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प्रारंभिक मसौदा

शुंडाकार रोलर बियरिंग्स के लिए विशिष्टि — एक्सेसरीज
भाग 1 एडेप्टर स्लीव असेंबलियों के लिए आयाम और
निकासी स्लीव

[IS 16605-1 का पहला पुनरीक्षण]

Preliminary Draft

Specification for Rolling Bearings — Accessories
Part 1 Dimensions for Adapter Sleeve Assemblies and
Withdrawal Sleeves

[First revision of IS 16605-1]

ICS 21.100.20

Bearings Sectional Committee, PGD 13

Last date for Comment:

FOREWORD

(Formal clauses will be added later on)

This Indian Standard (First Revision) will be adopted by Bureau of Indian Standards after the draft is finalized by the Bearings Sectional Committee and approval by the Production and General Engineering Division Council (PGDC).

This standard was first published in 2018 and has now been revised to keep up the pace with the latest technological developments and international practices.

In this revision, the following major modifications have been made:

- a) Normative references have been updated (see section 2);
- b) Added new section of design type of Adapter and Withdrawal sleeve with oil groove (see section 3.4);
- c) The symbols (see section 4) & designation (see section 5.1 and 5.2) have been adapted largely to global standards prevailing in the industry;
- d) Added new dimension Table 3 of adapter sleeve assemblies with taper 1:30 (see section 6.2);
- e) Designation have been updated in Table 1, 2 and 3 for adapter sleeves (See section 6.2) and Table 4 (see section 6.3) and 5 (see section 6.4) for withdrawal sleeves;
- f) Added new section of Material (see section 7);
- g) Added new section of dimension tolerances (see section 8.1 and 8.2);
- h) Added new section of Information on Workmanship and delivery requirement (see section 9);
- j) Added new Annexure A “Sampling and criteria for acceptance”; and
- k) Added new Annexure B “Explanatory notes” with 3D graphics.

This standard has another part, under the general title “Rolling bearings — Accessories: Part 2 Dimensions

for locknuts and locking devices”.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*).’ The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Draft Indian Standard

**SPECIFICATION FOR ROLLING BEARINGS — ACCESSORIES
PART 1 DIMENSIONS FOR ADAPTER SLEEVE ASSEMBLIES AND
WITHDRAWAL SLEEVES**

(First revision of IS 16605-1)

1 SCOPE

This part of IS 16605 specifies:

- Boundary dimensions of adapter sleeves with taper 1:12 and 1:30 and withdrawal sleeves with tapers 1:12 and 1:30 for rolling bearings of a number of dimension series as specified in IS 5669.
- The outside diameter of suitable locknuts.
- Distance from bearing small bore face to outer face of locknut.
- From bearing small bore face to outer face of bolt head.
- Overall length of withdrawal sleeve and bearing ring.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

<i>IS No./Other Standards</i>	<i>Title</i>
IS 919 (Part 1) : 2014	Geometrical product specifications (GPS) - ISO code system for tolerances on linear sizes: Part 1 Basis of tolerance, deviation and fits <i>(Third Revision)</i>
IS 1875: 1992	Carbon steel billets, blooms, slabs and bars for forgings — Specification <i>(Fifth Revision)</i>
IS 2399: 2024	Rolling bearings — Vocabulary <i>(Third Revision)</i>
IS 4905: 2015	Random sampling and randomization procedures <i>(First Revision)</i>
IS 5669: 2019	Rolling bearings — Radial bearings — Boundary dimensions, general plan <i>(Second Revision)</i>
IS 7008 (Part 4) : 2021	ISO metric trapezoidal screw threads: Part 4 Tolerances <i>(Third Revision)</i>
IS 14962 (Part 3) : 2022	ISO general purpose metric screw threads - Tolerances: Part 3 Limit deviations for screw threads <i>(First Revision)</i>
IS 15726: 2021	Technical product documentation — Edges of undefined shape — Indication and dimensioning <i>(First Revision)</i>
IS 16605 (part 2)	Rolling bearings — Accessories — Part 2: Dimensions for locknuts and locking devices
PGD 13 (24061) / ISO 15241 : 2012	Rolling bearings — Symbols for physical quantities

3 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in **IS 2399** and the following apply.

3.1 Adapter Sleeve Assembly

assembly comprising an adapter sleeve, a locknut, and a locking device

3.2 Locking Clip

part in C-shape for securing a locknut

3.3 Locking Clip Assembly

assembly comprising a locking clip and a bolt

3.4 Design Types

Adapter sleeves and Withdrawal sleeves are available in various dimension series. They are slotted on one side and have a tapered casing/bearing seat of 1:12 or 1:30.

3.5 Adapter Sleeves

Up to a shaft diameter of about $d_1 = 200$ mm, adapter sleeves shall preferably be used with lock washer (see Fig. 1a). Beyond this, a locking clip shall be used (see Fig. 1b). For better understanding Annex B with 3D graphics added for reference.

For easier mounting of Adapter sleeves, sleeves from $d_1 = 140$ mm upwards can be supplied with an oil supply duct on the threaded side and an oil distributor groove in the tapered casing surface (denoted by the suffix "H") (see Fig. 1e and Fig. 2).

Sleeves from $d_1 \geq 140$ mm upwards are also available with an additional supply duct, offset by 90° , and an oil distributor groove in the sleeve bore (denoted by the suffix "HB" see Fig. 3).

3.6 Withdrawal sleeves

Withdrawal sleeves (see Fig. 1c) are available in various dimension series. They are slotted on one side and have a tapered casing/bearing seat of 1:12 or, for the wider dimension series 40 and 41, of 1:30.

Similarly, for easier mounting and dismounting of large bearings, Withdrawal sleeves from $d_1 = 140$ mm bore diameter are made with two oil supply ducts on the threaded side, one with access to the oil groove in the tapered casing surface, and the second with access to the bore (suffix H) (see Fig. 1d). For better understanding Annex B with 3D graphics added for reference

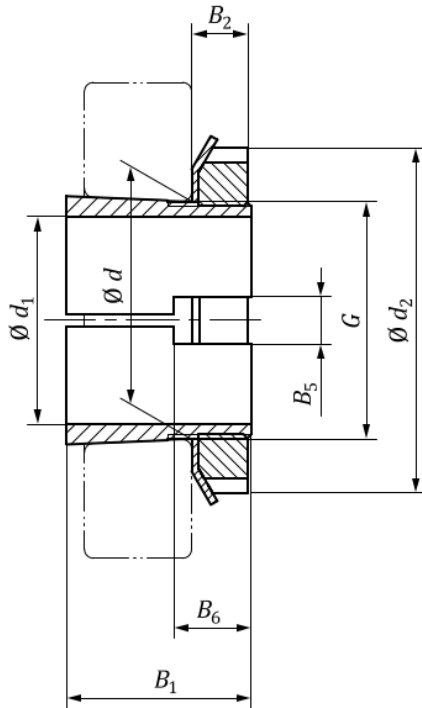
4 SYMBOLS

For the purposes of this document, the symbols given in ISO 15241 and the following apply.

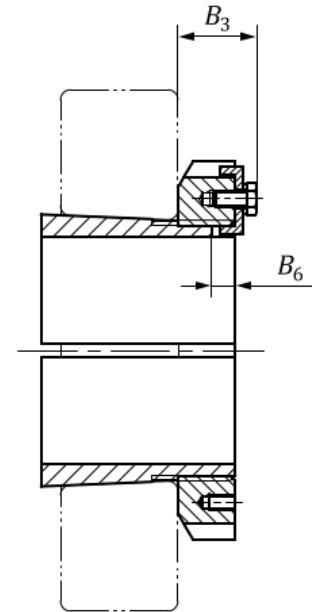
The symbols shown in Fig. 1 and the values given in Table 1, Table 2, Table 3, Table 4 and Table 5 denote nominal dimensions, unless specified otherwise.

