

BOLEXP

PCS
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Turn To The Industry Experts



free **LUB**

— 2021 —



Turn To The Industry Experts

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BOLEXP, guidance systems

This catalogue shows several guidance systems designed to provide with efficient service and useful solutions to the problems which arise when executing injection moulds and dies, as well as when executing machinery tools and construction in general.

All of the products in the present catalogue are available in stock for immediate delivery in order to offer a better service to meet our customer needs.



Bolexp Ball Guidance is a high-precision rolling system with very reduced travel resistance. It is advisable for rectilinear guides where wide travels, tiny friction, high-precision guidance and positioning, together with reduced wear and long durability, are required. Page 5.

The centerer for moulds guarantees the appropriate alignment for the main plates in the mould. The system of fixing to plate allows to apply machinery to plates in only one operation.

It includes graphite components for self-lubricating pieces and a TiN treatment for reducing seizing. For details, see page 16.



The tilted assembly allows to make the allocations of tilted columns with great agility. The fact of fixing it through the front side of the plate allows for an agile capacity of exchange. 140 models are available in stock, with 7 different degrees and 5 column diameters. For details, see page 19.

Bolexp Self-lubricated Guidance is a travel system which adds-in solid lubricant for its operating, needing little maintenance and exhibiting high resistance in elevated-temperature operating conditions and drastic seizing reduction. For details, see page 22.





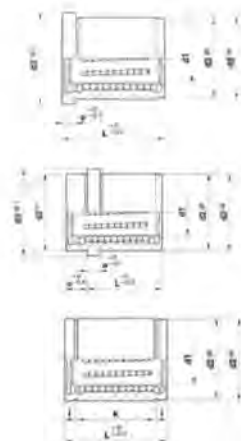
BALL GUIDANCE

PRODUCT DESCRIPTION

BALL GUIDE BUSH

BOLEXP ball guidance bushes are made up of an outer casing of steel for rolling, hardened and ground, which holds fixed inside a high-resistance bronze cage for guiding the balls running along the cage. The translation system consists of several rows of precision balls circulating endlessly.

The great novelty of BOLEXP ball guidance bushes is that balls do not run aligned, with the translation motion, but at a slight angle, thus enlarging the contact area with the shaft and enabling greater load capacity. This patented system represents an utter innovation in the linear guidance market. An all-metal structure makes bushes extremely resistant to high temperatures. BOLEXP bushes are supplied in a variety of three outer forms, all of them equipped with the same inside structure.



Model 801 Bush with an outer cylindrical body and a flange at the end for fixing it.

Model 802 Bush with two outer cylindrical bodies and a center flange for fixing it between two plates.

Model 803 Bush with an all-cylindrical outer body and two ferrules at the ends for fixing it with security spring rings.

GUIDE COLUMN

BOLEXP guide column is made of steel 1.5732 with surface hardening, obtaining a hardness of 62-64 RHc, and a depth from 1.00 to 1.20 mm., leaving the shaft core soft so that it can absorb the bending it might be required to. In guide manufacturing, some features are considered to be essential, including the quality of steel, surface hardness and precision and quality of the finish.

FEATURES

Determining the adequate ball bush size is based on the requirements of the tool to be constructed and the load capacity needed, as well as bush lifetime and operating security.

Use the maximum recommended loads listed in Table I below for calculations.

Made in accordance with report by L.G.A.I. (Generalitat de Catalunya)

MODEL	Maximum Recommended Load (N)	MODEL	Maximum Recommended Load (N)	MODEL	Maximum Recommended Load (N)
B8012035	1,250	B8022026	1,250	B8031630	882
B8012535	1,250	B8022035	1,915	B8031635	1,250
B8012545	1,985	B8022526	1,250	B8032035	1,250
B8012555	2,721	B8022535	1,985	B8032045	1,912
B8013245	1,691	B8022545	2,721	B8032535	1,250
B8013263	3,015	B8022555	3,456	B8032545	1,985
B8014045	1,691	B8023245	2,574	B8032555	2,721
B8014063	3,015	B8023263	3,897	B8033245	1,691
B8021222	882	B8024045	2,574	B8033263	3,015
B8021622	882	B8024063	3,897	B8035045	1,691
B8021626	1,250	B8031230	882	B8034063	3,015

Use the following formula to calculate nominal life for ball bushes.

$$L_h = (833/H \cdot N_{osc}) \cdot (C/P) \text{ in hours}$$

- Lh=** Nominal lifetime in operating hours
- H=** Single-way length of oscillatory motion travel in m.
- Nosc=** Come-and-go motion frequency in 1/min.
- C=** Load capacity in N.
- P=** Equivalent rolling load in N.

Calculation example:

An injection mould expulsion is guided by four bushes reference B8022535 (C=1,985). The load on each bush is of P=200N, the column travel is of H=0.25 m., the come-and-go motion frequency is of Nosc=10 1/min. Nominal lifetime has to be calculated.

Solution: $L_h = (833/0.25 \cdot 10) \cdot (1,985/200) = 300,000$ hours

Load capacities and lifetime calculations for bushes shown here above are applicable under precisely defined conditions. Any adverse condition may reduce significantly both measurements.

TRAVEL ACCURACY

Travel accuracy with a guidance system using shafts with BOLEXP ball linear rolling depends on several factors, such as the positioning precision of bushes or shafts, quality of shafts, free length between shaft supports and length of the bush in relation to the area to be slid. These influences depend basically on the type of application and the load to be supported.

On the whole, the required travel accuracy must be ensured by the features and design of the assembly, as well as by the precise manufacture of adjacent pieces.

Fixing the shaft at its two ends is recommended, particularly in the case of high loads, whenever the project allows it.

LUBRICATION

In order to ensure long durability for BOLEXP ball bushes, proper lubrication and maintenance are a must. The channels that the balls run along must be free of any interfering particles. Moreover, it is recommended to use oil lubrication so as to ensure proper lubrication for the whole of rolling items and, if necessary, to remove all impurities.

We suggest the use of CLP oils according to DIN 51524, within the range of viscosities from ISO VG 64 to 100. Although grease can also be used for lubrication, this is not highly recommended as it fixes dirt particles much more easily.

BOLEXP ball bushes are supplied oiled for its conservation and must be lubricated when necessary. The conservancy fluid is compatible and can be mixed with mineral-based lubricants, making it unnecessary to wash bushes before assembling them.

SHAFT EXECUTION

Shafts for BOLEXP ball bushes must be hardened and ground. The ends require a tapering so that rollings cannot be damaged during the assembling. In order to fully benefit from high travel accuracy and load capacity of BOLEXP ball bushes, the shafts around which bushes slid must exhibit the best quality and a properly hard layer.

ASSEMBLING AND FIXING

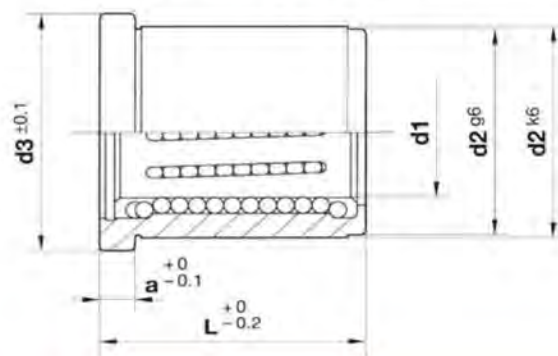
BOLEXP ball bushes can be mounted either in holes with tolerance H7 or in such a way that they can be manually slid into their cartridge. Never hit them with hammers or any other impacting tool. Otherwise, the bush structure could be damaged.

