



Innovative  
**ADP HYDRAULIC NUT**  
with Measuring Ring



宁波斯立福精密工业有限公司  
Ningbo Eurotec Precision Industry Co.,Ltd.

浙江省宁波市镇海区临俞工业园区前程路168号  
No.168,QianCheng Rd.LinYu Industry Park,Zhen Hai,Ningbo,PRC  
电话(TEL): 86 - 574 - 86369916  
传真(FAX): 86 - 574 - 86360066  
网站(WEBSITE): [www.adpsleeve.com](http://www.adpsleeve.com)  
邮箱(E-MAIL): [sales@adpsleeve.com](mailto:sales@adpsleeve.com)

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ISO9001:2015

Certificate Registration No . 44 100 085183  
Audit Report No . 2.5-6203/2015

# ADP Hydraulic Nut

*with Measuring Ring*



**Ningbo Eurotec Precision Industry CO., Ltd.**

Buliding 1, No. 168, Qiancheng Road,  
Linyu Industrial Park, Zhenhai, Ningbo, China

Tel: +86 574 86369916

Fax: +86 574 86360066

Web site: [www.adpsleeve.com](http://www.adpsleeve.com)

e-mail: [sales@adpsleeve.com](mailto:sales@adpsleeve.com)





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Every care has been taken to ensure the accuracy of the information in this catalogue but no liability can be accepted for any error or omissions.



# Introduction of the Company



### The company

Ningbo Eurotec Precision Industry Co., Ltd. is a Taiwanese-owners' company, was founded in 2007 taking the form of FDI(foreign direct invest) in mainland China. We specialize in the field of bearing accessories manufacturing and our products are marketed with the brand name—ADP. The ultimate goal of this company's very existence has been the commitment of delivering higher value against each dollar spent by our customers. You'll find our major differentiation proves to be value-adding.

### Management team

The management team is headed by a seasoned application engineering manager who was working for one of the multinational bearing manufacturing companies for over 25 years. All the team members are also from precision bearing industry.

Descending from the culture of precision bearing manufacturing, we lay special eyes on the finished product precisions of roundness and run-out of inner & outer bores, and taper deviation even there's no criterion of any kind provided by ISO standard. Those proactively quality-oriented manufacturing from raw materials all the way down to finished products are precisely the drive that makes us the qualified supplier for one of the famous bearing manufacturer in Japan.

### Quality management system

ISO 9001:2000 (certified by TÜV NORD CERT GmbH in Mar. 2008)

### Manufacturing status of the company

### Manufacturing Boor

- floor area: 2,400 square meters
- machine tools:
  - 4 sets of sawing machine
  - 1 set of 70 tons punching press & 1 set of 45 tons
  - 12 sets of medium to large-size CNC lathe 1 set of machining center
  - 4 sets of milling machine
- max. throughput: 90 tons of seamless pipe and forging raw material / month

### Measuring equipments

Full ranges of bearing measuring equipments are equipped to measure running accuracies and dimensional accuracies of sleeves and threads gauges for nuts. The sine bar is used for measuring taper precision.

### Product range

The manufacturing program includes standardized accessories, made with the highest precision, for bearing industry. Moreover, we also offer on request custom-made products according to print or print designed in-house. Last but not least,given the opportunity of cooperation with our customers, we envision to become one of the top quality bearing accessories suppliers in the world.

### Supply chain geography

Ningbo is a deepwater harbor city in the vicinity of Shanghai with very convenient daily air travel and short flight from Shanghai or Hong-Kong. The alternative is by car, it takes two and half hours from downtown of Shanghai to Ningbo via Hangzhou bay crossing highway.



CNC lathes for turning operations



Milling and drilling operations



Punching press operations



Raw material preparation from seamless steel tubes



Forged-steel rings for large-sized lock nuts



Snapshot of quality assurance center



Snapshot of quality assurance center



All products are 100% inspected on the production line



# ADP Hydraulic Nut with Measuring Ring PATENT

## Application

ADP hydraulic nuts with measuring ring are used for pressing parts with a taper bore onto tapered seatings. They are used primarily where the drive-up force of locknut and the pressure of bolts is not sufficient.

Main field of application:

- Mounting of rolling bearings with a taper bore. The bearing can be mounted direct on tapered shaft seatings or on adapter or withdrawal sleeves. Hydraulic nut can also be used to dismount sleeve-mounted bearings which depend on the shaft design.
- Mounting of couplings, gear wheels, impellers with taper bore....

## Design Principle

ADP hydraulic nut consist of an annular body, and a piston, in addition to the above main parts, there is a measuring ring which is the center of our innovation. The piston is operated hydraulically. The pressure chamber is sealed by two O-rings of Nitrile butadiene rubber (NBR).

The hydraulic nut are designed for a maximum oil pressure of 100 MPa (1000 bar or 14500 psi).

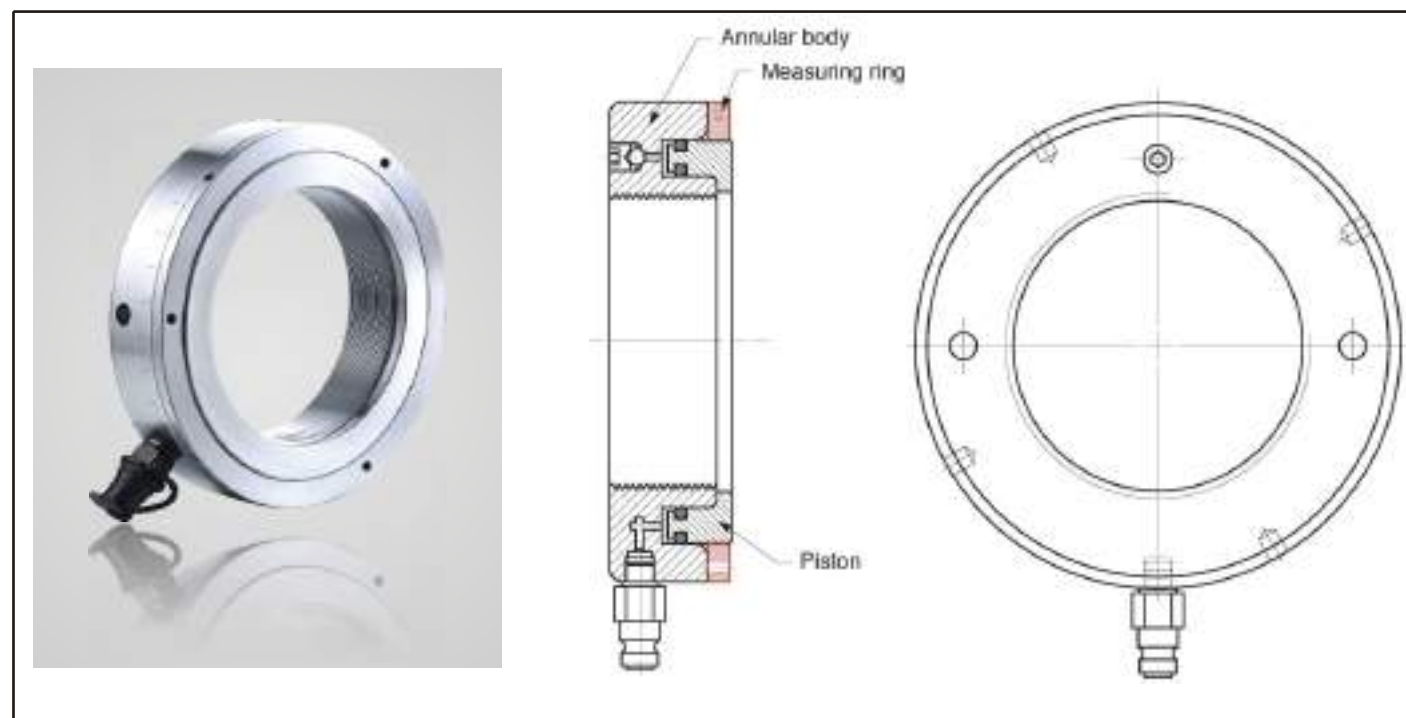
Their stroke is power enough that the rolling bearings or other parts can be mounted in a single operation.

The bore G in the annular body is available with a metric fine thread, a trapezoidal thread or an inch thread. They are suitable for sleeve and shaft threads of international standard.

ADP hydraulic nuts feature two oil supply connection holes with G 1/4 thread. Four handling holes are on the outside diameter of the annular body and two handling holes are on the side face for easier handling.

### a) Design for accurate measurement of the piston travel:

To differentiate our add-on value from competitors, we focused on practicality and simplicity. Our idea was to build in a kind of “**micrometer**” onto the hydraulic nut so that there is no need for additional measuring instrument during installation. And this has been achieved by introducing a rotatable “**measuring ring**” on the outer rim of the piston via male and female threads. There are calibrations on the outer diameters of the annular body as well as the measuring ring. By adjusting and aligning calibrations on the opposite sides of annular body and measuring ring, the required axial drive-up can be achieved with ease within 0.015mm allowance



of accuracy. The finer the thread pitch is the more precision it is going to give.

At the same time with the verification processes of our innovative ADP hydraulic nut with measuring ring, we've compared our product against competitors', which more or less adopting a design of an added-on dial gauge. During assembling of a hydraulic nut, it is very common that jerking takes place (especially when axial drive-up pressure exceeding 20 MPa) whenever there is a breakaway from overcoming static friction into sliding. Dial gauge with a nature of inaccuracy under jerking performs badly. Our product, on the contrary, proves to be influence-free from jerking.

