



Guide Elements

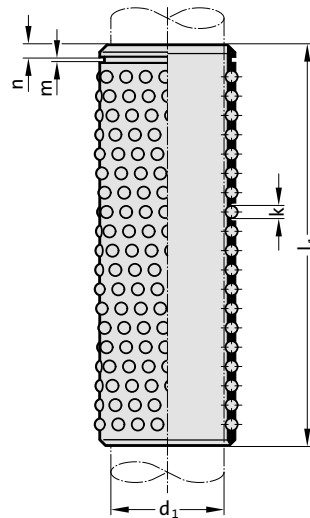




Ball cage with circlip groove, Brass



206.71.



Material:

Cage: Brass

Balls: Steel hardened (DIN 5401)

Note:

Ball cages from Ø 10 has a groove for circlip to DIN 471.

Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

l = Nominal ordering length

l_1 = Manufacturing length

206.71. Ball cage with circlip groove, Brass

d_1	8	10	11	12	15	16	19	20	24	25	30	32	38	40	48	50	60	63	80
k	1.5	2	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	6
n	-	1.1	1.6	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	3
l / l_1	Total number of balls																		
40 / 39	80	176																	
56 / 57		272																	
45 / 44			144	144	180	180	180												
56 / 56			192	192	240	240	240												
63 / 64			224	224															
71 / 72			256	256	320	320	320												
24 / 24				64			80												
28 / 28				80			100												
31 / 32					120	120	120												
80 / 80					360	360	360	280	280	336	392	392							
95 / 96					440	440	440												
40 / 40								160	120	120									
120 / 120								560	440	440	528	616	616	704					
45 / 45									140	140	168								
50 / 50									160	160	192	224	224						
56 / 55									180	180	216								
71 / 70									240	240									
75 / 75									260										
95 / 95									340	340	408	476	476	544					
105 / 105									380	380	456	532	532	608					
140 / 140									520	520	624	728	728	832	648				
160 / 160									600	600	720	840	840	960					
63 / 65											264	308	308						
180 / 180											816	952	952	1088					
200 / 200											912	1064	1064	1216					
240 / 240											1104	1288	1288	1472					
128 / 128													616						
120 / 119																			540
160 / 161																			756
180 / 182																			864
200 / 203																			972
240 / 238																			1152

Ordering Code (example):

Ball cage with circlip groove, Brass =206.71.
 Guide diameter d_1 38 mm= 038.
 Nominal ordering length l 45 mm= 045
 Order No =206.71. 038.045



Ball cage with circlip groove, Aluminium

Material:

Cage: Aluminium

Balls: Steel hardened (DIN 5401)

Note:

Ball cages from $\varnothing 10$ has a groove for circlip to DIN 471.

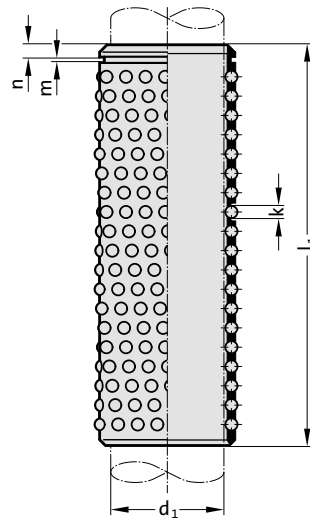
Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

l = Nominal ordering length

l_1 = Manufacturing length

2060.61.



2060.61. Ball cage with circlip groove, Aluminium

d_1	10	11 12	15	16	19	20	24 25	30 32	38 40	48 50	60 63	80
k	2	2	3	3	3	3	3	4	4	4	4	6
n	1.1	1.1	1.6	1.6	1.6	1.6	1.6	2.1	2.1	2.1	2.1	3
l/l_1	Total number of balls											
40 / 39	176	176										
56 / 57	272	272										
45 / 44			144	144	180	180	180					
56 / 56			192	192	240	240	240					
63 / 64			224	224								
71 / 72			256	256	320	320	320					
24 / 24				64		80						
28 / 28				80		100						
31 / 32					120	120	120					
80 / 80					360	360	360	280	336	392		
95 / 96					440	440	440					
40 / 40							160	120				
120 / 120							560	440	528	616	704	
45 / 45								140	168			
50 / 50								160	192	224		
56 / 55								180	216			
71 / 70								240				
95 / 95								340	408	476	544	
105 / 105								380	456	532	608	
140 / 140								520	624	728	832	648
160 / 160								600	720	840	960	
63 / 65									264	308		
180 / 180									816	952	1088	
200 / 200									912	1064	1216	
240 / 240									1104	1288	1472	
120 / 119												540
160 / 161												756
180 / 182												864
200 / 203												972
240 / 238												1152

Ordering Code (example):

Ball cage with circlip groove, Aluminium =2060.61.

Guide diameter d_1 38 mm= 038.

Nominal ordering length l 50 mm= 050

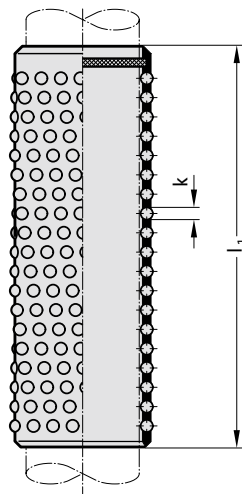
Order No =2060.61.038.050



Ball cage with assembly aid, Brass



206.73.



Material:

Cage: Brass

Balls: Steel hardened (DIN 5401)

Note:

No assistant is needed for their assembly. These cages are equipped with a suitably positioned brake ring insert. That ensures equal cage spacing especially on die sets with multiple pillars.

Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

Nominal ordering length

l_1 = Manufacturing length

206.73. Ball cage with assembly aid, Brass

d_1	10	11 12	15	16	19	20	24 25	30 32	38 40	48 50	60 63	80
k	2	2	3	3	3	3	3	4	4	4	4	6
l/l_1	Total number of balls											
40 / 39	176	176										
56 / 57	272	272										
45 / 44			144	144	180	180	180					
56 / 56			192	192	240	240	240					
63 / 64			224	224								
71 / 72			256	256	320	320	320					
24 / 24				64		80						
28 / 28				80		100						
31 / 32					120	120	120					
80 / 80					360	360	360	280	336	392		
95 / 96					440	440	440					
40 / 40							160	120				
120 / 120							560	440	528	616	704	
45 / 45								140	168			
50 / 50								160	192	224		
56 / 55								180	216			
71 / 70								240				
95 / 95								340	408	476	544	
105 / 105								380	456	532	608	
140 / 140								520	624	728	832	648
160 / 160								600	720	840	960	
63 / 65									264	308		
180 / 180									816	952	1088	
200 / 200									912	1064	1216	
240 / 240									1104	1288	1472	
120 / 119												540
160 / 161												756
180 / 182												864
200 / 203												972
240 / 238												1152

Ordering Code (example):

Ball cage with assembly aid, Brass =206.73.

Guide diameter d_1 38 mm= 038.

Nominal ordering length l 50 mm= 050

Order No =206.73. 038.050



Ball cage with assembly aid, Aluminium

Material:

Cage: Aluminium

Balls: Steel hardened (DIN 5401)

2060.63.

Note:

No assistant is needed for their assembly.

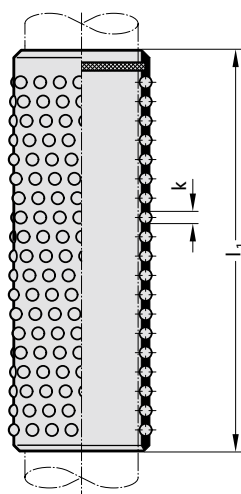
These cages are equipped with a suitably positioned brake ring insert. That ensures equal cage spacing especially on die sets with multiple pillars.

Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

Nominal ordering length

l_1 = Manufacturing length



2060.63. Ball cage with assembly aid, Aluminium

d_1	10	11 12	15	16	19	20	24 25	30 32	38 40	48 50	60 63	80
k	2	2	3	3	3	3	3	4	4	4	4	6
l / l_1	Total number of balls											
40 / 39	176	176										
56 / 57	272	272										
45 / 44			144	144	180	180	180					
56 / 56			192	192	240	240	240					
63 / 64			224	224								
71 / 72			256	256	320	320	320					
24 / 24				64		80						
28 / 28				80		100						
31 / 32					120	120	120					
80 / 80					360	360	360	280	336	392		
95 / 96					440	440	440					
40 / 40							160	120				
120 / 120							560	440	528	616	704	
45 / 45								140	168			
50 / 50								160	192	224		
56 / 55								180	216			
71 / 70								240				
95 / 95								340	408	476	544	
105 / 105								380	456	532	608	
140 / 140								520	624	728	832	648
160 / 160								600	720	840	960	
63 / 65									264	308		
180 / 180									816	952	1088	
200 / 200									912	1064	1216	
240 / 240									1104	1288	1472	
120 / 119												540
160 / 161												756
180 / 182												864
200 / 203												972
240 / 238												1152

Ordering Code (example):

Ball cage with assembly aid, Aluminium =2060.63.

Guide diameter d_1 38 mm= 038.

Nominal ordering length l 50 mm= 050

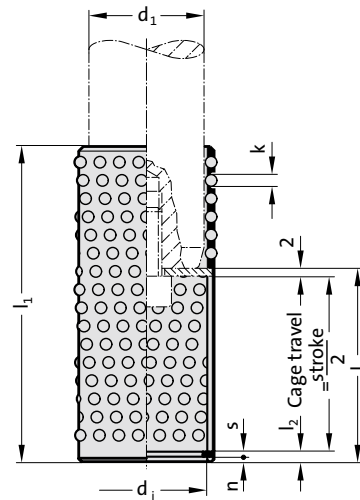
Order No =2060.63.038.050



Ball cage with circlip and fastening ring groove, Brass



206.75.



Material:

Cage: Brass

Balls: Steel hardened (DIN 5401)

Note:

Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

l = Nominal ordering length

l_1 = Manufacturing length

206.75. Ball cage with circlip and fastening ring groove, Brass

d_1	19	20	24	25	30	32	38	40	48	50	60	63
$d_1 \times s$	20 x 1	21 x 1	25 x 1.2	26 x 1.2	31 x 1.2	33 x 1.2	39 x 1.5	41 x 1.75	50 x 2	51 x 2	60 x 2	63 x 2
k	3	3	3	3	4	4	4	4	4	4	4	4
l_2	2.6	2.6	2.6	2.6	2.6	2.6	3.45	3.45	4.3	4.3	4.3	4.3
n	1.3	1.3	1.3	1.3	1.3	1.3	1.85	1.6	2.15	2.15	2.15	2.15
l / l_1	l_3											
56 / 56	31	31	31	31								
72 / 72	41	41	41	41								
80 / 80	51	51	51	51	51	51	51	51	51	51		
70 / 70					41	41						
95 / 95					61	61	61	61	61	61	61	61
105 / 105					61	61	61	61				
120 / 120							73	73	73	73	73	73
140 / 140											83	83

Ordering Code (example):

Ball cage with circlip and fastening ring groove, Brass	=206.75.
Guide diameter d_1	38 mm = 038.
Nominal ordering length l	80 mm = 080.
Groove length l_3	51 mm = 051
Order No	=206.75. 038.080.051



Ball cage with circlip and fastening ring groove, Aluminium

Material:

Cage: Aluminium

Balls: Steel hardened (DIN 5401)

Note:

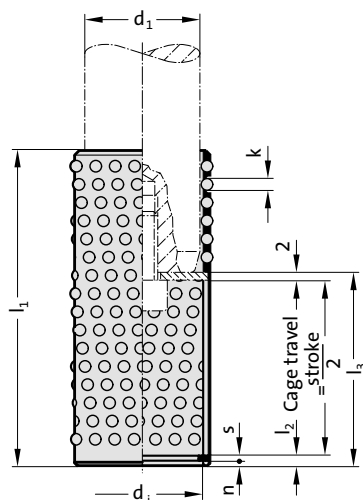
Notes on ball bearing type guides at the beginning of chapter D.

Bearing life and dynamic load indexes see at the end of chapter D.

l = Nominal ordering length

l_1 = Manufacturing length

2060.65.



2060.65. Ball cage with circlip and fastening ring groove, Aluminium

d_1	19	20	24	25	30	32	38	40	48	50	60	63
$d_i \times s$	20 x 1	21 x 1	25 x 1.2	26 x 1.2	31 x 1.2	33 x 1.2	39 x 1.5	41 x 1.75	50 x 2	51 x 2	60 x 2	63 x 2
k	3	3	3	3	4	4	4	4	4	4	4	4
l_2	2.6	2.6	2.6	2.6	2.6	2.6	3.45	3.45	4.3	4.3	4.3	4.3
n	1.3	1.3	1.3	1.3	1.3	1.3	1.85	1.6	2.15	2.15	2.15	2.15
l/l_1	l_3											
56 / 56	31	31	31	31								
72 / 72	41	41	41	41								
80 / 80	51	51	51	51	51	51	51	51	51	51		
70 / 70					41	41						
95 / 95					61	61	61	61	61	61	61	61
105 / 105					61	61	61	61				
120 / 120							73	73	73	73	73	73
140 / 140											83	83

Ordering Code (example):

Ball cage with circlip and fastening ring groove, Aluminium =2060.65.

Guide diameter d_1 38 mm= 038.

Nominal ordering length l 80 mm= 080.

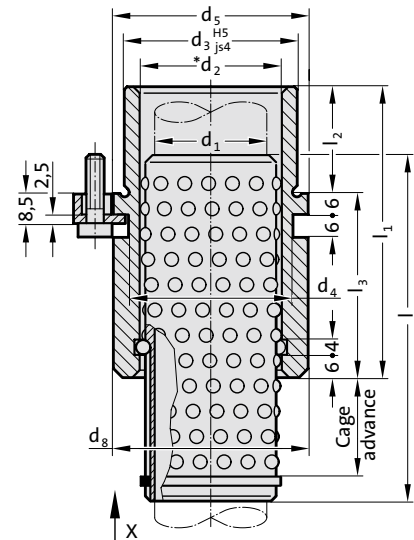
Groove length l_3 51 mm= 051

Order No =2060.65.038.080.051

Headed guide bush with ball cage retainer



2081.67.



Material:

Bush: Tool steel
Hardness: 62 ± 2 HRC
Cage: Brass
Balls: Steel hardened (DIN 5401)

Note:

Ball cage position - please specify the required cage advance with order. FIBRO Ball Cage Retainers ensure optimum starting position of ball cages on inverted die sets - even if pillars retract from guide bushes. The application determines the cage advance. Note that cage travel is half the stroke length. In this context it is of importance to note the minimum constructional length.