It is recommended to mount at least two units in parallel disposal so as to avoid possible rotation motions in the travelling of items. Bush length is also suggested to be at least twice its diameter in order to minimize the rotation motion of balls, whenever this is possible.

Rotation motions are not advised in this type of bushes, whose function is that of translation.



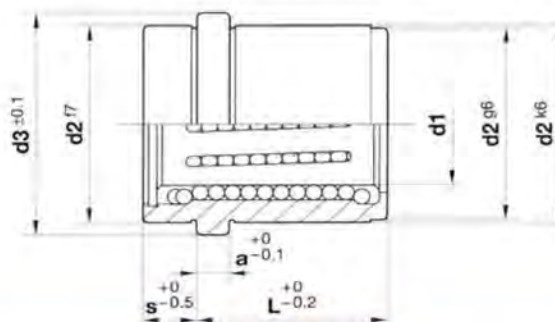
BUSH REF. 801



BOLEXP 801							
d1	L	d2	d3	a	Ø ball	Number of lines	Item code
20	35	32	36	6	3	6	B8012035
25	35	40	45	6	3	8	B8012535
25	45	40	45	6	3	8	B8012545
25	55	40	45	6	3	8	B8012555
32	45	50	56	8	4	8	B8013245
32	63	50	56	8	4	8	B8013263
40	45	60	66	8	4	8	B8014045
40	63	60	66	8	4	8	B8014063

Materials: Special steel bush. Bronze cage with high resistance to wear. High-precision balls. Hardness: 60-62 HRc.

BUSH REF. 802

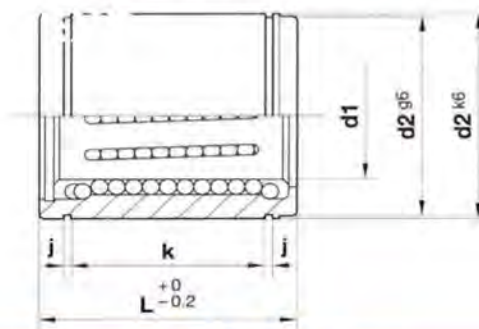


BOLEXP 802								
d1	L	d2	d3	a	s	Ø ball	Number of lines	Item code
8	12	18	21	3	6	2	5	B8020812
10	12	20	24	4	9	2.5	5	B8021012
12	22	24	28	6	8	3	5	B8021222
16	22	28	32	6	8	3	6	B8021622
16	26	28	32	6	9	3	6	B8021626
20	26	32	36	6	9	3	6	B8022026
20	35	32	36	6	9	3	6	B8022035
25	26	40	45	6	9	3	8	B8022526
25	35	40	45	6	10	3	8	B8022535
25	45	40	45	6	10	3	8	B8022545
25	55	40	45	6	10	3	8	B8022555
32	45	50	56	8	12	4	8	B8023245
32	63	50	56	8	12	4	8	B8023263
40	45	60	66	8	12	4	8	B8024045
40	63	60	66	8	12	4	8	B8024063
50	55	70	76	10	25	4	10	B8025055
60	55	85	91	10	25	4	12	B8026055

Materials: Special steel bush. Bronze cage with high resistance to wear. High-precision balls. Hardness: 60-62 HRc.

Please ask for other diameters and lengths different to the ones included in this catalogue.

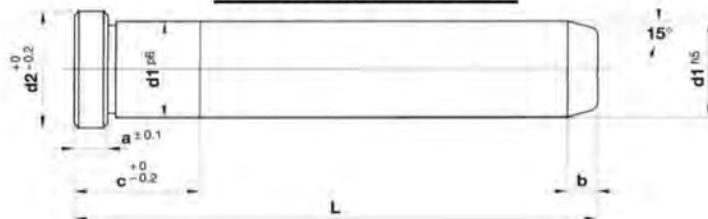
BUSH REF. 803



BOLEXP 803							
d1	L	d2	k	j	Ø ball	Number of lines	Item code
12	30	24	20	1,3	3	5	B8031230
16	30	28	19	1,6	3	6	B8031630
16	35	28	24	1,6	3	6	B8031635
20	35	32	24	1,6	3	6	B8032035
20	45	32	34	1,6	3	6	B8032045
25	35	40	23	1,8	3	8	B8032535
25	45	40	33	1,8	3	8	B8032545
25	55	40	43	1,8	3	8	B8032555
32	45	50	33	2,1	4	8	B8033245
32	63	50	51	2,1	4	8	B8033263
40	45	60	33	2,1	4	8	B8034045
40	63	60	51	2,1	4	8	B8034063
50	63	70	50	2,6	4	10	B8035063
50	80	70	65	2,6	4	10	B8035080
60	80	85	65	3,1	4	12	B8036080
60	100	85	85	3,1	4	12	B80360100

Materials: Special steel bush. Bronze cage with high resistance to wear. High-precision balls. Hardness: 60-62 HRC.

COLUMN REF. 808

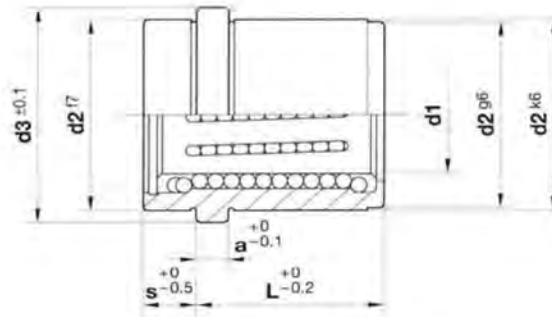


BOLEXP 808						
d1	L	d2	a	b	c	Item code
8	60	12	3	4	10	B80808060
8	80	12	3	4	10	B80808080
8	100	12	3	4	10	B80808100
10	60	14	4	4	12	B80810060
10	80	14	4	4	12	B80810080
10	100	14	4	4	12	B80810100
12	80	16	4	4	16	B80812080
12	100	16	4	4	16	B80812100
12	125	16	4	4	16	B80812125
16	80	20	6	6	20	B80816080
16	100	20	6	6	20	B80816100
16	125	20	6	6	20	B80816125
16	160	20	6	6	20	B80816160
16	200	20	6	6	20	B80816200
20	100	24	6	6	22	B80820100
20	125	24	6	6	22	B80820125
20	160	24	6	6	22	B80820160
20	200	24	6	6	22	B80820200
20	250	24	6	6	22	B80820250
25	125	30	6	6	25	B80825125
25	160	30	6	6	25	B80825160
25	200	30	6	6	25	B80825200
25	250	30	6	6	25	B80825250
25	315	30	6	6	25	B80825315
32	125	37	8	8	35	B80832125
32	160	37	8	8	35	B80832160
32	200	37	8	8	35	B80832200
32	250	37	8	8	35	B80832250
32	315	37	8	8	35	B80832315
40	125	45	8	8	35	B80840125
40	200	45	8	8	35	B80840200
40	250	45	8	8	35	B80840250
40	315	45	8	8	35	B80840315
40	400	45	8	8	35	B80840400
50	315	55	10	10	45	B80850315
50	400	55	10	10	45	B80850400
60	315	65	10	10	55	B80860315
60	400	65	10	10	55	B80860400

Materials: Steel 5732 Hardness: 62-64 HRC.

Please ask for other diameters and lengths different to the ones included in this catalogue.