B_1	adapter sleeve length or withdrawal sleeve length
B_2	distance from bearing small bore face to outer face of locknut
B_3	distance from bearing small bore face to outer face of bolt head

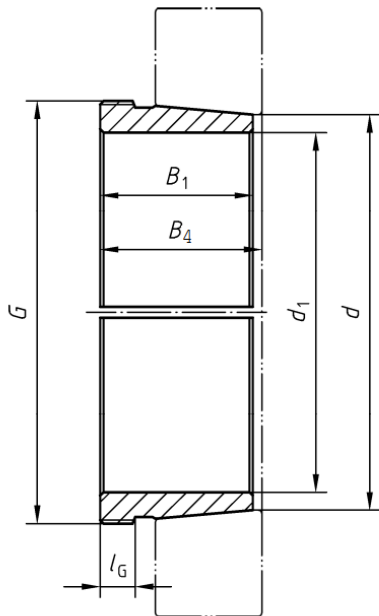
B_4	overall length of withdrawal sleeve and bearing ring
B_5	slot width (for lockwasher inner tab or locking clip)
B_6	slot length
d	bearing bore diameter
d_1	bore diameter of sleeve
d_2	outside diameter of locknut
G	designation of screw thread
a	Distance of bore for oil injection
G_1	Thread designation of bore(s) for oil injection
l_G	Thread length of withdrawal sleeve
l_{G1}	Thread length of bore for oil injection



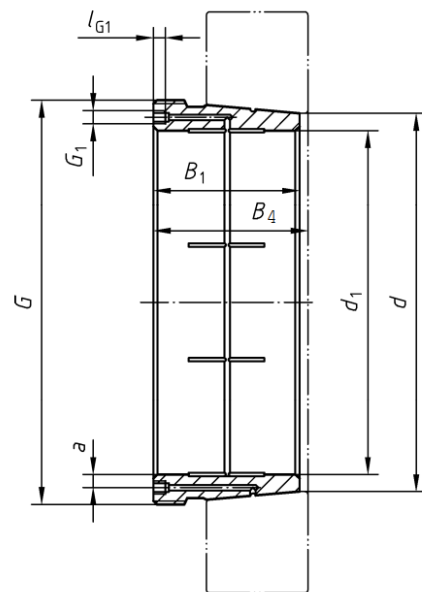
a) Dimensions of adapter sleeve with locknut and lock washer



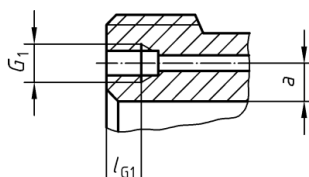
b) Dimensions of adapter sleeve with locknut and locking clip assembly



c) Dimensions of Withdrawal sleeve basic design



d) Dimensions of Withdrawal sleeve with bore for oil injection



e) Dimensions of adapter and withdrawal sleeve with bore for oil injection

FIG. 1 ADAPTER SLEEVE ASSEMBLIES AND WITHDRAWAL SLEEVE

5. DESIGNATION

5.1 Designation of an Adapter Sleeve

Designation of an adapter sleeve complete with locknut and lock washer with $d_1 = 20$ mm bore diameter and $B_1 = 26$ mm sleeve width (symbol H 205), without oil supply duct:

Adapter sleeve IS 16605(Part 1)- H 205

Designation of an adapter sleeve complete with locknut and lock washer with $d_1 = 260$ mm bore diameter and $B_1 = 195$ mm sleeve width (symbol H 3156), with an oil supply duct on the threaded side and with access to the oil groove in the tapered casing surface (suffix H see Fig. 2):

Adapter sleeve IS 16605(Part 1)- H 3156 H

Designation of an adapter sleeve complete with locknut and lock washer with $d_1 = 260$ mm bore diameter and $B_1 = 195$ mm sleeve width (symbol H 3156), with two oil supply ducts on the threaded side, one with access to the oil groove in the tapered casing surface, the second offset at an angle of 90° with access to the oil groove in the sleeve bore (suffix HB see Fig. 3):

Adapter sleeve IS 16605(Part 1) - H 3156 HB

NOTE — Suffix may be kept as per the agreement between supplier and customer.

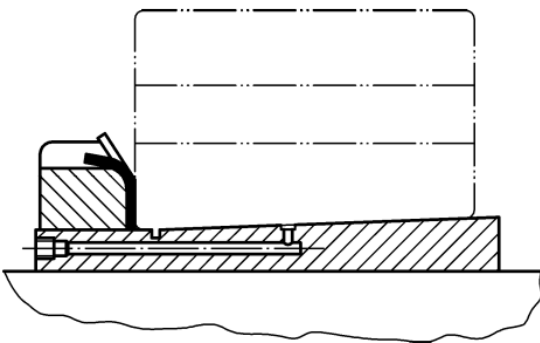


FIG. 2 ADAPTER SLEEVE WITH SUPPLY DUCT FOR OIL INJECTION; SUFFIX: H

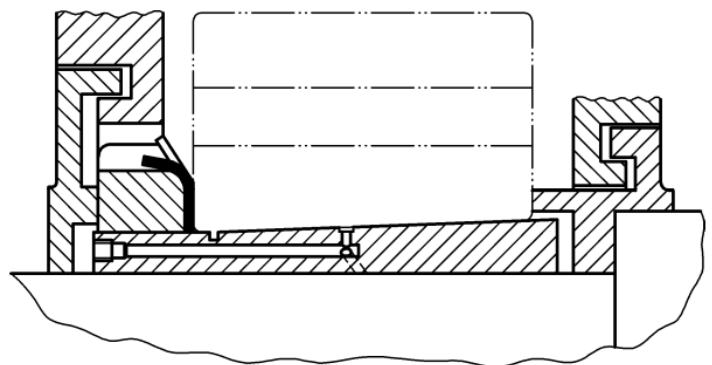


FIG. 3 ADAPTER SLEEVE WITH TWO SUPPLY DUCTS FOR OIL INJECTION; SUFFIX: HB

5.2 Designation of A Withdrawal Sleeve

Designation of a withdrawal sleeve with $d_1 = 35$ mm bore diameter and $B_1 = 25$ mm sleeve width for a bearing with $d = 40$ mm (symbol AH 208), without oil supply duct:

Withdrawal sleeve IS 16605(Part 1) - AH 208

Designation of a withdrawal sleeve with $d_1 = 150$ mm bore diameter and $B_1 = 77$ mm sleeve width for a bearing with $d = 160$ mm (symbol AH 3032), with two oil supply ducts on the threaded side (suffix H):

Withdrawal sleeve IS 16605(Part 1) - AH 3032 H

NOTE — Suffix may be kept as per the agreement between supplier and customer.

6 DIMENSIONS

6.1 General

Dimensions of adapter sleeve assemblies and boundary dimensions of withdrawal sleeves and overall lengths of withdrawal sleeve and bearing ring are given in Table 1, Table 2, Table 3, Table 4 and Table 5.

Thread lengths are not specified but shall be appropriate for securing adapter sleeve with locknut or for withdrawing a rolling bearing on the withdrawal sleeve with locknut. Dimensions of locknuts, lock washers, and locking clip assemblies for the adapter sleeves are given in IS 16605 (part 2). The locknuts are also suitable for the dismounting of the withdrawal sleeves.

6.2 Adapter Sleeve Assemblies with Taper 1:12 & 1:30

Dimensions of adapter sleeve assemblies with taper 1:12 are given in Table 1 and Table 2 and with taper 1:30 are given in Table 3. Slot lengths, B_6 , are not specified but

- shall be at least long enough that lock washer or locking clip can be installed when rolling bearing, adapter sleeve, and locknut are secured onto a shaft.
- shall not be longer than 1,3 times thread lengths.