The cage advance should be chosen so that during normal operation of the tool, optimum position is achieved.

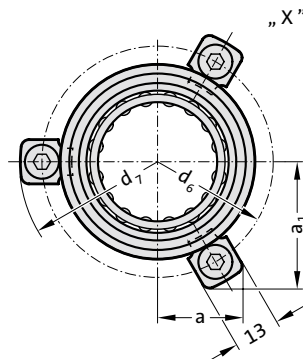
*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Price and delivery on request!

Tolerance range:

yellow = .10
green = .20
red = .30



2081.67. Headed guide bush with ball cage retainer

d ₁	19 20	24 25	30 32	38 40	48 50	60 63
d ₂	25 26	30 31	38 40	46 48	56 58	68 71
d ₃	32	40	48	58	70	85
d ₄	32	40	48	58	70	85
d ₅	40	48	56	66	80	95
d ₆	52	60	67	77	91	106
d ₇	64.7	72.7	79.7	89.7	103.7	118.7
d ₈	38.9	46	53	63	77	92
l ₁	59	79	93	108	127	150
l ₂	23	23	30	37	47	60
l ₃	36	56	63	71	80	90
l	72	96	120	140	140	160
a	20.7	22.65	24.4	35.3	40.2	45.5
a ₁	30	33.4	36.4	35.3	40.2	45.5

Ordering Code (example):

Headed guide bush with ball cage retainer =2081.67.

Guide diameter d₁ 38 mm= 038.

Cage advance VL 5 mm = 005.

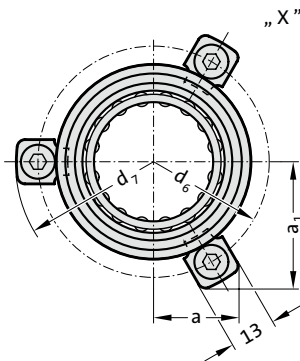
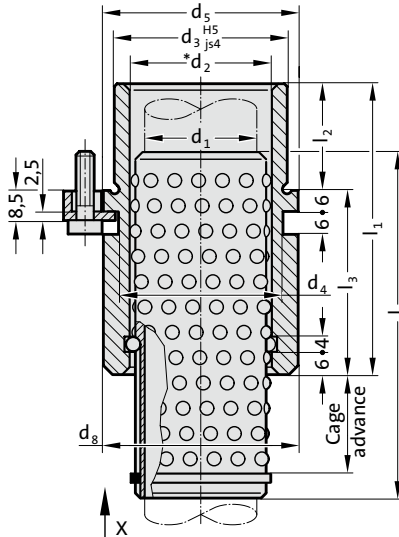
Classification TOL yellow= 10

Order No =2081.67.038.005.10



Headed guide bush with ball cage retainer

2081.68.



Material:

Bush: Tool steel

Hardness: 62 ± 2 HRC

Cage: Aluminium

Balls: Steel hardened (DIN 5401)

Note:

Ball cage position - please specify the required cage advance with order. FIBRO Ball Cage Retainers ensure optimum starting position of ball cages on inverted die sets - even if pillars retract from guide bushes. The application determines the cage advance. Note that cage travel is half the stroke length.

In this context it is of importance to note the minimum constructional length.

The cage advance should be chosen so that during normal operation of the tool, optimum position is achieved.

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

*Preloading see pairing classification at the beginning of chapter D Matching guide combinations, see selection matrix at the beginning of chapter D.

Price and delivery on request!

Tolerance range:

yellow = .10; green = .20; red = .30

2081.68. Headed guide bush with ball cage retainer

d ₁	19 20	24 25	30 32	38 40	48 50	60 63
d ₂	25 26	30 31	38 40	46 48	56 58	68 71
d ₃	32	40	48	58	70	85
d ₄	32	40	48	58	70	85
d ₅	40	48	56	66	80	95
d ₆	52	60	67	77	91	106
d ₇	64.7	72.7	79.7	89.7	103.7	118.7
d ₈	38.9	46	53	63	77	92
l ₁	59	79	93	108	127	150
l ₂	23	23	30	37	47	60
l ₃	36	56	63	71	80	90
l	72	96	120	140	140	160
a	20.7	22.65	24.4	35.3	40.2	45.5
a ₁	30	33.4	36.4	35.3	40.2	45.5

Headed guide bush with ball cage retainer = 2081.68.

Guide diameter d₁ 38 mm = 038.

Cage advance VL 5 mm = 005.

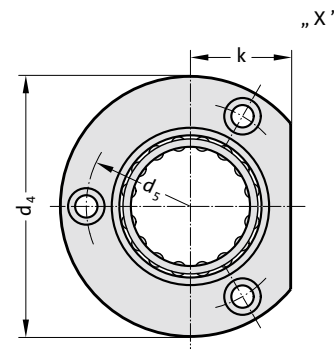
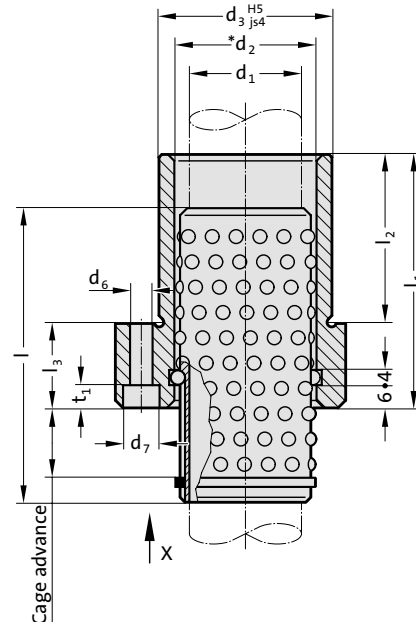
Classification TOL yellow mm = 10

Order No = 2081.68. 038. 005. 10

Flanged guide bush with ball cage retainer



2091.67.



Material:

Bush: Tool steel
Hardness: 62 ± 2 HRC
Cage: Brass
Balls: Steel hardened (DIN 5401)

Note:

Ball cage position - please specify the required cage advance with order. FIBRO Ball Cage Retainers ensure optimum starting position of ball cages on inverted die sets - even if pillars retract from guide bushes. The application determines the cage advance. Note that cage travel is half the stroke length.

In this context it is of importance to note the minimum constructional length.

The cage advance should be chosen so that during normal operation of the tool, optimum position is achieved.

*Preloading see pairing classification at the beginning of chapter D
Matching guide combinations, see selection matrix at the beginning of chapter D.

Price and delivery on request!

Tolerance range:

yellow = .10
green = .20
red = .30

2091.67. Flanged guide bush with ball cage retainer

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
d ₂	25 26	30 31	38 40	46 48	56 58	68 71	92
d ₃	32	40	48	58	70	85	105
d ₄	50	63	72	85	104	120	148
d ₅	40	50	58	70	86	100	125
d ₆	4.5	5.5	5.5	6.6	9	9	11
d ₇	8	10	10	11	15	15	18
t ₁	4.6	5.7	5.7	6.8	9	9	11
k	18	23	28	33	38	46	56
l ₁	52	62	72	77	102	102	125
l ₂	37	37	47	47	60	60	75
l ₃	15	25	25	30	42	42	50
l	72	72	80	95	105	120	140

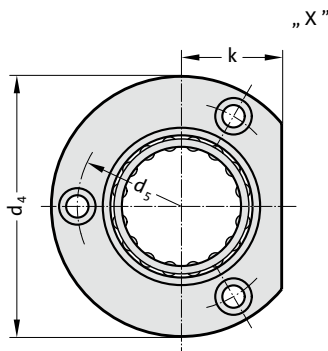
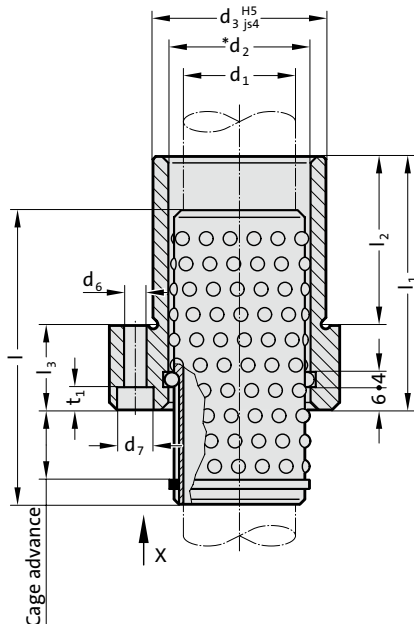
Ordering Code (example):

Flanged guide bush with ball cage retainer =2091.67.
Guide diameter d₁ 38 mm= 038.
Cage advance VL 5 mm = 005.
Classification TOL yellow= 10
Order No =2091.67.038.005.10



Flanged guide bush with ball cage retainer

2091.68.



Material:

Bush: Tool steel

Hardness: 62 ± 2 HRC

Cage: Aluminium

Balls: Steel hardened (DIN 5401)

Note:

Ball cage position - please specify the required cage advance with order. FIBRO Ball Cage Retainers ensure optimum starting position of ball cages on inverted die sets - even if pillars retract from guide bushes. The application determines the cage advance. Note that cage travel is half the stroke length.

In this context it is of importance to note the minimum constructional length.

The cage advance should be chosen so that during normal operation of the tool, optimum position is achieved.

*Preloading see pairing classification at the beginning of chapter D Matching guide combinations, see selection matrix at the beginning of chapter D.

Price and delivery on request!

Tolerance range:

yellow = .10

green = .20

red = .30

2091.68. Flanged guide bush with ball cage retainer

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
d ₂	25 26	30 31	38 40	46 48	56 58	68 71	92
d ₃	32	40	48	58	70	85	105
d ₄	50	63	72	85	104	120	148
d ₅	40	50	58	70	86	100	125
d ₆	4.5	5.5	5.5	6.6	9	9	11
d ₇	8	10	10	11	15	15	18
t ₁	4.6	5.7	5.7	6.8	9	9	11
k	18	23	28	33	38	46	56
l ₁	52	62	72	77	102	102	125
l ₂	37	37	47	47	60	60	75
l ₃	15	25	25	30	42	42	50
l	72	72	80	95	105	120	140

Flanged guide bush with ball cage retainer

=2091.68.

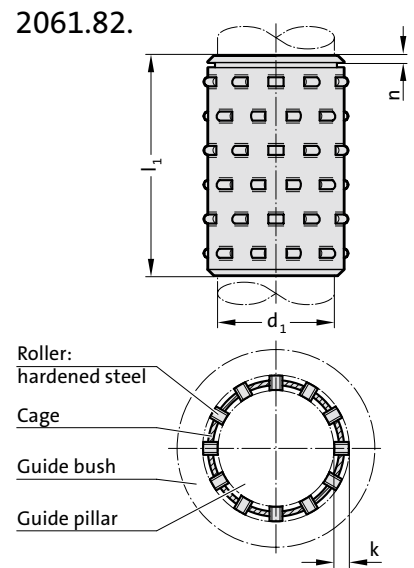
Guide diameter d₁ 38 mm = 038.

Cage advance VL 5 mm = 005.

Classification TOL yellow mm = 10

Order No =2091.68. 038. 005. 10

Roller cage with circlip groove, Brass



Description:

Roller cages make linear contact with the guide bush and the guide pillar. This results in a load carrying capacity for each individual roller which is many times that of a ball of the same diameter. Roller bearings feature a FIBRO specific seal, similar to the ball bearings. The profile rollers are arranged in a spiral layout axially, so that every roller has its own path. The cages are grooved to accept a DIN 471 circlip.

Material:

Roller Cage: Brass
Rollers: Steel hardened, 100 Cr6, DIN 5402

Note:

Preloading see at the beginning of Chapter D
For roller cages use only pairing class guide pillar red = .30 and guide sleeve yellow = .10.

2061.82. Roller cage with circlip groove, Brass

d ₁	19	20	24 25	30 32	38 40	48 50	63
k	3	3	3	4	4	4	4
n	1.6	1.6	1.6	2.1	2.1	2.1	2.1
l ₁	Total number of rollers						
45	32	32	40	48			
55	40	40	50	60	70		
65	48	48	60	72	84	108	
75	56	56	70	84	98	126	154
85	64	64	80	96	112	144	176
95	72	72	90	108	126	162	198
105	80	80	100	120	140	180	220
115			110	132	154	198	242
125			120	144	168	216	264
135				156	182	234	286
145				168	196	252	308
155				180	210	270	330
165				192	224	288	352
175					238	306	374
185					252	324	396
205					280	360	440

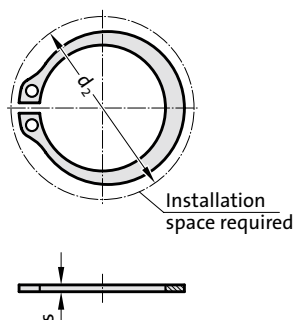
Ordering Code (example):

Roller cage with circlip groove, Brass	=2061.82.
Guide diameter d ₁	38 mm = 038.
Length l ₁	115 mm = 115
Order No	=2061.82.038.115

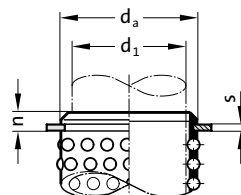
Circlip DIN 471



206.72.



Mounting example



206.72. Circlip DIN 471

d_1	$d_a \times s$	d_2	d_1	$d_a \times s$	d_2
10	13 x 1	20.2	30	37 x 1.5	49
11	14 x 1	21.4	32	38 x 1.75	51.4
12	15 x 1	22.6	38	45 x 1.75	59.1
15	20 x 1.2	28.4	40	47 x 1.75	60.8
16	21 x 1.2	29.6	48	55 x 2	70.2
18	23 x 1.2	32.2	50	57 x 2	72.6
19	24 x 1.2	33.2	60	67 x 2.5	83.1
20	25 x 1.2	34.2	63	70 x 2.5	87
24	29 x 1.5	39.1	80	90 x 3	108.5
25	30 x 1.5	40.5			

Description:

For securing the ball and roller cages

Execution:

to DIN 471

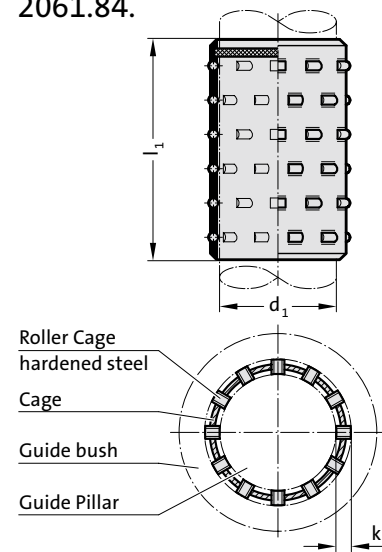
Ordering Code (example):

Circlip DIN 471	=206.72.
Guide diameter d_1	25 mm = 025
Order No	=206.72. 025

Roller cage with assembly aid, Brass



2061.84.



