

- 1) Inner rings with lubrication hole, type IMC, available on request.  
 2) Inner rings with convex raceways cannot be used with needle bushes with closed end (Series DLF or DLF...P).

### Inspection of bushes

	Ring Gauge Bore	Plug Gauge GO	Plug Gauge NO-GO
	mm	mm	mm
	12,000	6,009	6,036
	14,000	8,009	8,036
	14,000	9,009	9,036
	16,000	10,009	10,036
	18,000	12,009	12,035
	18,000	12,009	12,035
	19,000	13,009	13,035
	20,000	14,009	14,035
	21,000	15,009	15,035
	22,000	16,009	16,035
	23,000	17,009	17,035
	22,976	17,016	17,034
	24,000	18,009	18,035
	24,000	18,009	18,035
	23,976	18,016	18,034
	26,000	20,009	20,035
	26,000	20,009	20,035
	28,000	22,009	22,035
	33,000	25,015	25,041
	33,000	25,015	25,041
	36,000	28,015	28,041
	38,000	30,015	30,041
	38,000	30,015	30,041
	38,000	30,015	30,041
	41,972	35,025	35,050
	43,000	35,015	35,041
	43,000	35,015	35,041
	48,000	40,015	40,041
	48,000	40,015	40,041
	52,000	44,015	44,041
	51,967	45,025	45,050
	55,000	47,015	47,041
	58,000	50,015	50,041
	58,000	50,015	50,041
	58,000	50,015	50,041
	63,000	55,015	55,041

### Inner rings

Shaft Dia.	Designation	Di	Ci	L	r	Weight	Reference
mm	IM Series	mm	mm	0/-0.12 mm	mini mm	approx. g	Needle bush
<b>8</b>	<b>IM 8 12 12,4</b>	8	12	12,4	0,3	5,8	DL, DLF 12 12
<b>9</b>	<b>IM 9 13 12,4</b>	9	13	12,4	0,3	6,4	DL, DLF 13 12
<b>10</b>	<b>IM 10 14 12,4</b>	10	14	12,4	0,3	7	DL, DLF 14 12
<b>12</b>	<b>IM 12 15 12,4</b>	12	15	12,4	0,2	5,8	DL, DLF 15 12
	<b>IM 12 16 12,4</b>	12	16	12,4	0,3	8,1	DL, DLF 16 12
<b>13</b>	<b>IM 13 17 12,4</b>	13	17	12,4	0,3	8,7	DL, DLF 17 12
	<b>IM 13 17 12,4</b>	13	17	12,4	0,3	8,7	DL, DLF 17 23 12 P
	<b>IM 13 18 12,4</b>	13	18	12,4	0,35	11,2	DL, DLF 18 12
	<b>IM 13 18 16,4</b>	13	18	16,4	0,35	15	DL, DLF 18 16
<b>15</b>	<b>IM 13 18 16,4</b>	13	18	16,4	0,35	15	DL, DLF 18 24 16 P
	<b>IM 15 20 12,4</b>	15	20	12,4	0,35	12,7	DL, DLF 20 12
	<b>IM 15 20 16,4</b>	15	20	16,4	0,35	17	DL, DLF 20 16
<b>17</b>	<b>IM 17 22 16,4</b>	17	22	16,4	0,35	18,8	DL, DLF 22 16
<b>20</b>	<b>IM 20 25 16,4</b>	20	25	16,4	0,35	21,5	DL, DLF 25 16
	<b>IM 20 25 20,4</b>	20	25	20,4	0,35	27	DL, DLF 25 20
<b>23</b>	<b>IM 23 28 20,4</b>	23	28	20,4	0,35	30,5	DL, DLF 28 20
<b>25</b>	<b>IM 25 30 16,4</b>	25	30	16,4	0,35	26,5	DL, DLF 30 16
	<b>IM 25 30 20,4</b>	25	30	20,4	0,35	33	DL, DLF 30 20
	<b>IM 25 30 25</b>	25	30	25	0,35	40	DL, DLF 30 25
<b>30</b>	<b>IM 30 35 16,4</b>	30	35	16,4	0,35	31	DL, DLF 35 42 16 P
	<b>IM 30 35 16,4</b>	30	35	16,4	0,35	31	DL, DLF 35 16
	<b>IM 30 35 20,4</b>	30	35	20,4	0,35	39	DL, DLF 35 20
<b>35</b>	<b>IM 35 40 16,4</b>	35	40	16,4	0,35	36	DL, DLF 40 16
	<b>IM 35 40 20,4</b>	35	40	20,4	0,35	45	DL, DLF 40 20
<b>40</b>	<b>IM 40 44 16,4</b>	40	44	16,4	0,3	32	DL, DLF 44 16
	<b>IM 40 45 16,4 P*</b>	40	45	16,4	0,3	32	DL, DLF 45 52 16 P
<b>45</b>	<b>IM 45 50 20,4</b>	45	50	20,4	0,6	56	DL, DLF 50 20
<b>50</b>	<b>IM 50 55 20,4</b>	50	55	20,4	0,6	62	DL, DLF 55 20