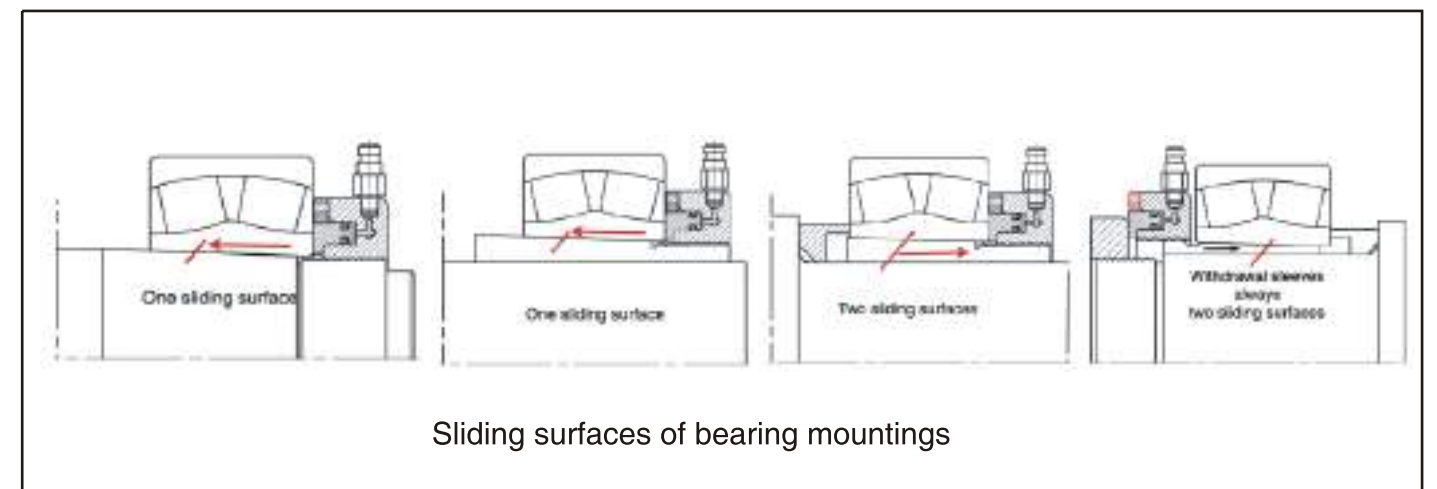
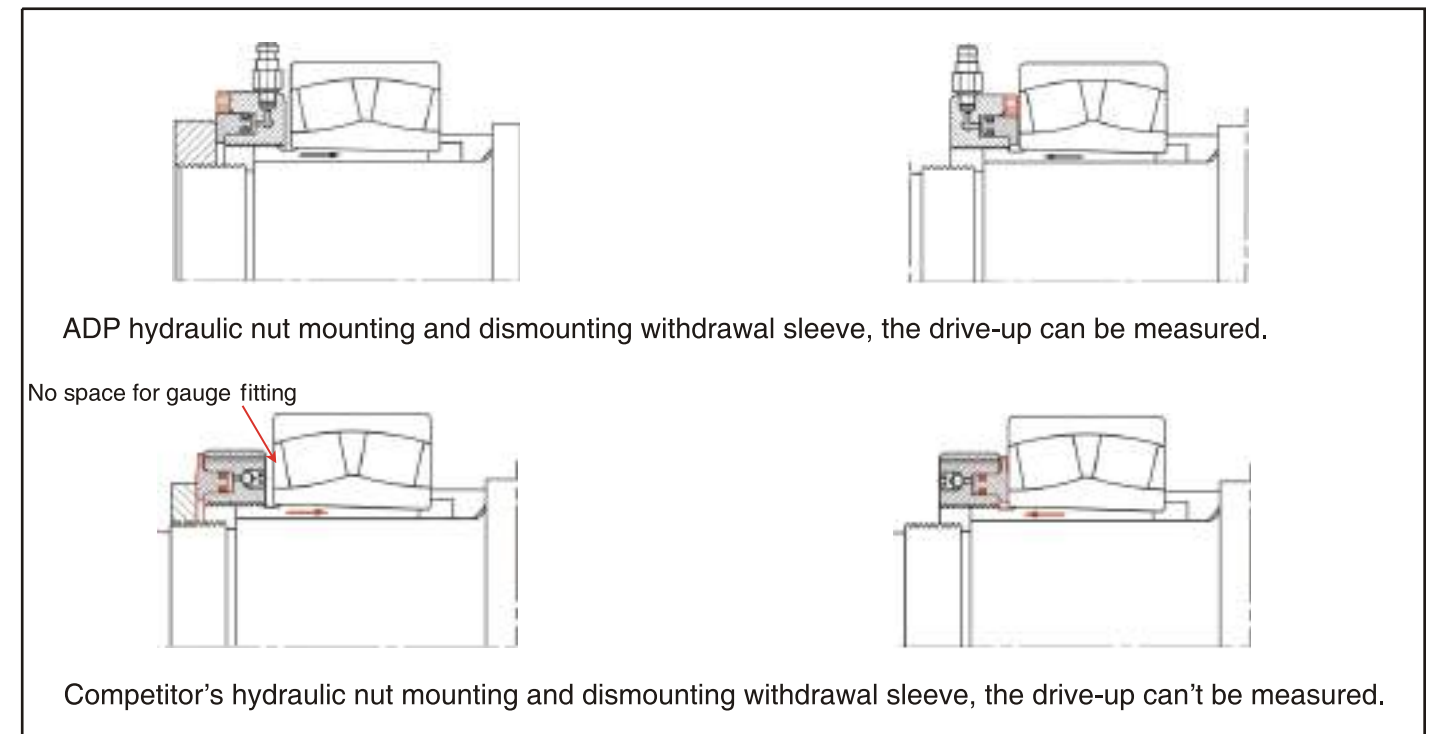
### b) Design for easy disassembly and maintenance:

In terms of maintenance, O-ring is the most consumed part and needs to be replaced anew once damaged. Our

design of measuring ring provides an additional advantage over competitors'—jacking bolts do not intrude into annular body cavity. Intrusion by jacking bolts may create complication of compromising static sealing of the plug, which is important for constant high oil pressure application. With our design, there are three (3) jacking bolts equally spaced on the measuring ring. Upon disassembly for the replacement of O-ring these three jacking bolts are exactly the only tool and procedure need to be done, reliable and time-saving.

### c) Flexible in both directions of installation:

Our measuring ring provides no interference in both directions during installation, i.e. the same hydraulic nut can be used for mounting and dismounting of withdrawal sleeve.





## How it works

Example 1: Mounting a spherical roller bearing with adapter sleeve, 22320 K (see Step 1 to Step 5 by diagrammatic explanation). Theoretically, the axial drive-up for mounting it on a taper seating is 1.06 mm according to the calculation (the required max. radial internal clearance reduction is 0.06% of the nominal diameter of the bearing bore). In fact, due to the quality and the manufacturing allowances involved with shaft and adapter sleeve, there are variations in the total clearance before installation. And in practice, those variations can be eliminated by applying a pre-load pressure, which is 7.1 MPa (71 bar) more or less, in the hydraulic nut. After that, a further 0.92 mm in axial drive-up needs to be accomplished.

The thread pitch of the measuring ring is 1 mm. 0.92 mm in axial drive-up is converted into angular travel by the following simple equation:

$0.92 \div 1.00 \times 360 = 331.2^\circ \approx 330^\circ$  As demonstrated by the following illustrations and steps, one can see how easily this can be done.

The example above mentioned is for the convenience diagrammatic explanation. In fact, for mounting spherical roller bearing 22320K with adapter sleeve H2320, two sliding surfaces, the initial preload is 8.7 MPa, a further 0.65 mm in axial drive-up needs to be accomplished. The thread pitch of the measuring ring is 1.5 mm. 0.65 mm in axial drive-up is converted into angular travel  $155^\circ$ . See the mounting data on Table 1.

Example 2, for mounting bearing 23164K with withdrawal sleeve AHX3164G which has two sliding surfaces, an ADP hydraulic nut H MV68E is used, the initial preload is 7.8 MPa, a further 1.85 mm in axial drive-up needs to be accomplished. The thread pitch of the measuring ring is 2 mm. 1.85 mm in axial drive-up is converted into angular travel  $334^\circ$ . This hydraulic nut can be used for extracting the sleeve in the same time. See the mounting data on Table 2.

Table 1 and Table 2 are our proposal which aim for the total reduction of internal clearance is 0.05% -0.055% of the nominal diameter of the bearing bore. (The variations depend on the section height of the inner ring of bearing design.)

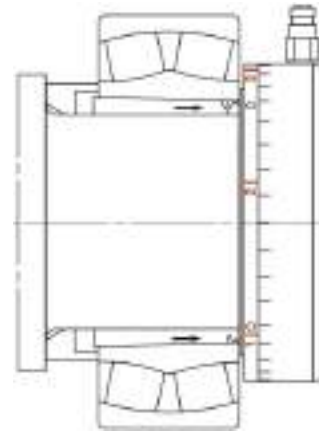
## Mounting Procedures

All the mounting data of are listed on Table 1 and Table 2 which is very important for accurate mounting of spherical roller bearing with taper bore.

It is very simple to use the data on the Tables:

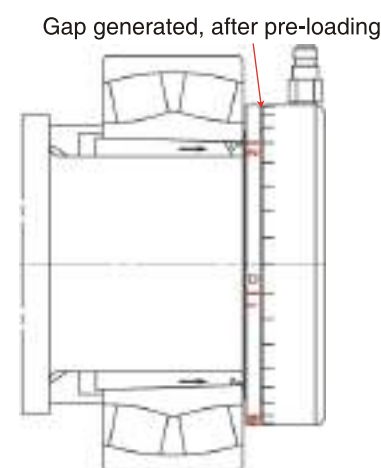
- Depend on sleeve types, choose Table 1 or Table 2
- Select the sliding surface, single or double
- Find the preload pressure
- Choose the angular travel range

### Step 1:



- 1-1 Screw in the ADP hydraulic nut on the thread of the adapter sleeve and rotate the hydraulic nut with the help of a steel pin inserted on the outer rim of the annular body until the bearing is tightened by the hydraulic nut.
- 1-2 Open the valve of the hydraulic pump.
- 1-3 Connect the high-pressure hose of hydraulic pump to the quick connecting nipple on the hydraulic nut.
- 1-4 Make sure again that the bearing is tightened against by the hydraulic nut.
- 1-5 Close the valve of the hydraulic pump to prevent the oil from back-flowing.