Description:

Roller cages make linear contact with the guide bush and the guide pillar. This results in a load carrying capacity for each individual roller which is many times that of a ball of the same diameter. Roller bearings feature a FIBRO specific seal, similar to the ball bearings. The profile rollers are arranged in a spiral layout axially, so that every roller has its own path.

Material:

Roller Cage: Brass

Rollers: Steel hardened, 100 Cr6, DIN 5402

Note:

No assistant is needed for their assembly. These cages are equipped with a suitably positioned brake ring insert. That ensures equal cage spacing especially on die sets with multiple pillars.

Preloading see at the beginning of Chapter D

For roller cages use only pairing class guide pillar red = .30 and guide sleeve yellow = .10.

2061.84. Roller cage with assembly aid, Brass

d ₁	19	20	24 25	30 32	38 40	48 50	63
k	3	3	3	4	4	4	4
l ₁	Total number of rollers						
45	32	32	40	48			
55	40	40	50	60	70		
65	48	48	60	72	84	108	
75	56	56	70	84	98	126	154
85	64	64	80	96	112	144	176
95	72	72	90	108	126	162	198
105	80	80	100	120	140	180	220
115			110	132	154	198	242
125			120	144	168	216	264
135				156	182	234	286
145				168	196	252	308
155				180	210	270	330
165				192	224	288	352
175					238	306	374
185					252	324	396
205					280	360	440

Ordering Code (example):

Roller cage with assembly aid, Brass =2061.84.

Guide diameter d₁ 38 mm = 038.

Length l₁ 115 mm = 115

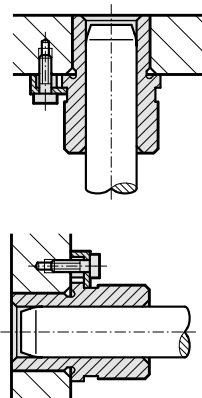
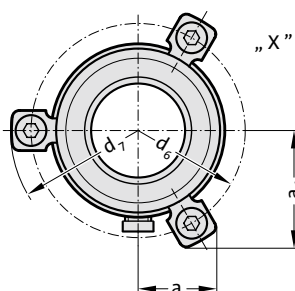
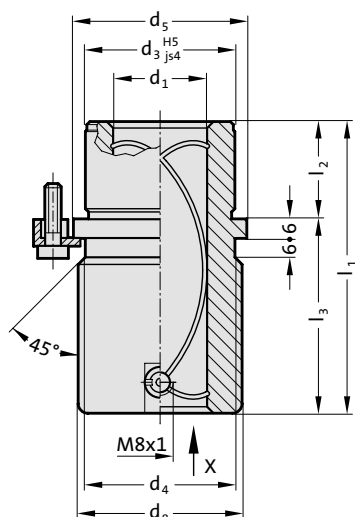
Order No =2061.84.038.115



Headed guide bush, bronze coated, ISO 9448-6

2081.81.

Mounting example



Material:

1.0503

Ø d₃ and d₈ induction hardened to 500+100 HV 10.

Execution:

Bronze coated internal bore.

Diameter d₃ and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

2081.81. Headed guide bush, bronze coated, ISO 9448-6

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
Tolerance	+0.003/+0.012	+0.003/+0.012	+0.004/+0.015	+0.004/+0.015	+0.004/+0.015	+0.005/+0.018	+0.005/+0.018
d ₃	32	40	48	58	70	85	105
d ₄	32	40	48	58	70	85	105
d ₅	40	48	56	66	80	95	118
d ₆	52	60	67	77	91	106	129
d ₇	64.7	72.7	79.7	89.7	103.7	118.7	141
d ₈	39	46	53	63	77	92	115
a	20.9	22.7	24.4	35.3	40.2	45.5	54.5
a ₁	30.3	33.4	36.4	35.3	40.2	45.5	54.5
l ₁	59	79	93	108	127	150	150
l ₂	23	23	30	37	47	60	60
l ₃	36	56	63	71	80	90	90

Ordering Code (example):

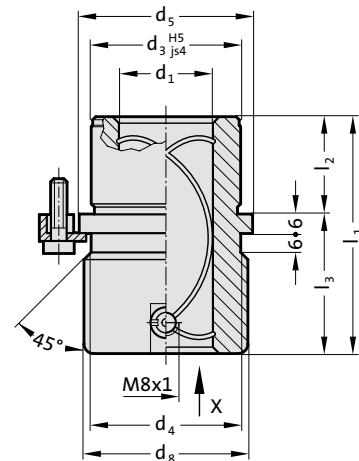
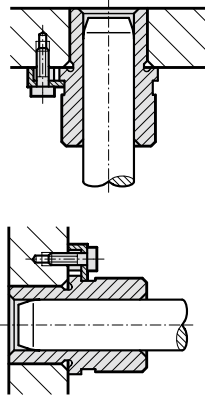
Headed guide bush, bronze coated, ISO 9448-6 =2081.81.
 Guide diameter d₁ 38 mm= 038
 Order No =2081.81.038

Headed guide bush, bronze coated, ISO 9448-6



Mounting example

2081.84.



Material:

1.0503

Ø d₃ and d₈ induction hardened to 500+100 HV 10.

Execution:

Bronze coated internal bore.

Diameter d₃ and collar face precision ground.

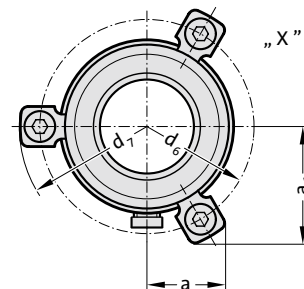
Note:

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.84. Headed guide bush, bronze coated, ISO 9448-6

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
Tolerance	+0.003/+0.012	+0.003/+0.012	+0.004/+0.015	+0.004/+0.015	+0.004/+0.015	+0.005/+0.018	+0.005/+0.018
d ₃	32	40	48	58	70	85	105
d ₄	32	40	48	58	70	85	105
d ₅	40	48	56	66	80	95	118
d ₆	52	60	67	77	91	106	129
d ₇	65.7	72.7	79.7	89.7	103.7	118.7	141
d ₈	39	46	53	63	77	92	115
a	20.9	22.7	24.4	35.3	40.2	45.5	54.5
a ₁	30.3	33.4	36.4	35.3	40.2	45.5	54.5
l ₁	43	59	75	82	97	116	120
l ₂	23	23	30	37	47	60	60
l ₃	20	36	45	45	50	56	60

Ordering Code (example):

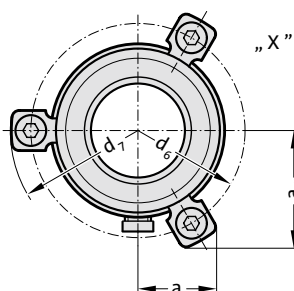
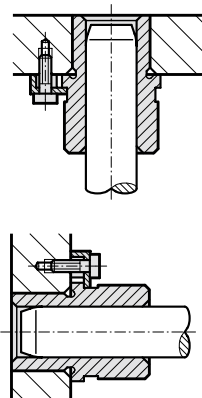
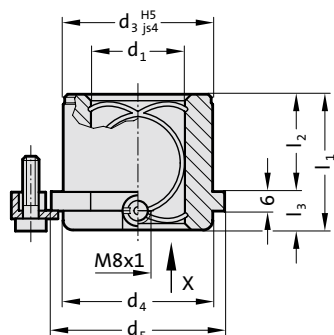
Headed guide bush, bronze coated, ISO 9448-6 =2081.84.
 Guide diameter d₁ 38 mm= 038
 Order No =2081.84.038



Headed guide bush, bronze coated, ISO 9448-6

2081.85.

Mounting example



Material:

1.0503

Ø d₃ and d₈ induction hardened to 500+100 HV 10.

Execution:

Bronze coated internal bore.

Diameter d₃ and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

2081.85. Headed guide bush, bronze coated, ISO 9448-6

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
Tolerance	+0.003/+0.012	+0.003/+0.012	+0.004/+0.015	+0.004/+0.015	+0.004/+0.015	+0.005/+0.018	+0.005/+0.018
d ₃	32	40	48	58	70	85	105
d ₄	32	40	48	58	70	85	105
d ₅	40	48	56	66	80	95	118
d ₆	52	60	67	77	91	106	129
d ₇	65.7	72.7	79.7	89.7	103.7	118.7	141
a	20.9	22.7	24.4	35.3	40.2	45.5	54.4
a ₁	30.3	33.4	36.4	35.3	40.2	45.5	54.4
l ₁	35	35	42	52	65	80	80
l ₂	23	23	30	37	47	60	60
l ₃	12	12	12	15	18	20	20

Ordering Code (example):

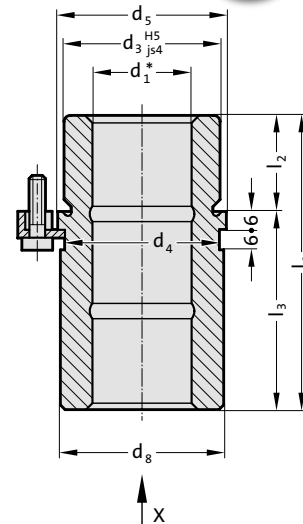
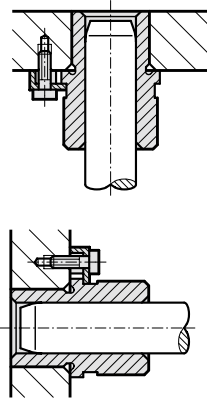
Headed guide bush, bronze coated, ISO 9448-6 =2081.85.
 Guide diameter d₁ 38 mm= 038
 Order No =2081.85.038

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6



Mounting example

2081.31.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

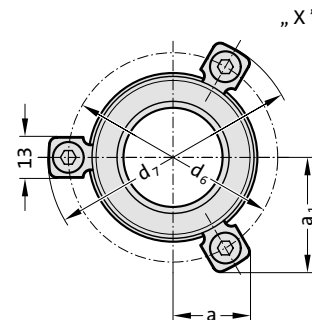
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.31. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

d_1	19 20	24 25	30 32	38 40	48 50	60 63
d_3	32	40	48	58	70	85
d_4	32	40	48	58	70	85
d_5	40	48	56	66	80	95
d_6	52	60	67	77	91	106
d_7	64.7	72.7	79.7	89.7	103.7	118.7
d_8	39	46	53	63	77	92
a	20.7	22.65	24.4	35.3	40.2	45.5
a_1	30	33.4	36.4	35.3	40.2	45.5
l_1	59	79	93	108	127	150
l_2	23	23	30	37	47	60
l_3	36	56	63	71	80	90

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

=2081.31.

Guide diameter d_1

38 mm= 038.

Classification TOL

yellow= 10

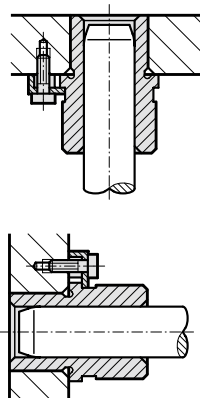
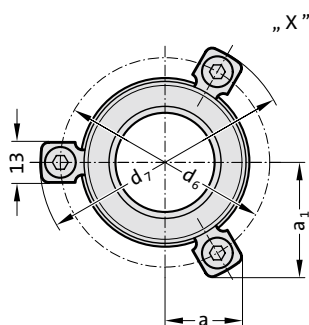
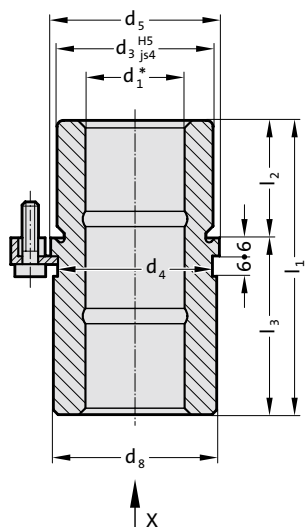
Order No

=2081.31.038.10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

2081.32.

Mounting example



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.32. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

	24 25	30 32	38 40	48 50
d_1	40	48	58	70
d_3	40	48	58	70
d_4	40	48	58	70
d_5	48	56	66	80
d_6	60	67	77	91
d_7	72.7	79.7	89.7	103.7
d_8	46	53	63	77
a	22.65	24.4	35.3	40.2
a_1	33.4	36.4	35.3	40.2
l_1	80	93	110	131
l_2	30	37	47	60
l_3	50	56	63	71

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

Guide diameter d_1

Classification TOL

Order No

=2081.32.

38 mm= 038.

yellow= 10

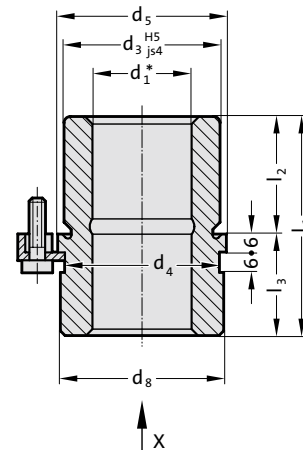
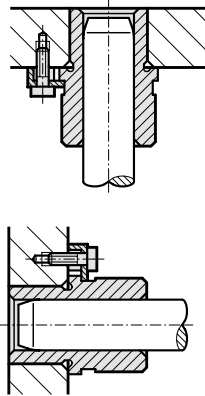
=2081.32. 038.10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6



Mounting example

2081.33.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

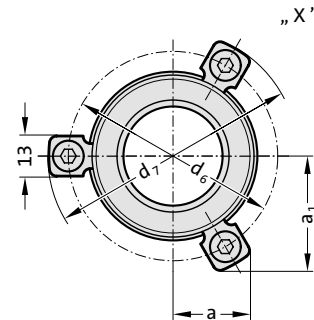
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.33. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

d_1	24 25	30 32	38 40	48 50
d_3	40	48	58	70
d_4	40	48	58	70
d_5	48	56	66	80
d_6	60	67	77	91
d_7	72.7	79.7	89.7	103.7
d_8	46	53	63	77
a	22.65	24.4	35.3	40.2
a_1	33.4	36.4	35.3	40.2
l_1	55	69	79	96
l_2	30	37	47	60
l_3	25	32	32	36

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

=2081.33.

Guide diameter d_1

38 mm= 038.

