

## General

Microcylinders are the most widespread linear actuators in common use due to their reduced dimensions. They can be applied in the most varied of sectors, from packaging to textiles, from woodworking machines to the ceramic sector and so on. Starting from these premises we have designed a light and sturdy component of pleasing appearance realized in three versions: with threaded end covers, rolled end covers and rolled end covers with all components stainless steel.

**Threaded end covers version:** hard anodized aluminium end covers, threaded into the anodized aluminium barrel. Bores from diameter 8 to 25mm. are made according to ISO 6432, while the diameters 32, 40 and 50 out of norms are produced to complete the range.

Starting from this base, we have derived the special designs which we are describing herebelow:

- single-acting with front or rear spring (max. stroke 40 mm; for longer strokes the length increase is not proportional to the stroke in order to provide lodging for the spring);
- double and single-acting with flat bottom instead of clevis;
- push-pull rod;
- hexagonal non-rotating rod;
- stainless steel rod on all versions;
- THERBAN® seals on all versions for high temperature operations (120°C max);
- microcylinders with magnetic piston (from Ø 10 to Ø 50)
- stationary rubber cushions (standard);
- adjustable cushions (from Ø 16 to Ø 50).

**"MIR", rolled end covers version:** hard aluminium end covers, rolled on the AISI 304 stainless steel barrel, magnetic piston and standard AISI 303 piston rod on all versions. Also for these microcylinders, bores from diameter 8 to 25mm are made according to ISO 6432, while diameters 32 out of norms is completing the range.

Starting from this base, we have derived the special designs which we are describing herebelow:

- single-acting with front or rear spring (max. stroke 50 mm; for longer strokes the length increase is not proportional to the stroke in order to provide lodging for the spring);
- double and single-acting with flat bottom instead of clevis;
- push-pull rod;
- chromed stainless steel piston rod, compulsory on piston rod locking version;
- THERBAN® seals on all versions for high temperature operations (120°C max);
- stationary rubber cushions (standard);
- adjustable cushions (from Ø 16 to Ø 32).

**"MIR-INOX", stainless steel rolled end covers version:** this version is very similar to previous one for technical and assembling characteristics, but all components are stainless steel.

Bores from Ø16 to Ø25 are made according to ISO 6432 while diameter 32 out of norms is completing the range.

The production of a stainless steel cylinder is requested for particular working ambiances where resistance to hard chemicals conditions is necessary (zoothechnics, chemicals); at the same chemical neutrality must be guaranteed (food industry, medicals).

Main characteristics:

- AISI 316 end covers
- AISI 304 barrel
- AISI 304 mountings
- Standard magnetic piston
- NBR seals (except for piston rod seals which are in polyur.)
- Stationary rubber cushions (standard)

Available special designs:

- Push-pull rod
- VITON® seals (150°C max)
- pneumatic progressive cushions (non adjustable)

**"TECHNOPOLYMER Microcylinders according to standard ISO 6432":** Continuing in our commitment to the development and implementation of technologically advanced, competitive products we have introduced the 1230 series of technopolymer bodied microcylinders. This new cylinder complies with ISO6432 and has operational characteristics similar to the Mir (1280) series cylinder with rolled end covers.

One of the main features of this cylinder is the material of construction.

In fact, the end covers and barrel are made from a technopolymer reinforced with glass fiber, giving mechanical qualities similar to those of aluminium.

The use of technopolymer also allows the use of these cylinders in environments that are incompatible with aluminium.

Bores available : Ø12 - Ø16 - Ø20 - Ø25.

Products types:

- Basic
- Basic with magnetic piston

Options:

- Double acting
- Double acting with flat rear end cover
- Double acting through rod (Push/Pull)

### Construction characteristics

End covers	hard anodized aluminium
Barrel	anodized aluminium (brass for $\varnothing 8$ and 10)
Piston rod	hard chrome-plated C43 steel (stainless steel for $\varnothing 8$ and 10 as well as $\varnothing 12$ , 16 and 20 on magnetic microcylinders)
Piston	aluminium
Piston seals	NBR oil-resistant rubber THERBAN <sup>®</sup> for high temperatures 120°C on request
Rod seals	mixing polyurethane self-lubrication 90 Shore or VITON <sup>®</sup>
End cover seals	NBR oil-resistant rubber O Rings
Shock absorbing seals	NBR oil-resistant rubber or THERBAN <sup>®</sup>
Mounting	steel painted in cataphoresis
Forks	cadmium plated steel
Single-acting springs	steel for springs and stainless steel
Cushioning length	$\varnothing$ 16 - 20 - 25 - 32 - 40 - 50 mm 15 - 18 - 18 - 18 - 22 - 22