\* on request



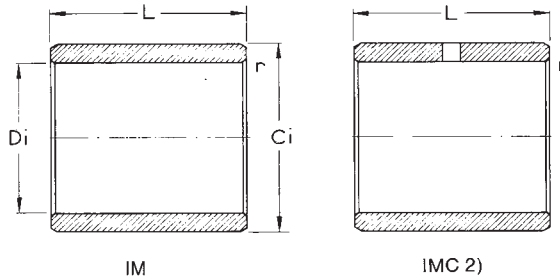


**IMPORTANT**

The caged needle bushes manufactured to tolerances conforming to ISO standard 3245 now have new designations:

- **HK** series, open, formerly DB...P
- **BK** series, closed-end, formerly DBF...P

For a limited period, one or the other designations will be supplied in deliveries.



**Inspection of bushes**

	Ring Gauge Bore	Plug Gauge GO	Plug Gauge NO-GO
	mm	mm	mm
	27,976	22,020	22,041
	27,976	22,020	22,041
	28,000	22,009	22,035
	31,972	25,020	25,041
	31,972	25,020	25,041
	31,972	25,020	25,041
	33,000	25,015	25,041
	33,000	25,015	25,041
	34,972	28,020	28,041
	34,972	28,020	28,041
	36,972	30,020	30,041
	36,972	30,020	30,041
	36,972	30,020	30,041
	38,000	30,015	30,041
	41,972	35,025	35,050
	41,972	35,025	35,050
	43,000	35,015	35,041
	46,972	40,025	40,050
	46,972	40,025	40,050
	46,972	40,025	40,050
	48,000	40,015	40,041
	51,967	45,025	45,050
	51,967	45,025	45,050
	52,000	45,015	45,041
	55,000	47,015	47,041
	57,967	50,025	50,050
	58,000	50,015	50,041
	57,967	50,025	50,050
	62,967	55,030	55,060
	62,967	55,030	55,060

**Inner rings**

2) Inner rings with lubrication hole type IMC, available on request.

Shaft Dia.	Designation	Di	Ci	L	r	Weight approx.	Reference Needle bush
mm	IM Series	mm	mm	0/-0.12 mm	mm	g	
<b>17</b>	*IM 17 22 13 P	17	22	13	0,35	14,9	HK, BK 22 12
	IM 17 22 16 P	17	22	16	0,35	18,5	HK, BK 22 16
	IM 17 22 16,4	17	22	16,4	0,35	18,8	DB, DBF 22 16
<b>20</b>	IM 20 25 16 P	20	25	16	0,35	21	HK, BK 25 16
	IM 20 25 20 P	20	25	20	0,35	26,5	HK, BK 25 20
	IM 20 25 16,4	20	25	16,4	0,35	21,5	DB, DBF 25 16
	IM 20 25 20,4	20	25	20,4	0,35	27	DB, DBF 25 20
<b>23</b>	IM 23 28 20 P	23	28	20	0,35	30	HK, BK 28 20
<b>25</b>	IM 25 30 12,4 P	25	30	12,4	0,35	19,7	HK, BK 30 12
	IM 25 30 16,4	25	30	16,4	0,35	26,5	HK, BK 30 16
	IM 25 30 20 P	25	30	20	0,35	32	HK, BK 30 20
	IM 25 30 20,4	25	30	20,4	0,35	33	DB, DBF 30 20
<b>30</b>	IM 30 35 16,4	30	35	16,4	0,35	31	HK, BK 35 16
	IM 30 35 20 P	30	35	20	0,35	38	HK, BK 35 20
	IM 30 35 20,4	30	35	20,4	0,35	39	DB, DBF 35 20
<b>35</b>	IM 35 40 16,4	35	40	16,4	0,35	36	HK, BK 40 16
	IM 35 40 20 P	35	40	20	0,35	44	HK, BK 40 20
	IM 35 40 20,4	35	40	20,4	0,35	45	DB, DBF 40 20
<b>40</b>	*IM 40 45 16,4 P	40	45	16,4	0,35	41	HK, BK 45 16
	IM 40 45 20 P	40	45	20	0,35	50	HK, BK 45 20
	IM 40 45 20,4	40	45	20,4	0,35	51	DB, DBF 45 20
<b>45</b>	IM 45 50 20,4	45	50	20,4	0,65	56	HK, BK 50 20
	IM 45 50 20,4	45	50	20,4	0,65	56	DB, DBF 50 20
	IM 45 50 25 P	45	50	25	0,65	69	HK, BK 50 24
<b>50</b>	IM 50 55 20,4	50	55	20,4	0,65	62	HK, BK 55 20
	IM 50 55 25 P	50	55	25	0,65	76	HK, BK 55 24