Classification TOL

yellow= 10

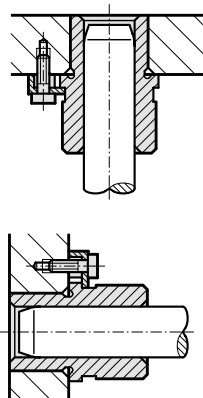
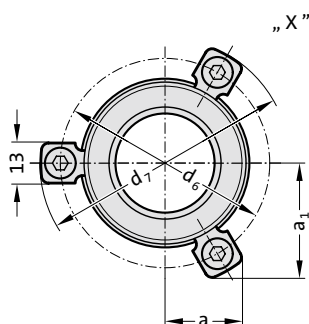
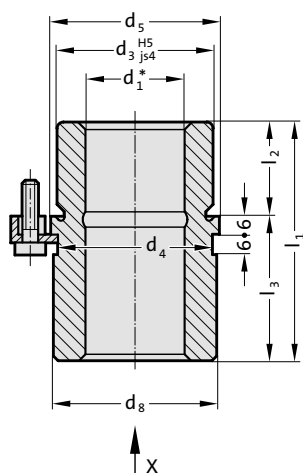
Order No

=2081.33.038.10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

2081.34.

Mounting example



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.34. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

	19 20	24 25	30 32	38 40	48 50	60 63
d_1	32	40	48	58	70	85
d_3	32	40	48	58	70	85
d_4	40	48	56	66	80	95
d_5	52	60	67	77	91	106
d_6	64.7	72.7	79.7	89.7	103.7	118.7
d_7	39	46	53	63	77	92
d_8	20.7	22.65	24.4	35.3	40.2	45.5
a	30	33.4	36.4	35.3	40.2	45.5
a_1	43	59	75	82	97	116
l_1	23	23	30	37	47	60
l_2	20	36	45	45	50	56
l_3						

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

Guide diameter d_1

Classification TOL

Order No

=2081.34.

38 mm= 038.

yellow= 10

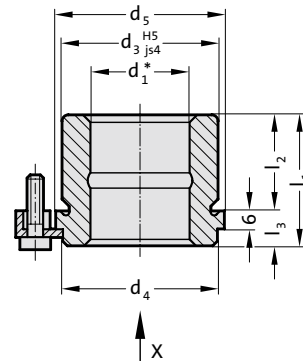
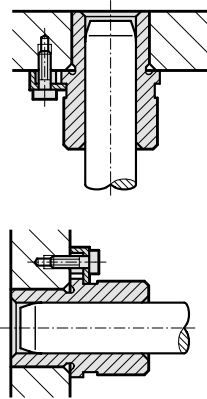
=2081.34.038.10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6



Mounting example

2081.35.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

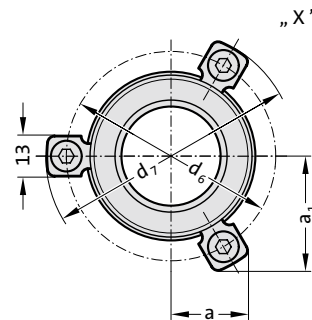
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.35. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

	19 20	24 25	30 32	38 40	48 50	60 63
d_1	19 20	24 25	30 32	38 40	48 50	60 63
d_3	32	40	48	58	70	85
d_4	32	40	48	58	70	85
d_5	40	48	56	66	80	95
d_6	52	60	67	77	91	106
d_7	64.7	72.7	79.7	89.7	103.7	118.7
a	20.7	22.65	24.4	35.3	40.2	45.5
a_1	30	33.4	36.4	35.3	40.2	45.5
l_1	35	35	42	52	65	80
l_2	23	23	30	37	47	60
l_3	12	12	12	15	18	20

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-6

=2081.35.

Guide diameter d_1

38 mm= 038.

Classification TOL

yellow= 10

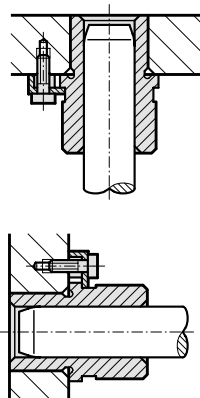
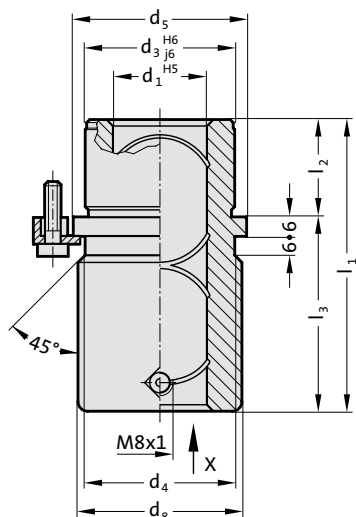
Order No

=2081.35.038.10

Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

2081.91.

Mounting example



Material:

Steel, d_3 induction hardened

Execution:

Bronze plated internal bore.

Diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.91. Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141
d_8	39	46	53	63	77	92	115
a	20.7	22.7	24.4	35.3	40.2	45.5	54.5
a_1	30.3	33.4	36.4	35.3	40.2	45.5	54.5
l_1	59	79	93	108	127	150	150
l_2	23	23	30	37	47	60	60
l_3	36	56	63	71	80	90	90

Ordering Code (example):

Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

=2081.91.

Guide diameter d_1

38 mm= 038

Order No

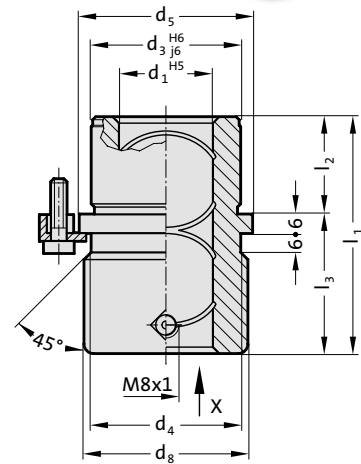
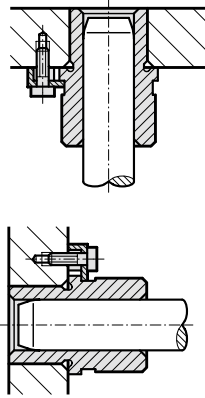
=2081.91.038

Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6



Mounting example

2081.94.



Material:

Steel, d₃ induction hardened

Execution:

Bronze plated internal bore.

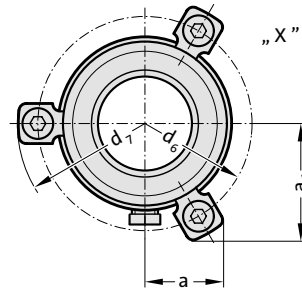
Diameter d₃ and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.94. Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
d ₃	32	40	48	58	70	85	105
d ₄	32	40	48	58	70	85	105
d ₅	40	48	56	66	80	95	118
d ₆	52	60	67	77	91	106	129
d ₇	64.7	72.7	79.7	89.7	103.7	118.7	141
d ₈	39	46	53	63	77	92	115
a	20.7	22.7	24.4	35.3	40.2	45.5	54.5
a ₁	30.3	33.4	36.4	35.3	40.2	45.5	54.5
l ₁	43	59	75	82	97	116	120
l ₂	23	23	30	37	47	60	60
l ₃	20	36	45	45	50	56	60

Ordering Code (example):

Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6	=2081.94.
Guide diameter d ₁	38 mm= 038
Order No	=2081.94.038

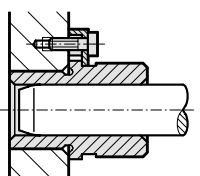
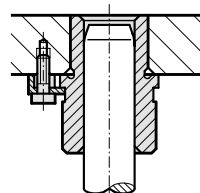
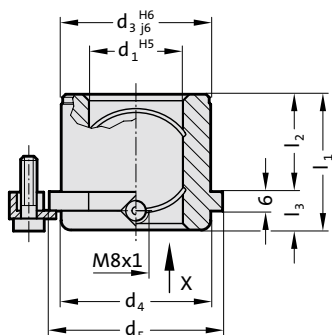
Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6



FIBRO

2081.95.

Mounting example



Material:

Steel, d₃ induction hardened

Execution:

Bronze plated internal bore.

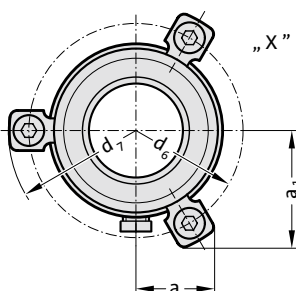
Diameter d₃ and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from Ø d₁ = 38 with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head Ø 13).

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.95. Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
d ₃	32	40	48	58	70	85	105
d ₄	32	40	48	58	70	85	105
d ₅	40	48	56	66	80	95	118
d ₆	52	60	67	77	91	106	129
d ₇	64.7	72.7	79.7	89.7	103.7	118.7	141
a	20.7	22.65	24.4	35.3	40.2	45.5	54.4
a ₁	30	33.4	36.4	35.3	40.2	45.5	54.4
l ₁	35	35	42	52	65	80	80
l ₂	23	23	30	37	47	60	60
l ₃	12	12	12	15	18	20	20

Ordering Code (example):

Headed guide bush "ECO-LINE", bronzeplated, ISO 9448-6

=2081.95.

Guide diameter d₁

38 mm= 038

Order No

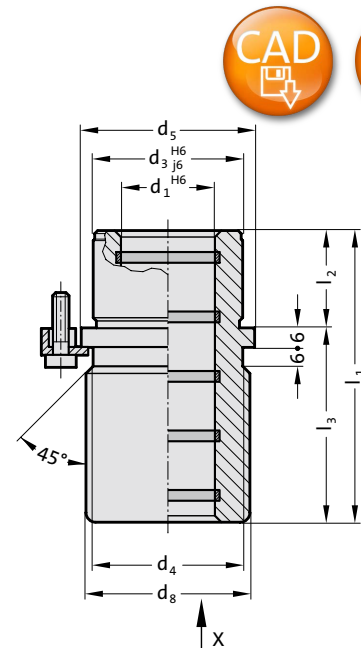
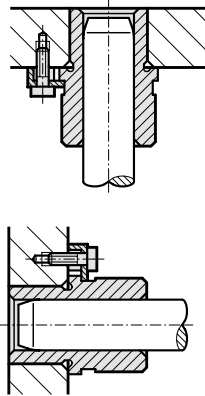
=2081.95.038

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6



Mounting example

2081.71.



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

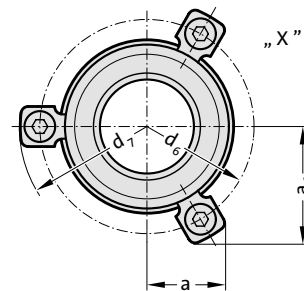
Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.71. Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141
d_8	39	46	53	63	77	92	115
a	20.7	22.65	24.4	35.3	40.2	45.5	54.5
a_1	30	33.4	36.4	35.3	40.2	45.5	54.5
l_1	59	79	93	108	127	150	150
l_2	23	23	30	37	47	60	60
l_3	36	56	63	71	80	90	90

Ordering Code (example):

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

=2081.71.

Guide diameter d_1

38 mm= 038

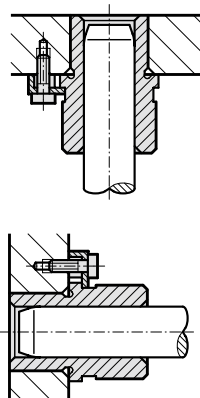
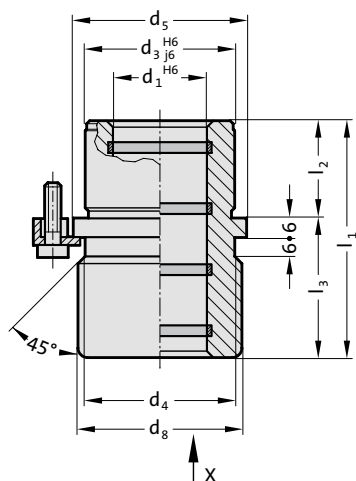
Order No

=2081.71.038

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

2081.74.

Mounting example



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

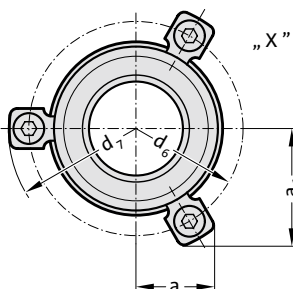
Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.74. Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141
d_8	39	46	53	63	77	92	115
a	20.7	22.65	24.4	35.3	40.2	45.5	54.5
a_1	30	33.4	36.4	35.3	40.2	45.5	54.5
l_1	43	59	75	82	97	116	120
l_2	23	23	30	37	47	60	60
l_3	20	36	45	45	50	56	60

Ordering Code (example):

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings,
ISO 9448-6

Guide diameter d_1

Order No

=2081.74.

38 mm= 038

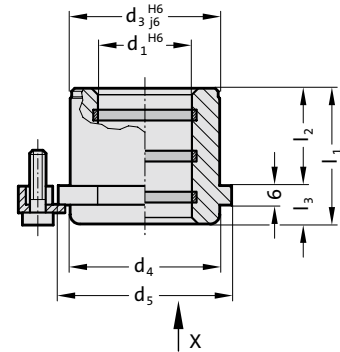
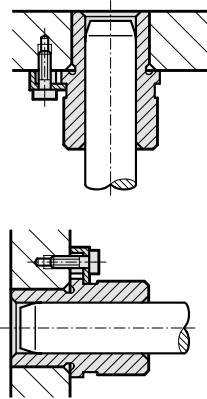
=2081.74.038

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6



Mounting example

2081.75.



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

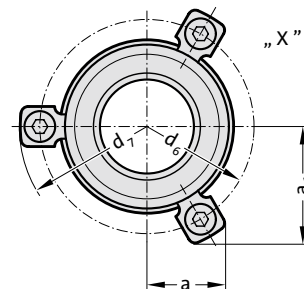
Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2081.75. Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141
a	20.7	22.65	24.4	35.3	40.2	45.5	54.4
a_1	30	33.4	36.4	35.3	40.2	45.5	54.4
l_1	35	35	42	52	65	80	80
l_2	23	23	30	37	47	60	60
l_3	12	12	12	15	18	20	20

Ordering Code (example):

Headed guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-6

=2081.75.