### Technical characteristics

Fluid	filtered air and preferably lubricated
Max. pressure	10 bar
Min. and max temperature	-5°C ÷ 70°C (120°C THERBAN seals)

"Attention: Dry air must be used for application below 0°C"

### Use and maintenance

The microcylinder is basically a simple and rugged component which can be used maintenance-free for a long time and several million cycles. Essential factors for a long life are:

- good quality of the air (which must be filtered and moderately lubricated with suitable oils);
- correct alignment during assembly with regard to applied load, which shall not create radial components with bending effect on the rod;
- avoiding having simultaneously high speeds, long strokes and considerable loads which produce kinetic energies that the microcylinder could not absorb if used as a limit stop of traversed masses (in this case always use outside mechanical stops);
- checking the ambient conditions in which the microcylinder operates (high temperature, aggressive atmosphere, dust, humidity, etc.) and consequently choose the most suitable type.

In case of doubt, our Engineering Office can supply information on the best solution to adopt. In order to carry out proper maintenance of the microcylinder, unscrew the front head, remove the rod with the piston and replace the piston (or its gaskets) and the gasket of the rod. The O.rings providing the seal between the heads and the barrel are usually not replaced, but are included in the sets of spares. Clean the barrel and rod carefully, check that they are undamaged and after lubricating the sliding surfaces and gaskets with suitable grease, assemble again lining up the air inlet ports of the heads.

Warning: the heads are screwed to the jacket using a small amount of a thread locking liquid to avoid accidental unscrewing under heavy stresses. The thread lock might hinder disassembly: in this case warm the part involved to 212°F to neutralize the glueing effect of the thread lock.

For lubrication please use class H hydraulic oils, for example MAGNA GC 32 Castrol.

### Standard strokes

#### **$\varnothing 8$ and $\varnothing 10$**

15 - 25 - 50 - 75 - 80 - 100 mm

#### **$\varnothing 12$ and $\varnothing 16$**

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm

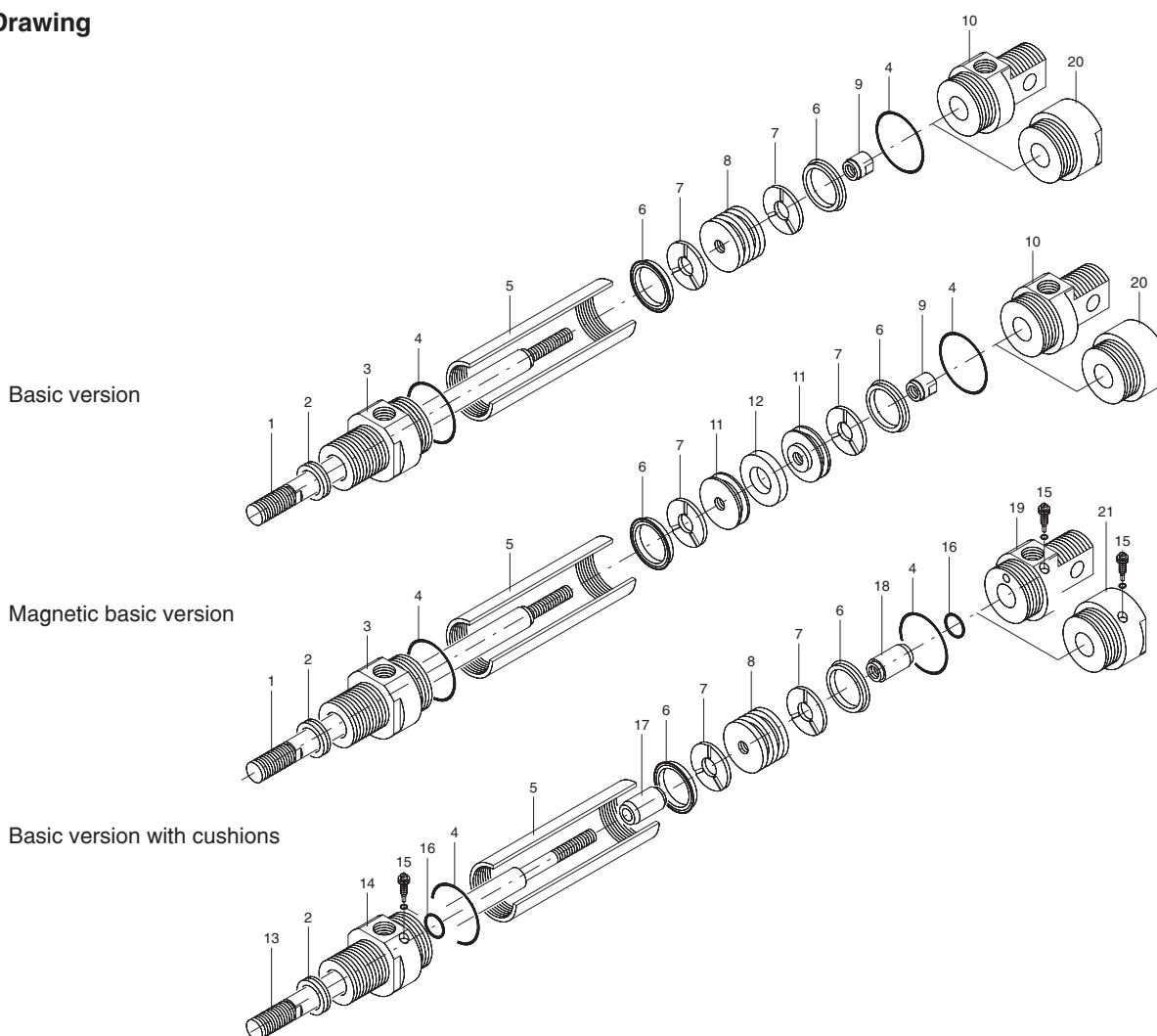
#### **$\varnothing 20$ and $\varnothing 25$**

