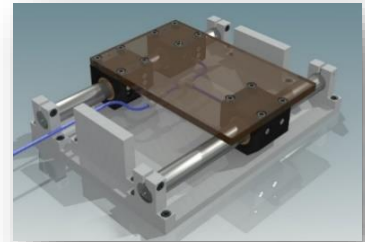




**LINEAR AIR BUSHINGS**

**XABR**



**INTENDED USE**

The XABR series finds their best application in linear and rotary movements, even with motorization, where zero friction is needed. Their high flexibility allows the customer to set up the guide system in various ways.

**BENEFITS**

**Zero friction**

**No wear**

**Smooth and silent movement without vibrations**

**Possibility of high accelerations and speeds**

**Maintenance-free components**

**Simple design**

**High precision movements**

**INDUSTRIAL SECTORS**

**LENGTH AND ANGLE METROLOGY**

**MASS AND FORCES METROLOGY**

**SEMICONDUCTOR**

**BIOMEDICAL**

**APPLICATIONS**

**Coordinate Measurings Machines**

**Wafer Handling**

**Optical Test**

**Computed Tomography**

**Laser Cut and Scribing**

**Micro Milling Machines**



## MAIN FEATURES

The cylindrical air bearing (XABR-□□□-RBB) is made up of an aerostatic porous bushing and an anodized aluminum sleeve, joined through interference.

Sliding occurs on shafts (PBH-□□□-□□□-□□) manufactured with rounds or stainless hoses or chrome-plated grinded steel, both with very accurate dimensional and shape tolerances. Shaft can be supported with their own supports (PBE-□□□).

The bearings can be supplied:

- a) as a simple sliding element, as cylindrical bearing (XABR-□□□-RBB): in this particular case, the support element has to be manufactured by the user
- b) already integrated with the MAGER standard support (XABR-□□□-RF□)

The cylindrical bearing may be coupled with the support in different ways; on the one hand, self-alignment gradually decreases, on the other hand, stiffness and then guides accuracies increase:

UNION TYPE	DESCRIPTION
<b>floating</b> (...-RFF)	the sealing O-rings act as a spring and allow the cylindrical bearing to self-align to the guide element, and to help compensation of straightness and parallelism errors (within certain limits) as in the case of systems with 2 or more parallel shafts
<b>stiffened floating</b> (...-RFI)	the sealing O-rings also act as a spring, but, supplying compressed air in the resin room, the OR stiffen and allow less elasticity in the self-alignment
<b>resin stiffened</b> (...-RFR)	the resin process leads to a rigid coupling, not self-aligning: in case of very slight misalignment of the guide shafts, it still guarantees the best alignment of the cylindrical bearings during the resin drying process

