10,5	305	52
HYDNUT225-E	Tr225×4	16	4,9	10,7	315	53
HYDNUT230-E	Tr230×4	16,3	5	10,9	320	53
HYDNUT235-E	Tr235×4	16,6	5,2	11,1	325	53
HYDNUT240-E	Tr240×4	17	5,3	11,3	330	53
HYDNUT250-E	Tr250×4	18,9	5,9	12,6	345	54
HYDNUT260-E	Tr260×4	19,9	6,2	13,3	355	55
HYDNUT270-E	Tr270×4	22,3	7	14,9	370	56
HYDNUT275-E	Tr275×4	22,6	7,1	15,1	375	56
HYDNUT280-E	Tr280×4	23	7,3	15,3	380	56
HYDNUT290-E	Tr290×4	24,1	7,6	16,1	390	57
HYDNUT295-E	Tr295×4	25,9	8,2	17,3	400	57
HYDNUT300-E	Tr300×4	28,5	8,8	19,0	405	62
HYDNUT310-E	Tr310×5	29,3	9,4	19,5	415	62
HYDNUT315-E	Tr315×5	29,7	9,5	19,8	420	62
HYDNUT320-E	Tr320×5	32,3	10,3	21,5	430	63
HYDNUT330-E	Tr330×5	33,7	10,8	22,5	440	64
HYDNUT335-E	Tr335×5	34,2	10,9	22,8	445	64
HYDNUT340-E	Tr340×5	34,6	11	23,1	450	64
HYDNUT345-E	Tr345×5	35	11,2	23,3	455	64
HYDNUT350-E	Tr350×5	37,3	11,9	24,9	465	64
HYDNUT355-E	Tr355×5	38,4	12,3	25,6	470	65
HYDNUT360-E	Tr360×5	38,9	12,5	25,9	475	65
HYDNUT365-E	Tr365×5	40,1	12,8	26,7	482	65
HYDNUT370-E	Tr370×5	42,4	13,6	28,3	490	66
HYDNUT375-E	Tr375×5	42,9	13,7	28,6	495	66
HYDNUT380-E	Tr380×5	43,4	13,9	28,9	500	66
HYDNUT385-E	Tr385×5	43,9	14,1	29,3	505	66
HYDNUT395-E	Tr395×5	44,3	14,2	29,5	512	67

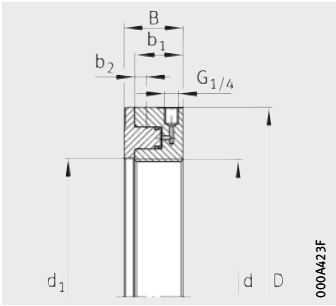


TR: Trapezoidal thread

d ₁	b ₁	Stroke length	Piston surface	Oil volume	Max. pressure	Drive-up force
		b ₂ mm	cm ²	l	bar	kN
207	42	8	132	0,5	500	661
212	43	9	135	0,5	500	675
217	43	9	138	0,5	500	689
222	43	9	144	0,5	500	721
227	44	10	153	0,5	500	766
232	44	10	160	0,5	500	800
237	44	10	162	0,5	500	809
242	44	10	165	0,5	500	827
252	44	10	182	0,5	500	911
262	45	11	188	0,5	500	939
272	46	12	196	0,5	500	980
277	46	12	204	0,5	500	1 019
282	46	12	212	0,5	500	1 059
292	47	13	218	0,5	500	1 092
297	47	13	230	0,5	500	1 150
302	52	13	237	0,5	500	1 185
312	52	13	249	0,5	500	1 246
317	52	13	253	0,5	500	1 264
322	53	14	264	0,5	500	1 322
332	53	14	271	0,5	500	1 355
337	53	14	275	0,5	500	1 373
342	53	14	284	0,5	500	1 419
347	53	14	288	0,5	500	1 438
352	53	14	306	0,5	500	1 530
357	54	15	304	1	500	1 519
362	54	15	313	1	500	1 564
367	54	15	317	1	500	1 584
372	55	16	323	1	500	1 614
377	55	16	334	1	500	1 669
382	55	16	337	1	500	1 685
387	55	16	348	1	500	1 740
397	56	16	356	1	500	1 780