Table 1 Dimensions of Adapter Sleeve Assemblies with Taper 1:12 ($15 \leq d \leq 110$)
(Clause 4, 6.1 and 6.2)

Dimensions in millimeters

d	d_1	B_1	$B_2 \approx$	B_3 max.	B_5 min.	d_2	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
15	12	19	6	—	5	25	—	—	—	—	02	M 15 x 1
		22									22, 03	
		25									23	
17	14	20	6	—	5	28	—	—	—	—	02	M 17 x 1
		24									22, 03	
		27									23	
20	17	24	7	—	5	32	—	—	—	H 204	02	M 20 x 1
		28								22, 03		
		31								23		
25	20	26	8	—	6	38	—	—	—	H 205	02	M 25 x 1,5
		29								22, 03		
		35								23		
30	25	27	8	—	6	45	—	—	—	H 206	02	M 30 x 1,5
		31								22, 03		
		38								23		
35	30	29	9	—	7	52	—	—	—	H 207	02	M 35 x 1,5
		35								22, 03		
		43								23		
		31		—						H 208	02	

40	35	36	10		7	58	-	-	-	H 308	22, 03	M 40 x 1,5
		46								H 2308	23	
45	40	33	11	-	7	65	-	-	-	H 209	02	M 45 x 1,5
		39								H 309	22, 03	
		50								H 2309	23	
50	45	35	12	-	7	70	-	-	-	H 210	02	M 50 x 1,5
		42								H 310	22, 03	
		55								H 2310	23	

Table 1 (continued)

Dimensions in millimeters

d	d_1	B_1	$B_2 \approx$	B_3 Max.	B_5 min.	d_2	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
55	50	37	12	-	9	75	-	-	-	H 211	02	M 55 x 2
		45								H 311	22, 03	
		59								H 2311	23	
60	55	38	13	-	9	80	-	-	-	H 212	02	M 60 x 2
		47								H 312	22, 03	
		62								H 2312	23	
65	60	40	14	-	9	85	-	-	-	H 213	02	M 65 x 2
		50								H 313	22, 03	
		65								H 2313	23	
70	60	41	14	-	9	92	-	-	-	H 214	02	M 70 x 2
		52								H 314	22, 03	
		68								H 2314	23	
75	65	43	15	-	9	98	-	-	-	H 215	02	M 75 x 2
		55								H 315	22, 03	
		73								H 2315	23	
80	70	46	17	-	11	105	-	-	-	H 216	02	M 80 x 2
		59								H 316	22, 03	
		78								H 2316	23	
85	75	50	18	-	11	110	-	-	-	H 217	02	M 85 x 2
		63								H 317	22, 03	
		82								H 2317	23	
90	80	52	18	-	11	120	-	-	-	H 218	02	M 90 x 2
		65								H 318	22, 03	
		86								H 2318	23	
95	85	55	19	-	11	125	-	-	-	H 219	02	M 95 x 2
		68								H 319	22, 03	
		90								H 2319	23	
100	90	58	20	-	13	130	-	-	-	H 220	02	M 100 x 2
		71								H 320	22, 03	
		76								H 3120	31	
		97								H 2320	32, 23	
105	95	60	20	-	13	140	-	-	-	H 221	02	M 105 x 2
		74								H 321	22, 03	
		80								H 3121	31	
		101								H 2321	32, 23	
110	100	63	21	-	13	145	-	-	-	H 222	02	M 110 x 2
		77								H 322	22, 03	
		81								H 3122	31	

		105								H 2322	32, 23	
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Table 2 Dimensions of adapter sleeve assemblies with taper 1:12 ($120 \leq d \leq 1060$)
(Clause 4, 6.1 and 6.2)

Dimensions in millimeters

d	d_1	B_1	$B_2 \approx$	B_3 max.	B_5 min.	d_2	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
120	110	60	22	-	15	145	-	-	-	H 3924	39	M 120 x 2
		72								H 3024	30, 02, 12	
		88				155				H 3124	31, 22, 03, 13	
		112								H 2324	32, 23	
130	115	65	23	-	15	155	-	-	-	H 3926	39	M 130 x 2
		80								H 3026	30, 02, 12	
		92				165				H 3126	31, 22, 03, 13	
		121								H 2326	32, 23	
140	125	66	24	-	17	165	-	-	-	H 3928	39	M 140 x 2
		82								H 3028	30, 02, 12	
		97				180				H 3128	31, 22, 03, 13	
		131								H 2328	32, 23	
150	135	76	26	-	17	180	-	-	-	H 3930	39	M 150 x 2
		87								H 3030	30, 02, 12	
		111				195				H 3130	31, 22, 03, 13	
		139								H 2330	32, 23	
160	140	78	28	-	19	190	M6	7	4,2	H 3932	39	M 160 x 3
		93								H 3032	30, 02, 12	
		119				210				H 3132	31, 22, 03, 13	
		147								H 2332	32, 23	
170	150	79	29	-	19	200	M6	7	4,2	H 3934	39	M 170 x 3
		101								H 3034	30, 02, 12	
		122				220				H 3134	31, 22, 03, 13	
		154								H 2334	32, 23	
180	160	87	30	-	21	210	M6	7	4,2	H 3936	39	M 180 x 3
		109								H 3036	30, 02, 12	
		131				230				H 3136	31, 22, 03, 13	
		161								H 2336	32, 23	
190	170	89	31	-	21	220	M6	7	4,2	H 3938	39	M 190 x 3
		112								H 3038	30, 02, 12	
		141				240				H 3138	31, 22, 03, 13	
		169								H 2338	32, 23	
200	180	98	32	-	21	240	M6	7	4,2	H 3940	39	M 200 x 3
		120								H 3040	30, 02, 12	
		150				250				H 3140	31, 22, 03, 13	
		176								H 2340	32, 23	
220	200	96	-	41	20	260	M6	7	4,2	H 3944	39	Tr 220 x 4
		126								H 3044	30, 02, 12	
		161	35	-	25	280				H 3144	31, 22, 03, 13	
		186								H 2344	32, 23	
240	220	101	-	46	20	290	M6	7	4,2	H 3948	39	Tr 240 x 4
		133								H 3048	30, 02, 12	
		172	37	-	25	300				H 3148	31, 22, 03, 13	
		199								H 2348	32, 23	
260	240	116	-	46	20	310	M6	7	4,2	H 3952	39	Tr 260 x 4
		145								H 3052	30, 02, 12	
		190	39	-	29	330				H 3152	31, 22, 03, 13	
		211								H 2352	32, 23	
		121	-	50	24	330	M6	7	4,2	H 3956	39	Tr 280 x 4

280	260	152	41	-	29	350				H 3056	30, 02, 12	
		195								H 3156	31, 22, 03, 13	
		224								H 2356	32, 23	

Table 2 (continued)

Dimensions in millimeters

d	d_1	B_1	$B_2 \approx$	B_3 max.	B_5 min.	d_2	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G	
300	280	140	-	54	24	360	M6	7	4,2	H 3960	39	Tr 300 x 4	
		168								H 3060	30, 02, 12		
		208		53		380				H 3160	31, 22, 03, 13		
		240								H 3260	32, 23		
320	300	140	-	55	24	380	M6	7	3,5	H 3964	39	Tr 320 x 5	
		171								H 3064	30, 02, 12		
		226		56		400				H 3164	31, 22, 03, 13		
		258								H 3264	32, 23		
340	320	144	-	58	24	400	M6	7	3,5	H 3968	39	Tr 340 x 5	
		187								H 3068	30, 02, 12		
		254		72		28				440	H 3168		31, 22, 03, 13
		288									H 3268		32, 23
360	340	144	-	58	28	420	M6	7	3,5	H 3972	39	Tr 360 x 5	
		188								H 3072	30, 02, 12		
		259		75		460				H 3172	31, 22, 03, 13		
		299								H 3272	32, 23		
380	360	164	-	62	28	450	M6	7	3,5	H 3976	39	Tr 380 x 5	
		193								H 3076	30, 02, 12		
		264		77		32				490	H 3176		31, 22, 03, 13
		310									H 3276		32, 23
400	380	168	-	66	28	470	M6	7	3,5	H 3980	39	Tr 400 x 5	
		210								H 3080	30, 02, 12		
		272		82		32				520	H 3180		31, 22, 03, 13
		328									H 3280		32, 23
420	400	168	-	66	32	490	M6	7	3,5	H 3984	39	Tr 420 x 5	
		212								H 3084	30		
		304		90		540				H 3184	31		
		352								H 3284	32		
440	410	189	-	77	32	520	M8	12	6,5	H 3988	39	Tr 440 x 5	
		228								H 3088	30		
		307		90		36				560	H 3188		31
		361									H 3288		32
460	430	189	-	77	32	540	M8	12	6,5	H 3992	39	Tr 460 x 5	
		234								H 3092	30		
		326		95		36				580	H 3192		31
		382									H 3292		32
480	450	200	-	77	36	560	M8	12	6,5	H 3996	39	Tr 480 x 5	
		237								H 3096	30		
		335		95		40				620	H 3196		31
		397									H 3296		32
500	470	208	-	85	36	580	M8	12	6,5	H 39/500	39	Tr 500 x 5	
		247								H 30/500	30		
		356		100		40				630	H 31/500		31
		428									H 32/500		32
530	500	216	-	90	40	630	M8	12	6	H 39/530	39	Tr 530 x 6	
		265								H 30/530	30		
		364		105		670				H 31/530	31		