\* on request

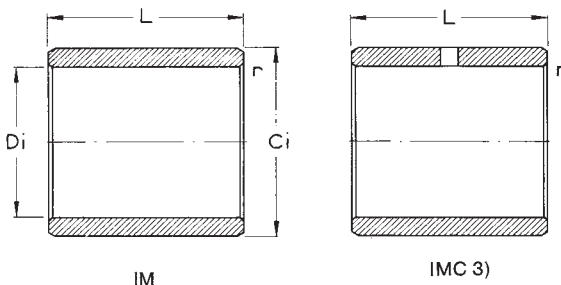


**IMPORTANT**

The caged needle bushes manufactured to tolerances conforming to ISO standard 3245 now have new designations:

– **HK...E** series, open, with seal, formerly DB...PE

For a limited period, one or the other designations will be supplied in deliveries.



**Inspection of bushes**

	Ring Gauge Bore	Plug Gauge GO	Plug Gauge NO-GO
	mm	mm	mm
	18,000	12,009	12,035
	19,976	14,016	14,034
	20,000	14,009	14,035
	20,976	15,016	15,034
	20,976	15,016	15,034
	21,976	16,016	16,034
	21,976	16,016	16,034
	23,000	17,009	17,035
	23,976	18,016	18,034
	24,000	18,009	18,035
	25,976	20,020	20,041
	26,000	20,009	20,035
	27,976	22,020	22,041
	28,000	22,009	22,035
	31,972	25,020	25,041
	33,000	25,015	25,041
	33,000	25,015	25,041
	36,972	30,020	30,041
	38,000	30,015	30,041
	41,972	35,025	35,050
	43,000	35,015	35,041
	46,972	40,025	40,050
	48,000	40,015	40,041
	51,967	45,025	45,050
	51,967	45,025	45,050
	57,967	50,025	50,050
	58,000	50,015	50,041

**Inner rings**

3) Inner rings with lubrication hole type IMC, available on request.

Shaft Dia.	Designation	Di	Ci	L	r	Weight approx.	Reference Needle bush
mm	IM Series	mm	mm	0/-0.12 mm	min mm	g	
<b>8</b>	<b>*IM 8 12 16</b>	8	12	16	0,3	7,4	DB 12 14 E
<b>10</b>	<b>IM 10 14 16 P</b>	10	14	16	0,3	9	HK 14 14 E
	<b>IM 10 14 16,4</b>	10	14	16,4	0,3	9,2	DB 14 14 E
<b>12</b>	<b>IM 12 15 16 P</b>	12	15	16	0,2	7,6	HK 15 14 E
	<b>IM 12 16 16 P</b>	12	16	16	0,3	10,5	HK 16 14 E
	<b>*IM 12 16 20 P</b>	12	16	20	0,3	13,2	HK 16 18 E
<b>13</b>	<b>IM 13 17 16,4</b>	13	17	16,4	0,3	11,5	DB 17 14 E
	<b>IM 13 18 16 P</b>	13	18	16	0,35	14,5	HK 18 14 E
<b>14</b>	<b>IM 14 18 20,4</b>	14	18	20,4	0,3	15,5	DB 18 18 E
<b>15</b>	<b>IM 15 20 20 P</b>	15	20	20	0,35	20,5	HK 20 18 E
	<b>IM 15 20 20</b>	15	20	20	0,35	20,5	DB 20 18 E
<b>17</b>	<b>IM 17 22 20 P</b>	17	22	20	0,35	23	HK 22 18 E
	<b>IM 17 22 20,4</b>	17	22	20,4	0,35	23,5	DB 22 18 E
<b>20</b>	<b>IM 20 25 20 P</b>	20	25	20	0,35	26,5	HK 25 18 E
	<b>IM 20 25 25</b>	20	25	25	0,35	33	DB 25 22 E
<b>25</b>	<b>IM 25 30 20 P</b>	25	30	20	0,35	32	HK 30 18 E
	<b>IM 25 30 25</b>	25	30	25	0,35	40	DB 30 22 E
<b>30</b>	<b>IM 30 35 20 P</b>	30	35	20	0,35	38	HK 35 18 E
	<b>IM 30 35 25</b>	30	35	25	0,35	48	DB 35 22 E
<b>35</b>	<b>IM 35 40 20 P</b>	35	40	20	0,35	44	HK 40 18 E
	<b>IM 35 40 25</b>	35	40	25	0,35	55	DB 40 22 E
<b>40</b>	<b>IM 40 45 20 P</b>	40	45	20	0,35	50	HK 45 18 E
	<b>*IM 40 45 25 P</b>	40	45	25	0,35	62	HK 45 22 E
<b>45</b>	<b>IM 45 50 25 P</b>	45	50	25	0,65	69	HK 50 22 E
	<b>IM 45 50 25</b>	45	50	25	0,65	69	DB 50 22 E

\* on request