Hydraulic nut

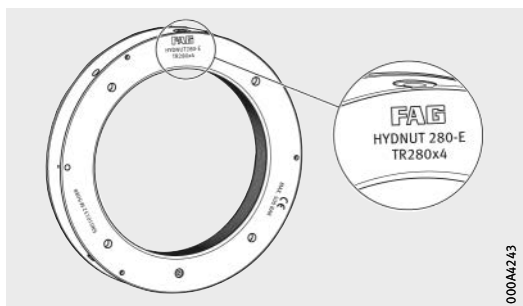
Trapezoidal thread



Dimensions

Dimension table (continued) · Dimensions in mm

Designation	Thread d mm	Mass m			Dimensions	
		Total ≈ kg	Press ring ≈ kg	Annular piston ≈ kg	D	B
HYDNUT400-E	Tr400×5	49,7	16	33,1	525	69
HYDNUT410-E	Tr410×5	50,8	16,3	33,9	535	69
HYDNUT415-E	Tr415×5	51,3	16,5	34,2	540	69
HYDNUT420-E	Tr420×5	52,2	16,8	34,8	545	70
HYDNUT430-E	Tr430×5	57,5	18,5	38,3	555	75
HYDNUT435-E	Tr435×5	58,1	18,7	38,7	560	75
HYDNUT440-E	Tr440×5	58,7	18,9	39,1	565	75
HYDNUT450-E	Tr450×5	62,6	20,1	41,7	580	75
HYDNUT460-E	Tr460×5	64,3	20,7	42,9	590	76
HYDNUT470-E	Tr470×5	65,9	21,2	43,9	600	76
HYDNUT480-E	Tr480×5	69,2	22,2	46,1	612	77
HYDNUT490-E	Tr490×5	73,2	23,5	48,8	625	78
HYDNUT500-E	Tr500×5	75,5	24,3	50,3	635	79
HYDNUT510-E	Tr510×6	76,8	24,8	51,2	645	79
HYDNUT520-E	Tr520×6	80,5	25,9	53,7	657	80
HYDNUT530-E	Tr530×6	84,9	27,5	56,6	670	81
HYDNUT540-E	Tr540×6	86,3	27,9	57,5	680	81
HYDNUT550-E	Tr550×6	89,1	28,8	59,4	692	81
HYDNUT560-E	Tr560×6	92,3	29,5	61,5	705	81
HYDNUT570-E	Tr570×6	101,2	32,8	67,5	715	87
HYDNUT580-E	Tr580×6	102,8	33,3	68,5	725	87
HYDNUT590-E	Tr590×6	108,4	35,3	72,3	740	87
HYDNUT600-E	Tr600×6	109,3	35,6	72,9	750	87
HYDNUT610-E	Tr610×6	113,5	36,9	75,7	760	89
HYDNUT625-E	Tr625×6	116	37,7	77,3	775	89
HYDNUT630-E	Tr630×6	116,8	38	77,9	780	89
HYDNUT650-E	Tr650×6	124,6	40,5	83,1	805	89
HYDNUT655-E	Tr655×6	125,5	41	83,7	810	89
HYDNUT670-E	Tr670×6	128,1	41,8	85,4	825	89
HYDNUT680-E	Tr680×6	131,6	42,9	87,7	837	89
HYDNUT690-E	Tr690×6	137,8	45	91,9	850	90
HYDNUT695-E	Tr695×6	138,7	45,4	92,5	855	90