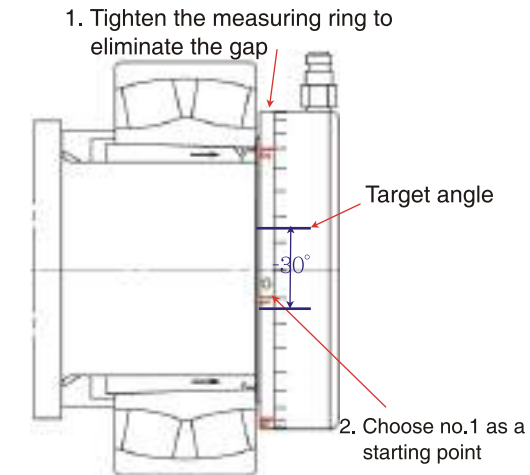
### Step 2:



Pump the oil pressure up to 70 bar (7 Mpa). There

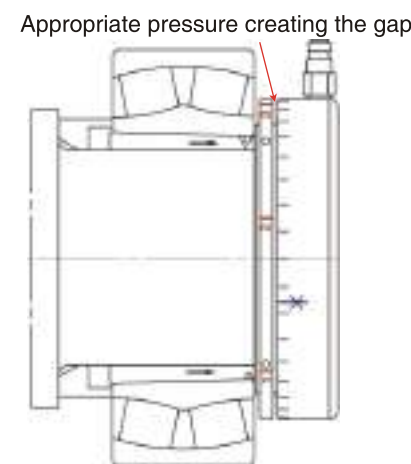
will be a gap resulted from the axial movement of the piston when jacking up the oil pressure. It doesn't matter how big or small the gap is.

### Step 3:



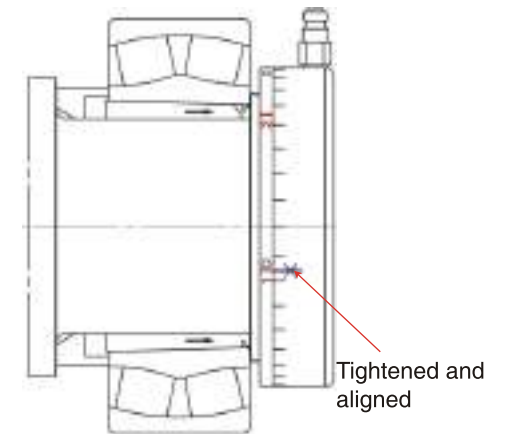
- 3-1 Insert a  $\Phi 5$  mm pin into the hole on the outer rim of the measuring ring and rotate it to tighten against the annular body.
- 3-2 Mark one of the calibrations on the measuring ring as the reference starting point. In this example, index no.1 is specified.
- 3-3 Locate a mark  $330^\circ$  away from the reference starting point in step 3-2 on the calibrations of the cylinder as the target mark. Aligning the reference starting point (index no.1) with the target mark will have the job done.

### Step 4:



Continue to pump the oil to an appropriate incremental pressure. There will be a growing gap between measuring ring and annular body. Stop pumping and rotate the measuring ring to close the gap. Watch how far you need to go between the reference starting point (index no.1) and the target mark.

### Step 5:



Repeat step 4 in graduation until alignment of the reference starting point and the target is reached.

## Threads

ADP hydraulic nuts up to and including size 40 have metric ISO threads to tolerance 6H(ISO 965/III-1980) and the lager nuts from size 41 have metric ISO trapezoidal threads to tolerance 7H (ISO 2901-1977).

The mating thread on the shaft should made to the tolerance 6g (ISO 965/III-1980) for the small sizes, and tolerance 7e (ISO 2901/1977) for sizes with trapezoidal thread.

## Material

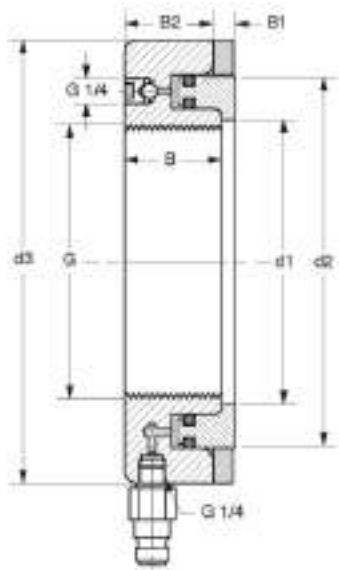
The annular body of ADP hydraulic nuts up to and including size 64 are made of hardenable steel and the pistons are made of bearing steel. From size 66 the annular bodys and pistons are made of Grade 2 construction steel.



High pressure test rig of ADP Hydraulic nut

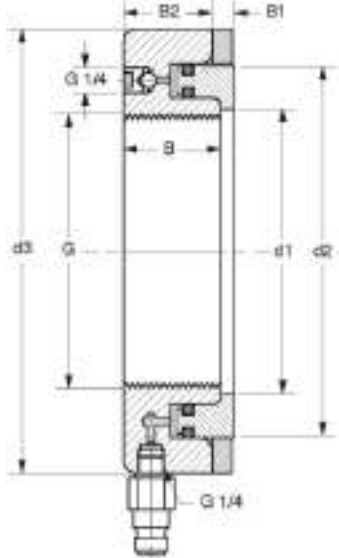


Hydraulic nuts  
M50x1.5 - Tr500x5



Dimensions							Axial displace- ment	Piston area	Mass	Designation	Max. force at 100 Mpa( 1000 bar)	
G	d1	d2	d3	B	B1	B2	max					
mm							mm	mm2	kg	-	KN	
M50x1.5	50.5	85	114	38	4	36	5	2900	2.70	HMV10 E	290	
M55x2	55.5	90	120	38	4	36	5	3150	2.75	HMV11 E	315	
M60x2	60.5	95	125	38	5	36	5	3300	2.80	HMV12 E	330	
M65x2	65.5	101	130	38	5	36	5	3600	3.00	HMV13 E	360	
M70x2	70.5	107	135	38	5	36	5	3800	3.20	HMV14 E	380	
M75x2	75.5	112	140	38	5	36	5	4000	3.40	HMV15 E	400	
M80x2	80.5	117	146	38	5	36	5	4200	3.70	HMV16 E	420	
M85x2	85.5	122	150	38	5	36	5	4400	3.75	HMV17 E	440	
M90x2	90.5	127	156	38	5	36	5	4700	4.00	HMV18 E	470	
M95x2	95.5	133	162	38	5	36	5	4900	4.30	HMV19 E	490	
M100x2	100.5	138	166	38	6	36	5	5100	4.40	HMV20 E	510	
M105x2	105.5	143	172	38	6	36	5	5300	4.65	HMV21 E	530	
M110x2	110.5	149	178	38	6	36	5	5600	4.95	HMV22 E	560	
M115x2	115.5	154	182	38	6	36	5	5800	5.00	HMV23 E	580	
M120x2	120.5	159	188	38	6	36	5	6000	5.25	HMV24 E	600	
M125x2	125.5	164	192	38	6	36	5	6200	5.35	HMV25 E	620	
M130x2	130.5	170	198	38	6	36	5	6400	5.65	HMV26 E	640	
M135x2	135.5	175	204	38	6	36	5	6600	5.90	HMV27 E	660	
M140x2	140.5	180	208	38	7	36	5	6800	6.00	HMV28 E	680	
M145x2	145.5	186	214	39	7	37	5	7300	6.50	HMV29 E	730	
M150x2	150.5	191	220	39	7	37	5	7500	6.60	HMV30 E	750	
M155x3	155.5	198	226	39	7	37	5	8100	6.95	HMV31 E	810	
M160x3	160.5	204	232	40	7	38	6	8600	7.60	HMV32 E	860	
M165x3	165.5	209	238	40	7	38	6	8900	7.90	HMV33 E	890	
M170x3	170.5	215	244	41	7	39	6	9400	8.40	HMV34 E	940	
M180x3	180.5	227	256	41	7	39	6	10300	9.15	HMV36 E	1030	
M190x3	191	239	270	42	8	40	7	11500	10.50	HMV38 E	1150	
M200x3	201	251	282	43	8	41	8	12500	11.50	HMV40 E	1250	
Tr205x4	207	256	288	43	8	41	8	12800	12.00	HMV41 E	1280	
Tr210x4	212	262	294	44	8	42	9	13400	12.50	HMV42 E	1340	
Tr215x4	217	267	300	44	8	42	9	13700	13.00	HMV43 E	1370	
Tr220x4	222	273	306	44	8	42	9	14400	13.50	HMV44 E	1440	
Tr225x4	227	280	312	45	8	43	9	15200	14.50	HMV45 E	1520	
Tr230x4	232	285	318	45	8	43	9	15500	14.50	HMV46 E	1550	