15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm

#### **$\varnothing 32$ , $\varnothing 40$ and $\varnothing 50$**

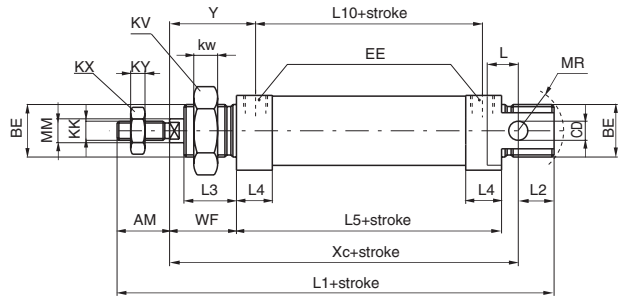
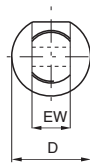
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

**Drawing**



Pos.	Description	N. Pieces
1	Piston rod	1
2	Piston rod seal	1
3	Front cover	1
4	Cover seal	2
5	Barrel	1
6	Piston seal	2
7	Shock absorbing washer	2
8	Piston	1
9	Threaded bush	1
10	Rear cover	1
11	Half piston for magnetic version	2
12	Magnet	1
13	Piston rod cushioned version	1
14	Front cover for cushioned version	1
15	Cushion adjusting pin	2
16	Cushion seal	2
17	Front cushion bearing	1
18	Rear cushion bearing	1
19	Rear cover for cushioned version	1
20	Rear cover without rear eye	1
21	Rear cover without rear eye for cushion	1

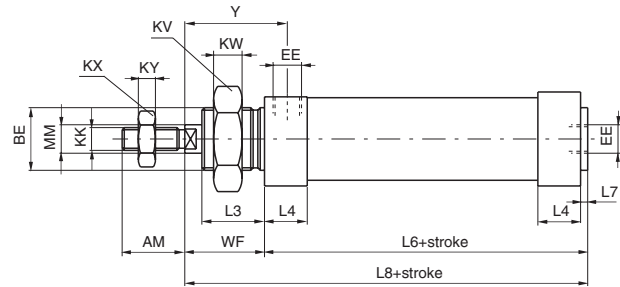
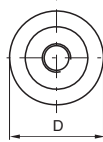
**Basic version**



Standard execution, fully complying with ISO standards from  $\varnothing 8$  to  $\varnothing 25$ . Diameters 32, 40 and 50 not included in the standard, comply with our own specifications. Can use all available mountings. For single acting type, the maximum stroke is 40 mm., after which overall dimensions increase in length to an extent not proportional to the stroke (and in any case not longer than stroke 100).