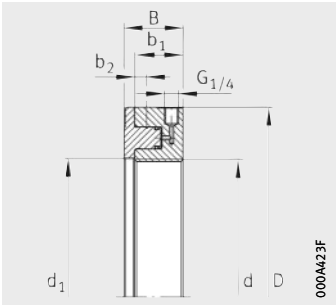


TR: Trapezoidal thread

d ₁	b ₁	Stroke length	Piston surface	Oil volume	Max. pressure	Drive-up force
		b ₂ mm	cm ²	l	bar	kN
402	58	17	368	1	500	1 842
412	58	17	382	1	400	1 527
417	58	17	386	1	400	1 543
422	58	17	390	1	400	1 560
432	63	17	398	1	400	1 593
437	63	17	403	1	400	1 610
442	63	17	425	1	400	1 699
452	63	17	442	1	400	1 766
462	64	18	450	1	400	1 802
472	64	18	459	1	400	1 837
482	65	19	460	1	400	1 840
492	65	19	506	2	400	2 022
502	66	20	523	2	400	2 092
512	66	20	532	2	400	2 130
522	67	21	542	2	400	2 168
532	68	22	562	2	400	2 248
542	68	22	581	2	400	2 326
552	68	22	592	2	400	2 369
562	68	22	612	2	400	2 448
572	74	23	631	2	400	2 525
582	74	23	641	2	400	2 566
592	74	23	666	2	400	2 665
603	74	23	676	2	400	2 706
613	75	24	687	2	400	2 747
628	75	24	702	2	400	2 808
633	75	24	728	2	400	2 911
653	75	24	763	2	300	2 288
658	75	24	768	2	300	2 304
673	75	24	795	3	300	2 385
683	75	24	819	3	300	2 458
693	76	25	844	3	300	2 531
698	76	25	862	3	300	2 585

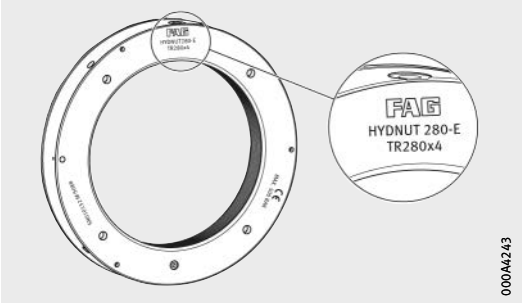
Hydraulic nut

Trapezoidal thread



Dimensions

Dimension table (continued) · Dimensions in mm						
Designation	Thread d mm	Mass m			Dimensions	
		Total	Press ring	Annular piston	D	B
		≈ kg	≈ kg	≈ kg		
HYDNUT710-E	Tr710×7	141,6	46,4	94,4	870	90
HYDNUT720-E	Tr720×7	147,8	48,4	98,5	883	91
HYDNUT740-E	Tr740×7	158,7	51,9	105,8	910	91
HYDNUT750-E	Tr750×7	173,5	56,8	115,7	922	97
HYDNUT760-E	Tr760×7	179	58,6	119,3	935	97
HYDNUT780-E	Tr780×7	187	61,4	124,7	955	99
HYDNUT800-E	Tr800×7	187,1	61,4	124,7	970	100
HYDNUT830-E	Tr830×7	195,4	64,2	130,3	1 000	101
HYDNUT850-E	Tr850×7	199,6	65,9	133,1	1 020	101
HYDNUT880-E	Tr880×7	206	67,6	137,3	1 050	101
HYDNUT900-E	Tr900×7	210,3	69	140,2	1 070	101
HYDNUT930-E	Tr930×8	218,8	72,1	145,9	1 100	102
HYDNUT950-E	Tr950×8	230,9	76	153,9	1 125	102
HYDNUT1000-E	Tr1000×8	256,7	84,5	171,1	1 185	102
HYDNUT1060-E	Tr1060×8	298,1	98,2	198,7	1 255	106
HYDNUT1080-E	Tr1080×8	314,8	104	209,9	1 280	107
HYDNUT1120-E	Tr1120×8	373,2	134,1	237,9	1 340	111
HYDNUT1180-E	Tr1180×8	473,4	176,1	295,9	1 430	117