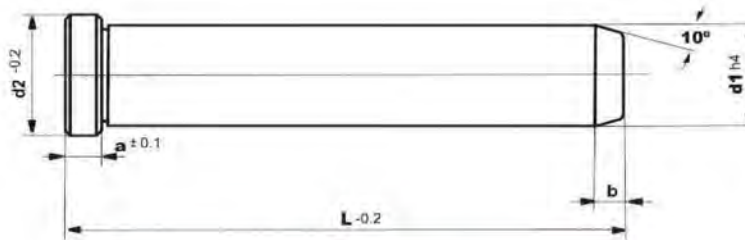
BUSH REF. 812



BOLEXP 812									
d1	L	d2	d3	a	s	Ø ball	Number of lines	Item code	
12	20	22	26	6	6	2,5	6	B8121226	
18	24	30	35	6	11	3	6	B8121835	
24	29	38	43	6	16	3	8	B8122445	
30	34	46	52	6	21	4	8	B8123055	

Materials: Special steel bush. Bronze cage with high resistance to wear.
High-precision balls. Hardness: 60-62 HRc.

COLUMN REF. 818

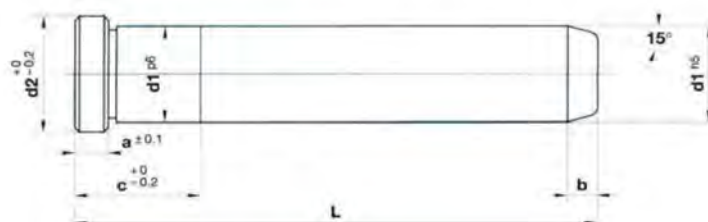


BOLEXP 818					
d1	L	d2	a	b	Item code
12	80	16	4	4	B81812080
12	100	16	4	4	B81812100
12	120	16	4	4	B81812120
12	140	16	4	4	B81812140
18	100	22	6	7	B81818100
18	120	22	6	7	B81818120
18	140	22	6	7	B81818140
18	160	22	6	7	B81818160
18	200	22	6	7	B81818200
24	160	28	6	7	B81824160
24	200	28	6	7	B81824200
24	240	28	6	7	B81824240
24	300	28	6	7	B81824300
30	160	36	6	7	B81830160
30	200	36	6	7	B81830200
30	240	36	6	7	B81830240
30	300	36	6	7	B81830300

Materials: Steel 5732. Hardness: 62-64 HRc.

Please ask for other diameters and lengths different to the ones included in this catalogue.

COLUMN REF. 828

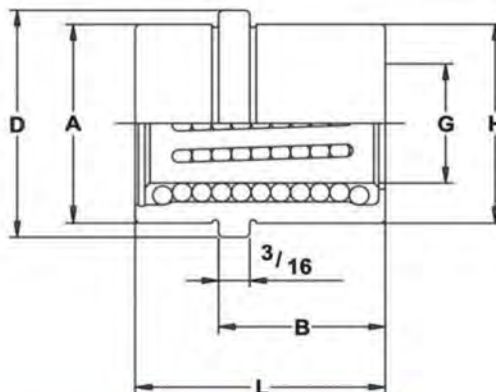


BOLEXP 828						
d1	L	d2	a	b	c	Item Code
12	80	16	4	4	17	B82812080
12	100	16	4	4	17	B82812100
12	120	16	4	4	17	B82812120
12	140	16	4	4	17	B82812140
18	100	22	6	7	22	B82818100
18	120	22	6	7	22	B82818120
18	140	22	6	7	22	B82818140
18	160	22	6	7	22	B82818160
18	200	22	6	7	22	B82818200
24	160	28	6	7	27	B82824160
24	200	28	6	7	27	B82824200
24	240	28	6	7	27	B82824240
24	300	28	6	7	27	B82824300
30	160	36	6	7	36	B82830160
30	200	36	6	7	36	B82830200
30	240	36	6	7	36	B82830240
30	300	36	6	7	36	B82830300

Materials: Steel 5732. Hardness: 62-64 HRc.

BALL GUIDED EJECTION BUSHINGS

INCH SIZES

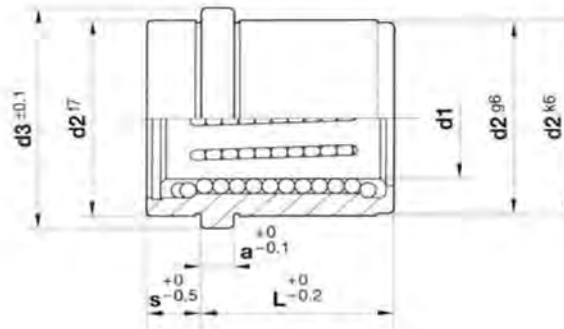


BOLEXP INCH SIZES							
NOM. I.D.	G	H	A	D	L	B	CATALOG NUMBER
3/4	0.751	1.2505 <small>+0.0005 -0.0003</small>	1.2490 <small>+0.0005 -0.001</small>	1.427 <small>+0.0005 -0.001</small>	1.50 <small>+0.0005 -0.001</small>	1.00 <small>+0.0005 -0.001</small>	BGEB0750
7/8	0.876	1.3755	1.3740	1.552	1.75	1.12	BGEB0875
1"	1.001	1.6255	1.6240	1.802	1.75	1.12	BGEB1000
1-1/4	1.251	2.0005	1.9990	2.177	1.75	1.12	BGEB1250
1-1/2	1.501	2.5005	2.4990	2.687	2.25	1.62	BGEB1500

Materials: Special steel bush. Bronze cage with high resistance to wear.
High-precision balls, Hardness: 60-62 HRc.

Please ask for other diameters and lengths different to the ones included in this catalogue.

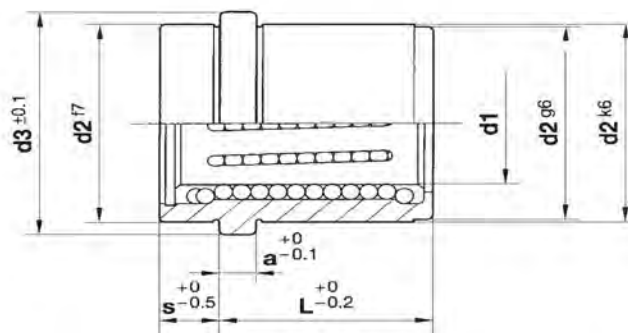
BUSH REF. 844



BOLEXP 844								
d1	L	d2	d3	a	s	Ø ball	Number of lines	Item code
10	12	17	20	6	9	2	6	B844100912
10	17	17	20	6	9	2	6	B844100917
12	17	22	25	6	9	2.5	6	B844120917
12	17	22	25	6	12	2.5	6	B844121217
18	22	30	33	6	12	3	6	B844181222
18	22	30	33	6	17	3	6	B844181722
24	27	38	41	6	17	3	8	B844241727
24	27	38	41	6	22	3	8	B844242227
30	32	46	49	6	22	4	8	B844302232
30	36	46	49	6	27	4	8	B844302736

Materials: Special steel bush. Bronze cage with high resistance to wear. High-precision balls. Hardness: 60-62 HRC.