Hydraulic nuts  
M50x1.5 - Tr500x5



Dimensions							Axial displace- ment	Piston area	Mass	Designation	Max. force at 100 Mpa( 1000 bar)	
G	d1	d2	d3	B	B1	B2	max					
mm							mm	mm2	kg	-	KN	
Tr235x4	237	291	326	46	8	44	10	16200	16.0	HMV47 E	1620	
Tr240x4	242	296	330	46	9	44	10	16500	16.0	HMV48 E	1650	
Tr250x4	252	307	342	46	9	44	10	17600	17.5	HMV50 E	1760	
Tr260x4	262	319	356	47	9	45	11	18800	19.0	HMV52 E	1880	
Tr270x4	272	330	368	48	9	46	12	19800	20.5	HMV54 E	1980	
Tr280x4	282	341	380	49	9	47	12	21100	22.0	HMV56 E	2110	
Tr290x4	292	353	390	49	9	47	13	22400	22.5	HMV58 E	2240	
Tr300x4	302	364	404	51	10	49	14	23600	25.5	HMV60 E	2360	
Tr310x5	312	375	416	52	10	50	14	24900	27.0	HMV62 E	2490	
Tr320x5	322	387	428	53	10	51	14	26300	29.5	HMV64 E	2630	
Tr330x5	332	397	438	53	10	51	14	27000	30.0	HMV66 E	2700	
Tr340x5	342	408	450	54	10	52	14	28400	31.5	HMV68 E	2840	
Tr345x5	347	414	456	54	10	52	14	29400	32.5	HMV69 E	2940	
Tr350x5	352	420	464	56	10	54	14	29900	35.0	HMV70 E	2990	
Tr360x5	362	431	472	56	10	54	15	31300	35.5	HMV72 E	3130	
Tr365x5	367	436	482	57	11	55	15	31700	38.5	HMV73 E	3170	
Tr370x5	372	442	486	57	11	55	16	32800	39.0	HMV74 E	3280	
Tr380x5	382	452	498	58	11	56	16	33500	40.5	HMV76 E	3350	
Tr385x5	387	459	504	58	11	56	16	34700	41.0	HMV77 E	3470	
Tr400x5	402	475	522	60	11	58	17	36700	45.5	HMV80 E	3670	
Tr410x5	412	486	534	61	11	59	17	38300	48.0	HMV82 E	3830	
Tr420x5	422	498	546	61	11	59	17	40000	50.0	HMV84 E	4000	
Tr430x5	432	508	556	62	11	60	17	40800	52.5	HMV86 E	4080	
Tr450x5	452	530	580	64	12	62	17	44100	57.5	HMV90 E	4410	
Tr460x5	462	541	590	64	12	62	17	45100	60.0	HMV92 E	4510	
Tr470x5	472	552	602	65	12	63	18	46900	62.0	HMV94 E	4690	
Tr480x5	482	563	612	65	12	63	19	48600	63.0	HMV96 E	4860	
Tr490x5	492	573	624	66	12	64	19	49500	66.0	HMV98 E	4950	
Tr500x5	502	585	636	67	12	65	19	51500	70.0	HMV100 E	5150	





Mounting SRB with Adapter Sleeve & Taper Shaft (Table 1)

Bearing		Hydraulic		Piston	Preload		Reduction of total bearing RIC			
Number		Nut		Area	Sliding Surfaces		Percentage of bearing bore diameter			
					Single	Double	0.045	0.05	0.055	0.06
				mm²	*MPa	*MPa	Covert to closed angle of measuring ring			
22210	K	HMV10	E	2900	1.0	1.7	62	71	80	89
21310	K	HMV10	E	2900	1.5	2.7	69	78	88	98
22310	K	HMV10	E	2900	2.4	4.3	69	78	88	98
22211	K	HMV11	E	3150	1.1	1.9	69	79	89	99
21311	K	HMV11	E	3150	1.7	3.0	75	86	97	107
22311	K	HMV11	E	3150	2.6	4.6	75	86	97	107
22212	K	HMV12	E	3300	1.3	2.3	76	86	97	108
21312	K	HMV12	E	3300	1.8	3.3	82	93	105	117
22312	K	HMV12	E	3300	2.9	5.1	82	93	105	117
22213	K	HMV13	E	3600	1.4	2.6	82	94	106	117
21313	K	HMV13	E	3600	1.9	3.5	88	101	113	126
22313	K	HMV13	E	3600	3.0	5.3	88	101	113	126
22214	K	HMV14	E	3800	1.4	2.4	87	100	112	125
21314	K	HMV14	E	3800	2.1	3.8	95	108	122	135
22314	K	HMV14	E	3800	3.2	5.7	95	108	122	135
22215	K	HMV15	E	4000	1.3	2.3	92	105	119	132
21315	K	HMV15	E	4000	2.3	4.0	101	116	130	145
22315	K	HMV15	E	4000	3.5	6.3	101	116	130	145
22216	K	HMV16	E	4200	1.4	2.5	99	113	127	141
21316	K	HMV16	E	4200	2.4	4.3	108	123	139	154
22316	K	HMV16	E	4200	3.7	6.7	108	123	139	154
22217	K	HMV17	E	4400	1.6	2.8	105	120	135	150
21317	K	HMV17	E	4400	2.5	4.4	114	131	147	163
22317	K	HMV17	E	4400	3.8	6.8	114	131	147	163
23218	K	HMV18	E	4700	2.4	4.3	112	128	144	160
22218	K	HMV18	E	4700	1.8	3.2	112	128	144	160
21318	K	HMV18	E	4700	2.6	4.6	121	138	156	173
22318	K	HMV18	E	4700	4.0	7.2	121	138	156	173
22219	K	HMV19	E	4900	2.0	3.6	118	135	152	169
23219	K	HMV19	E	4900	2.6	4.7	118	135	152	169
21319	K	HMV19	E	4900	2.7	4.9	128	146	164	182
22319	K	HMV19	E	4900	4.3	7.6	128	146	164	182
23920	K	HMV20	E	5100	0.8	1.4	113	129	145	161
23020	K	HMV20	E	5100	1.2	2.1	116	132	149	166
23120	K	HMV20	E	5100	2.1	3.7	120	138	155	172
22220	K	HMV20	E	5100	2.2	3.9	125	143	161	179
23220	K	HMV20	E	5100	3.0	5.3	125	143	161	179
21320	K	HMV20	E	5100	3.0	5.3	136	155	174	194
22320	K	HMV20	E	5100	4.9	8.7	136	155	174	194
23022	K	HMV22	E	5600	1.5	2.7	129	147	166	184
23122	K	HMV22	E	5600	2.2	4.0	132	151	170	189
24122	K	HMV22	E	5600	2.4	4.6	330	377	424	472
22222	K	HMV22	E	5600	2.6	4.7	138	158	178	197
23222	K	HMV22	E	5600	3.5	6.3	138	158	178	197
21322	K	HMV22	E	5600	3.3	5.9	150	172	193	215
22322	K	HMV22	E	5600	5.6	9.9	150	172	193	215
23024	K	HMV24	E	6000	1.5	2.6	139	159	179	199
24024	K	HMV24	E	6000	1.7	3.2	348	397	447	497
23124	K	HMV24	E	6000	2.6	4.7	145	166	187	207
24124	K	HMV24	E	6000	3.0	5.7	363	415	467	518
22224	K	HMV24	E	6000	2.9	5.1	150	171	192	214
23224	K	HMV24	E	6000	3.8	6.8	150	171	192	214
21324	K	HMV24	E	6000	3.7	6.6	163	187	210	233
22324	K	HMV24	E	6000	6.0	10.8	163	187	210	233
23926	K	HMV26	E	6400	0.7	1.2	146	167	188	209

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Adapter Sleeve & Taper Shaft (Table 1)

Bearing		Hydraulic		Piston	Preload		Reduction of total bearing RIC			
Number		Nut		Area	Sliding Surfaces		Percentage of bearing bore diameter			
					Single	Double	0.045	0.05	0.055	0.06
				mm²	*MPa	*MPa	Covert to closed angle of measuring ring			
23026	K	HMV26	E	6400	1.8	3.2	152	174	196	217
24026	K	HMV26	E	6400	2.1	4.1	381	435	489	544
23126	K	HMV26	E	6400	2.6	4.6	155	177	200	222
24126	K	HMV26	E	6400	2.8	5.4	388	444	499	554
22226	K	HMV26	E	6400	3.1	5.4	161	184	207	230
23226	K	HMV26	E	6400	3.9	7.0	161	184	207	230
22326	K	HMV26	E	6400	6.5	11.5	176	202	227	252
23928	K	HMV28	E	6800	0.9	1.6	156	179	201	223
23028	K	HMV28	E	6800	1.8	3.1	162	185	209	232
24028	K	HMV28	E	6800	2.0	3.8	406	464	522	580
23128	K	HMV28	E	6800	2.7	4.9	167	191	214	238
24128	K	HMV28	E	6800	3.0	5.7	417	477	536	596
22228	K	HMV28	E	6800	3.4	6.0	174	199	224	249
23228	K	HMV28	E	6800	4.5	8.0	174	199	224	249
22328	K	HMV28	E	6800	7.2	12.8	190	217	244	271
23930	K	HMV30	E	7500	1.2	2.1	169	194	218	242
23030	K	HMV30	E	7500	1.8	3.2	174	199	224	248
24030	K	HMV30	E	7500	2.1	4.1	435	497	559	621
23130	K	HMV30	E	7500	3.4	6.1	181	207	233	259
24130	K	HMV30	E	7500	3.8	7.2	454	518	583	648
22230	K	HMV30	E	7500	3.6	6.4	187	214	241	268
23230	K	HMV30	E	7500	4.8	8.6	187	214	241	268
22330	K	HMV30	E	7500	7.4	13.1	203	232	260	289
23932	K	HMV32	E	8600	1.0	1.8	179	205	231	256
23032	K	HMV32	E	8600	1.8	3.2	185	212	238	265
24032	K	HMV32	E	8600	2.1	4.1	464	530	596	662
23132	K	HMV32	E	8600	3.6	6.3	195	222	250	278
24132	K	HMV32	E	8600	4.0	7.5	486	556	625	695
22232	K	HMV32	E	8600	3.8	6.7	201	229	258	287
23232	K	HMV32	E	8600	5.0	8.9	201	229	258	287
22332	K	HMV32	E	8600	7.2	12.9	216	247	277	308
23934	K	HMV34	E	9400	0.9	1.7	190	217	244	271
23034	K	HMV34	E	9400	2.1	3.7	199	227	255	284
24034	K	HMV34	E	9400	2.5	4.7	496	567	638	709
23134	K	HMV34	E	9400	3.4	6.0	205	234	263	292
24134	K	HMV34	E	9400	3.6	6.9	512	585	658	731
22234	K	HMV34	E	9400	3.9	6.9	214	244	275	305
23234	K	HMV34	E	9400	5.1	9.1	214	244	275	305
22334	K	HMV34	E	9400	7.4	13.1	229	262	294	327
23936	K	HMV36	E	10300	1.2	2.1	203	232	260	289
23036	K	HMV36	E	10300	2.3	4.2	212	242	272	302
24036	K	HMV36	E	10300	2.8	5.3	529	605	680	756
23136	K	HMV36	E	10300	3.6	6.4	218	249	280	311
24136	K	HMV36	E	10300	3.9	7.4	544	622	700	778
22236	K	HMV36	E	10300	3.6	6.4	224	256	288	320
23236	K	HMV36	E	10300	4.8	8.5	224	256	288	320
22336	K	HMV36	E	10300	7.5	13.3	242	276	311	346
23938	K	HMV38	E	11500	1.0	1.8	213	243	273	304
23038	K	HMV38	E	11500	2.1	3.8	222	253	285	317
24038	K	HMV38	E	11500	2.5	4.8	554	634	713	792
23138	K	HMV38	E	11500	3.8	6.7	231	264	297	330
24138	K	HMV38	E	11500	4.1	7.8	577	660	742	824
22238	K	HMV38	E	11500	3.7	6.6	237	271	305	338
23238	K	HMV38	E	11500	4.9	8.8	237	271	305	338
22338	K	HMV38	E	11500	7.3	12.9	255	291	328	364