Ordering code	Description
<b>1260.Ø.stroke</b>	Basic
<b>1271.Ø.stroke</b>	Basic front spring from $\varnothing 12$ (max stroke 40 mm)
<b>1272.Ø.stroke</b>	Basic rear spring from $\varnothing 12$ (max stroke 40 mm)
<b>12- -Ø.stroke.A</b>	Adjustable cushions (from $\varnothing 16$ )
<b>12- -Ø.stroke.M</b>	Magnetic piston (from $\varnothing 10$ )
<b>12- -Ø.stroke.X</b>	Stainless steel chromed rod
<b>12- -Ø.stroke.A.M</b>	Cushioned with magnetic piston
<b>12- -Ø.stroke.A.M.X</b>	Cushioned, magnetic piston and stainless steel chromed rod
<b>12- -Ø.stroke. . . T</b>	THERBAN® seals version

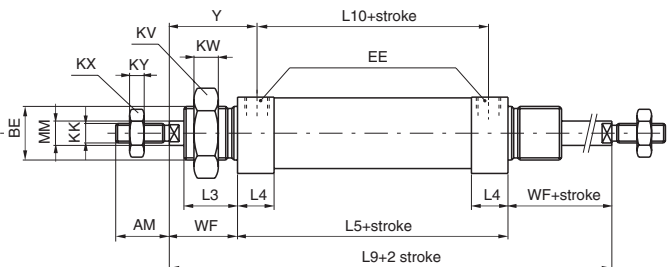
**Without rear eye version**



Version derived from standard execution 1260 and not included in ISO standard. Not having a rear eye it is shorter and the air inlet is from the rear or at 90° like it is on the front. The considerations made for the basic type 1260 apply for all single-acting types.

Ordering code	Description
<b>1261.Ø.stroke</b>	Without rear eye
<b>1273.Ø.stroke</b>	Without rear eye front spring from $\varnothing 12$ (max stroke 40 mm)
<b>1274.Ø.stroke</b>	Without rear eye rear spring from $\varnothing 12$ (max stroke 40 mm)
<b>12- -Ø.stroke.A</b>	Without rear eye adjustable cushions (from $\varnothing 16$ )
<b>12- -Ø.stroke.M</b>	Without rear eye magnetic piston (from $\varnothing 10$ )
<b>12- -Ø.stroke.X</b>	Without rear eye stainless steel chromed rod
<b>12- -Ø.stroke.A.M</b>	Cushioned with magnetic piston
<b>12- -Ø.stroke.A.M.X</b>	Cushioned, magnetic piston and stainless steel chromed rod
<b>12- -Ø.stroke. . . T</b>	THERBAN® seals version
<b>12- -Ø.stroke. . . L</b>	Air inlet at 90° version

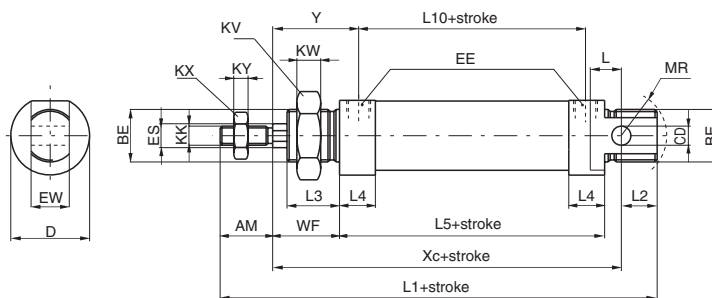
**Push/Pull rod version**



Execution by rod coming out from both end plates, with overall dimensions, except for the rod, equal to 1260 version. Not available with  $\varnothing 8$  and 10).