BUSH REF. 845



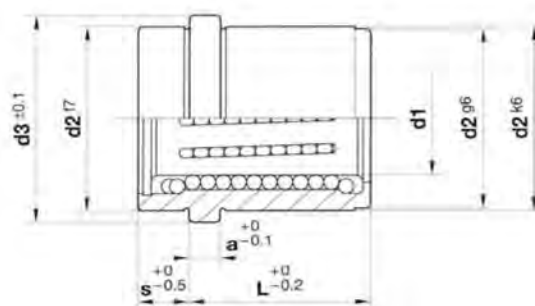
36

BOLEXP 845								
d1	L	d2	d3	a	s	Ø ball	Number of lines	Item Code
24	17	38	41	6	12	3	8	B8452417
24	22	38	41	6	17	3	8	B8452422
36	22	54	58	6	17	4	8	B8453622
36	27	54	58	6	22	4	8	B8453627
48	27	68	73	6	22	4	10	B8454827
48	36	68	73	6	27	4	10	B8454836

Materials: Special steel bush. Bronze cage with high resistance to wear. High-precision balls. Hardness: 60-62 HRC.

Please ask for other diameters and lengths different to the ones included in this catalogue.

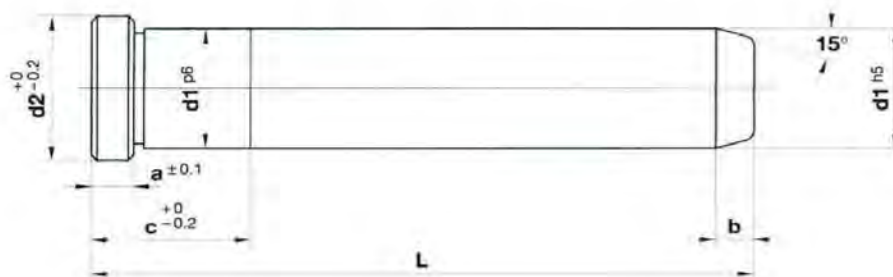
BUSH REF. 852 (stainless steel)



BOLEXP 852								
d1	L	d2	d3	a	s	Ø ball	Number of lines	Item code
12	22	24	28	6	8	3	5	B8521222
16	22	28	32	6	8	3	6	B8521622
20	26	32	36	6	9	3	6	B8522026
25	26	40	45	6	9	3	8	B8522526

Materials: Stainless steel bush 1.2083.
Anodized aluminium cage
High-precision balls stainless steel,
Hardness: 54-56 HRc.

COLUMN REF. 858 (stainless steel)



BOLEXP 858						
d1	L	d2	a	b	c	Item code
12	80	16	4	4	16	B85812080
12	100	16	4	4	16	B85812100
16	100	20	6	6	20	B85816100
16	125	20	6	6	20	B85816125
20	125	24	6	6	22	B85820125
20	160	24	6	6	22	B85820160
25	160	30	6	6	25	B85825160
25	200	30	6	6	25	B85825200

Materials: 1.4125 Hardness: 58-60 HRc.

Please ask for other diameters and lengths different to the ones included in this catalogue.

MODIFIED ROLLING CHANNELS

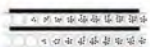
- With inclination
- With channel grouping



INNER RECIRCULATION WITH SOLID LUBRICANTS

- Emergency lubricant
- Manufactures for use with solid lubricants

Graphite + Molybdenum disulfide



Without maintenance
Continuously greasing balls

DOUBLE CONTACT CHANNELS

A new distribution for a bigger load work
Up to +25% of load allowed



GREASE RETAINERS

- Two grease retainers included in the ends
- Made of 190°C resistant material
- Prevents inner lubricant from being lost
- Prevents outer particles from getting inside

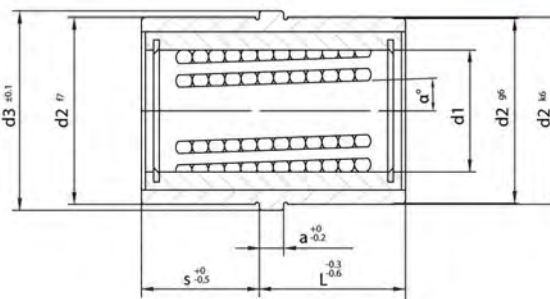
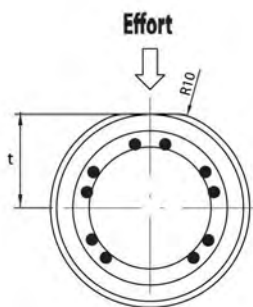


WORKING TEMPERATURE

-5° up to 190°C

MANUFACTURING DIAMETERS

Model B737: Ø12, Ø18, Ø24, Ø30 and Ø40



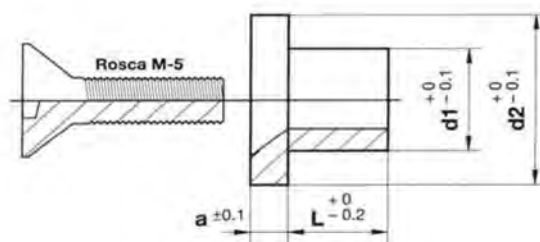
free **LUB**

BOLEXP 737									
d1	L	d2	d3	a	s	t	Ø ball	Number of lines	Item code
12	17	22	25	6	12	11,25	2,5	6	B737121217
18	22	30	33	6	17	15,25	3	6	B737181722
24	27	38	41	6	22	19,25	3	8	B737242227
30	36	46	49	6	27	23,25	4	8	B737302736
40	46	60	66	8	27	30,25	4	10	B737402746

Materials: Special steel bush. Bronze cage with high resistance to wear.
High-precision balls. Hardness: 60-62 HRC.
Solid Lubricants

Please ask for other diameters and lengths different to the ones included in this catalogue.

CLAMP



CLAMP				
L	a	d1	d2	Item code
6	3	9	13	B6
8	3	9	15	B8

Materials: Special steel. Hardness: 60 HRc.

Please ask for other diameters and lengths different to the ones included in this catalogue.

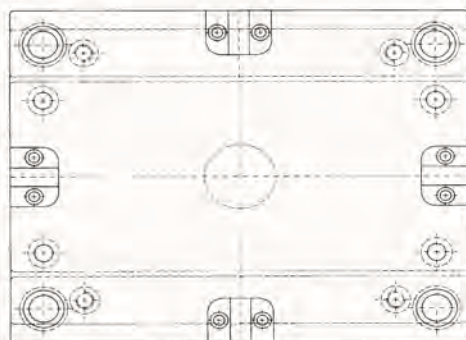
MOULD CENTERERS



All our range of centerers that we present in this catalogue edition include graphite insertions in order to self-lubricate its working in one of the pieces, the other one being coated with a TiN treatment at 2300 Hv for reducing seizing.

Side centerers make it possible to guarantee the appropriate alignment for the main plates in the mould.

The fact of making the allocations in the mould bearer axis allows us to ensure the zero point of the whole structure.

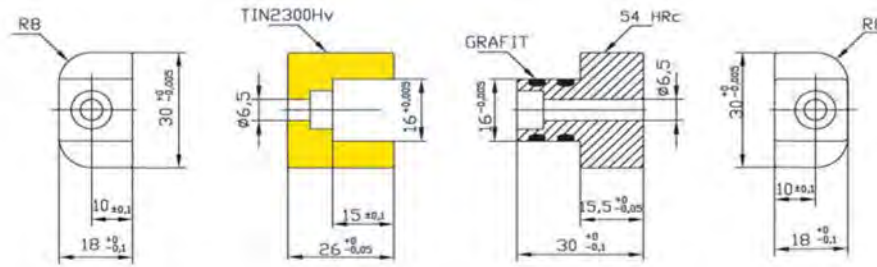


The fact of making the allocations in the mould bearer axis allows us to ensure the zero point of the whole structure.