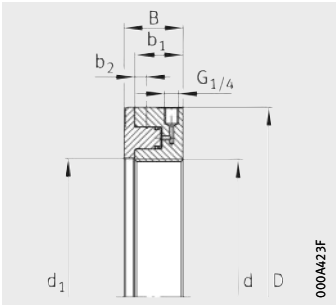


TR: Trapezoidal thread

d ₁	b ₁	Stroke length	Piston surface	Oil volume	Max. pressure	Drive-up force
		b ₂ mm	cm ²	l	bar	kN
713	76	25	878	3	300	2 633
723	76	25	928	3	300	2 783
743	76	25	991	3	300	2 974
753	82	26	1 033	3	300	3 099
763	82	26	1 046	3	300	3 137
783	84	28	1 068	4	300	3 204
803	84	28	1 079	4	300	3 237
833	85	29	1 101	4	300	3 304
853	85	29	1 156	4	300	3 468
883	85	29	1 148	4	300	3 445
903	85	29	1 251	4	300	3 752
933	86	30	1 289	5	300	3 868
953	86	30	1 319	5	300	3 957
1 003	86	30	1 492	5	300	4 475
1 063	88	32	1 612	6	300	4 835
1 083	89	33	1 678	6	300	5 033
1 123	92	36	1 901	8	300	5 702
1 183	95	39	2 099	9	300	6 296

Hydraulic nut

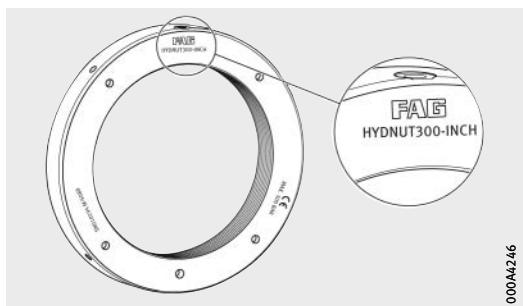
Threads in inch sizes



Dimensions

Dimension table - Dimensions in mm

Designation	Thread		Flank diameter		Quantity Thread turns per inch	Mass		
	d					m		
	mm	inch	mm	inch		Total ≈ kg	Press ring ≈ kg	Cylindrical body ≈ kg
HYDNUT90-E-INCH	89,586	3,527	88,212	3,4729	12	4,5	1	3,3
HYDNUT95-E-INCH	94,742	3,73	93,368	3,6759	12	4,7	1,1	3,4
HYDNUT100-E-INCH	99,517	3,918	98,143	3,8639	12	4,9	0,5	3,5
HYDNUT105-E-INCH	104,699	4,122	103,325	4,0679	12	5,3	1,2	3,8
HYDNUT110-E-INCH	109,855	4,325	108,481	4,2709	12	5,5	1,3	3,9
HYDNUT120-E-INCH	119,786	4,716	118,412	4,6619	12	5,8	1,4	4,1
HYDNUT130-E-INCH	129,692	5,106	128,318	5,0519	12	6,4	1,5	4,6
HYDNUT140-E-INCH	139,624	5,497	138,25	5,4429	12	6,7	1,6	4,8
HYDNUT150-E-INCH	149,555	5,888	148,181	5,8339	12	7,1	1,9	5,2
HYDNUT160-E-INCH	159,614	6,284	157,551	6,2028	8	8,7	2	5,9
HYDNUT170-E-INCH	169,139	6,659	167,067	6,5778	8	9,1	2,2	6,3
HYDNUT180-E-INCH	179,476	7,066	177,414	6,9848	8	9,6	2,4	6,9
HYDNUT190-E-INCH	189,789	7,472	187,726	7,3908	8	11,5	2,9	8,2
HYDNUT200-E-INCH	199,314	7,847	197,251	7,7658	8	12	3	8,6
HYDNUT220-E-INCH	219,151	8,628	217,089	8,5468	8	14,5	3,8	10,3
HYDNUT240-E-INCH	239,827	9,442	237,076	9,3337	6	17	5,3	11,3
HYDNUT260-E-INCH	258,877	10,192	256,126	10,0837	6	19,9	6,2	13,3
HYDNUT280-E-INCH	279,502	11,004	276,751	10,8975	6	23	7,3	15,3
HYDNUT300-E-INCH	299,339	11,785	296,588	11,6767	6	28,5	8,8	18,5
HYDNUT320-E-INCH	319,075	12,562	316,324	12,4537	6	32,3	10,3	21,5
HYDNUT340-E-INCH	338,811	13,339	335,763	13,219	5	34,6	11	23
HYDNUT360-E-INCH	359,918	14,17	356,87	14,05	5	38,9	12,5	25,9
HYDNUT380-E-INCH	379,908	14,957	376,86	14,837	5	43,4	13,9	28,9
HYDNUT400-E-INCH	399,923	15,745	396,875	15,625	5	49,7	16	33,1
HYDNUT420-E-INCH	419,913	16,532	416,865	16,412	5	52,2	16,8	34,8
HYDNUT440-E-INCH	439,903	17,319	436,855	17,199	5	58,7	18,9	39,1
HYDNUT460-E-INCH	459,918	18,107	456,87	17,987	5	64,3	20,7	42,9
HYDNUT480-E-INCH	479,908	18,894	476,86	18,774	5	69,2	22,2	46,1
HYDNUT500-E-INCH	499,923	19,682	496,875	19,562	5	75,5	24,3	49,4
HYDNUT530-E-INCH	530,022	20,867	526,339	20,722	4	84,9	27,5	56,6