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Adapter Sleeve & Taper Shaft (Table 1)

Bearing		Hydraulic		Piston	Preload		Reduction of total bearing RIC			
Number		Nut		Area	Sliding Surfaces		Percentage of bearing bore diameter			
					Single	Double	0.045	0.05	0.055	0.06
				mm²	*MPa	*MPa	Covert to closed angle of measuring ring			
23940	K	HMV40	E	12500	1.3	2.2	226	258	290	323
23040	K	HMV40	E	12500	2.4	4.2	235	268	302	336
24040	K	HMV40	E	12500	2.8	5.3	587	671	755	839
23140	K	HMV40	E	12500	4.0	7.2	244	279	314	348
24140	K	HMV40	E	12500	4.4	8.4	610	697	784	871
22240	K	HMV40	E	12500	3.9	6.9	250	286	321	357
23240	K	HMV40	E	12500	5.2	9.2	250	286	321	357
22340	K	HMV40	E	12500	7.3	13.1	268	306	345	383
23944	K	HMV44	E	14400	1.1	2.0	246	281	316	351
23944	K	HMV44	E	14400	1.1	2.0	246	281	316	351
23044	K	HMV44	E	14400	2.4	4.3	258	295	332	369
24044	K	HMV44	E	14400	2.8	5.3	645	737	829	922
23144	K	HMV44	E	14400	4.0	7.1	267	305	343	382
24144	K	HMV44	E	14400	4.4	8.3	668	763	859	954
22244	K	HMV44	E	14400	4.2	7.5	276	316	355	395
22344	K	HMV44	E	14400	7.3	13.1	294	336	378	420
23948	K	HMV48	E	16500	1.0	1.7	200	228	257	285
23048	K	HMV48	E	16500	2.2	3.9	209	238	268	298
24048	K	HMV48	E	16500	2.5	4.7	522	596	671	745
23148	K	HMV48	E	16500	4.0	7.1	218	249	280	311
24148	K	HMV48	E	16500	4.4	8.3	544	622	700	778
22248	K	HMV48	E	16500	4.5	8.1	227	259	292	324
23248	K	HMV48	E	16500	6.2	11.0	227	259	292	324
22348	K	HMV48	E	16500	7.5	13.3	240	275	309	343
23952	K	HMV52	E	18800	1.3	2.4	219	251	282	313
23052	K	HMV52	E	18800	2.5	4.4	228	261	294	326
24052	K	HMV52	E	18800	3.0	5.6	571	652	734	815
23152	K	HMV52	E	18800	4.4	7.9	237	271	305	339
24152	K	HMV52	E	18800	4.9	9.3	593	678	763	848
22252	K	HMV52	E	18800	4.7	8.4	246	282	317	352
23252	K	HMV52	E	18800	6.4	11.4	246	282	317	352
22352	K	HMV52	E	18800	7.4	13.3	260	297	334	372
23956	K	HMV56	E	21100	1.2	2.1	234	268	301	335
23056	K	HMV56	E	21100	2.3	4.0	243	278	313	348
24056	K	HMV56	E	21100	2.6	5.0	609	696	782	869
23156	K	HMV56	E	21100	4.0	7.1	253	289	325	361
24156	K	HMV56	E	21100	4.3	8.2	631	721	812	902
22256	K	HMV56	E	21100	4.2	7.5	262	299	336	374
23256	K	HMV56	E	21100	5.8	10.4	262	299	336	374
22356	K	HMV56	E	21100	7.6	13.5	280	320	360	400
23960	K	HMV60	E	23600	1.5	2.7	254	290	327	363
23060	K	HMV60	E	23600	2.6	4.6	263	301	338	376
24060	K	HMV60	E	23600	3.1	5.9	658	752	846	940
23160	K	HMV60	E	23600	4.3	7.7	272	311	350	389
24160	K	HMV60	E	23600	4.8	9.1	680	778	875	972
22260	K	HMV60	E	23600	4.4	7.9	281	321	362	402
23260	K	HMV60	E	23600	6.2	11.1	281	321	362	402
22360	K	HMV60	E	23600	7.5	13.4	299	342	385	428
23964	K	HMV64	E	26300	1.4	2.4	269	308	346	384
23064	K	HMV64	E	26300	2.4	4.3	278	318	358	397
24064	K	HMV64	E	26300	2.8	5.3	696	795	894	994
23164	K	HMV64	E	26300	4.7	8.4	292	334	375	417
24164	K	HMV64	E	26300	5.1	9.8	730	834	938	1042
22264	K	HMV64	E	26300	4.6	8.3	301	344	387	430
23264	K	HMV64	E	26300	6.6	11.7	301	344	387	430

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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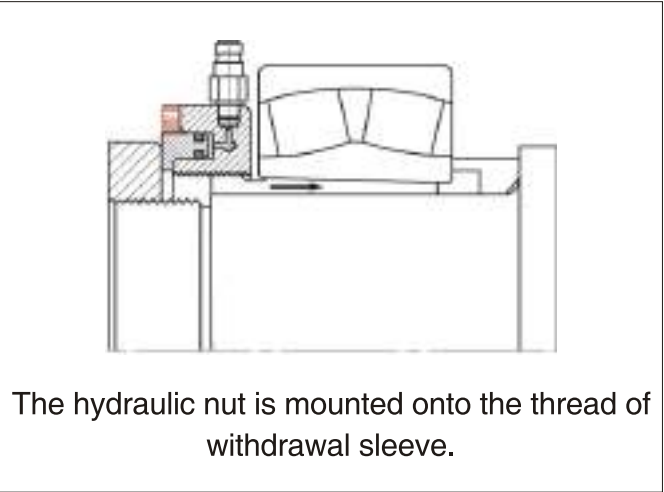
Mounting SRB with Adapter Sleeve & Taper Shaft (Table 1)										
Bearing		Hydraulic		Piston	Preload		Reduction of total bearing RIC			
Number		Nut		Area	Sliding Surfaces		Percentage of bearing bore diameter			
					Single	Double	0.045	0.05	0.055	0.06
				mm²	*MPa	*MPa	Covert to closed angle of measuring ring			
23968	K	HMV68	E	28400	1.3	2.2	284	325	365	406
23068	K	HMV68	E	28400	2.7	4.8	298	340	383	426
24068	K	HMV68	E	28400	3.2	6.2	745	851	957	1064
23168	K	HMV68	E	28400	5.2	9.2	311	356	400	445
24168	K	HMV68	E	28400	5.8	11.0	779	890	1001	1112
22268	K	HMV68	E	28400	5.1	9.0	321	366	412	458
23268	K	HMV68	E	28400	7.0	12.5	321	366	412	458
23972	K	HMV72	E	31300	1.1	2.0	299	342	385	428
23072	K	HMV72	E	31300	2.5	4.4	313	358	402	447
24072	K	HMV72	E	31300	3.0	5.6	782	894	1006	1118
23172	K	HMV72	E	31300	4.8	8.5	327	373	420	467
24172	K	HMV72	E	31300	5.3	10.1	816	933	1050	1166
23272	K	HMV72	E	31300	6.8	12.2	338	386	434	483
23976	K	HMV76	E	33500	1.4	2.6	213	243	273	304
23076	K	HMV76	E	33500	2.3	4.2	219	250	281	312
24076	K	HMV76	E	33500	2.8	5.3	547	625	703	781
23176	K	HMV76	E	33500	4.5	8.0	228	260	293	325
24176	K	HMV76	E	33500	5.0	9.4	570	651	732	814
23276	K	HMV76	E	33500	6.9	12.2	237	271	305	338
23980	K	HMN80	E	36700	1.3	2.4	223	255	286	318
23080	K	HMN80	E	36700	2.6	4.7	232	265	298	331
24080	K	HMN80	E	36700	3.1	6.0	580	662	745	828
23180	K	HMN80	E	36700	4.4	7.8	239	274	308	342
24180	K	HMN80	E	36700	4.8	9.2	599	684	770	855
23280	K	HMN80	E	36700	7.2	12.7	250	286	321	357
23984	K	HMV84	E	40000	1.2	2.2	233	266	299	333
23084	K	HMV84	E	40000	2.4	4.4	242	276	311	346
24084	K	HMV84	E	40000	2.9	5.5	605	691	778	864
23184	K	HMV84	E	40000	5.1	9.0	254	290	327	363
24184	K	HMV84	E	40000	5.6	10.6	635	726	816	907
23284	K	HMV84	E	40000	7.3	13.1	263	301	338	376
23988	K	HMV88	E	42500	1.5	2.6	246	281	316	351
23088	K	HMV88	E	42500	2.5	4.5	254	290	326	362
24088	K	HMV88	E	42500	3.0	5.7	634	724	815	905
23188	K	HMV88	E	42500	4.8	8.6	264	302	340	377
24188	K	HMV88	E	42500	5.3	10.0	660	755	849	943
23288	K	HMV88	E	42500	7.3	13.1	275	314	353	392
23992	K	HMV92	E	45100	1.4	2.5	256	293	329	366
23092	K	HMV92	E	45100	2.6	4.6	265	303	341	379
24092	K	HMV92	E	45100	3.0	5.8	663	757	852	947
23192	K	HMV92	E	45100	5.1	9.1	277	317	356	396
24192	K	HMV92	E	45100	5.6	10.7	693	792	891	990
23292	K	HMV92	E	45100	7.7	13.8	288	329	370	411
23996	K	HMV96	E	48600	1.5	2.6	268	306	344	382
23096	K	HMV96	E	48600	2.4	4.3	275	314	354	393
24096	K	HMV96	E	48600	2.8	5.4	688	786	885	983
23196	K	HMV96	E	48600	5.1	9.1	289	330	371	413
24196	K	HMV96	E	48600	5.6	10.6	722	825	928	1031
23296	K	HMV96	E	48600	7.9	14.2	301	344	387	430
239/500	K	HMV100	E	51500	1.4	2.5	278	317	357	397
230/500	K	HMV100	E	51500	2.3	4.1	285	326	367	408
240/500	K	HMV100	E	51500	2.7	5.1	713	815	917	1019
231/500	K	HMV100	E	51500	5.4	9.7	302	345	388	431
241/500	K	HMV100	E	51500	5.9	11.2	755	863	970	1078
232/500	K	HMV100	E	51500	8.8	15.6	316	361	406	451