The flat centerer keeps the axis invariable where it is located as well as absorbs the +B27 longitudinal dilatations of that axis.

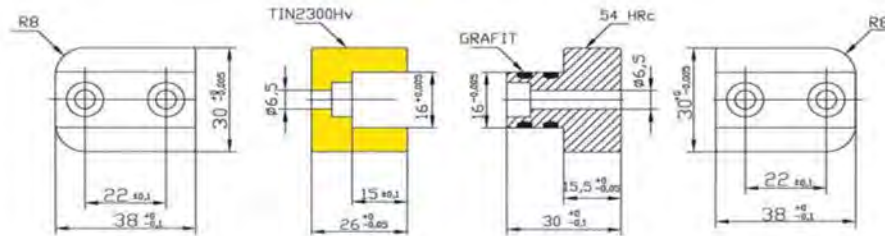
The system of fixing to plate of our centerers allows to make all the mechanization of plates, figure allocations and centering system in a single operation, which guarantees a greater precision of execution.

CENTERER REF. 503018



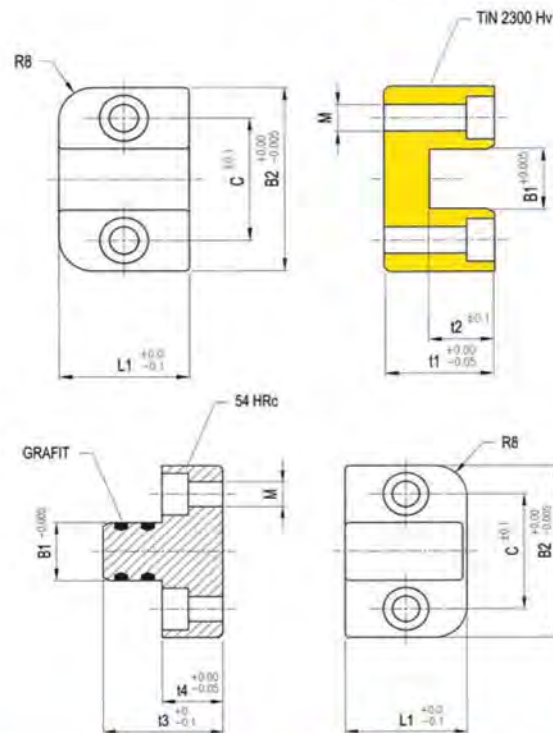
Materials: Steel 1.2344 at 54HRC. + graphite and TiN 2300Hv.

CENTERER REF. 503038



Materials: Steel 1.2344 at 54 HRC. + graphite and TiN 2300 Hv.

CENTERER REF. 505

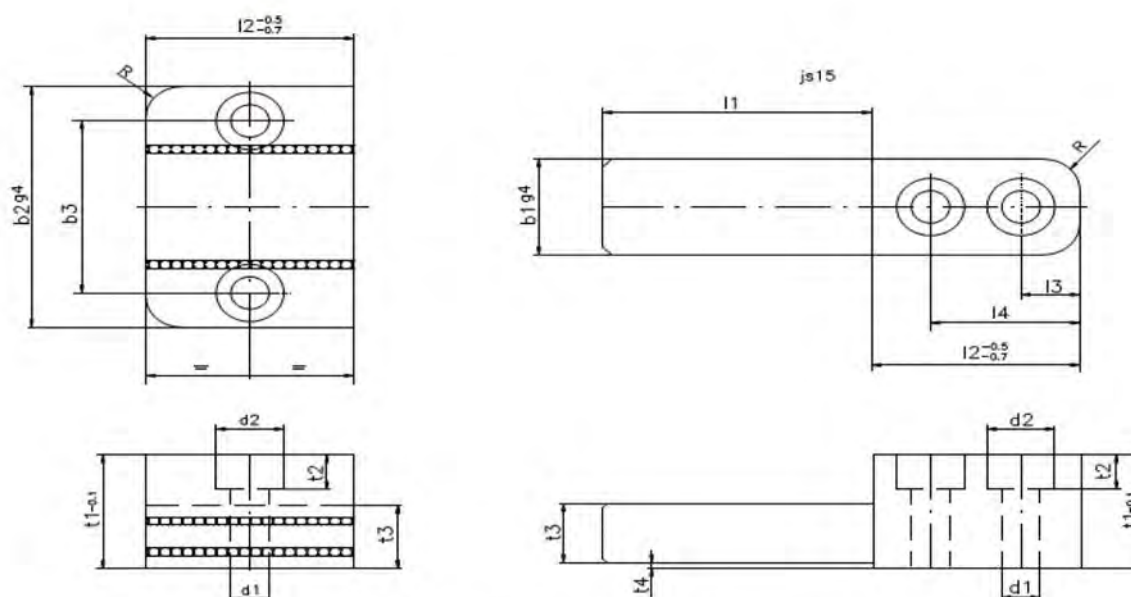


BOLEXP REF. 505										
B1	B2	L1	C	t1	t2	t3	t4	M	Item code	
11	35	26	23	25	15	29,5	15	M5	CL505035	
15	45	30	30	25	15	29,5	15	M6	CL505045	
20	55	36	37,5	30	20	39,5	20	M8	CL505055	
30	75	36	52	35	25	44,5	20	M10	CL505075	

Materials: Steel 1.2344 at 54 HRC. + graphite and TiN 2300 Hv.

Please ask for other diameters and lengths different to the ones included in this catalogue.

CENTERER REF. 508



- Minimal friction with better adjustment
- Great agility of motion
- Endless travel with re-circulating balls

BOLEXP REF. 508														Item code
b1	b2	b3	l1	l2	l3	l4	d1	d2	t1	t2	t3	t4	R	
12	45	29	25	27	7	20	6,3	11	22	6,8	14	1	6	CL508045025
			50											CL508045050
17	50	35	32	36	10	26	6,3	11	25	6,8	15	1	8	CL508050032
			63											CL508050063
25	63	45	40	46	13	33	8,5	15	32	9	20	1	8	CL508063040
			80											CL508063080
35	85	60	50	56	16	41	10,5	18	36	11	24	1	10	CL508085050
			100											CL508085100
45	100	74	56	66	19	48	13	20	40	13	25	1	10	CL508100056
			112											CL508100112

Materials: 1.2379 Hardness 60-62 HRc.

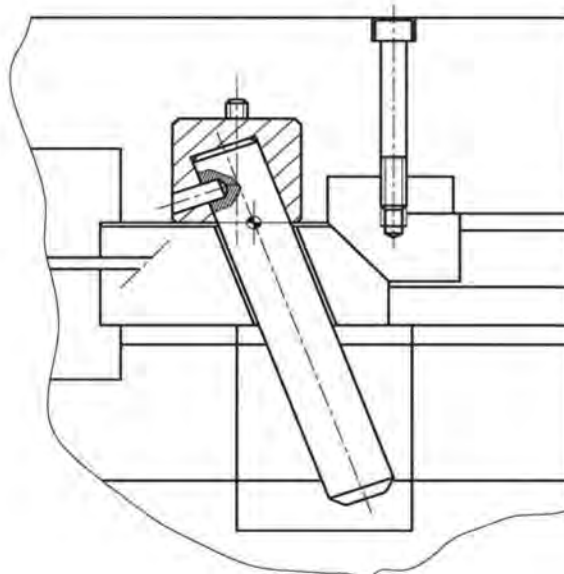
Please ask for other diameters and lengths different to the ones included in this catalogue.