560	530	447	-	97	40	650	M8	12	6	H 32/530	32	Tr 560 x 6
		227								H 39/560	39	
		282		H 30/560	30							
		377		H 31/560	31							
		462		H 32/560	32							
		110	45	710								

Table 2 (continued)

Dimensions in millimeters

d	d_1	B_1	$B_2 \approx$	B_3 max.	B_5 min.	d_2	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
600	560	239	-	97	40	700	G 1/8	12	8	H 39/600	39	Tr 600 x 6
		289								H 30/600	30	
		399		110	45	750				H 31/600	31	
		487								H 32/600	32	
630	600	254	-	97	45	730	M8	12	6	H 39/630	39	Tr 630 x 6
		301								H 30/630	30	
		424		120	50	800				H 31/630	31	
		521								H 32/630	32	
670	630	264	-	102	45	780	G 1/8	12	8	H 39/670	39	Tr 670 x 6
		324								H 30/670	30	
		456		131	50	850				H 31/670	31	
		558								H 32/670	32	
710	670	286	-	112	50	830	G 1/8	12	8	H 39/710	39	Tr 710 x 7
		342								H 30/710	30	
		467		135	55	900				H 31/710	31	
		572								H 32/710	32	
750	710	291	-	112	55	870	G 1/8	12	8	H 39/750	39	Tr 750 x 7
		356								H 30/750	30	
		493		141	60	950				H 31/750	31	
		603								H 32/750	32	
800	750	303	-	112	55	920	G 1/8	12	10	H 39/800	39	Tr 800 x 7
		366								H 30/800	30	
		505		141	60	1000				H 31/800	31	
		618								H 32/800	32	
850	800	308	-	115	60	980	G 1/8	12	10	H 39/850	39	Tr 850 x 7
		380								H 30/850	30	
		536		147	70	1060				H 31/850	31	
		651								H 32/850	32	
900	850	326	-	125	60	1030	G 1/8	12	10	H 39/900	39	Tr 900 x 7
		400								H 30/900	30	
		557		154	70	1120				H 31/900	31	
		660								H 32/900	32	
950	900	344	-	125	60	1080	G 1/8	12	10	H 39/950	39	Tr 950 x 8
		420								H 30/950	30	
		583		154	70	1170				H 31/950	31	
		675								H 32/950	32	
1 000	950	358	-	125	60	1140	G 1/8	12	10	H 39/1000	39	Tr 1000 x 8
		430								H 30/1000	30	
		609		154	70	1240				H 31/1000	31	
		707								H 32/1000	32	
1 060	1 000	372	-	125	60	1200	G 1/4	15	12	H 39/1060	39	Tr 1060 x 8
		447								H 30/1060	30	

		622		154	70	1300			H 31/1060	31	
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Table 3 Dimensions of Adapter Sleeve Assemblies with Taper 1:30 ($110 \leq d \leq 1060$)
(Clause 4, 6.1 and 6.2)

Dimensions in millimeters

d	d_1	B_1	B_2	B_3	B_5	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
110	100	99	21	–	13	–	–	–	H 24122	41	M 110 x 2
120	110	91	22	–	15	–	–	–	H 24024	40	M 120 x 2
		111							H 24124	41	
130	115	102	23	–	15	–	–	–	H 24026	40	M 130 x 2
		113							H 24126	41	
140	125	103	24	–	17	–	–	–	H 24028	40	M 140 x 2
		119							H 24128	41	
150	135	112	26	–	17	–	–	–	H 24030	40	M 150 x 2
		137							H 24130	41	
160	140	118	28	–	19	M6	7	4,2	H 24032	40	M 160 x 3
		148							H 24132	41	
170	150	130	29	–	19	M6	7	4,2	H 24034	40	M 170 x 3
		149							H 24134	41	
180	160	140	30	–	21	M6	7	4,2	H 24036	40	M 180 x 3
		159							H 24136	41	
190	170	143	31	–	21	M6	7	4,2	H 24038	40	M 190 x 3
		172							H 24138	41	
200	180	153	32	–	21	M6	7	4,2	H 24040	40	M 200 x 3
		185							H 24140	41	
220	200	162	–	41	20	M6	7	4,2	H 24044	40	Tr 220 x 4
		199	35	–	25				H 24144	41	
240	220	167	–	46	20	M6	7	4,2	H 24048	40	Tr 240 x 4
		212	37	–	25				H 24148	41	
260	240	190	–	46	20	M6	7	4,2	H 24052	40	Tr 260 x 4
		235	39	–	29				H 24152	41	
280	260	195	–	50	24	M6	7	4,2	H 24056	40	Tr 280 x 4
		238	41	–	29				H 24156	40	
300	280	220	–	54	24	M6	7	4,2	H 24060	41	Tr 300 x 4
		258	–	53	–				H 24160	40	
320	300	220	–	55	24	M6	7	3,5	H 24064	40	Tr 320 x 5
		278	–	56	–				H 24164	41	
340	320	244	–	58	24	M6	7	3,5	H 24068	40	Tr 340 x 5
		317	–	72	28				H 24168	41	
360	340	244	–	58	28	M6	7	3,5	H 24072	40	Tr 360 x 5
		321	–	75	–				H 24172	41	
380	360	248	–	62	28	M6	7	3,5	H 24076	40	Tr 380 x 5
		323	–	77	32				H 24176	41	
400	380	272	–	66	28	M6	7	3,5	H 24080	40	Tr 400 x 5
		332	–	82	32				H 24180	41	
420	400	274	–	66	32	M6	7	3,5	H 24084	40	Tr 420 x 5
		372	–	90	–				H 24184	41	
440	410	294	–	77	32	M8	12	6,5	H 24088	40	Tr 440 x 5
		372	–	90	36				H 24188	41	
460	430	300	–	77	32	M8	12	6,5	H 24092	40	Tr 460 x 5
		398	–	95	36				H 24192	41	
480	450	301	–	77	36	M8	12	6,5	H 24096	40	Tr 480 x 5
		408	–	95	–				H 24196	41	

500	470	309	-	85	36	M8	12	6,5	H 240/500	40	Tr 500 x 5
		430		100	40				H 241/500	41	

Table 3 (continued)

Dimensions in millimeters

d	d_1	B_1	B_2	B_3	B_5	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
530	500	343	-	90	40	M8	12	6,5	H 240/530	40	Tr 530 x 6
		440		105					H 241/530	41	
560	530	358	-	97	40	M8	12	6,5	H 240/560	40	Tr 560 x 6
		468		110					45	H 241/560	
600	560	377	-	97	40	G1/8	12	8	H 240/600	40	Tr 600 x 6
		490		110					45	H 241/600	
630	600	395	-	97	45	M8	12	6,5	H 240/630	40	Tr 630 x 6
		525		120					50	H 241/630	
670	630	418	-	102	45	G1/8	12	8	H 240/670	40	Tr 670 x 6
		548		131					50	H 241/670	
710	670	438	-	112	50	G1/8	12	8	H 240/710	40	Tr 710 x 7
		577		135					55	H 241/710	
750	710	460	-	112	55	G1/8	12	8	H 240/750	40	Tr 750 x 7
		622		141					60	H 241/750	
800	750	475	-	112	55	G1/8	12	10	H 240/800	40	Tr 800 x 7
		627		141					60	H 241/800	
850	800	495	-	115	60	G1/8	12	10	H 240/850	40	Tr 850 x 7
		658		147					70	H 241/850	
900	850	520	-	125	60	G1/8	12	10	H 240/900	40	Tr 900 x 7
		685		154					70	H 241/900	
950	900	557	-	125	60	G1/8	12	10	H 240/950	40	Tr 950 x 8
		715		154					70	H 241/950	
1000	950	562	-	125	60	G1/8	12	10	H 240/1000	40	Tr 1000 x 8
		755		154					70	H 241/1000	
1060	1000	588	-	125	60	G1/4	15	12	H 240/1060	40	Tr 1060 x 8
		775		154					70	H 241/1060	

6.3 Withdrawal Sleeves with Taper 1:12

Boundary dimensions of Withdrawal sleeves with taper 1:12 and overall lengths of withdrawal sleeve and bearing ring are given in Table 4.