Guide diameter d_1

38 mm= 038

Order No

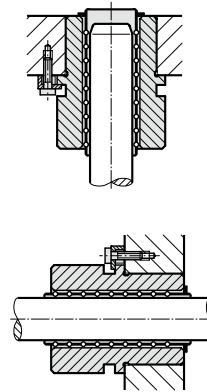
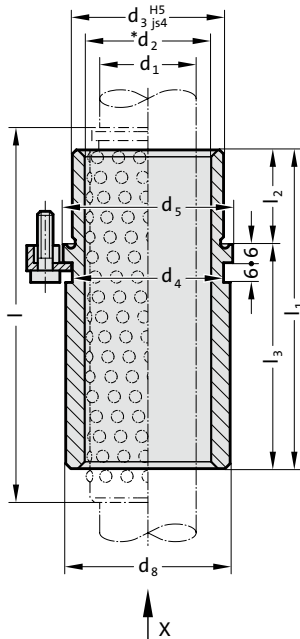
=2081.75.038



Headed guide bush for ball bearing, ISO 9448-7

2081.44.

Mounting example



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2081.44. Headed guide bush for ball bearing, ISO 9448-7

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_2	25 26	30 31	38 40	46 48	56 58	68 71	92
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141.7
d_8	39	46	53	63	77	92	115
a	20.7	22.65	24.4	35.3	40.2	45.5	54.5
a_1	30	33.4	36.4	35.3	40.2	45.5	54.5
l_1	59	79	93	108	127	150	150
l_2	23	23	30	37	47	60	60
l_3	36	56	63	71	80	90	90
l^*	71	95	120	120	140	160	160

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Headed guide bush for ball bearing, ISO 9448-7

=2081.44.

Guide diameter d_1 38 mm = 038.

Classification TOL yellow = 10

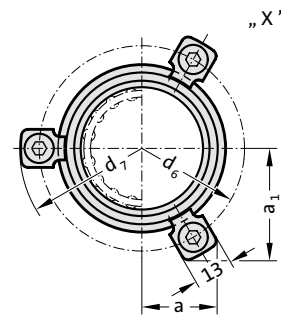
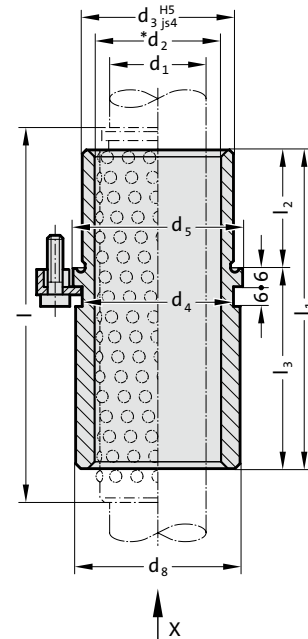
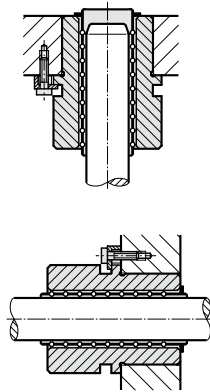
Order No =2081.44. 038. 10

Headed guide bush for ball bearing, ISO 9448-7



Mounting example

2081.45.



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2081.45. Headed guide bush for ball bearing, ISO 9448-7

d_1	24 25	30 32	38 40	48 50
d_2	30 31	38 40	46 48	56 58
d_3	40	48	58	70
d_4	40	48	58	70
d_5	48	56	66	80
d_6	60	67	77	91
d_7	72.7	79.7	89.7	103.7
d_8	46	53	63	77
a	22.65	24.4	35.3	40.2
a_1	33.4	36.4	35.3	40.2
l_1	80	93	110	131
l_2	30	37	47	60
l_3	50	56	63	71
l^*	95	120	140	160

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

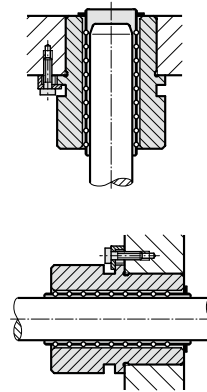
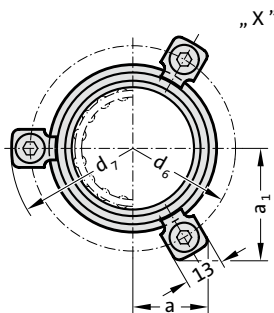
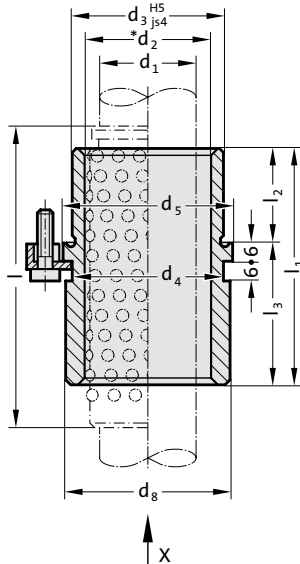
Headed guide bush for ball bearing, ISO 9448-7 = 2081.45.
 Guide diameter d_1 38 mm = 038.
 Classification TOL yellow = 10
 Order No = 2081.45.038.10



Headed guide bush for ball bearing, ISO 9448-7

2081.46.

Mounting example



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2081.46. Headed guide bush for ball bearing, ISO 9448-7

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_2	25 26	30 31	38 40	46 48	56 58	68 71	92
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141.7
d_8	39	46	53	63	77	92	115
a	20.7	22.65	24.4	35.3	40.2	45.5	54.5
a_1	30	33.4	36.4	35.3	40.2	45.5	54.5
l_1	43	59	75	82	97	116	120
l_2	23	23	30	37	47	60	60
l_3	20	36	45	45	50	56	60
l^*	56	71	95	105	120	140	140

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Headed guide bush for ball bearing, ISO 9448-7

=2081.46.

Guide diameter d_1 38 mm = 038.

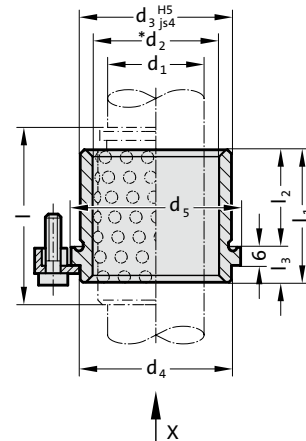
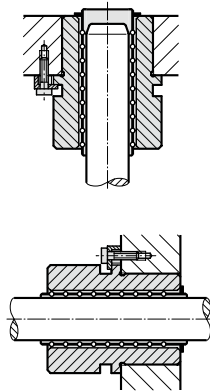
Classification TOL yellow = 10

Order No =2081.46. 038. 10

Headed guide bush for ball bearing, ISO 9448-7



Mounting example 2081.47.



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

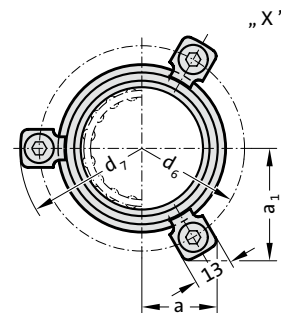
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2081.47. Headed guide bush for ball bearing, ISO 9448-7

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_2	25 26	30 31	38 40	46 48	56 58	68 71	92
d_3	32	40	48	58	70	85	105
d_4	32	40	48	58	70	85	105
d_5	40	48	56	66	80	95	118
d_6	52	60	67	77	91	106	129
d_7	64.7	72.7	79.7	89.7	103.7	118.7	141.7
a	20.7	22.65	24.4	35.3	40.2	45.5	54.5
a_1	30	33.4	36.4	35.3	40.2	45.5	54.5
l_1	35	35	42	52	65	80	80
l_2	23	23	30	37	47	60	60
l_3	12	12	12	15	18	20	20
l^*	45	45	56	63	80	95	120

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Headed guide bush for ball bearing, ISO 9448-7 = 2081.47.

Guide diameter d_1 38 mm = 038.

Classification TOL yellow = 10

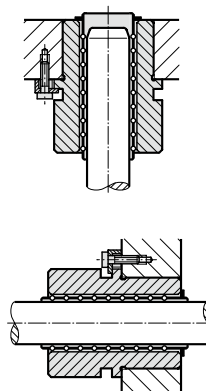
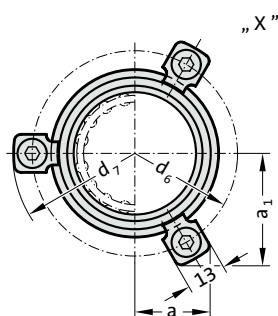
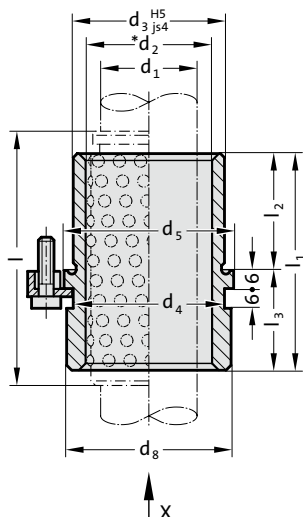
Order No = 2081.47.038.10



Headed guide bush for ball bearing, ISO 9448-7

2081.49.

Mounting example



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2081.49. Headed guide bush for ball bearing, ISO 9448-7

d_1	24 25	30 32	38 40	48 50
d_2	30 31	38 40	46 48	56 58
d_3	40	48	58	70
d_4	40	48	58	70
d_5	48	56	66	80
d_6	60	67	77	91
d_7	72.7	79.7	89.7	103.7
d_8	46	53	63	77
a	22.65	24.4	35.3	40.2
a_1	33.4	36.4	35.3	40.2
l_1	55	69	79	96
l_2	30	37	47	60
l_3	25	32	32	36
l^*	71	80	95	120

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Headed guide bush for ball bearing, ISO 9448-7

=2081.49.

Guide diameter d_1 38 mm = 038.

Classification TOL yellow = 10

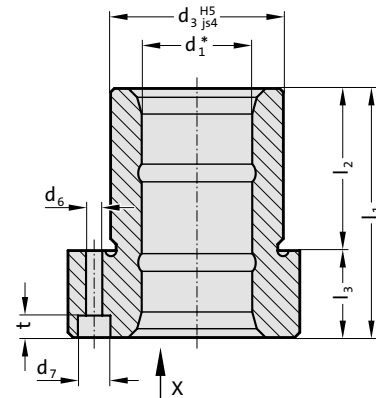
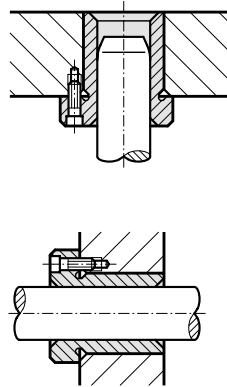
Order No =2081.49. 038. 10

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4



Mounting example

2091.31.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

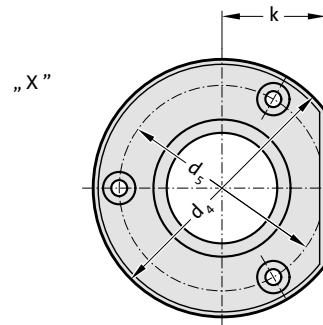
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2091.31. Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	50	63	72	85	104	120	148
d_5	40	50	58	70	86	100	125
d_6	4.5	5.5	5.5	6.6	9	9	11
d_7	8	10	10	11	15	15	18
k	18	23	28	33	38	46	56
l_1	52	62	72	77	102	102	125
l_2	37	37	47	47	60	60	75
l_3	15	25	25	30	42	42	50
t	4.6	5.7	5.7	6.8	9	9	11

Ordering Code (example):

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

=2091.31.

Guide diameter d_1

38 mm= 038.

Classification TOL

yellow= 10

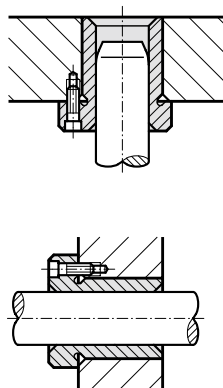
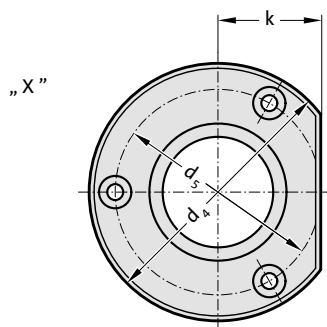
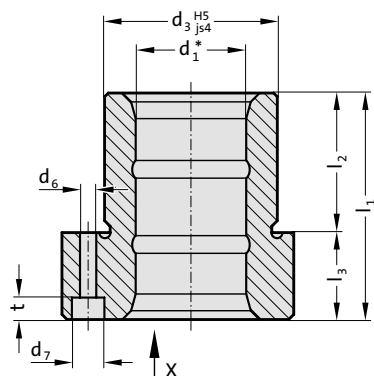
Order No

=2091.31.038.10

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

2091.32.

Mounting example



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2091.32. Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

	15 16	19 20	24 25	30 32	38 40	48 50	60 63
d_1	15 16	19 20	24 25	30 32	38 40	48 50	60 63
d_3	28	32	40	48	58	70	85
d_4	45	50	63	72	85	104	120
d_5	35	40	50	58	70	86	100
d_6	4.5	4.5	5.5	5.5	6.6	9	9
d_7	8	8	10	10	11	15	15
k	15	18	23	28	33	38	46
l_1	36	45	55	62	67	89	89
l_2	30	30	30	37	37	47	47
l_3	6	15	25	25	30	42	42
t	3.4	4.6	5.7	5.7	6.8	9	9

Ordering Code (example):

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

Guide diameter d_1

Classification TOL

Order No

=2091.32.

32 mm = 032.

yellow = 10

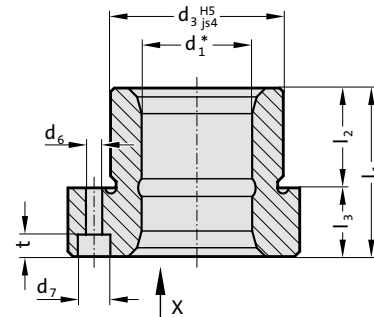
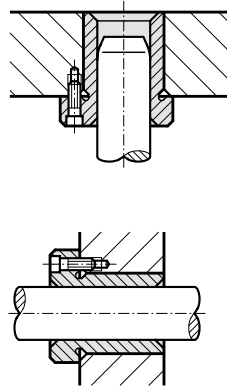
=2091.32.032.10

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4



Mounting example

2091.34.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

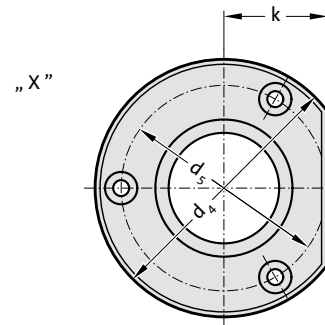
The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



Tolerance range:

yellow = .10

green = .20

red = .30

2091.34. Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

	15 16	19 20	24 25	30 32	38 40	48 50
d_1	15 16	19 20	24 25	30 32	38 40	48 50
d_3	28	32	40	48	58	70
d_4	45	50	63	72	85	104
d_5	35	40	50	58	70	86
d_6	4.5	4.5	5.5	5.5	6.6	9
d_7	8	8	10	10	11	15
k	15	18	23	28	33	38
l_1	29	38	38	45	55	62
l_2	23	23	23	30	30	37
l_3	6	15	15	15	25	25
t	3.4	4.6	5.7	5.7	6.8	9

Ordering Code (example):

Flanged guide bush, sintered ferrite carbonitrided with long-term lubrication, ISO 9448-4

=2091.34.