INCLINED ASSEMBLY

During the years of experience in the injection mould sector mechanizations, we have detected the need of products which are able to agilize its mechanization; because of this fact, and given the complexity of making the tilted columns in moulds, we have decided to manufacture these tilted assemblies.

Our standard system allows us to have in stock and ready for immediate delivery an amount of 140 models, with which we expect to greatly cover the existing needs.



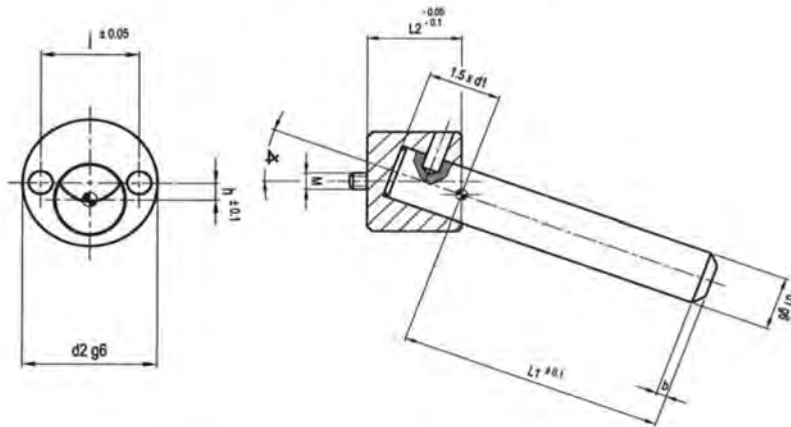
The assembly consists of a support in 1.2312 material screwed into the allocation previously made in the mould plate with 2 conical screws fixing and aligning the position of the tilted column out of the support.

Mounting and unmounting operations are made through the front side of the plate, which makes it easy to exchange, when needed. The allocations to make on plates are always straight, so improving its mechanization agility.

By using the BOLEXP tilted assembly, we keep free the down side of the plate through which we can make cooling circuits without interferences.

INCLINED ASSEMBLY REF. CI

7° - 10° - 12° - 15° - 18° - 20° - 22°



ALL OF THE BENCH MARKS IN THE DIMENSION TABLE ARE VALID FOR ANY OF THE AVAILABLE DEGREES: 7°, 10°, 12°, 15°, 18°, 20° AND 22°

INCLINED ASSEMBLY CI																
d1	d2	L2	j	h	b	M	L1									
							50	75	100	125	150	175	200	250		
12	24	22	17,5	2,5	4	4	●	●	●	●						
16	30	28	22,5	3	6	5		●	●	●	●					
20	38	36	28	4	6	6			●	●	●	●	●			
25	48	45	36	5	6	8				●	●	●	●	●		
30	58	55	43	6	8	10					●	●	●	●	●	

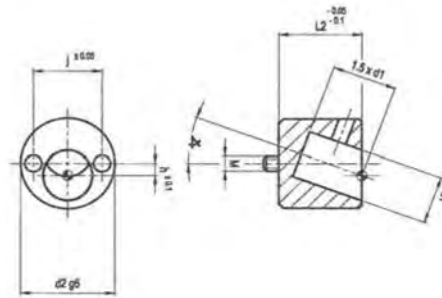
Way of order: CI + Angle + Ø Column + Column Length L1

Materials: Base support 1.2312, Column 1.5732 58-60 HRc, Screw 12-9

Please ask for other diameters and lengths different to the ones included in this catalogue.

TILTED COLUMN SUPPORT

7° - 10° - 12° - 15° - 18° - 20° - 22°

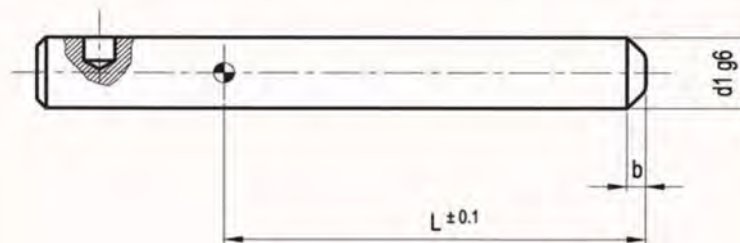


CS SUPPORT					
d1	d2	L2	j	h	M
12	24	22	17,5	2,5	4
16	30	28	22,5	3	5
20	38	36	28	4	6
25	48	45	36	5	8
30	58	55	43	6	10

ALL OF THE BENCHMARKS IN THE DIMENSION TABLE ARE VALID FOR ANY OF THE AVAILABLE DEGREES: 7°, 10°, 12°, 15°, 18°, 20° Y 22°

Way of order: CS + Angle + Ø Column
 Materials: Base support 1.2312, Column 1.5732 58-60 HRc, Screw 12-9

TILTED COLUMN CP



		L1							
d1	b	50	75	100	125	150	175	200	250
12	4	●	●	●	●				
16	6		●	●	●				
20	6			●	●	●	●		
25	6				●	●	●	●	
30	8					●	●	●	●

Way of order: CP + Ø Column + Length column L1
 Materials: 1.5732 58-60 HRc

Please ask for other diameters and lengths different to the ones included in this catalogue.



SELF-LUBRICATED BRONZE

The development of self-lubricated guidance systems arises from the need to solve the existing problems involved in lubrication. These are due either to the difficulty of access or to the convenience of continuous and permanent lubrication, which oils fail to ensure.

Implementing these systems results in a significant reduction in seizing problems and maintenance costs, as well as in gas emission caused by oil heating. This permits to operate at high temperatures that in some cases can reach 400° C (752° F).

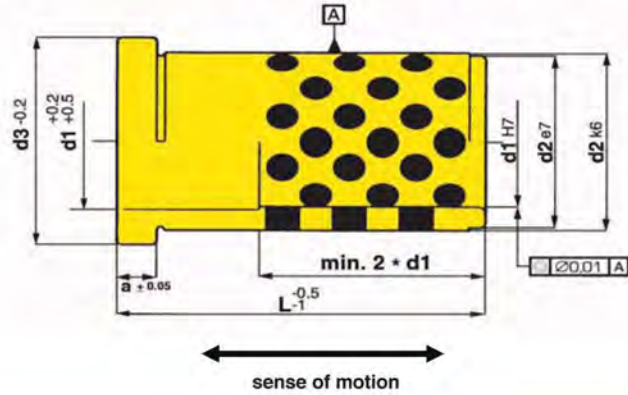
The presence of aluminium in bronze reduces the attack of atmospheric agents and warm gases, whilst at the same time exhibiting great stability against distilled water, saline water, seawater or acid well water. Bleaches, except for ammonia, are harmless to it. Moreover, a protection layer produced by the material itself acts very favourably against the corrosive effect of sulphur and oxidizing gases.

Graphite insertions, acting as a solid lubricant, allow to keep an excellent level of lubrication for plates or bushes through all their lifetime, ready for use at any time. Through use, the bronze structure wear causes graphite insertions wear. The graphite dust resulting from this slight wear will be the responsible for lubricating the whole of the contact area.

The graphite used is a material with an extremely low chemical-inertia level, not interacting with most elements in nature under normal conditions. This ensures regular behaviour through the piece lifetime without unexpected contingency.