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting bearings with withdrawal sleeves

Table 2 list for the mounting data which depend on the size of thread on the withdrawal sleeve. The hydraulic nut is mounted onto the thread of withdrawal sleeve.



Example 1:

Bearing: 23264K

Withdrawal sleeve: AOH 3264G (The thread size on the sleeve is Tr 340×5), so ADP hydraulic nut HMV68E is selected.

Then you can find the mounting data on Table 2:

Preload of the oil pump pressure, 10.8MPa(108 bar or 1566 psi), the piston area of ADP HMV68E is 28400mm² ,which can generate a thrust force of 306720N (28400×7.7=306720)

The converted drive angle range is between 344° and 387° .

Example 2:

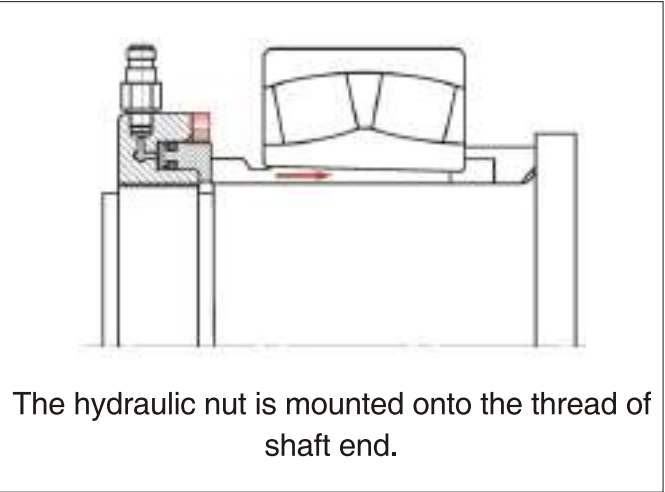
Alternatively the withdrawal sleeve: AOH 3264 (The thread size on the sleeve is Tr 350×5) is a lager thread on the sleeve and ADP hydraulic nut HMV70E is selected.

As HMV70 is lager than HMV68, the piston area is 29900mm² , Preload of the oil pump pressure is 10.3MPa(103 bar or 1495 psi), which can generate a thrust fore of 307970N (29900×10.3=307970)

The converted drive angle range is between 344° and 387° .

Special case

Very often the hydraulic nut is to be mounted onto the thread of the shaft end. Depending on the thread size



of shaft end, the preload pressure can be calculated by the following method.

Example 3:

Bearing :23264K

Withdrawal sleeve: AOH3264G

Thread of shaft end: Tr300×4

Then ADP hydraulic nut HMV60 is selected, the piston area is 23600mm² , as the thrust foce of the preload is 306720N (Example 1, or 2), so the preload pressure of oil pump will be 13MPa.

(306720÷23600=12.99≈13)

(307970÷23600=13.04≈13)

The converted drive angle range is remained the same range which is between 344° and 387° .



Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC				
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter				
					Double	0.045	0.05	0.055	0.06	
				mm²	*MPa	Covert to closed angle of measuring ring				
22210	K	AHX310	HMV11	E	3150	1.6	62	71	80	89
21310	K	AHX310	HMV11	E	3150	2.5	69	78	88	98
22310	K	AHX2310	HMV11	E	3150	3.9	69	78	88	98
22211	K	AHX311	HMV12	E	3300	1.8	69	79	89	99
21311	K	AHX311	HMV12	E	3300	2.8	75	86	97	107
22311	K	AHX2311	HMV12	E	3300	4.4	75	86	97	107
22212	K	AHX312	HMV13	E	3600	2.1	76	86	97	108
21312	K	AHX312	HMV13	E	3600	3.0	82	93	105	117
22312	K	AHX2312	HMV13	E	3600	4.7	82	93	105	117
22213	K	AHX313	HMV15	E	4000	2.3	82	94	106	117
21313	K	AHX313	HMV15	E	4000	3.1	88	101	113	126
22313	K	AH2313G	HMV14	E	3800	5.0	88	101	113	126
22313	K	AH2313	HMV15	E	4000	4.7	88	101	113	126
22214	K	AH314G	HMV15	E	4000	2.3	87	100	112	125
22314	K	AHX2314/60G	HMV15	E	4000	5.4	95	108	122	135
22314	K	AHX2314G	HMV15	E	4000	5.4	95	108	122	135
21314	K	AH314G	HMV15	E	4000	3.6	95	108	122	135
22314	K	AHX2314	HMV16	E	4200	5.2	95	108	122	135
22215	K	AH315G	HMV16	E	4200	2.2	92	105	119	132
21315	K	AH315G	HMV16	E	4200	3.8	101	116	130	145
22315	K	AHX2315/65G	HMV16	E	4200	6.0	101	116	130	145
22315	K	AHX2315G	HMV16	E	4200	6.0	101	116	130	145
22315	K	AHX2315	HMV17	E	4400	5.7	101	116	130	145
22216	K	AH316	HMV18	E	4700	2.2	99	113	127	141
21316	K	AH316	HMV18	E	4700	3.9	108	123	139	154
22316	K	AHX2316	HMV18	E	4700	6.0	108	123	139	154
22217	K	AHX317/75	HMV19	E	4900	2.6	105	120	135	150
22217	K	AHX317	HMV19	E	4900	2.6	105	120	135	150
21317	K	AHX317/75	HMV19	E	4900	3.9	114	131	147	163
21317	K	AHX317	HMV19	E	4900	3.9	114	131	147	163
22317	K	AHX2317/75	HMV19	E	4900	6.1	114	131	147	163
22317	K	AHX2317	HMV19	E	4900	6.1	114	131	147	163
23218	K	AHX3218	HMV20	E	5100	4.0	112	128	144	160
22218	K	AHX318/80	HMV20	E	5100	3.0	112	128	144	160
22218	K	AHX318	HMV20	E	5100	3.0	112	128	144	160
21318	K	AHX318/80	HMV20	E	5100	4.2	121	138	156	173
21318	K	AHX318	HMV20	E	5100	4.2	121	138	156	173
22318	K	AHX2318/80	HMV20	E	5100	6.6	121	138	156	173
22318	K	AHX2318	HMV20	E	5100	6.6	121	138	156	173
22219	K	AHX319/85	HMV21	E	5300	3.3	118	135	152	169
22219	K	AHX319	HMV21	E	5300	3.3	118	135	152	169
23219	K	AHX3219	HMV21	E	5300	4.4	118	135	152	169
21319	K	AHX319/85	HMV21	E	5300	4.5	128	146	164	182
21319	K	AHX319	HMV21	E	5300	4.5	128	146	164	182
22319	K	AHX2319/85	HMV21	E	5300	7.0	128	146	164	182
22319	K	AHX2319	HMV21	E	5300	7.0	128	146	164	182
23020	K	AHX2320/90	HMV22	E	5100	2.1	116	132	149	166