Guide diameter d_1

30 mm = 030.

Classification TOL

yellow = 10

Order No

=2091.34.030.10

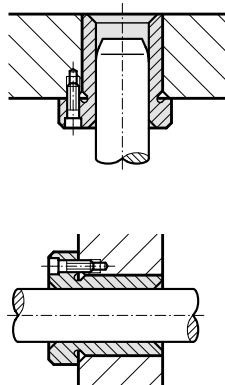
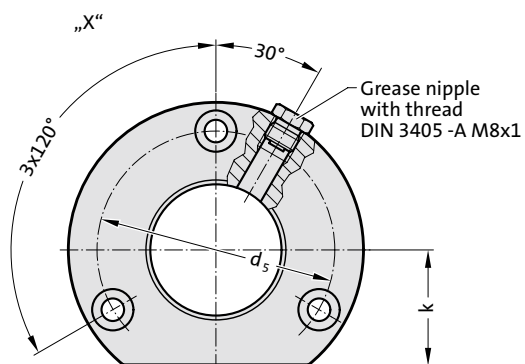
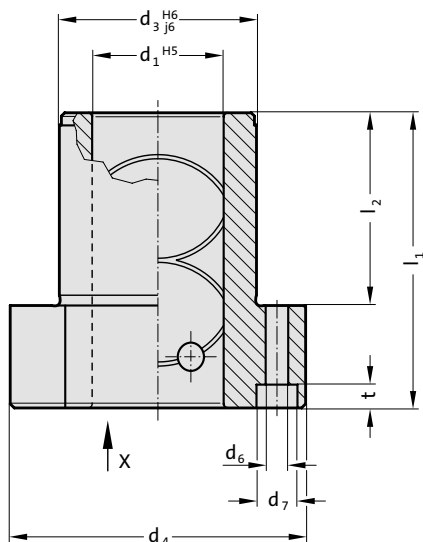
Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4



FIBRO

2091.91.

Mounting example



Material:

Steel, d₃ induction hardened

Execution:

Bronze plated internal bore.

Diameter d₃ and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

2091.91. Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

d ₁	19 20	24 25	30 32	38 40	48 50	60 63	80
d ₃	32	40	48	58	70	85	105
d ₄	50	63	72	85	104	120	146
d ₅	40	50	58	70	86	100	125
d ₆	4.5	5.5	5.5	6.6	9	9	11
d ₇	8	10	10	11	15	15	18
k	18	23	28	33	38	46	56
l ₁	52	62	72	77	102	102	125
l ₂	36	37	47	47	60	60	75
t	4.6	5.7	5.7	6.8	9	9	11

Ordering Code (example):

Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

=2091.91.

Guide diameter d₁

38 mm= 038

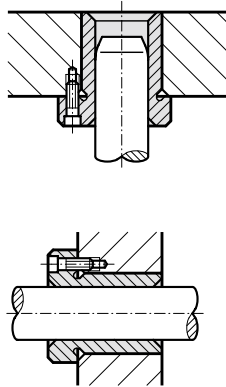
Order No

=2091.91.038

Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

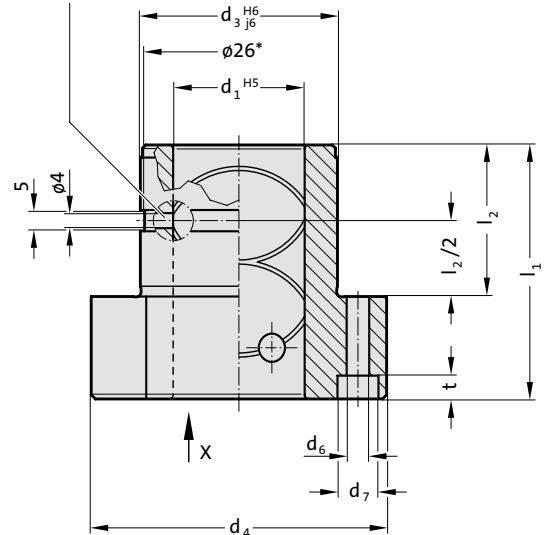


Mounting example



2091.92.

Groove and lubrication hole by $d_1 = 15/16$ mm



Material:

Steel, d_3 induction hardened

Execution:

Bronze plated internal bore.

Diameter d_3 and collar face precision ground.

Note:

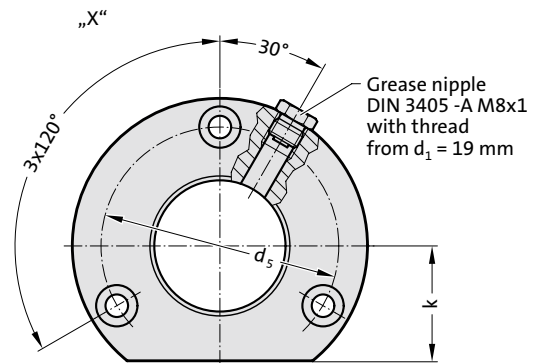
The guide bush is fixed by means of 3 screws up to $\phi 16$: with screws to DIN 6912, from $\phi 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2091.92. Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

d_1	15 16	19 20	24 25	30 32	38 40	48 50	60 63
d_3	28	32	40	48	58	70	85
d_4	45	50	63	72	85	104	120
d_5	35	40	50	58	70	86	100
d_6	4.5	4.5	5.5	5.5	6.6	9	9
d_7	8	8	10	10	11	15	15
k	15	18	23	28	33	38	46
l_1	36	45	55	62	67	89	89
l_2	30	30	30	37	37	47	47
t	3.4	4.6	5.7	5.7	6.8	9	9

Ordering Code (example):

Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

=2091.92.

Guide diameter d_1

32 mm = 032

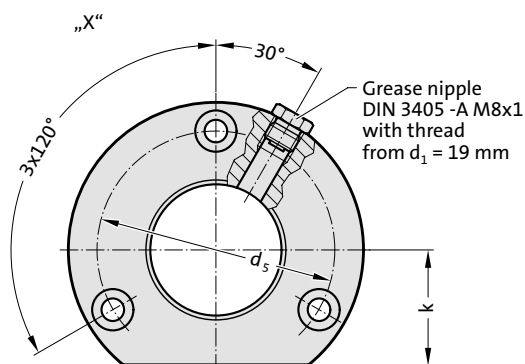
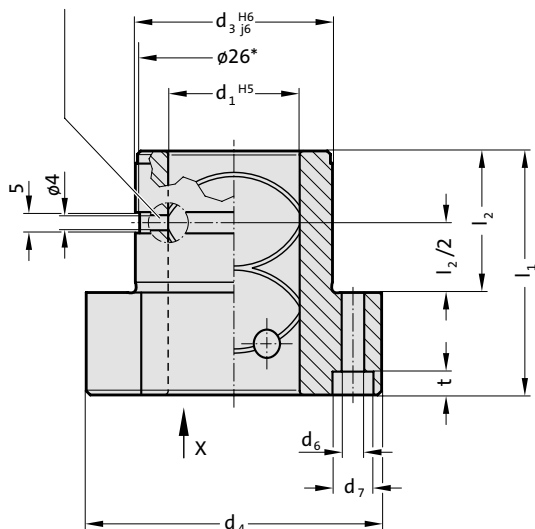
Order No

=2091.92.032

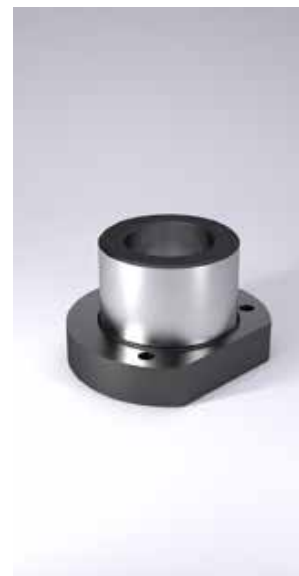
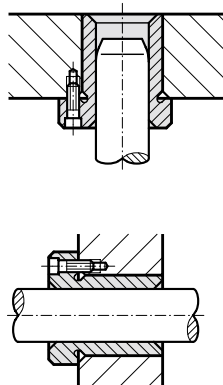
Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

2091.94.

Groove and lubrication hole by $d_1 = 15/16$ mm



Mounting example



Material:

Steel, d_3 induction hardened

Execution:

Bronze plated internal bore.

Diameter d_3 and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\phi 16$: with screws to DIN 6912, from $\phi 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2091.94. Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

d_1	15 16	19 20	24 25	30 32	38 40	48 50
d_3	28	32	40	48	58	70
d_4	45	50	63	72	85	104
d_5	35	40	50	58	70	86
d_6	4.5	4.5	5.5	5.5	6.6	9
d_7	8	8	10	10	11	15
k	15	18	23	28	33	38
l_1	29	38	38	45	55	62
l_2	23	23	23	30	30	37
t	3.4	4.6	5.7	5.7	6.8	9

Ordering Code (example):

Flanged guide bush "ECO-LINE", bronzeplated, ISO 9448-4

=2091.94.

Guide diameter d_1

30 mm = 030

Order No

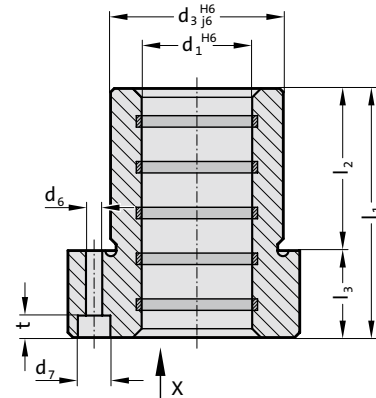
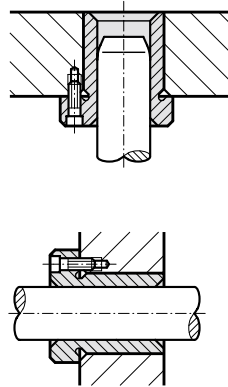
=2091.94.030

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4



Mounting example

2091.71.



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

Contact surface with solid lubricant rings

Diameter d_3 and collar face precision ground.

Note:

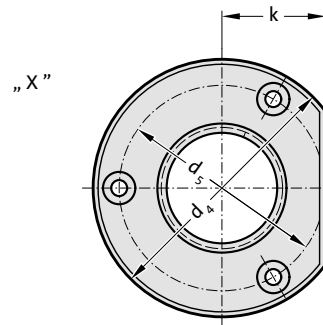
The guide bush is fixed by means of 3 screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2091.71. Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_3	32	40	48	58	70	85	105
d_4	50	63	72	85	104	120	148
d_5	40	50	58	70	86	100	125
d_6	4.5	5.5	5.5	6.6	9	9	11
d_7	8	10	10	11	15	15	18
k	18	23	28	33	38	46	56
l_1	52	62	72	77	102	102	125
l_2	37	37	47	47	60	60	75
l_3	15	25	25	30	42	42	50
t	4.6	5.7	5.7	6.8	9	9	11

Ordering Code (example):

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings,
ISO 9448-4

=2091.71.

Guide diameter d_1

38 mm= 038

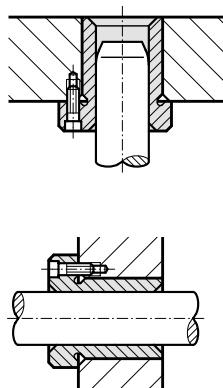
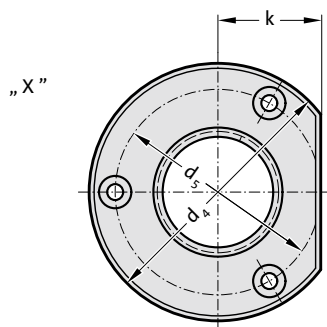
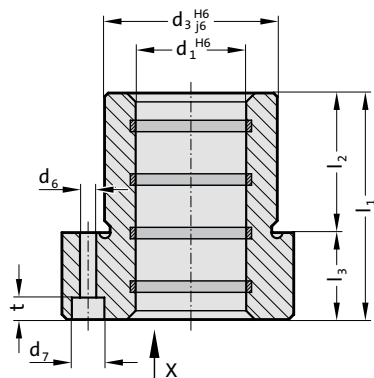
Order No

=2091.71.038

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4

2091.72.

Mounting example



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

Contact surface with solid lubricant rings

Diameter d_3 and collar face precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2091.72. Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4

d_1	15 16	19 20	24 25	30 32	38 40	48 50	60 63
d_3	28	32	40	48	58	70	85
d_4	45	50	63	72	85	104	120
d_5	35	40	50	58	70	86	100
d_6	4.5	4.5	5.5	5.5	6.6	9	9
d_7	8	8	10	10	11	15	15
k	15	18	23	28	33	38	46
l_1	36	45	55	62	67	89	89
l_2	30	30	30	37	37	47	47
l_3	6	15	25	25	30	42	42
t	3.4	4.6	5.7	5.7	6.8	9	9

Ordering Code (example):

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4

=2091.72.

Guide diameter d_1

32 mm = 032

Order No

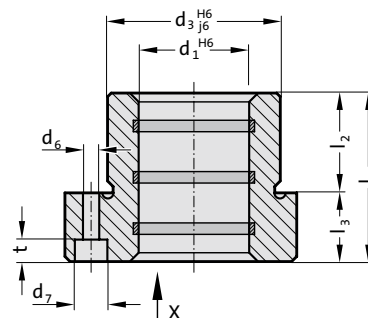
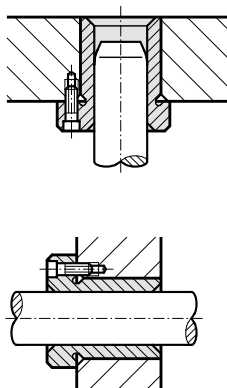
=2091.72.032

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4



Mounting example

2091.74.



Material:

Bronze with solid lubricant, oilless lubricating

Execution:

Contact surface with solid lubricant rings

Diameter d_3 and collar face precision ground.