BOLEXP item construction exhibits a graphite distribution over the guide surface of about 25%-35% of the total, thus guaranteeing proper lubrication of the tool to construct. In addition, the graphite insertions used are relatively small, in comparison with other manufacturers, in order to minimize the impact on bronze bush consistency and maximize the dispersal of solid lubricant.

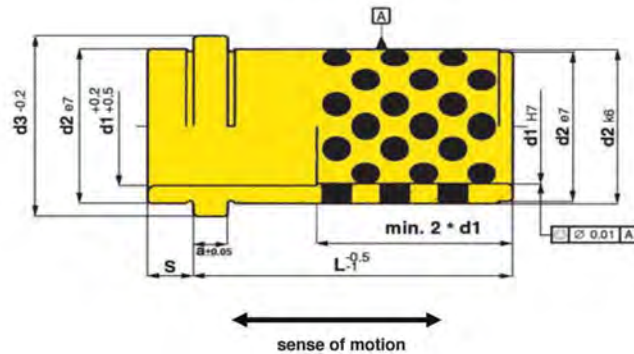
BUSH REF. 311



BOLEXP 311																
d1	d2	d3	a	L												
				12	17	22	27	36	46	56	66	76	86	96	116	136
9	14	16	3	●	●	●	●	●	●							
10	14	16	3	●	●	●	●	●	●							
12	18	23	6		●	●	●	●	●							
14	20	25	6		●	●	●	●	●							
15	20	25	6		●	●	●	●	●							
16	22	27	6		●	●	●	●	●							
18	26	31	6		●	●	●	●	●	●	●					
20	26	31	6		●	●	●	●	●	●	●	●				
22	30	35	6			●	●	●	●	●	●	●	●			
24	30	35	6			●	●	●	●	●	●	●	●	●		
30	42	47	6				●	●	●	●	●	●	●	●	●	
32	42	47	6				●	●	●	●	●	●	●	●	●	●
40	54	60	10					●	●	●	●	●	●	●	●	●
42	54	60	10					●	●	●	●	●	●	●	●	●

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

BUSH REF. 312



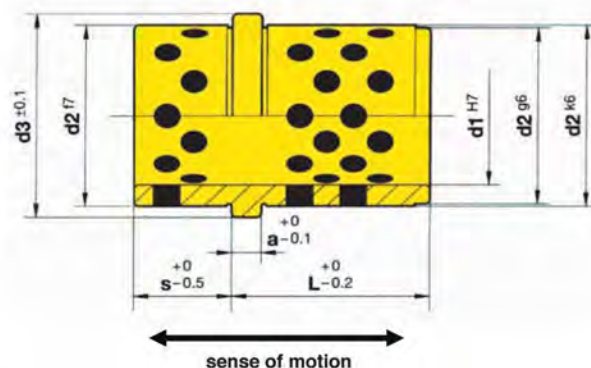
BOLEXP 312																
d1	d2	d3	S	a	L											
					17	22	27	36	46	56	66	76	86	96	116	136
9	14	16	5	3	●	●	●	●	●	●						
10	14	16	5	3	●	●	●	●	●	●						
14	20	25	6	6	●	●	●	●	●	●	●					
15	20	25	6	6	●	●	●	●	●	●	●					
18	26	31	8	6	●	●	●	●	●	●	●	●				
20	26	31	8	6	●	●	●	●	●	●	●	●				
22	30	35	8	6		●	●	●	●	●	●	●	●			
24	30	35	8	6		●	●	●	●	●	●	●	●	●		
30	42	47	8	6			●	●	●	●	●	●	●	●	●	
32	42	47	8	6			●	●	●	●	●	●	●	●	●	●
40	54	60	10	10				●	●	●	●	●	●	●	●	●
42	54	60	10	10				●	●	●	●	●	●	●	●	●

Form of order: G312 + d1 + L

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

Please ask for other diameters and lengths different to the ones included in this catalogue.

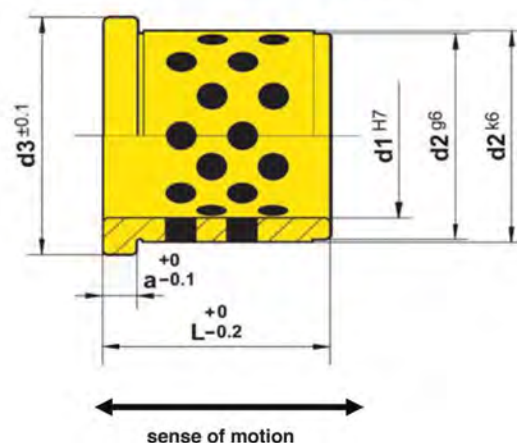
BUSH REF. 313



BOLEXP 313						
d1	L	d2	d3	a	S	Item code
14	17	20	25	6	9	G3131417
15	17	20	25	6	9	G3131517
18	22	26	31	6	17	G3131822
20	22	26	31	6	17	G3132022
22	27	30	35	6	22	G3132227
24	27	30	35	6	22	G3132427
30	36	42	47	6	27	G3133036
32	36	42	47	6	27	G3133236

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

BUSH REF. 401

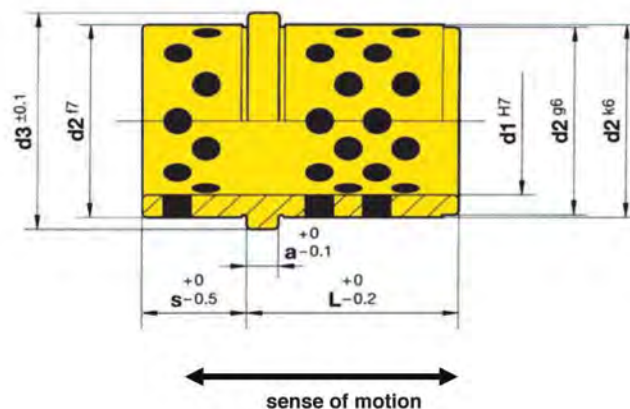


BOLEXP 401					
d1	L	d2	d3	a	Item code
20	26	28	32	6	G4012026
20	35	28	32	6	G4012035
25	26	32	36	6	G4012526
25	35	32	36	6	G4012535
25	45	32	36	6	G4012545
32	35	40	45	8	G4013235
32	45	40	45	8	G4013245
40	45	50	56	8	G4014045

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

Please ask for other diameters and lengths different to the ones included in this catalogue.