## AIR SUPPLY SPECIFICATIONS

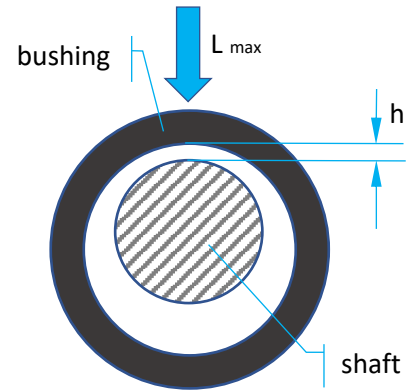
Refer to **ISO 8573-1:2010**

- particles:** class 1
- water:** class 3
- oil:** class 0 totally oil free

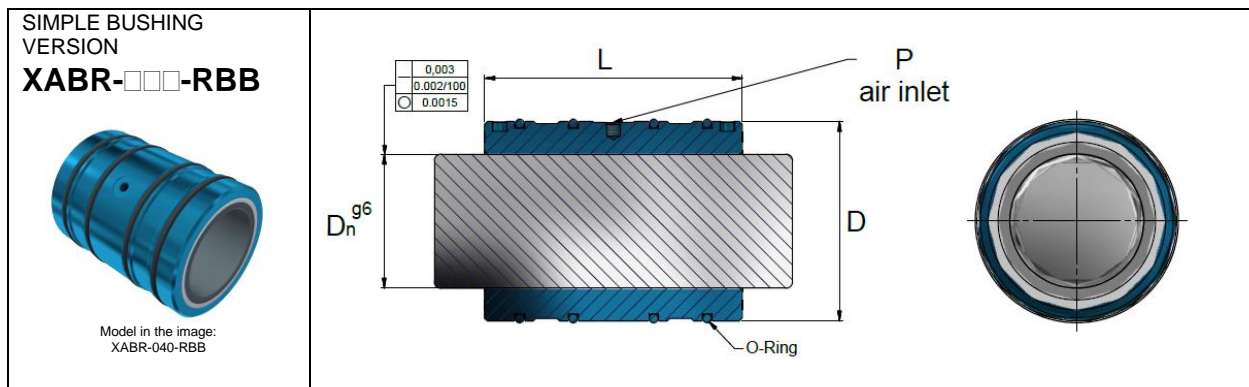
## AEROSTATIC PERFORMANCES

AIR SUPPLY PRESSURE: 4 bar

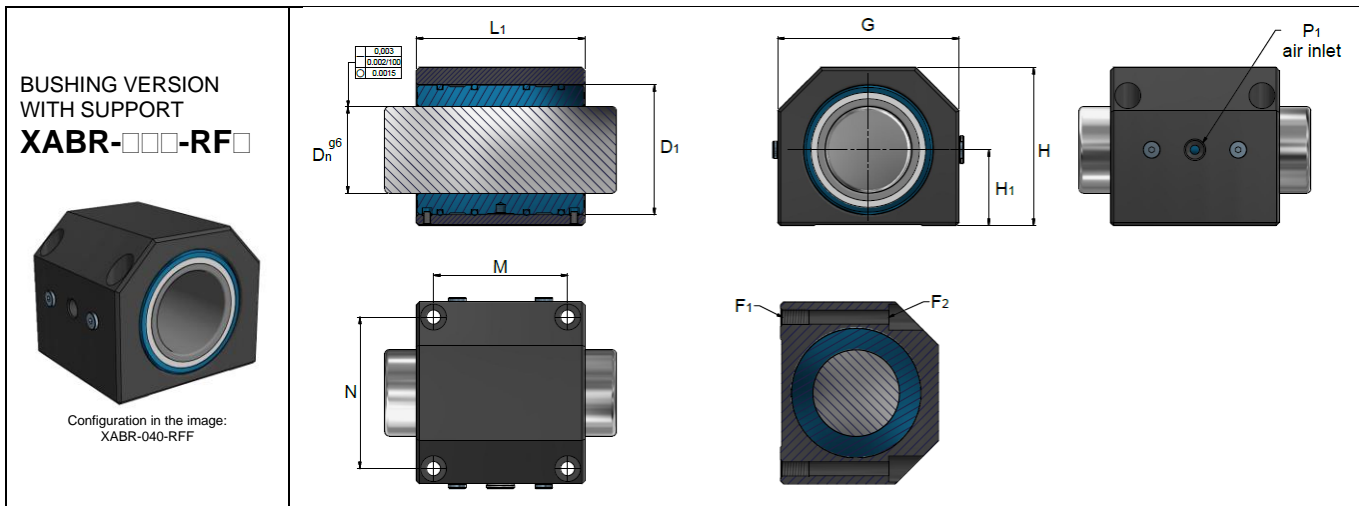
nominal diam. $D_n$ [mm]	DESCRIPTION	max radial load $L_{max}$ [N]	radial stiffness $R$ [N/ $\mu$ m]	radial air gap @ $L_{max}$ $h$ [ $\mu$ m]
10	XABR-010-R□□	20	5	4
13	XABR-013-R□□	38	9	4
16	XABR-016-R□□	54	13	4
20	XABR-020-R□□	116	20	4
25	XABR-025-R□□	164	30	4
40	XABR-040-R□□	568	63	4
50	XABR-050-R□□	837	99	4
75	XABR-075-R□□	1,118	143	4



## MASSES AND DIMENSIONS



nominal diam. $D_n$ g6 [mm]	DESCRIPTION	bushing diam. (°) $D_{\pm 0.1}$ [mm]	length bushing $L_{\pm 0.1}$ [mm]	Air inlet thread $P$	O-ring	mass $m$ [kg]	$\varnothing$ shaft toll. g6 [ $\mu$ m]
10	XABR-010-RBB	20.7	39	M3 x 2.5	s2 x d17	0.02	-5   -14
13	XABR-013-RBB	23.7	51	M3 x 2.5	s2 x d20	0.03	-6   -17
16	XABR-016-RBB	27.7	51	M3 x 2.5	s2 x d24	0.04	-6   -17
20	XABR-020-RBB	31.8	51	M3 x 2.5	s2 x d28	0.05	-7   -20
25	XABR-025-RBB	38.8	56	M3 x 2.5	s3 x d33	0.08	-7   -20
40	XABR-040-RBB	59.6	77	M5 x 3.5	s3 x d54	0.25	-9   -25
50	XABR-050-RBB	74.1	88	M5 x 3.5	s4 x d67	0.41	-9   -25
75	XABR-075-RBB	99.5	109	M5 x 3.5	s4 x d93	0.74	-10   -29