Note:

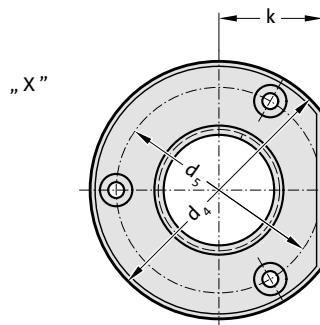
The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



2091.74. Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings, ISO 9448-4

	15 16	19 20	24 25	30 32	38 40	48 50
d_1	28	32	40	48	58	70
d_3	45	50	63	72	85	104
d_4	35	40	50	58	70	86
d_5	4.5	4.5	5.5	5.5	6.6	9
d_6	8	8	10	10	11	15
d_7	15	18	23	28	33	38
k	29	38	38	45	55	62
l_1	23	23	23	30	30	37
l_2	6	15	15	15	25	25
l_3	3.4	4.6	5.7	5.7	6.8	9
t						

Ordering Code (example):

Flanged guide bush "ECO-LINE", Bronze with solid lubricant rings,
ISO 9448-4

=2091.74.

Guide diameter d_1

30 mm= 030

Order No

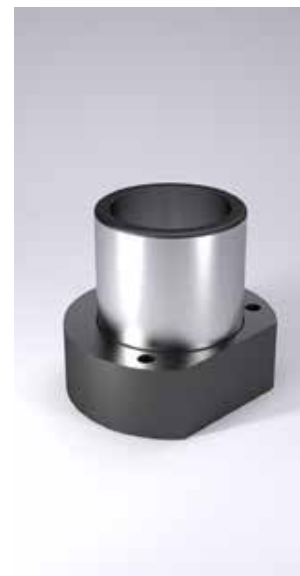
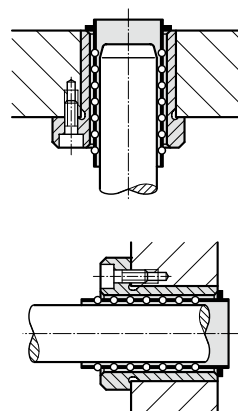
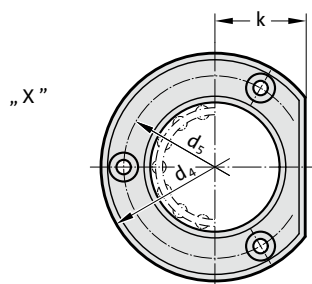
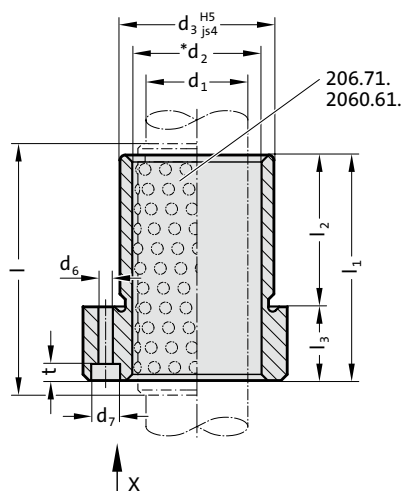
=2091.74.030



Flanged guide bush for ball bearing, ISO 9448-5

2091.44.

Mounting example



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The guide bush is fixed by means of 3 screws to DIN EN ISO 4762.
The screws are not contained in the scope of delivery.

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2091.44. Flanged guide bush for ball bearing, ISO 9448-5

d_1	19 20	24 25	30 32	38 40	48 50	60 63	80
d_2	25 26	30 31	38 40	46 48	56 58	68 71	92
d_3	32	40	48	58	70	85	105
d_4	50	63	72	85	104	120	148
d_5	40	50	58	70	86	100	125
d_6	4.5	5.5	5.5	6.6	9	9	11
d_7	8	10	10	11	15	15	18
k	18	23	28	33	38	46	56
l_1	52	62	72	77	102	102	125
l_2	37	37	47	47	60	60	75
l_3	15	25	25	30	42	42	50
t	3.4	5.7	5.7	6.8	9	9	11
l^*	71	71	80	95	120	120	140

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

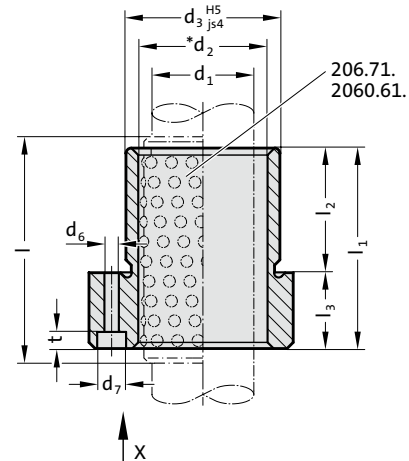
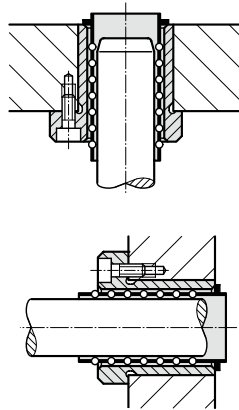
Flanged guide bush for ball bearing, ISO 9448-5	=2091.44.
Guide diameter d_1	38 mm = 038.
Classification TOL	yellow = 10
Order No	=2091.44. 038. 10

Flanged guide bush for ball bearing, ISO 9448-5



Mounting example

2091.45.



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

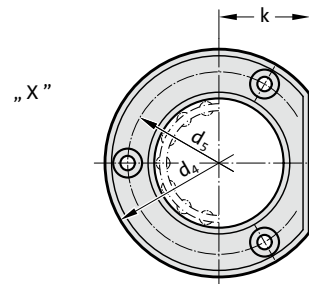
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



2091.45. Flanged guide bush for ball bearing, ISO 9448-5

d_1	15 16	19 20	24 25	30 32	38 40	48 50	60 63
d_2	21 22	25 26	30 31	38 40	46 48	56 58	68 71
d_3	28	32	40	48	58	70	85
d_4	45	50	63	72	85	104	120
d_5	35	40	50	58	70	86	100
d_6	4.5	4.5	5.5	5.5	6.6	9	9
d_7	8	8	10	10	11	15	15
k	15	18	23	28	33	38	46
l_1	36	45	55	62	67	89	89
l_2	30	30	30	37	37	47	47
l_3	6	15	25	25	30	42	42
t	3.4	4.6	5.7	5.7	6.8	9	9
l^*	45	56	71	71	80	95	95

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Flanged guide bush for ball bearing, ISO 9448-5

= 2091.45.

Guide diameter d_1 32 mm = 032.

Classification TOL yellow = 10

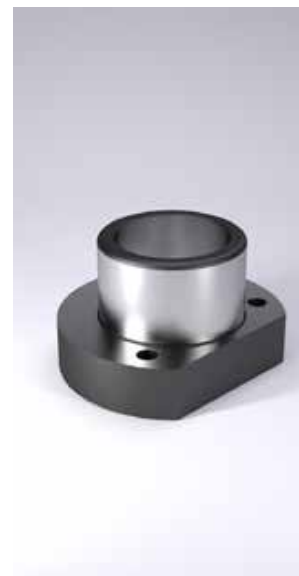
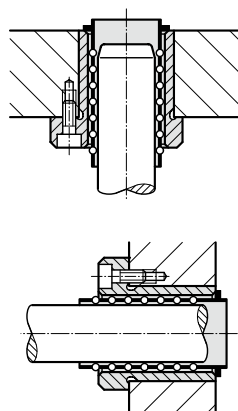
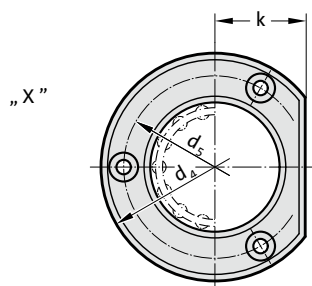
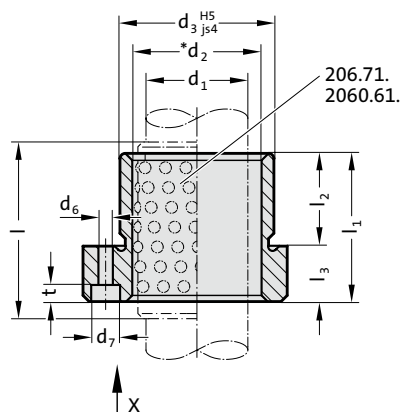
Order No = 2091.45.032.10



Flanged guide bush for ball bearing, ISO 9448-5

2091.46.

Mounting example



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The guide bush is fixed by means of 3 screws up to $\varnothing 16$: with screws to DIN 6912, from $\varnothing 19$: with screws to DIN EN ISO 4762.

The screws are not contained in the scope of delivery.

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

2091.46. Flanged guide bush for ball bearing, ISO 9448-5

d_1	12	15 16	19 20	24 25	30 32	38 40	48 50
d_2	16	21 22	25 26	30 31	38 40	46 48	56 58
d_3	26	28	32	40	48	58	70
d_4	43	45	50	63	72	85	104
d_5	33	35	40	50	58	70	86
d_6	4.5	4.5	4.5	5.5	5.5	6.6	9
d_7	8	8	8	10	10	11	15
k	13	15	18	23	28	33	38
l_1	25	29	38	38	45	55	62
l_2	16	23	23	23	30	30	37
l_3	9	6	15	15	15	25	25
t	4.6	3.4	4.6	5.7	5.7	6.8	9
l^*	40	45	45	45	56	63	80

* l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

Flanged guide bush for ball bearing, ISO 9448-5

=2091.46.

Guide diameter d_1 25 mm = 025.

Classification TOL yellow = 10

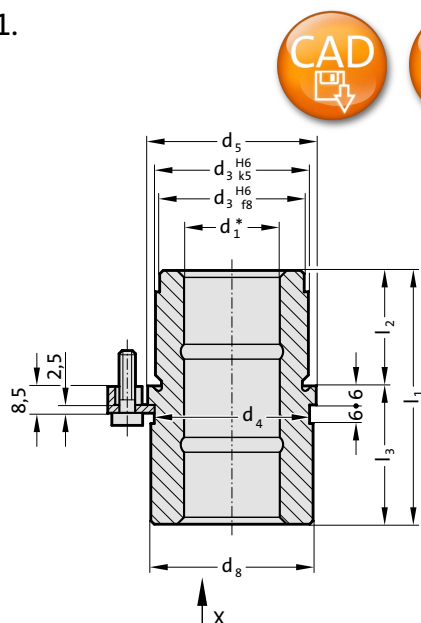
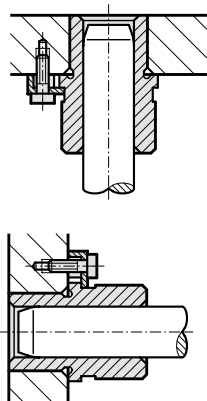
Order No =2091.46. 025. 10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR



Mounting example

210.31.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

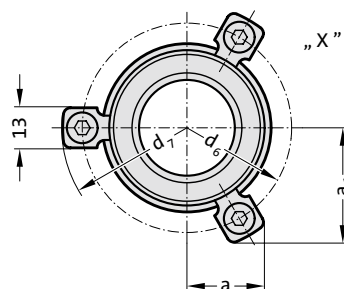
Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D.
Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



Tolerance range:

yellow = .10

green = .20

```
green = .20
red = .30
```

210.31. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

d_1	19	20	25	32	40	50
d_3	32		40	50	63	80
d_4	32		40	50	63	80
d_5	36		45	56	70	90
d_6	49		57	67	81	101
d_7	61.7		69.7	79.7	93.7	113.7
d_8	35		43.5	53	67	87
a	19.9		21.9	24.4	36	43
a_1	28.6		32.1	36.4	36	43
l_1	66		70	83	98	120
l_2	30		30	38	48	61
l_3	36		40	45	50	59

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

$$= 210.31.$$

Guide diameter d_1	32 mm =	032.
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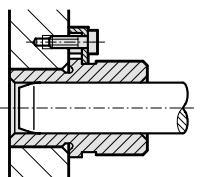
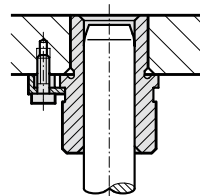
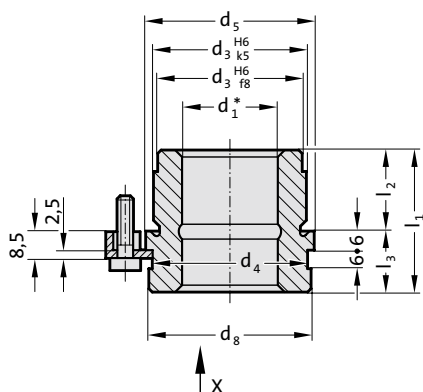
Guide diameter d ₁	32 mm =	032.
Classification TOL	yellow =	10

Order No	=210.31. 032.10
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Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

210.34.

Mounting example



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

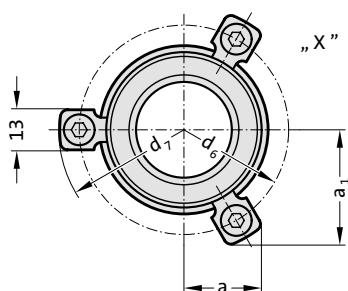
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



210.34. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

d_1	19 20	25	32	40	50
d_3	32	40	50	63	80
d_4	32	40	50	63	80
d_5	36	45	56	70	90
d_6	49	57	67	81	101
d_7	61.7	69.7	79.7	93.7	113.7
d_8	35	43.5	53	67	87
a	19.9	21.9	24.4	36	43
a_1	28.6	32.1	36.4	36	43
l_1	42	50	63	76	96
l_2	30	38	48	61	78
l_3	12	12	15	15	18

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

Guide diameter d_1

Classification TOL

Order No

=210.34.

32 mm = 032.

yellow = 10

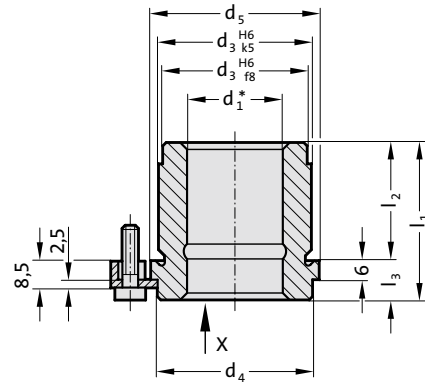
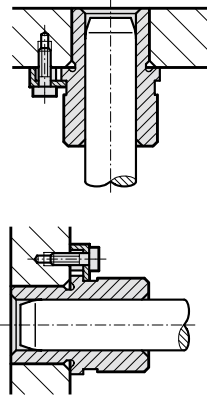
=210.34. 032.10

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR



Mounting example

210.35.