Ordering code	Description
<b>1262.Ø.stroke</b>	Push/pull rod
<b>1262.Ø.stroke.A</b>	Adjustable cushions (from $\varnothing 16$ )
<b>1262.Ø.stroke.M</b>	Magnetic piston (from $\varnothing 10$ )
<b>1262.Ø.stroke.X</b>	Stainless steel chromed rod
<b>1262.Ø.stroke.E</b>	Hexagon rod (from $\varnothing 12$ )
<b>1262.Ø.stroke.A.M</b>	Cushioned with magnetic piston
<b>1262.Ø.stroke.A.M.X</b>	Cushioned, magnetic piston and stainless steel chromed rod
<b>1262.Ø.stroke. . . T</b>	THERBAN® seals version

### Non rotating hexagonal rod



Similar overall dimensions as 1260 basic type, it differs because of the hexagonal rod (instead of circular) to avoid the rotation. It is particularly suited when it is used as a guide and support to the linked element. Not for use with high frequencies and long strokes. For which, whenever possible use front spring.

Ordering code	Description
<b>1260.Ø.stroke.E</b>	Non rotating hexagonal rod from ø 12
<b>1271.Ø.stroke.E</b>	Non rotating hexagonal rod front spring from ø 12 (max stroke 40 mm.)
<b>1272.Ø.stroke.E</b>	Non rotating hexagonal rod rear spring from ø 12 (max stroke 40 mm.)
<b>12- -Ø.stroke.E.M</b>	Non rotating hexagonal rod magnetic piston (from ø 12)
<b>12- -Ø.stroke.E.X</b>	Non rotating hexagonal stainless steel chromed rod

### Table of dimension

	8	10	12	16	20	25	32	40	50
Bore	8	10	12	16	20	25	32	40	50
AM (-0,2)	12	12	16	16	20	22	20	25	25
BE	M12x1,25	M12x1,25	M16x1,5	M16x1,5	M22x1,5	M22x1,5	M30x1,5	M40x1,5	M40x1,5
CD (H 9)	4	4	6	6	8	8	12	14	14
D (-0,3)	16	17	19	24	28	33	40	48	58
EE	M5	M5	M5	M5	G 1/8"	G 1/8"	G 1/8"	G 1/4"	G 1/4"
ES	/	/	6	6	8	10	12	12	12
EW (d 13)	8	8	12	12	16	16	26	30	30
KK (6 g)	M4x0,7	M4x0,7	M6x1	M6x1	M8x1,25	M10x1,25	M10x1,25	M12x1,75	M12x1,75
KV	17	17	22	22	30	30	42	52	52
KW	5,5	5,5	6	6	7	7	8	9	9
KX	7	7	10	10	13	17	17	19	19
KY	3	3	4	4	5	6	6	7	7
L	6	6	9	9	12	13	13	16	16
L1 (± 1) *	85	85	105	111	130	141	139	164	167
L2	9	9	14	13	15	15	14	16	16
L3	11	11	17	17	18	22	22	25	25
L4	10	10	9,5	10,5	15	15	15	18	18
L5 (± 1) *	46	46	50	56	68	69	69	79	82
L6 (± 1) *	48	48	52	58	70,5	71,5	71,5	82	85
L7	2	2	2	2	2,5	2,5	2,5	3	3
L8 (± 1) *	64	64	74	80	94,5	99,5	99,5	117	120
L9 (± 1,2) *	78	78	94	100	116	125	125	149	152
L10 (± 1) *	35	35	40	45	52	53	53	60	63
MM (f 7)	4	4	6	6	8	10	12	14	14
MR (min)	12	12	16	16	18	19	22	28	28
WF (± 1,2)	16	16	22	22	24	28	28	35	35
XC (± 1) *	64	64	75	82	95	104	105	123	126
Y (± 1,2)	21,5	21,5	27	27,5	32	36	36	44,5	44,5

STROKE TOLERANCE: until stroke 100 mm - 1,5, beyond + 2 mm.

Weight	stroke 0	55	60	80	100	175	240	365	610	790
gr.	every 10 mm.	6	7	5	5	8	11	15	19	21

#### Variations of the versions:

Without rear eye version

Weight	stroke 0	50	55	75	95	170	230	345	570	750
gr.	every 10 mm.	6	7	5	5	8	11	15	19	21

Push/pull rod version

Weight	stroke 0	55	60	95	120	220	310	450	760	950
gr.	every 10 mm	7	8	7	7	12	17	24	31	33

Hexagonal rod version

Weight	stroke 0	/	/	85	105	180	250	370	590	760
Gr.	every 10 mm	/	/	5	6	8	12	16	17	19

(\*) These dimensions increase of 10 mm for microcylinders equipped with magnetic piston and spring return, and of 9 mm for microcylinders with 10 mm diameter magnetic piston