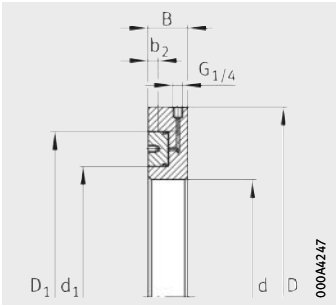


INCH: Inch size thread

Dimensions				Stroke length b ₂	Piston surface	Oil volume	Max. pressure	Drive-up force
D	B	d ₁	b ₁					
				mm	cm ²	l	bar	kN
160	40	91	37	5	50	0,5	700	350
165	40	96	37	5	52	0,5	700	360
170	42	101	37	5	54	0,5	700	380
175	42	106	37	5	57	0,5	600	340
180	43	111	37	5	59	0,5	600	350
190	43	121	37	5	63	0,5	600	380
200	44	131	37	5	65	0,5	600	390
210	45	141	37	5	69	0,5	600	410
220	46	151	37	5	75	0,5	600	450
235	47	161	40	6	87	0,5	600	520
245	48	171	40	6	95	0,5	600	570
255	48	181	40	6	103	0,5	600	620
270	50	191	42	8	116	0,5	600	700
280	50	201	42	8	125	0,5	600	750
305	53	222	43	9	144	0,5	500	720
330	55	242	44	10	165	0,5	500	830
355	57	262	45	11	188	0,5	500	940
380	59	282	46	12	212	0,5	500	1 060
405	61	302	52	13	237	0,5	500	1 190
430	63	322	53	14	264	0,5	500	1 320
450	65	342	53	14	284	0,5	500	1 420
475	67	362	54	15	313	1	500	1 570
500	69	382	55	16	337	1	500	1 690
525	71	402	58	17	368	1	500	1 840
545	72	422	58	17	390	1	400	1 560
565	74	442	63	17	425	1	400	1 700
590	76	462	64	18	450	1	400	1 800
612	76	482	65	18	460	1	400	1 840
635	80	502	66	20	523	2	400	2 090
670	83	542	68	22	562	2	400	2 250