Material:

Sintered ferrite of high purity, carbonitrided, long-term lubrication

Execution:

Bearing surfaces, diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on sliding type guides at the beginning of chapter D.

Bearing clearance see pairing classification at the beginning of chapter D. Matching guide combinations, see selection matrix at the beginning of chapter D.

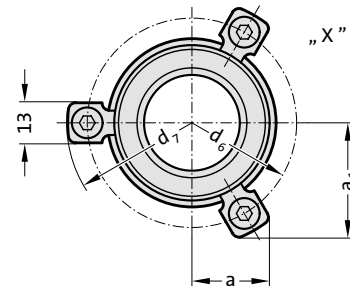
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30



210.35. Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

d_1	19 20	25	32	40	50
d_3	32	40	50	63	80
d_4	32	40	50	63	80
d_5	36	45	56	70	90
d_6	49	57	67	81	101
d_7	61.7	69.7	79.7	93.7	113.7
a	19.9	21.9	24.4	36	43
a_1	28.6	32.1	36.4	36	43
l_1	28	32	37	44	44
l_2	16	20	25	32	32
l_3	12	12	12	12	12

Ordering Code (example):

Headed guide bush, sintered ferrite carbonitrided with long-term lubrication, ~AFNOR

=210.35.

Guide diameter d_1

32 mm = 032.

Classification TOL

yellow = 10

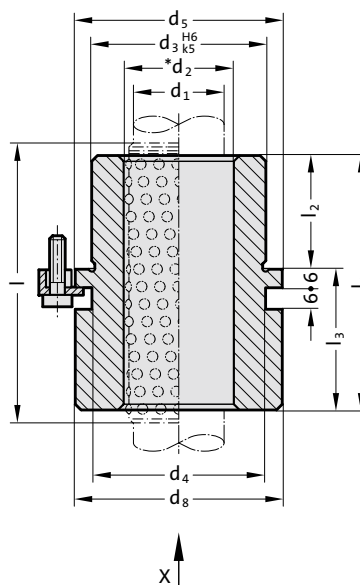
Order No

=210.35. 032.10

Headed guide bush for ball bearing, ~AFNOR



210.44.



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed.

Diameter d_3 and collar face precision ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

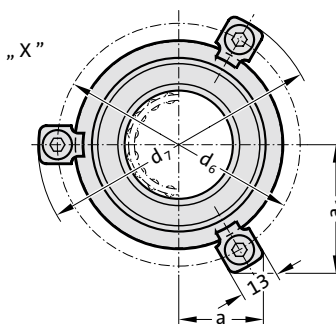
Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

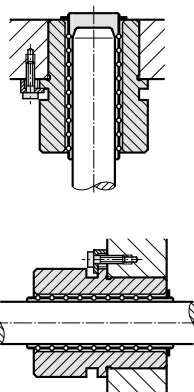
yellow = .10

green = .20

red = .30



Mounting example





Headed guide bush for ball bearing, ~AFNOR

210.44. Headed guide bush for ball bearing, ~AFNOR

d ₁	16	20	25	32	40	50	63
d ₂	22	26	31	40	48	58	71
d ₃	28	32	40	50	63	80	90
d ₄	29	32	40	50	63	80	90
d ₅	32	36	45	56	70	90	110
d ₆	45	49	57	67	81	101	121
d ₇	57.7	61.7	69.7	79.7	93.7	113.7	131.7
d ₈	31	35	43.5	53.5	67	87	107
a	18.9	19.9	21.9	24.4	36	43	50.1
a ₁	26.9	28.6	32.1	36.4	36	43	50.1
l ₃	32	36	40	45	50	63	63
l ₂ [*]	l ₁ /l						
23	55/63		63/71	68/80			
30	62/71	66/71	70/80	75/80	80/95		
38	70/71	74/80	78/95	83/95	88/95	101/120	
48			88/100	93/105	98/105	111/120	
61			101/120	106/120	111/120	124/140	
78				123/120	128/140	141/160	
98					148/160	161/180	161/180
123							186/200

*l = Nominal ordering length of ball cage - preferred length

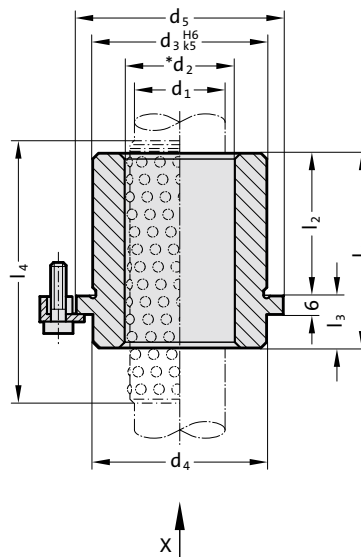
Ordering Code (example):

Headed guide bush for ball bearing, ~AFNOR	=210.44.
Guide diameter d ₁	32 mm = 032.
Installation length l ₂	61 mm = 061.
Classification TOL	yellow = 10
Order No	=210.44. 032.061.10

Headed guide bush for ball bearing, ~AFNOR



210.46.



Material:

Bush: tool steel
Hardness: $62 \pm 2\text{HRC}$
Ball Cage: brass
Balls: hardened steel
DIN 5401

Execution:

Bearing surfaces honed.
Outside diameter fine-ground.

Note:

The attachment is with 3 Screw clamp, from $\varnothing d_1 = 38$ with 4 Screw clamp, which are included in delivery (Order No: 207.45 - Screw clamp incl. socket cap screw DIN 6912, Head $\varnothing 13$).

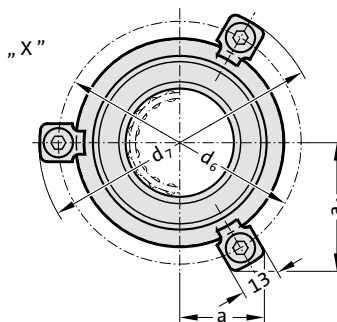
Notes on ball bearing type guides at the beginning of chapter D.

Preloading see pairing classification at the beginning of chapter D

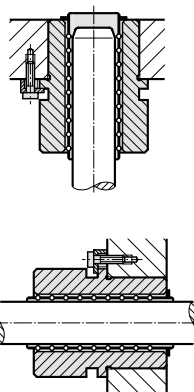
Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



Mounting example



Tolerance range:
yellow = .10
green = .20
red = .30



Headed guide bush for ball bearing, ~AFNOR

210.46. Headed guide bush for ball bearing, ~AFNOR

d ₁	16	20	25	32	40	50	63
d ₂	22	26	31	40	48	58	71
d ₃	28	32	40	50	63	80	90
d ₄	29	32	40	50	63	80	90
d ₅	32	36	45	56	70	90	110
d ₆	45	49	57	67	81	101	121
d ₇	57.7	61.7	69.7	79.7	93.7	113.7	131.7
a	18.9	19.9	21.9	24.4	36	43	50.1
a ₁	26.9	28.6	32.1	36.4	36	43	50.1
l ₃	10	12	12	15	15	18	20
l ₂ *	l ₁ /l						
23	33/45						
30	40/45	42/45	42/45	45/56			
38	48/56	50/56	50/56	53/71			
48	58/63	60/71	60/71	63/71	63/80		
61			73/80	76/80	76/95	79/95	
78				90/105	93/105	96/105	
98				113/120	113/120	116/140	118/120
123							143/160

*l = Nominal ordering length of ball cage - preferred length

Ordering Code (example):

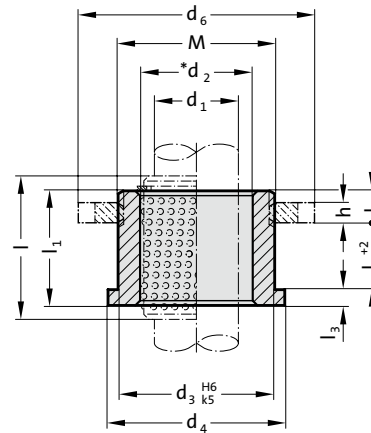
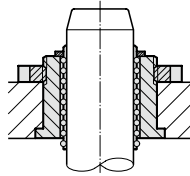
Headed guide bush for ball bearing, ~AFNOR	=210.46.
Guide diameter d ₁	32 mm= 032.
Installation length l ₂	38 mm= 038.
Classification TOL	yellow = 10
Order No	=210.46. 032.038.10

Guide bush with collar, for ball bearing, ~AFNOR



Mounting example

210.45.



Material:

Tool steel, hardened 62 ± 2 HRC

Execution:

Bearing surfaces honed,
outside diameter precision ground.

Note:

The guide bush is fixed with slotted nut 207.48.

Notes on ball bearing type guides at the beginning of chapter D.

*Preloading see pairing classification at the beginning of chapter D

Matching guide combinations, see selection matrix at the beginning of chapter D.

Ball guide capacity calculations at the end of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.

Tolerance range:

yellow = .10

green = .20

red = .30

210.45. Guide bush with collar, for ball bearing, ~AFNOR

d ₁	16	16	20	20	20	25	25	25	32	32	32	40	40	40	50	50
d ₂	22	22	26	26	26	31	31	31	40	40	40	48	48	48	58	58
d ₃	28	28	32	32	32	40	40	40	50	50	50	63	63	63	80	80
d ₄	32	32	36	36	36	45	45	45	56	56	56	70	70	70	90	90
d ₆	40	40	44	44	44	55	55	55	65	65	65	81	81	81	100	100
M	M27x1	M27x1	M30x1	M30x1	M30x1	M39x1	M39x1	M39x1	M48x1	M48x1	M48x1	M60x1	M60x1	M60x1	M76x1	M76x1
h	3	3	4	4	4	4	4	4	5	5	5	6	6	6	8	8
l ₁	16	20	17	21	25	22	26	31	26	31	38	32	39	47	41	49
l ₂	8	12	8	12	16	12	16	21	15	20	27	20	27	35	26	34
l ₃	3	3	3	3	3	3	3	3	4	4	4	4	4	4	5	5
l ₄	5	5	6	6	6	7	7	7	7	7	7	8	8	8	10	10
l*	24	28	24	28	31	31	40	40	40	40	50	50	50	56	50	63

*l = Nominal ordering length of ball cage - preferred length

Guide bush with collar, for ball bearing, ~AFNOR

= 210.45.

Guide diameter d₁ 32 mm = 032.

Total length l₁ 26 mm = 026.

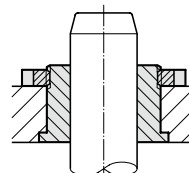
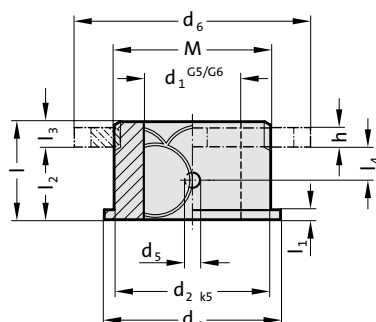
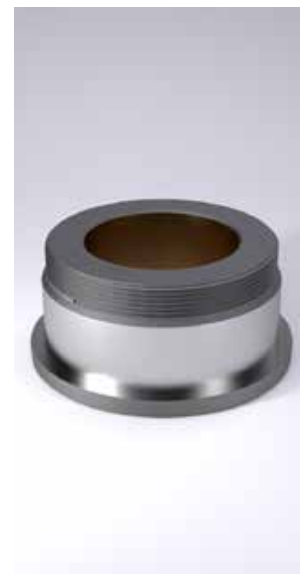
Classification TOL yellow = 10

Order No = 210.45. 032. 026. 10

Guide bush with collar, bronze coated, ~AFNOR

210.85.

Mounting example



Material:

1.0503

Ø d₂ induction hardened to 500+100 HV 10

Execution:

Bronze coated internal bore.

Diameter d₂ and collar face precision ground.

up to Ø d₁ = 25 tolerance G6

from Ø d₁ = 32 tolerance G5

Note:

The guide bush is fixed with slotted nut 207.48.

Notes on sliding type guides at the beginning of chapter D.

Matching guide combinations, see selection matrix at the beginning of chapter D.

Assembly guide lines / Dimensional requirements and tolerances at the end of chapter D.



210.85. Guide bush with collar, bronze coated, ~AFNOR

d ₁	16	16	20	20	25	25	32	32	40	40	50	50
TOL	+0.006/ +0.017	+0.006/ +0.017	+0.007/ +0.020	+0.007/ +0.020	+0.007/ +0.020	+0.007/ +0.020	+0.009/ +0.020	+0.009/ +0.020	+0.009/ +0.020	+0.009/ +0.020	+0.009/ +0.020	+0.009/ +0.020
d ₂	28	28	32	32	40	40	50	50	63	63	80	80
d ₄	32	32	36	36	45	45	56	56	70	70	90	90
d ₅	3	3	4	4	4	4	4	4	7	7	7	7
d ₆	40	40	44	44	55	55	65	65	81	81	100	100
h	3	3	4	4	4	4	5	5	6	6	8	8
M	M27x1	M27x1	M30x1	M30x1	M39x1	M39x1	M48x1	M48x1	M60x1	M60x1	M76x1	M76x1
l	16	20	21	25	26	31	31	38	39	47	41	49
l ₁	3	3	3	3	3	3	4	4	4	4	5	5
l ₂	11	15	15	19	19	24	24	31	31	39	31	39
l ₃	5	5	6	6	7	7	7	7	8	8	10	10
l ₄	5.5	7.5	5	9.5	9.5	12	12	15.5	15.5	19.5	15.5	19.5

Guide bush with collar, bronze coated, ~AFNOR

=210.85.

Guide diameter d₁

32 mm = 032.

Total length l

31 mm = 031

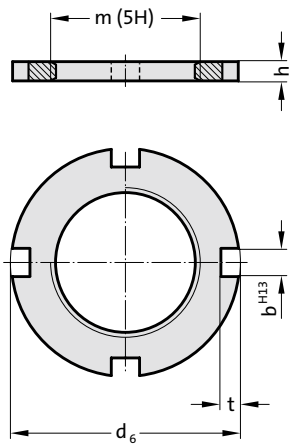
Order No

=210.85. 032. 031

Slotted nut



207.48.



Material:

Steel

Note:

For fixing the guide bushes 210.45. and 210.85.

207.48. Slotted nut

Order No	d ₆	b	t	h	m
207.48.016	40	5	3	3	M27 x 1
207.48.020	44	5	4	4	M30 x 1
207.48.025	55	6	4	4	M39 x 1
207.48.032	65	6	5	5	M48 x 1
207.48.040	81	7	6	6	M60 x 1
207.48.050	100	8	8	8	M76 x 1