Table 4 Boundary Dimensions of Withdrawal Sleeves with Taper 1:12, and Overall Lengths of Withdrawal Sleeve and Bearing Ring
(Clause 4, 6.1 and 6.3)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
40	35	25	27	6	-	-	-	AH 208	02	M 45 x 1,5
		29	32	6				AH 308	03, 13, 22	

		40	43	7				AH 2308	23	
45	40	26	29	6	-	-	-	AH 209	02	M 50 x 1,5
		31	34	6				AH 309	03, 13, 22	
		44	47	7				AH 2309	23	
50	45	28	31	7	-	-	-	AH 210	02	M 55 x 2
		35	38	7				AH 310	03, 13, 22	
		50	53	9				AH 2310	23	
55	50	29	32	7	-	-	-	AH 211	02	M 60 x 2
		37	40	7				AH 311	03, 13, 22	
		54	57	10				AH 2311	23	
60	55	32	35	8	-	-	-	AH 212	02	M 65 x 2
		40	43	8				AH 312	03, 13, 22	
		58	61	11				AH 2312	23	
65	60	32,5	36	8	-	-	-	AH 213	02	M 70 x 2
		42	45	8				AH 313	03, 13, 22	
		61	64	12				AH 2313	23	
70	65	33,5	37	8	-	-	-	AH 214	02	M 75 x 2
		43	47	8				AH 314	03, 13, 22	
		64	68	12				AH 2314	23	
75	70	34,5	38	8	-	-	-	AH 215	02	M 80 x 2
		45	49	8				AH 315	03, 13, 22	
		68	72	12				AH 2315	23	
80	75	35,5	37	8	-	-	-	AH 216	02	M 90 x 2
		48	52	8				AH 316	03, 13, 22	
		71	75	12				AH 2316	23	
85	80	38,5	42	9	-	-	-	AH 217	02	M 95 x 2
		52	56	9				AH 317	03, 13, 22	
		74	78	13				AH 2317	23	
90	85	40	44	9	-	-	-	AH 218	02	M 100 x 2
		53	57	9				AH 318	03, 13, 22	
		63	67	10				AH 3218	32	
		79	83	14				AH 2318	23	

Table 4 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
95	90	43	47	10	-	-	-	AH 219	02	M 105 x 2
		57	61	10				AH 319	03, 13, 22	
		67	71	11				AH 3219	32	
		85	89	16				AH 2319	23	
100	95	45	49	10	-	-	-	AH 220	02	M 110 x 2
		59	63	10				AH 320	03, 13, 22	
		64	68	11				AH 3120	31	
		73	77	11				AH 3220	32	
		90	94	16				AH 2320	23	
105	95	47	51	-	-	-	-	02	M 115 x 2	

		62	66						03, 13, 22	
		68	72						31	
		78	82						32	
		94	98	–	–	–	–	–	23	M 120 x 2
110	105	50	54	11	–	–	–	AH 222	02	M 120 x 2
		63	67	12				AH 322	03, 13	
		68	72	11				AH 3122	22, 31	
		82	86	11				AH 3222	32	
		98	102	16				AH 2322	23	
120	115	53	57	12	–	–	–	AH 224	02	M 130 x 2
		60	64	13				AH 3024	30	
		69	73	13				AH 324	03, 13	
		75	79	12				AH 3124	22, 31	
		90	94	13				AH 3224	32	
		105	109	17				AH 2324	23	
130	125	53	57	12	–	–	–	AH 226	02	M 140 x 2
		67	71	14				AH 3026	30	
		74	78	14				AH 326	03, 13	
		78	82	12				AH 3126	22, 31	
		98	102	15				AH 3226	32	
		115	119	19				AH 2326	23	
140	135	56	61	13	–	–	–	AH 228	02	M 150 x 2
		68	73	14				AH 3028	30	
		77	82	14				AH 328	03, 13	
		83	88	14				AH 3128	22, 31	
		104	109	15				AH 3228	32	
		125	130	20				AH 2328	23	
150	145	60	65	14	–	–	–	AH 230	02	M 160 x 3
		72	77	15				AH 3030	30	
		83	88	15				AH 330	03, 13	
		96	101	15				AH 3130	22, 31	
		114	119	17				AH 3230	32	
		135	140	24				AH 2330	23	

Table 4 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
160	150	64	69	15	–	–	–	AH 232	02	M 170 x 3
		77	82	16				AH 3032	30	
		88	93	16				AH 332	03, 13	
		103	108	16				AH 3132	22, 31	
		124	130	20				AH 3232	32	
		140	146	24				AH 2332	23	
170	160	59	64	13	–	–	–	AH 3934	39	M 180 x 3
		69	74	16				AH 234	02	
		85	90	17				AH 3034	30	
		93	98	17				AH 334	03, 13	
		104	109	16				AH 3134	22, 31	
		134	140	24				AH 3234	32	

		146	152	24				AH 2334	23	
180	170	66	71	13	-	-	-	AH 3936	39	M 190 x 3
		69	74	16				AH 236	02	
		92	98	17				AH 3036	30	
		105	110	17				AH 2236	22	
		116	122	19				AH 3136	31	
		140	146	25				AH 3236	32	
		154	160	26				AH 2336	23	
190	180	66	71	13	-	-	-	AH 3938	39	M 200 x 3
		73	78	17				AH 238	02	
		96	102	18				AH 3038	30	
		112	117	18				AH 2238	22	
		125	131	20				AH 3138	31	
		145	152	25				AH 3238	32	
		160	167	26				AH 2338	23	
200	190	77	83	16	-	-	-	AH 3940	39	Tr 210 x 4
		77	82	18				AH 240	02	
		102	108	19				AH 3040	30	
		118	123	19				AH 2240	22	Tr 220 x 4
		134	140	21				AH 3140	31	
		153	160	24				AH 3240	32	
		170	177	30				AH 2340	23	
220	200	77	83	16	-	-	-	AH 3944	39	Tr 230 x 4
		85	91	18				AH 244	02	
		111	117	20				AH 3044	30	
		130	136	20				AH 2244	22	Tr 240 x 4
		145	151	23				AH 3144	31	
		181	189	30				AH 2344	23	
240	220	77	83	16	-	-	-	AH 3948	39	Tr 250 x 4
		96	102	22				AH 248	02	Tr 260 x 4
		116	123	21				AH 3048	30	
		144	150	21				AH 2248	22	
		154	161	25				AH 3148	31	
		189	197	30				AH 2348	32, 23	

Table 4 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
260	240	94	100	18	-	-	-	AH 3952	39	Tr 280 x 4
		105	111	23				AH 252	02	
		128	135	23				AH 3052	30	
		155	161	23				AH 2252	22	
		172	179	26				AH 3152	31	
		205	213	30				AH 2352	32, 23	
280	260	94	100	18	-	-	-	AH 3956	39	Tr 300 x 4
		105	113	23				AH 256	02	
		131	139	24				AH 3056	30	
		155	163	24				AH 2256	22	
		175	183	28				AH 3156	31	
		212	220	30				AH 2356	32, 23	
300	280	112	119	21	-	-	-	AH 3960	39	Tr 320 x 5
		145	153	26				AH 3060	30	
		170	178	26				AH 2260	22	
		192	200	30				AH 3160	31	
		228	236	34				AH 3260	32	

320	300	112	119	21	G 1/4	15	9	AH 3964	39	Tr 340 x 5
		149	157	27				AH 3064	30	
		180	190	27				AH 2264	22	
		209	217	31				AH 3164	31	
		246	254	36				AH 3264	32	
340	320	112	119	21	G 1/4	15	9	AH 3968	39	Tr 360 x 5
		162	171	28				AH 3068	30	
		225	234	33				AH 3168	31	
		264	273	38				AH 3268	32	
360	340	112	119	21	G 1/4	15	9	AH 3972	39	Tr 380 x 5
		167	176	30				AH 3072	30	
		229	238	35				AH 3172	31	
		274	283	40				AH 3272	32	
380	360	130	138	22	G 1/4	15	9	AH 3976	39	Tr 400 x 5
		170	180	31				AH 3076	30	
		232	242	36				AH 3176	31	
		284	294	42				AH 3276	32	
400	380	130	138	20	G 1/4	15	9	AH 3980	39	Tr 420 x 5
		183	193	33				AH 3080	30	
		240	250	38				AH 3180	31	
		302	312	44				AH 3280	32	
420	400	130	138	22	G 1/4	15	9	AH 3984	39	Tr 440 x 5
		186	196	34				AH 3084	30	
		266	276	40				AH 3184	31	
		321	331	46				AH 3284	32	
440	420	145	153	25	G 1/4	15	9	AH 3988	39	Tr 460 x 5
		194	205	35				AH 3088	30	
		270	281	42				AH 3188	31	
		330	341	48				AH 3288	32	