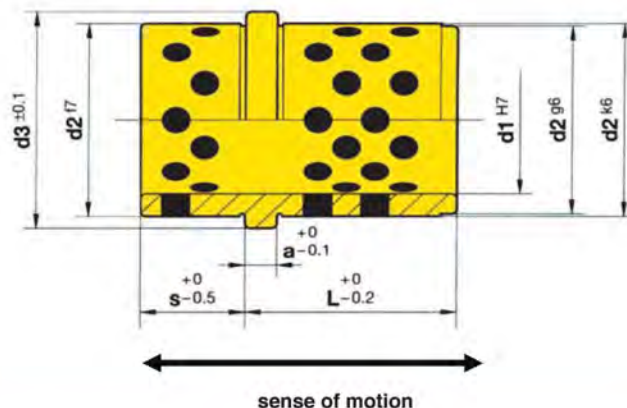
BUSH REF. 402



BOLEXP 402						
d1	L	d2	d3	a	S	Item code
12	22	18	22	6	9	G4021222
16	22	22	26	6	12	G4021622
16	26	22	26	6	12	G4021626
20	26	28	32	6	15	G4022026
20	35	28	32	6	15	G4022035
25	26	32	36	6	18	G4022526
25	35	32	36	6	18	G4022535
25	45	32	36	6	18	G4022545
32	35	40	45	8	20	G4023235
32	45	40	45	8	20	G4023245
40	45	50	56	8	25	G4024045
40	63	50	56	8	25	G4024063

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

BUSH REF. 403

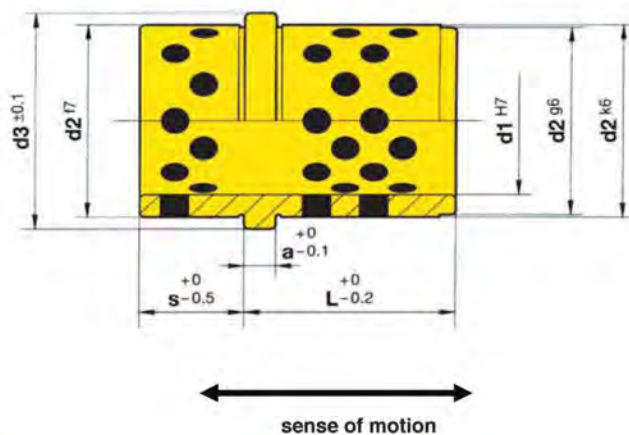


BOLEXP 403							
D1	D2	D3	L+S	L	S	a	Item code
12	18	22	32	16	16	5	G4031232
14	20	24	32	16	16	5	G4031432
16	22	26	32	16	16	5	G4031632
18	26	30	32	16	16	5	G4031832
20	28	32	32	16	16	6	G4032032
25	34	38	32	16	16	7	G4032532
32	40	45	50	25	25	7	G4033250
40	48	52	65	33	32	8	G4034065

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

Please ask for other diameters and lengths different to the ones included in this catalogue.

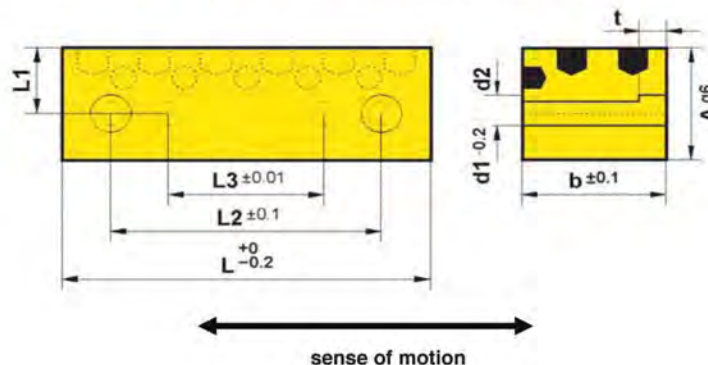
BUSH REF. 404



BOLEXP 404						
d1	L	d2	d3	a	S	Item code
12	17	16	20	4	8	G4041217
16	17	20	24	4	12	G4041617
16	21	20	24	4	12	G4041621
18	21	25	30	6	17	G4041821
18	26	25	30	6	17	G4041826
20	26	30	35	6	17	G4042026
22	21	30	35	6	17	G4042221
22	26	30	35	6	17	G4042226
25	26	35	40	8	18	G4042526
25	35	35	40	8	18	G4042535
30	35	40	45	8	21	G4043035

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

GUIDE STRIP REF. 405

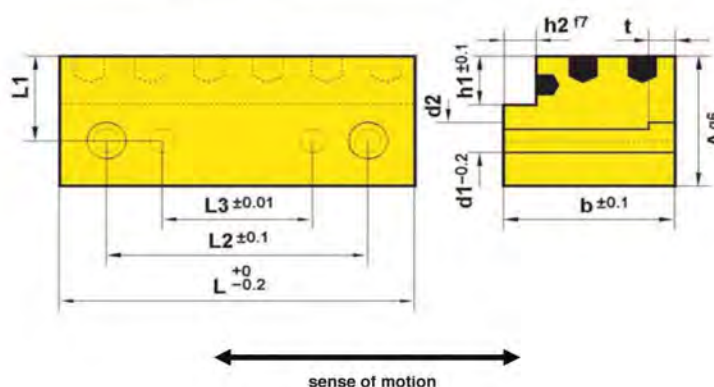


BOLEXP 405									
A	b	L	L1	L2	L3	d1	d2	t	Item code
20	15	63	13	47	25	6	6,5	6,5	G40515063
20	15	300							G40515300
20	20	63	13	47	25	6	6,5	6,5	G40520063
20	20	80	13	64	40	6	6,5	6,5	G40520080
20	20	100	13	84	60	6	6,5	6,5	G40520100
20	20	300							G40520300
25	25	100	16	80	50	8	8,5	8,5	G40525100
25	25	125	16	105	75	8	8,5	8,5	G40525125
25	25	300							G40525300
25	30	125	16	105	75	8	8,5	8,5	G40530125
25	30	160	16	140	110	8	8,5	8,5	G40530160
25	30	300							G40530300

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

Please ask for other diameters and lengths different to the ones included in this catalogue.

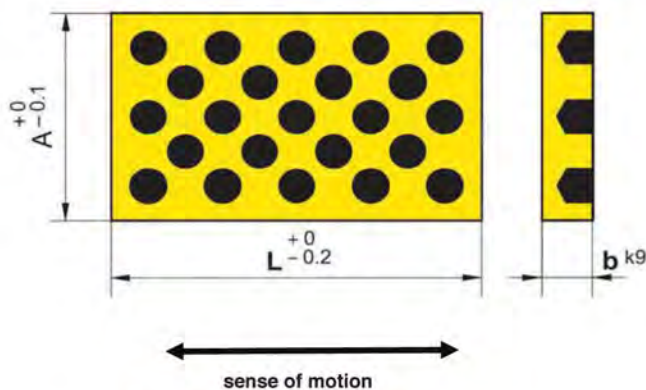
GUIDE STRIP REF. 406



BOLEXP 406											
A	b	L	L1	L2	L3	d1	d2	t	h1	h2	Item code
20	20	63	13	47	25	6	6,5	6,5	6	5	G40620063
20	25	63	13	47	25	6	6,5	6,5	6	5	G40625063
20	25	80	13	64	40	6	6,5	6,5	6	5	G40625080
20	25	100	13	84	60	6	6,5	6,5	6	5	G40625100
25	31	100	16	80	50	8	8,5	8,5	7	6	G40631100
25	31	125	16	105	75	8	8,5	8,5	7	6	G40631125
25	38	125	16	105	75	8	8,5	8,5	7	8	G40638125
25	38	160	16	140	110	8	8,5	8,5	7	8	G40638160

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

SLID PLATE REF. 407



BOLEXP 407			
A	L	b	Item code
20	63	5	G40720063
20	300	6	G40720300
25	63	5	G40725063
25	80	5	G40725080
25	300	6	G40725300
30	80	6	G40730080
30	100	6	G40730100
30	300	6	G40730300
40	80	6	G40740080
40	100	6	G40740100
40	125	6	G40740125
40	300	6	G40740300

Materials: Bronze EN1982 CuAl10Fe5Ni5C + Graphite

Please ask for other diameters and lengths different to the ones included in this catalogue.

BOLEXP



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