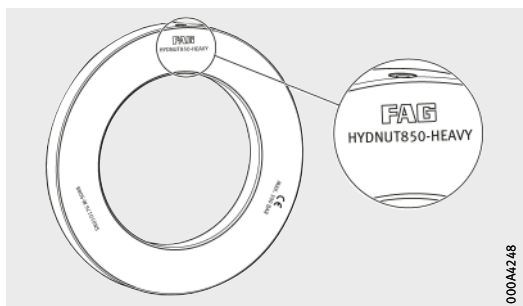
Hydraulic nut

No thread, reinforced



Dimensions

Dimension table · Dimensions in mm						
Designation	Mass			Dimensions		
	Total	Press ring	Cylindrical body	d	D	B
	≈ kg	≈ kg	≈ kg			
HYDNUT100-HEAVY	9,5	2,1	7	100	220	40
HYDNUT125-HEAVY	9,8	2,2	7,4	125	245	40
HYDNUT150-HEAVY	12,5	2,3	9,6	150	270	40
HYDNUT175-HEAVY	17	2,8	13,3	175	305	45
HYDNUT200-HEAVY	21	3,6	16,9	200	330	50
HYDNUT225-HEAVY	23	4,8	18,1	225	365	50
HYDNUT250-HEAVY	28	5,9	20,8	250	390	50
HYDNUT275-HEAVY	34	7,5	26,6	275	430	50
HYDNUT300-HEAVY	44	9,1	32,2	300	470	55
HYDNUT325-HEAVY	49	10,7	37,9	325	500	55
HYDNUT350-HEAVY	57	12,3	43,6	350	540	55
HYDNUT375-HEAVY	65	15,4	45,4	375	575	55
HYDNUT400-HEAVY	83	18,5	62,6	400	620	60
HYDNUT425-HEAVY	90	20	69,2	425	650	60
HYDNUT450-HEAVY	100	22,2	76,9	450	690	65
HYDNUT475-HEAVY	120	26,6	92,3	475	725	65
HYDNUT500-HEAVY	142	31,5	109,2	500	760	70
HYDNUT525-HEAVY	158	35,1	121,5	525	800	70
HYDNUT550-HEAVY	183	40,6	140,7	550	835	75
HYDNUT575-HEAVY	197	43,7	151,5	575	870	75
HYDNUT600-HEAVY	230	51,1	176,9	600	910	80
HYDNUT625-HEAVY	248	55,1	190,7	625	945	80
HYDNUT650-HEAVY	282	62,6	216,9	650	980	85
HYDNUT675-HEAVY	307	68,2	236,1	675	1 020	85
HYDNUT700-HEAVY	351	78	270	700	1 060	90
HYDNUT750-HEAVY	431	95,7	331,5	750	1 130	95
HYDNUT800-HEAVY	500	111,1	348,6	800	1 205	100
HYDNUT850-HEAVY	583	129,5	448,4	850	1 275	105
HYDNUT900-HEAVY	688	152,8	529,2	900	1 350	110



HEAVY: no thread, reinforced

D ₁	d ₁	Stroke length	Piston surface	Oil volume	Max. pressure	Drive-up force
		b ₂ mm	cm ²	l	bar	kN
180	125	10	132	0,5	700	920
200	150	10	137	0,5	600	820
226	180	10	147	0,5	600	880
250	205	11	161	0,5	600	970
280	230	12	200	0,5	600	1 200
313	255	12	259	0,5	500	1 300
345	280	12	319	0,5	500	1 600
380	305	12	403	1,0	500	2 020
410	335	13	439	1	500	2 200
440	360	13	503	1	500	2 520
475	385	13	608	1	500	3 040
510	410	13	723	2	500	3 620
545	440	15	812	2	500	4 060
575	465	15	899	2	400	3 600
610	490	17	1 037	2	400	4 150
642	515	17	1 154	3	400	4 620
675	540	20	1 288	3	400	5 150
710	565	20	1 452	4	400	5 810
742	590	22	1 590	4	400	6 360
775	615	22	1 747	4	400	6 990
808	645	25	1 860	5	400	7 440
840	670	25	2 016	6	400	8 060
875	695	28	2 220	7	300	6 660
906	720	28	2 375	7	300	7 130
940	750	30	2 522	8	300	7 570
1 007	800	32	2 938	10	300	8 810
1 070	855	35	3 250	12	300	9 750
1 135	905	38	3 685	15	300	11 060
1 200	960	40	4 072	17	300	12 220

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