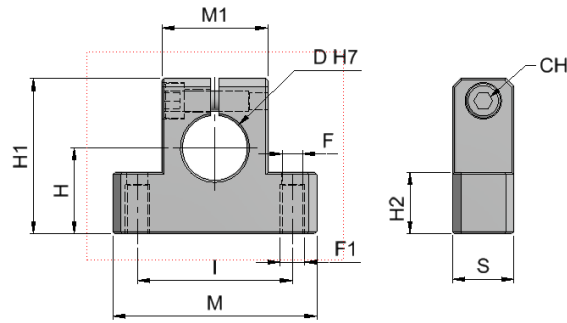
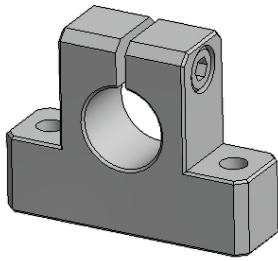


nominal diam. <b>D<sub>n</sub></b> [mm]	DESCRIPTION	bushing diam. seat <b>D<sub>1</sub> ±0.05</b> [mm]
10	<b>XABR-010-RF□</b>	21.2
13	<b>XABR-013-RF□</b>	24.2
16	<b>XABR-016-RF□</b>	28.2
20	<b>XABR-020-RF□</b>	32.3
25	<b>XABR-025-RF□</b>	39.6
40	<b>XABR-040-RF□</b>	60.3
50	<b>XABR-050-RF□</b>	74.9
75	<b>XABR-075-RF□</b>	100.4

support whidt <b>G</b> [mm]	support height <b>H</b> [mm]	support length <b>L<sub>1</sub></b> [mm]	hole axis height <b>H<sub>1</sub> ±0.02</b> [mm]	hole mounting <b>M</b> [mm]	hole mounting <b>N</b> [mm]	thread mounting <b>F<sub>1</sub></b> [mm]	screw mounting <b>F<sub>2</sub></b> [mm]	air inlet thread <b>P<sub>1</sub></b>	mass <b>m</b> [kg]
36	28	40	15	30	28	M4 × 8	M3 × 25	M3	0.08
38	32	52	16	40	30	M4 × 8	M3 × 30	M3	0.13
46	36	52	18	40	36	M5 × 10	M4 × 30	M3	0.16
57	46	52	23	38	44	M5 × 10	M4 × 40	M5	0.27
62	52	57	25	40	48	M5 × 10	M4 × 45	M5	0.34
84	73	78	35	62	70	M8 × 12	M6 × 60	1/8 GAS	0.82
99	87	89	42	66	84	M8 × 12	M6 × 70	1/8 GAS	1.25
129	119	110	57	80	112	M10 × 20	M8 × 90	1/8 GAS	2.50



**PBE SUPPORT ELEMENT FOR SHAFT**



DESCR.	D H7	H	H1	H2	M	M1	S	I	F	F1	CH
PBE-010	10	18	32	12	38	18	15	28	4.3	M5x10	3
PBE-013	13	19	34	12	43	23	15	33	4.3	M5x10	3
PBE-016	16	21	38	15	50	26	15	38	5.3	M6x12	4
PBE-020	20	26	47	20	60	32	20	46	6.5	M8x16	5
PBE-025	25	30	53	25	67	39	20	53	6.5	M8x16	5
PBE-040	40	40	73	30	92	56	25	74	8.5	M10x20	6
PBE-050	50	47	87	40	108	70	25	90	8.5	M10x20	6
PBE-075	75	64	118	50	150	105	35	128	10.5	M12x24	8

**HOW TO ORDER**

**XABR AEROSTATIC BUSHING**

XABR - □□□ - R□□

PART TYPE

**BB** = simple bushing, to be inserted into the support provided by the customer

integrated bushing, already inserted in the STANDARD provided support element with 3 way of usage:

- FX** { floating
- stiffened floating
- stiffened resinated

NOMINAL SHAFT DIAMETER

example: XABR-020-RFX

**PBH STANDARD SHAFT**

PBH - □□□ - □□□□ - □□

FINISHING

- MP** = round full inox magnetic
- AP** = round full inox not magnetic
- FP** = round full chromed iron
- FT** = chromed iron hollow shaft

TOTAL NOMINAL LENGHT of the shaft [mm]

NOMINAL SHAFT DIAMETER [mm]

example: PBH-020-0600-MP

**TOLLERANCE REQUIREMENTS ON SHAFTS:**

- dimensional tolerances on diameter  $D_n$  : ISO g6
- surface finishing : roughness  $R_a \leq 0,8 \mu m$
- shape tolerance:
  - roundness:  $\leq 1,5 \mu m$
  - local straightness:  $\leq 2,0 \mu m / 100mm$
  - straightness on the whole length:



coupling bush bushing - support →	floating	stiffened floating	stiffened resinated
qnt and shaft layout ↓			
single shaft	depending on the application needs		
2 or more coupled shafts	$\leq 15 \mu m$	$\leq 8 \mu m$	$\leq 5 \mu m$

<b>PBE SUPPORT</b>	PBE - □□□ ↓ NOMINAL SHAFT DIAMETER      example: PBE-020
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