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC				
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter				
					Double	0.045	0.05	0.055	0.06	
				mm²	*MPa	Covert to closed angle of measuring ring				
23120	K	AHX3120	HMV22	E	5600	3.4	120	138	155	172
22220	K	AHX320/90	HMV22	E	5600	3.6	125	143	161	179
22220	K	AHX320	HMV22	E	5600	3.6	125	143	161	179
23220	K	AHX3220	HMV22	E	5600	4.8	125	143	161	179
21320	K	AHX320/90	HMV22	E	5600	8.0	136	155	174	194
21320	K	AHX320	HMV22	E	5600	8.0	136	155	174	194
22320	K	AHX2320/90	HMV22	E	5600	8.0	136	155	174	194
22320	K	AHX2320	HMV22	E	5600	8.0	136	155	174	194
23122	K	AHX3122/100	HMV24	E	6000	3.7	132	151	170	189
23122	K	AHX3122	HMV24	E	6000	3.7	132	151	170	189
24122	K	AHX24122	HMV23	E	5800	4.4	330	377	424	472
22222	K	AHX3122/100	HMV24	E	6000	4.4	138	158	178	197
22222	K	AHX3122	HMV24	E	6000	4.4	138	158	178	197
23222	K	AHX3222G	HMV24	E	6000	5.9	138	158	178	197
23222	K	AHX3222	HMV25	E	6200	5.7	138	158	178	197
22322	K	AHX2322/100	HMV25	E	6200	8.9	150	172	193	215
21322	K	AHX3122/100	HMV24	E	6000	5.5	150	172	193	215
21322	K	AHX3122	HMV24	E	6000	5.5	150	172	193	215
22322	K	AHX2322/100G	HMV24	E	6000	9.2	150	172	193	215
22322	K	AHX2322G	HMV24	E	6000	9.2	150	172	193	215
22322	K	AHX2322	HMV25	E	6200	8.9	150	172	193	215
23024	K	AHX3024	HMV26	E	6400	2.4	139	159	179	199
24024	K	AH24024	HMV25	E	6200	3.1	348	397	447	497
23124	K	AHX3124/110	HMV26	E	6400	4.4	145	166	187	207
23124	K	AHX3124	HMV26	E	6400	4.4	145	166	187	207
24124	K	AH24124	HMV26	E	6400	5.4	363	415	467	518
22224	K	AHX3124/110	HMV26	E	6400	4.8	150	171	192	214
22224	K	AHX3124	HMV26	E	6400	4.8	150	171	192	214
23224	K	AHX3224G	HMV26	E	6400	6.4	150	171	192	214
23224	K	AHX3224	HMV27	E	6600	6.2	150	171	192	214
22324	K	AHX2324/110G	HMV26	E	6400	10.1	163	187	210	233
22324	K	AHX2324G	HMV26	E	6400	10.1	163	187	210	233
22324	K	AHX2324/110	HMV27	E	6600	9.8	163	187	210	233
22324	K	AHX2324	HMV27	E	6600	9.8	163	187	210	233
23026	K	AHX3026	HMV28	E	6800	3.0	152	174	196	217
24026	K	AH24026	HMV27	E	6600	3.9	381	435	489	544
23126	K	AHX3126/115	HMV28	E	6800	4.3	155	177	200	222
23126	K	AHX3126	HMV28	E	6800	4.3	155	177	200	222
24126	K	AH24126	HMV28	E	6800	5.1	388	444	499	554
22226	K	AHX3126/115	HMV28	E	6800	5.1	161	184	207	230
22226	K	AHX3126	HMV28	E	6800	5.1	161	184	207	230
23226	K	AHX3226G	HMV28	E	6800	6.5	161	184	207	230
23226	K	AHX3226	HMV29	E	7300	6.1	161	184	207	230
22326	K	AHX2326G	HMV28	E	6800	10.8	176	202	227	252
22326	K	AHX2326/115G	HMV28	E	6800	10.8	176	202	227	252
22326	K	AHX2326/115	HMV29	E	7300	10.1	176	202	227	252
22326	K	AHX2326	HMV29	E	7300	10.1	176	202	227	252

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC			
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter			
					Double	0.045	0.05	0.055	0.06
				mm²	*MPa	Covert to closed angle of measuring ring			
23028	K	AHX3028	HMV30	E	7500	2.8	162	185	209
24028	K	AH24028	HMV29	E	7300	3.6	406	464	522
23128	K	AHX3128/125	HMV30	E	7500	4.4	167	191	214
23128	K	AHX3128	HMV30	E	7500	4.4	167	191	214
24128	K	AH24128	HMV30	E	7500	5.2	417	477	536
22228	K	AHX3128/125	HMV30	E	7500	5.5	174	199	224
22228	K	AHX3128	HMV30	E	7500	5.5	174	199	224
23228	K	AHX3228G	HMV30	E	7500	7.2	174	199	224
23228	K	AHX3228	HMV31	E	8100	6.7	174	199	224
22328	K	AHX2328/125G	HMV30	E	7500	11.6	190	217	244
22328	K	AHX2328G	HMV30	E	7500	11.6	190	217	244
22328	K	AHX2328/125	HMV31	E	8100	10.7	190	217	244
24030	K	AH24030	HMV31	E	8100	3.8	435	497	559
23030	K	AH3030	HMV32	E	8600	2.8	174	199	224
23130	K	AHX3130G	HMV32	E	8600	5.4	181	207	233
23130	K	AHX3130/135G	HMV32	E	8600	5.4	181	207	233
23130	K	AHX3130	HMV33	E	8900	5.2	181	207	233
24130	K	AH24130	HMV32	E	8600	6.3	454	518	583
22230	K	AHX3130G	HMV32	E	8600	5.6	187	214	241
22230	K	AHX3130/135G	HMV32	E	8600	5.6	187	214	241
22230	K	AHX2330	HMV33	E	8900	5.4	187	214	241
23230	K	AHX3230G	HMV32	E	8600	7.5	187	214	241
23230	K	AHX3230	HMV33	E	8900	7.3	187	214	241
22330	K	AHX2330/135G	HMV32	E	8600	11.4	203	232	260
22330	K	AHX2330G	HMV32	E	8600	11.4	203	232	260
22330	K	AHX2330	HMV33	E	8900	11.1	203	232	260
23032	K	AOH3032	HMV34	E	9400	2.9	185	212	238
24032	K	AOH24032	HMV34	E	9400	3.7	464	530	596
23132	K	AOH3132/140G	HMV34	E	9400	5.8	195	222	250
23132	K	AOH3132G	HMV34	E	9400	5.8	195	222	250
23132	K	AOH3132/140	HMV36	E	10300	5.3	195	222	250
23132	K	AOH3132	HMV36	E	10300	5.3	195	222	250
24132	K	AOH24132	HMV34	E	9400	6.9	486	556	625
22232	K	AOH3132/140G	HMV34	E	9400	6.1	201	229	258
22232	K	AOH3132G	HMV34	E	9400	6.1	201	229	258
22232	K	AOH3132/140	HMV36	E	10300	5.6	201	229	258
22232	K	AOH3132	HMV36	E	10300	5.6	201	229	258
23232	K	AOH3232	HMV36	E	10300	7.4	201	229	258
22332	K	AOH2332/140G	HMV34	E	9400	11.8	216	247	277
22332	K	AOH2332G	HMV34	E	9400	11.8	216	247	277
22332	K	AOH2332/140	HMV36	E	10300	10.7	216	247	277
22332	K	AOH2332	HMV36	E	10300	10.7	216	247	277
23034	K	AOH3034	HMV36	E	10300	3.4	199	227	255
24034	K	AOH24034	HMV36	E	10300	4.3	496	567	638
23134	K	AOHX3134/150G	HMV36	E	10300	5.5	205	234	263
23134	K	AOHX3134G	HMV36	E	10300	5.5	205	234	263
23134	K	AOH3134	HMV38	E	11500	4.9	205	234	263

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC			
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter			
					Double	0.045	0.05	0.055	0.06
				mm²	*MPa	Covert to closed angle of measuring ring			
24134	K	AOH24134	HMV36	E	10300	6.3	512	585	658
22234	K	AOHX3134/150G	HMV36	E	10300	6.3	214	244	275
22234	K	AOH3134G	HMV36	E	10300	6.3	214	244	275
22234	K	AOH3134	HMV38	E	11500	5.7	214	244	275
23234	K	AOH3234G	HMV36	E	10300	8.3	214	244	275
23234	K	AOH3234	HMV38	E	11500	7.4	214	244	275
22334	K	AOH2334G	HMV36	E	10300	12.0	229	262	294
22334	K	AOH2334	HMV38	E	11500	10.7	229	262	294
23036	K	AOH3036	HMV38	E	11500	3.7	212	242	272
24036	K	AOH24036	HMV38	E	11500	4.8	529	605	680
23136	K	AOH3136G	HMV38	E	11500	5.7	218	249	280
23136	K	AOH3136	HMV40	E	12500	5.3	218	249	280
24136	K	AOH24136	HMV38	E	11500	6.6	544	622	700
22236	K	AOH2236/160G	HMV38	E	11500	5.7	224	256	288
22236	K	AOH2236G	HMV38	E	11500	5.7	224	256	288
22236	K	AOH2236	HMV40	E	12500	5.2	224	256	288
23236	K	AOH3236G	HMV38	E	11500	7.6	224	256	288
23236	K	AOH3236	HMV40	E	12500	7.0	224	256	288
22336	K	AOH2336/160G	HMV38	E	11500	11.9	242	276	311
22336	K	AOH2336G	HMV38	E	11500	11.9	242	276	311
22336	K	AOH2336	HMV40	E	12500	11.0	242	276	311
23038	K	AOH3038G	HMV40	E	12500	3.5	222	253	285
23038	K	AOH3038	HMV41	E	12800	3.4	222	253	285
24038	K	AOH24038	HMV40	E	12500	4.4	554	634	713
23138	K	AOH3138G	HMV40	E	12500	6.2	231	264	297
23138	K	AOH3138	HMV42	E	13400	5.8	231	264	297
24138	K	AOH24138	HMV40	E	12500	7.1	577	660	742
22238	K	AOH2238/170G	HMV40	E	12500	6.0	237	271	305
22238	K	AOH2238G	HMV40	E	12500	6.0	237	271	305
22238	K	AOH2238	HMV42	E	13400	5.6	237	271	305
23238	K	AOH3238G	HMV40	E	12500	8.1	237	271	305
23238	K	AOH3238	HMV42	E	13400	7.5	237	271	305
22338	K	AOH2338/170G	HMV40	E	12500	11.9	255	291	328
22338	K	AOH2338G	HMV40	E	12500	11.9	255	291	328
22338	K	AOH2338	HMV42	E	13400	11.1	255	291	328
23040	K	AOH3040G	HMV42	E	13400	3.9	235	268	302
23040	K	AOH3040	HMV43	E	13700	3.9	235	268	302
24040	K	AOH24040	HMV42	E	13400	4.9	587	671	755
23140	K	AOH3140	HMV44	E	14400	6.2	244	279	314
24140	K	AOH24140	HMV42	E	13400	7.9	610	697	784
22240	K	AOH2240	HMV44	E	14400	6.0	250	286	321
23240	K	AOH3240	HMV44	E	14400	8.0	250	286	321
22340	K	AOH2340	HMV44	E	14400	11.4	268	306	345
23044	K	AOH3044G	HMV46	E	15500	4.0	258	295	332
23044	K	AOH3044	HMV47	E	16200	3.8	258	295	332
24044	K	AOH24044	HMV46	E	15500	5.0	645	737	829
23144	K	AOH3144	HMV48	E	16500	6.2	267	305	343