Table 4 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
460	440	145	153	25	G 1/4	15	9	AH 3992	39	Tr 480 x 5
		202	213	37				AH 3092	30	
		285	296	43				AH 3192	31	
		349	360	50				AH 3292	32	
480	460	158	167	28	G 1/4	15	9	AH 3996	39	Tr 500 x 5
		205	217	38				AH 3096	30	
		295	307	45				AH 3196	31	
		364	376	52				AH 3296	32	
500	480	162	172	32	G 1/4	15	9	AH 39/500	39	Tr 530 x 6
		209	221	40				AH 30/500	30	
		313	325	47				AH 31/500	31	
		393	405	54				AH 32/500	32	
530	500	175	185	37	G 1/4	15	9	AH 39/530	39	Tr 560 x 6
		230	242	45				AH 30/530	30	
		325	337	53				AH 31/530	31	
		412	424	57				AH 32/530	32	
560	530	180	190	37	G 1/4	15	9	AH 39/560	39	Tr 600 x 6
		240	252	45				AH 30/560	30	
		335	347	55				AH 31/560	31	
		422	434	57				AH 32/560	32	
		192	202	38				AH 39/600	39	

600	570	245	259	45	G 1/4	15	9	AH 30/600	30	Tr 630 x 6
		355	369	55				AH 31/600	31	
		445	459	57				AH 32/600	32	
630	600	210	222	40	G 1/4	15	9	AH 39/630	39	Tr 670 x 6
		258	272	46				AH 30/630	30	
		375	389	60				AH 31/630	31	
		475	489	63				AH 32/630	32	
670	630	216	228	41	G 1/4	15	9	AH 39/670	39	Tr 710 x 7
		280	294	50				AH 30/670	30	
		395	409	59				AH 31/670	31	
		500	514	62				AH 32/670	32	
710	670	228	240	43	G 1/4	15	9	AH 39/710	39	Tr 750 x 7
		286	302	50				AHX 30/710	30	
		405	421	60				AHX 31/710	31	
		515	531	65				AH 32/710	32	
750	710	234	246	44	G 1/4	15	9	AH 39/750	39	Tr 800 x 7
		300	316	50				AH 30/750	30	
		425	441	60				AH 31/750	31	
		540	556	65				AH 32/750	32	
800	750	245	257	45	G 1/4	15	9	AH 39/800	39	Tr 850 x 7
		308	326	50				AH 30/800	30	
		438	456	63				AH 31/800	31	
		550	568	67				AH 32/800	32	

Table 4 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
850	800	258	270	50	G 1/4	15	9	AH 39/850	39	Tr 900 x 7
		325	343	53				AH 30/850	30	
		462	480	62				AH 31/850	31	
		585	603	70				AH 32/850	32	
900	850	265	277	51	G 1/4	15	9	AH 39/900	39	Tr 950 x 8
		335	355	55				AH 30/900	30	
		475	495	63				AH 31/900	31	
		585	605	70				AH 32/900	32	
950	900	282	297	51	G 1/4	15	9	AH 39/950	39	Tr 1000 x 8
		355	375	55				AH 30/950	30	
		500	520	62				AH 31/950	31	
		600	620	70				AH 32/950	32	
1 000	950	296	311	52	G 1/4	15	9	AH 39/1000	39	Tr 1060 x 8
		365	387	57				AH 30/1000	30	
		525	547	63				AH 31/1000	31	
		630	652	70				AH 32/1000	32	
1 060	1 000	310	325	52	G 1/4	15	9	AH 39/1060	39	Tr 1120 x 8
		385	407	60				AH 30/1060	30	
		540	562	65				AH 31/1060	31	

6.4 Withdrawal Sleeves with Taper 1:30

Boundary dimensions of withdrawal sleeves with taper 1:30 and overall lengths of withdrawal sleeve

and bearing ring are given in Table 5.

**Table 5 Boundary Dimensions of Withdrawal Sleeves with Taper 1:30, and Overall Lengths of
Withdrawal Sleeve and Bearing Ring**
(Clause 4, 6.1 and 6.4)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
110	105	82	91	13	–	–	–	AH 24122	41	M 115 x 2
120	115	73	82	13	–	–	–	AH 24024	40	M 125 x 2
		93	102	13				AH 24124	41	M 130 x 2
130	125	83	93	14	–	–	–	AH 24026	40	M 135 x 2
		94	104	14				AH 24126	41	M 140 x 2
140	135	83	93	14	–	–	–	AH 24028	40	M 145 x 2
		99	109	14				AH 24128	41	M 150 x 2
150	145	90	101	15	–	–	–	AH 24030	40	M 155 x 3
		115	126	15				AH 24130	41	M 160 x 3
160	150	95	106	15	–	–	–	AH 24032	40	M 170 x 3
		124	135	15				AH 24132	41	
170	160	106	117	16	–	–	–	AH 24034	40	M 180 x 3
		125	136	16				AH 24134	41	
180	170	116	127	16	–	–	–	AH 24036	40	M 190 x 3
		134	145	16				AH 24136	41	
190	180	118	131	18	–	–	–	AH 24038	40	M 200 x 3
		146	159	18				AH 24138	41	
200	190	127	140	18	–	–	–	AH 24040	40	Tr 210 x 4
		158	171	18				AH 24140	41	
220	200	138	152	20	G 1/8	12	6,5	AH 24044	40	Tr 230 x 4
		170	184	20				AH 24144	41	
240	220	138	153	20	G 1/8	12	6,5	AH 24048	40	Tr 250 x 4
		180	195	20	G 1/4	15	9	AH 24148	41	Tr 260 x 4
260	240	162	178	22	G 1/8	12	6,5	AH 24052	40	Tr 280 x 4
		202	218	22	G 1/4	15	9	AH 24152	41	
280	260	162	179	22	G 1/8	12	6,5	AH 24056	40	Tr 300 x 4
		202	219	22	G 1/4	15	9	AH 24156	41	
300	280	184	202	24	G 1/8	12	6,5	AH 24060	40	Tr 320 x 5
		224	242	24	G 1/4	15	9	AH 24160	41	
320	300	184	202	24	G 1/8	12	6,5	AH 24064	40	Tr 340 x 5
		242	260	24	G 1/4	15	9	AH 24164	41	
340	320	206	225	26	G 1/4	15	9	AH 24068	40	Tr 360 x 5
		269	288	26				AH 24168	41	
360	340	206	226	26	G 1/4	15	9	AH 24072	40	Tr 380 x 5
		269	289	26				AH 24172	41	
380	360	208	228	28	G 1/4	15	9	AH 24076	40	Tr 400 x 5
		271	291	28				AH 24176	41	
400	380	228	248	28	G 1/4	15	9	AH 24080	40	Tr 420 x 5
		278	298	28				AH 24180	41	

Table 5 (continued)