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC			
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter			
					Double	0.045	0.05	0.055	0.06
				mm <sup>2</sup>	*MPa	Covert to closed angle of measuring ring			
24144	K	AOH24144	HMV46	E	15500	7.7	668	763	859
23244	K	AOH3244	HMV48	E	16500	8.9	276	316	355
22244	K	AOH2244	HMV48	E	16500	6.5	276	316	355
22344	K	AOH2344	HMV48	E	16500	11.4	294	336	378
23048	K	AOH3048	HMV52	E	18800	3.4	209	238	268
24048	K	AOH24048	HMV50	E	17600	4.4	522	596	671
23148	K	AOH3148	HMV52	E	18800	6.2	218	249	280
24148	K	AOH24148	HMV52	E	18800	7.3	544	622	700
22248	K	AOH2248	HMV52	E	18800	7.1	227	259	292
23248	K	AOH2348	HMV44	E	14400	12.6	227	259	292
23248	K	AOH2348	HMV52	E	18800	9.7	227	259	292
22348	K	AOH2348	HMV52	E	18800	11.7	240	275	309
23052	K	AOH3052	HMV56	E	21100	3.9	228	261	294
24052	K	AOH24052G	HMV56	E	21100	5.0	571	652	734
24052	K	AOH24052	HMV54	E	19600	5.4	571	652	734
23152	K	AOH3152G	HMV56	E	21100	7.0	237	271	305
23152	K	AOH3152	HMV58	E	22400	6.6	237	271	305
24152	K	AOH24152	HMV56	E	21100	8.2	593	678	763
22252	K	AOH2252G	HMV56	E	21100	7.5	246	282	317
22252	K	AOH2252	HMV58	E	22400	7.0	246	282	317
23252	K	AOH2352	HMV58	E	22400	9.6	246	282	317
22352	K	AOH2352G	HMV56	E	21100	11.8	260	297	334
22352	K	AOH2352	HMV58	E	22400	11.1	260	297	334
23056	K	AOH3056	HMV60	E	23600	3.6	243	278	313
24056	K	AOH24056	HMV58	E	22400	4.7	609	696	782
24056	K	AOH24056G	HMV60	E	23600	4.5	609	696	782
23156	K	AOH3156G	HMV60	E	23600	6.3	253	289	325
23156	K	AOH3156	HMV62	E	24900	6.0	253	289	325
24156	K	AOH24156	HMV60	E	23600	7.3	631	721	812
22256	K	AOH2256G	HMV60	E	23600	6.7	262	299	336
22256	K	AOH2256	HMV62	E	24900	6.4	262	299	336
23256	K	AOH2356	HMV62	E	24900	8.8	262	299	336
22356	K	AOH2356	HMV62	E	24900	11.4	280	320	360
22356	K	AOH2356	HMV62	E	24900	11.4	280	320	360
23060	K	AOH3060	HMV64	E	26300	4.1	263	301	338
24060	K	AOH24060	HMV62	E	24900	5.6	658	752	846
24060	K	AOH24060G	HMV64	E	26300	5.3	658	752	846
23160	K	AOH3160G	HMV56	E	21100	8.6	272	311	350
23160	K	AOH3160	HMV66	E	27000	6.8	272	311	350
24160	K	AOH24160	HMV64	E	26300	8.1	680	778	875
22260	K	AOH2260G	HMV64	E	26300	7.1	281	321	362
22260	K	AOH2260	HMV66	E	27000	6.9	281	321	362
23260	K	AOH3260G	HMV64	E	26300	10.0	281	321	362
23260	K	AOH3260	HMV66	E	27000	9.7	281	321	362
23064	K	AOH3064G	HMV68	E	28400	3.9	278	318	358
23064	K	AOH3064	HMV69	E	29400	3.8	278	318	358
24064	K	AOH24064	HMV66	E	27000	5.2	696	795	894

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic	Piston	Preload	Reduction of total bearing RIC			
Number		Sleeve	Nut	Area	Sliding Surface	Percentage of bearing bore diameter			
					Double	0.045	0.05	0.055	0.06
				mm <sup>2</sup>	*MPa	Covert to closed angle of measuring ring			
24064	K	AOH24064G	HMV68	E	28400	4.9	696	795	894
23164	K	AOH3164G	HMV68	E	28400	7.8	292	334	375
23164	K	AOH3164	HMV70	E	29900	7.4	292	334	375
24164	K	AOH24164	HMV68	E	28400	9.1	730	834	938
22264	K	AOH2264G	HMV68	E	28400	7.7	301	344	387
22264	K	AOH2264	HMV70	E	29900	7.3	301	344	387
23264	K	AOH3264G	HMV68	E	28400	10.8	301	344	387
23264	K	AOH3264	HMV70	E	29900	10.3	301	344	387
23068	K	AOH3068G	HMV72	E	31300	4.4	298	340	383
23068	K	AOH3068	HMV73	E	31700	4.3	298	340	383
24068	K	AOH24068	HMV72	E	31300	5.6	745	851	957
23168	K	AOH3168G	HMV72	E	31300	8.4	311	356	400
23168	K	AOH3168	HMV74	E	32800	8.0	311	356	400
24168	K	AOH24168	HMV72	E	31300	10.0	779	890	1001
23268	K	AOH3268G	HMV72	E	31300	11.3	321	366	412
23268	K	AOH3268	HMV74	E	32800	10.8	321	366	412
23072	K	AOH3072G	HMV76	E	33500	4.1	313	358	402
23072	K	AOH3072	HMV77	E	34700	4.0	313	358	402
24072	K	AOH24072	HMV76	E	33500	5.2	782	894	1006
23172	K	AOH3172G	HMV76	E	33500	7.9	327	373	420
23172	K	AOH3172	HMV80	E	36700	7.2	327	373	420
24172	K	AOH24172	HMV76	E	33500	9.4	816	933	1050
23272	K	AOH3272G	HMV76	E	33500	11.4	338	386	434
23272	K	AOH3272	HMV80	E	36700	10.4	338	386	434
23076	K	AOH3076G	HMV80	E	36700	3.8	262	300	337
23076	K	AOH3076	HMV82	E	38300	3.7	262	300	337
24076	K	AOH24076	HMV80	E	36700	4.8	656	750	844
23176	K	AOH3176G	HMV80	E	36700	7.3	273	312	351
23176	K	AOH3176	HMV84	E	40000	6.7	273	312	351
24176	K	AOH24176	HMV80	E	36700	8.6	683	781	879
23276	K	AOH3276G	HMV80	E	36700	11.2	284	325	365
23276	K	AOH3276	HMV84	E	40000	10.3	284	325	365
23080	K	AOH3080G	HMV84	E	40000	4.3	278	318	358
23080	K	AOH3080	HMV86	E	40800	4.2	278	318	358
24080	K	AOH24080	HMV84	E	40000	5.5	696	795	894
23180	K	AOH3180G	HMV84	E	40000	7.2	287	328	369
23180	K	AOH3180	HMV88	E	42500	6.8	287	328	369
24180	K	AOH24180	HMV84	E	40000	8.4	718	821	923
23280	K	AOH3280G	HMV84	E	40000	11.7	300	343	386
23280	K	AOH3280	HMV88	E	42500	11.0	300	343	386
23084	K	AOH3084G	HMV88	E	42500	4.1	290	332	373
23084	K	AOH3084	HMV90	E	44100	3.9	290	332	373
24084	K	AOH24084	HMV88	E	42500	5.2	726	829	933
23184	K	AOH3184G	HMV88	E	42500	8.5	305	348	392
23184	K	AOH3184	HMV92	E	45100	8.0	305	348	392
24184	K	AOH24184	HMV88	E	42500	10.0	762	871	980
23284	K	AOH3284G	HMV88	E	42500	12.3	316	361	406

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

Mounting SRB with Withdrawal Sleeve (Table 2)

Bearing		Withdrawal	Hydraulic		Piston	Preload	Reduction of total bearing RIC			
Number		Sleeve	Nut		Area	Sliding Surface	Percentage of bearing bore diameter			
						Double	0.045	0.05	0.055	0.06
					mm²	*MPa	Covert to closed angle of measuring ring			
23284	K	AOH3284	HMV92	E	45100	11.6	316	361	406	451
23088	K	AOHX3088G	HMV92	E	45100	4.2	304	348	391	435
23088	K	AOHX3088	HMV94	E	46900	4.0	304	348	391	435
24088	K	AOH24088	HMV92	E	45100	5.4	761	869	978	1086
23188	K	AOHX3188	HMV96	E	48600	7.5	317	362	407	453
24188	K	AOH24188	HMV92	E	45100	9.4	792	905	1019	1132
23288	K	AOHX3288	HMV96	E	48600	11.4	330	377	424	471
23092	K	AOHX3092	HMV98	E	49500	4.2	318	364	409	454
24092	K	AOH24092	HMV96	E	48600	5.4	795	909	1023	1136
23192	K	AOHX3192	HMV102	E	53300	7.7	333	380	428	475
24192	K	AOH24192	HMV96	E	48600	9.9	832	950	1069	1188
23292	K	AOHX3292	HMV102	E	53300	11.7	345	395	444	493
23096	K	AOHX3096	HMV104	E	54300	3.9	275	314	354	393
24096	K	AOH24096	HMV100	E	51500	5.1	826	943	1061	1179
23196	K	AOHX3196	HMV106	E	56200	7.8	289	330	371	413
24196	K	AOH24196	HMV100	E	51500	10.0	866	990	1114	1238
23296	K	AOHX3296	HMV106	E	56200	12.2	301	344	387	430
230/500	K	AOHX30/500	HMV108	E	58200	3.4	713	815	917	1019
240/500	K	AOH240/500	HMV106	E	56200	4.7	713	815	917	1019
231/500	K	AOHX31/500	HMV110	E	59200	7.8	755	863	970	1078
241/500	K	AOH241/500	HMV106	E	56200	10.3	755	863	970	1078
232/500	K	AOHX32/500	HMV110	E	59200	12.6	789	901	1014	1127

\* 1 MPa= 10 bar= 145 psi= 1N/mm²= 0.102 kg/mm²

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