Dimensions in millimeters

d	d_1	B_1 max.	B_4	l_G	G_1	l_{G1}	a	Designation	Suitable for bearing dimension series	G
420	400	230	252	30	G 1/4	15	9	AH 24084	40	Tr 440 x 5
		310	332	30				AH 24184	41	
440	420	242	264	30	G 1/4	15	9	AH 24088	40	Tr 460 x 5
		310	332	30				AH 24188	41	
460	440	250	273	32	G 1/4	15	9	AH 24092	40	Tr 480 x 5
		332	355	32				AH 24192	41	
480	460	250	273	32	G 1/4	15	9	AH 24096	40	Tr 500 x 5
		340	363	32				AH 24196	41	
500	480	253	276	35	G 1/4	15	9	AH 240/500	40	Tr 530 x 6
		360	383	35				AH 241/500	41	
530	500	285	309	35	G 1/4	15	9	AH 240/530	40	Tr 560 x 6
		370	394	35				AH 241/530	41	
560	530	296	320	38	G 1/4	15	9	AH 240/560	40	Tr 600 x 6
		393	417	38				AH 241/560	41	
600	570	310	336	38	G 1/4	15	9	AH 240/600	40	Tr 630 x 6
		413	439	38				AH 241/600	41	
630	600	330	356	40	G 1/4	15	9	AH 240/630	40	Tr 670 x 6
		440	466	40				AH 241/630	41	
670	630	348	374	40	G 1/4	15	12	AH 240/670	40	Tr 710 x 7
		452	478	40				AH 241/670	41	
710	670	360	386	45	G 1/4	15	12	AH 240/710	40	Tr 750 x 7
		483	509	45				AH 241/710	41	
750	710	380	408	45	G 1/4	15	12	AH 240/750	40	Tr 800 x 7
		520	548	45				AH 241/750	41	
800	750	395	423	50	G 1/4	15	15	AH 240/800	40	Tr 850 x 7
		525	553	50				AH 241/800	41	
850	800	415	445	50	G 1/4	15	15	AH 240/850	40	Tr 900 x 7
		560	600	60				AH 241/850	41	
900	850	430	475	55	G 1/4	15	15	AH 240/900	40	Tr 950 x 8
		575	620	60				AH 241/900	41	
950	900	467	512	55	G 1/4	15	15	AH 240/950	40	Tr 1000 x 8
		605	650	60				AH 241/950	41	
1000	950	469	519	57	G 1/4	15	15	AH 240/1000	40	Tr 1060 x 8
		645	695	65				AH 241/1000	41	
1060	1000	498	548	60	G 1/4	15	15	AH 240/1060	40	Tr 1120 x 8
		665	715	65				AH 241/1060	41	

7 MATERIAL

Carbon Steel with a minimum tensile strength of 430 N/mm² from bar, tube, forged or equivalent route
Example: IS 1875 Class 2 (20C8), Class 2A (25C8), Class 3 (30C8)

8 DESIGN

8.1 Tolerances for Adapter Sleeve

The following tolerances shall apply:

- Sleeve bore diameter, d_1 :
 - Tolerance zone JS9 for taper 1:12 (before making slot) acc.to IS 919 (Part 1)
 - Tolerance zone JS7 for taper 1:30 (before making slot) acc.to IS 919 (Part 1)

- Wall thickness variation in the area of the tapered casing surface:
 - Basic tolerance IT 6 (before making slot) acc.to IS 919 (Part 1)

- Sleeve width, B_1 :
 - Tolerance zone h15 acc.to IS 919 (Part 1)

- Distance, B_2 and B_3 :
 - The value given in the table indicates the maximum distance.

- Slot width, B_5 :
 - The value given in the table indicates the minimum width.

- Roughness of bore and of tapered casing:
 - for $d_1 \leq 200$ mm.
 - $R_a = 2,5 \mu\text{m}$ max.
 - for $d_1 > 200$ mm.
 - $R_a = 3,2 \mu\text{m}$ max.

- Threads, G:
 - Metric fine thread as in IS 14962 (Part 1), tolerance class 6H.
 - Metric trapezoidal thread as in IS 7008 (Part 4), tolerance class 7H.

- Outer edges of workpiece:
 - Burrs are not permitted, according to IS 15726.

- Locknut, Lock washer and locking clip
 - as specified in IS:16605(Part 2).

8.2 Tolerances for Withdrawal Sleeve

The following tolerances shall apply:

- Sleeve bore diameter, d_1 :
 - Tolerance zone JS9 for taper 1:12 (before making slot) acc.to IS 919 (Part 1)
 - Tolerance zone JS7 for taper 1:30 (before making slot) acc.to IS 919 (Part 1)

- Wall thickness variation in the area of the tapered casing surface:
 - Basic tolerance IT 6 (before making slot) acc.to IS 919 (Part 1)

- Sleeve width, B_1 :
 - Tolerance zone h15 acc.to IS 919 (Part 1)

- Roughness of bore and of tapered casing:
 - for $d_1 \leq 200$ mm.
 - $R_a = 2,5 \mu\text{m}$ max.

- for $d_1 > 200$ mm.
- $R_a = 3,2 \mu\text{m}$ max.

- Thread, G:
 - Metric fine thread as in IS 14962 (Part 1), tolerance class 6g.
 - Metric trapezoidal thread as in IS 7008 (Part 4), tolerance class 7e.

- Outer edges of workpiece:
 - Burrs are not permitted, according to in IS 15726.

9 WORKMANSHIP AND DELIVERY REQUIREMENT

9.1 Visual Inspection

The surfaces of the bore, outside diameter and sides shall be smooth and shall not show any damaged areas.

9.2 Protection Against Corrosion

The type of protection against corrosion shall be decided by the manufacturer depending on the packing material used. Under proper storage conditions, the anti-corrosive treatment shall be effective for at least 12 months in order to ensure a satisfactory functioning of the adapter and withdrawal sleeves, unless otherwise required by the purchaser.

9.2.1 For proper storage conditions, the purchaser may consult the manufacturer.

10 PACKING

Adapter & Withdrawal sleeves shall be packed individually, and several pieces may be packed together in suitable containers depending on the size. The packing shall be such as to protect the contents from external influences.

11 MARKING

11.1 Packed containers shall be marked with the following:

- a) Manufacturer's name or trademark;
- b) Designation of the Withdrawal or Adapter sleeves;
- c) Coded or direct indication of month and year of manufacture;
- d) Quantity; and
- e) Country of origin in English (upper case).

11.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of Indian Standards Act, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

12 SAMPLING AND CRITERIA FOR ACCEPTANCE

Shall be as given in Annex A.

ANNEX A
(Clause 12)

SAMPLING AND CRITERIA FOR ACCEPTANCE

A-1 Scale of Sampling

A-1.1 Lot — In any consignment all Withdrawal & Adapter sleeves of the same designation and manufactured under similar conditions of production shall be grouped together to constitute a lot.

A-1.2 Withdrawal & Adapter sleeves from each lot shall be examined to ascertain its conformity to the requirements of the relevant specification.

A-1.3 Unless otherwise agreed to between the supplier and the purchaser the number of Withdrawal & Adapter sleeves to be selected at random shall be in accordance with col 1 and 2 of Table 6. To ensure randomness, selection methods given in IS 4905 shall be followed.

A-1.4 Number of Tests and Criteria for Conformity

A-1.4.1 The Withdrawal & Adapter sleeves selected according to A-1.3 shall be inspected for dimensions and tolerances, workmanship, surface finish and protection against corrosion. Any Withdrawal sleeves failing to meet requirements for any one or more of the above characteristics shall be declared as defective.

A-1.4.1.1 The lot shall be considered conforming to the requirements of the above characteristics, if the number of Withdrawal & Adapter sleeves found defective according to A-1.3 is less than or equal to the corresponding acceptance number given under col 3 of Table 6.

Table 6 Scale of Sampling and Criteria for Conformity
(Clauses A-1.3, A-1.4.1.1 and A-1.4.2)

Lot Size	Sampling Size	Acceptance Number	Sub-sample Size
(1)	(2)	(3)	(4)
Up to 50	5	0	3
51 to 160	8	0	5
161 to 300	13	0	5
301 to 500	20	0	8
501 to 1 000	32	1	13
1 001 and above	60	1	13

A-1.4.2 If the lot is found satisfactory according to A-1.4.1.1, a number of Withdrawal & Adapter sleeves corresponding to sub-sample size given under col 4 of Table 6 shall be selected and subjected to tensile strength test.

A-1.4.2.1 The lot shall be considered satisfactory to the requirements of the specification if none of the Withdrawal sleeves fails to meet the requirement for tensile strength.

ANNEX B
(informative)
EXPLANATORY NOTES

B-1 ADAPTER SLEEVE

- 1 - Slotted sleeve
- 2 - Lock washer
- 3 - Lock nut
- 4 - Locking clip assembly
- 5 - Tapered surface
- 6 - Thread area (G)
- 7 - Oil distributor groove

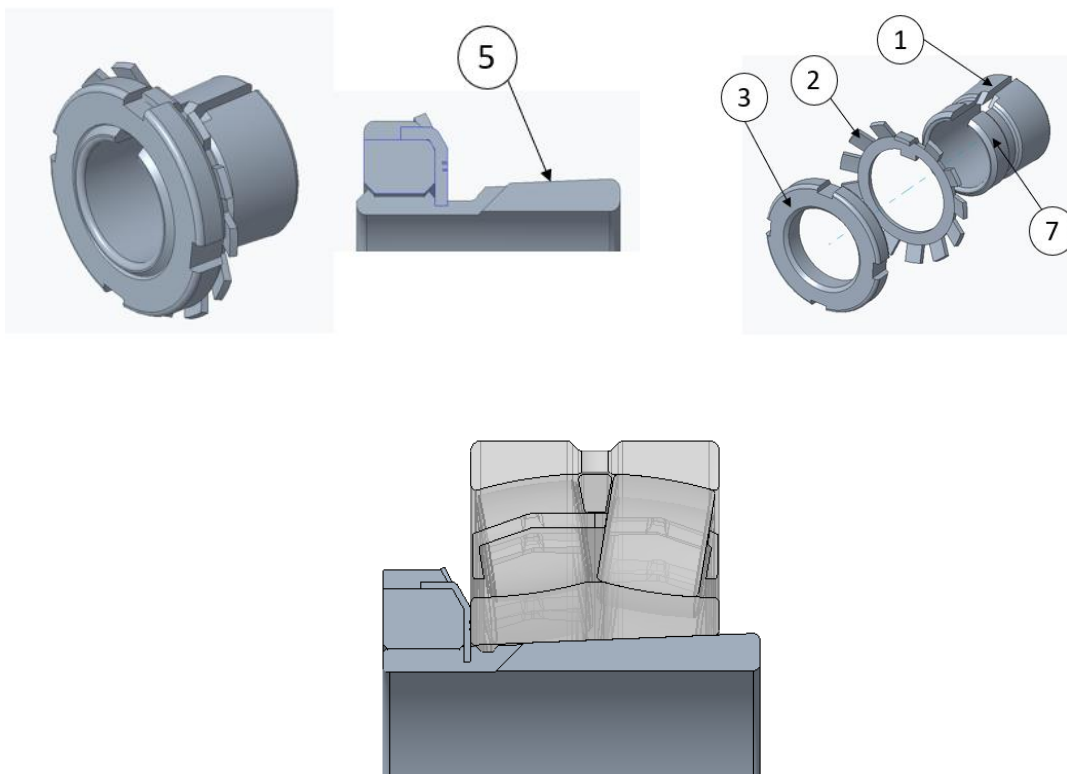


FIG. 4 ADAPTER SLEEVE ASSEMBLY WITH LOCK NUT AND LOCK WASHER

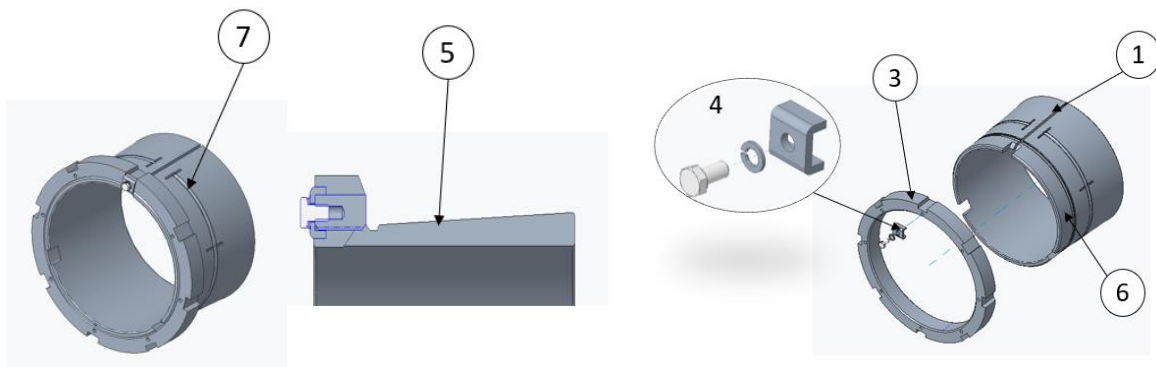


FIG. 5 ADAPTER SLEEVE ASSEMBLY WITH LOCKING CLIP

B-2 WITHDRAWAL SLEEVES

- 1 - Slotted sleeve
- 2 - Bore diameter
- 3 - Tapered surface
- 4 - Oil groove
- 5 - Thread area (G)
- 6 - Oil distributor groove

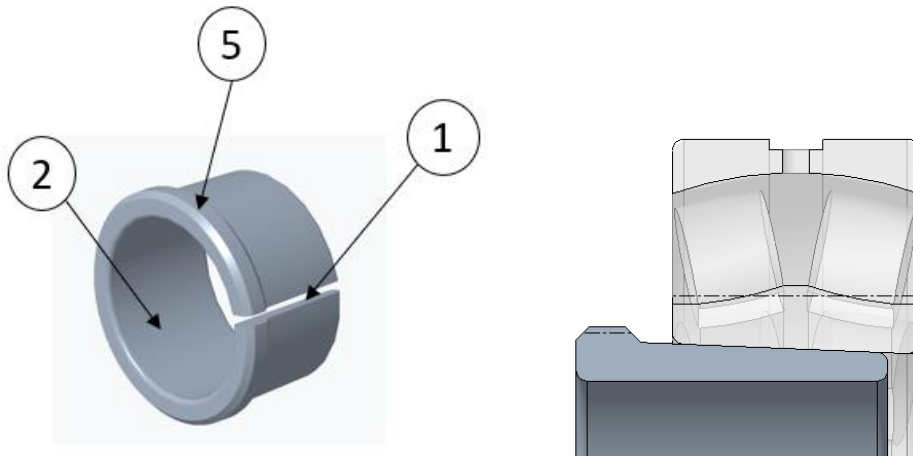


FIG. 6 WITHDRAWAL SLEEVE, BASIC DESIGN

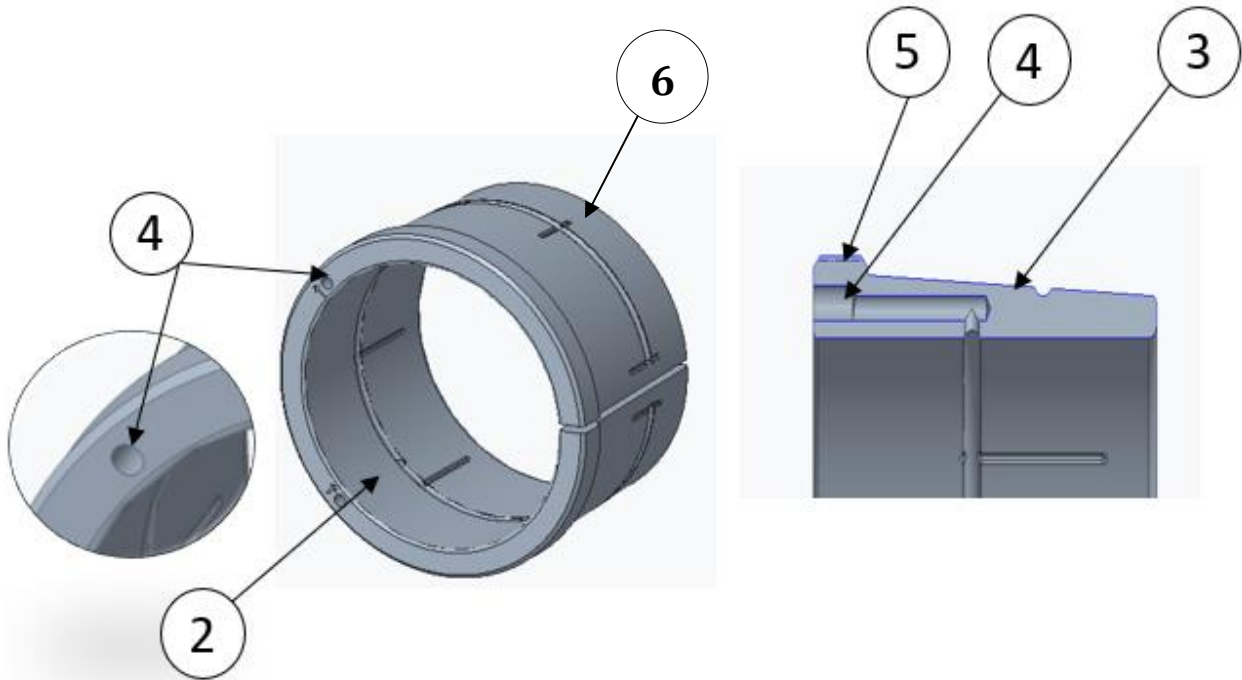


FIG. 7 WITHDRAWAL SLEEVE WITH OIL GROOVE