Series Ecolight

Construction characteristics

Piston rod bushings	spheroid bronze on steel band with P.T.F.E. coat
Barrel	anodised aluminium alloy
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals **V** version: FPM **P** version: PUR **Q** version: NBR and PUR with plastic rod scraper with high wear resistance **R** version: PUR with metallic rod scraper **L** version: special PUR
Pistons	Ø32 ... Ø100 acetal resin, aluminium on request Ø125 ... Ø200 aluminium V, Q, R, L Version: aluminium
Piston rod	C43 chromed steel or stainless steel
End caps	die-casting aluminium
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous) **L version** (for low temperature): dried air, guarantee a dew point lower than the minimum operating temperature
Pressure	max 10 bar
Working temperature	-5°C ... +70°C with standard seals -30 °C ... +80 °C with PUR seals (**P** version) -5 °C ... +80 °C with FPM seals for 1390 and 1391 series (magnetic piston) (**V** version) -5 °C ... +150 °C with FPM seals for 1392 series (Non magnetic rod) (**V** Version) -20°C ... +80°C (**Q** Version) -10 °C ... +80 °C (**R** Version) -50 °C ... +80 °C (**L** Version)

Bore	Ø	32	40	50	63	80	100	125	160	200
Cushioning lenght	mm	27	31	31	37	40	44	44	50	55
Cushioning lenght, version with aluminum piston	mm	20	20	22	22	32	32	44	50	55

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

VERSIONS WITH ADDITIONAL ROD SCRAPER

Version with plastic rod scraper (Q)
The pneumatic seal is manufactured using a special NBR seal material, with the rod scraper that comes in contact with the external environment made of a plastic material with a high wear resistance. The geometric shape with its excellent scraping capacity guarantees additional protection of the piston rod and nose seal against the impurities, liquids, water, and debris.
Version with metallic rod scraper (R)
The pneumatic seal is manufactured using a special FPM seal material with its own scraping lip with the additional rod scraper that comes into contact with the external environment made of metal. This combination of scraping lip and metal rod scraper enable these actuators to be used in particularly extreme environments.
Here are some examples:
Aluminum foundries: To remove the residues of alumina or fluorine compounds that are deposited on the piston rod during the preparation phase of aluminum casting.
Automotive: To prevent debris which has collected on the piston rod damaging the nose seal during operation especially waste produced during the welding process.
Industrial ovens: To eliminate cement powders or those produced during the manufacture of bricks/tiles Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.
Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.
Low temperature version (L): The special seals compound allows the use of the cylinders up to a temperature of -50°C. The rod scraper seal is equipped with a metallic scraper which removes ice crystals which might form at minus temperature
Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm
from 150 to 500, every 50 mm
from 500 to 1000, every 100 mm
On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

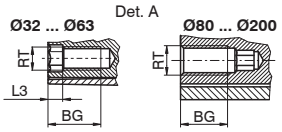
Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0
125-160-200	up to 500 mm	+4 0
	over 500 up to 1000	+5 0

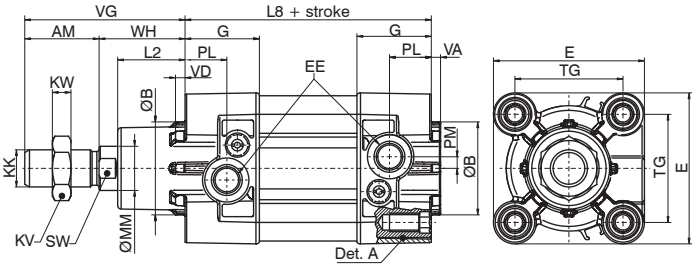
Basic version "01"

Coding:13Ⓥ.Ø.stroke.01Ⓣ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)

This is the configuration representing the basic cylinder according to ISO–VDMA standards. It can be directly anchored on machine parts using the four threads on the end cap screws. For other applications see "Cylinder section" on the General Catalogue, where different types of attachments are shown.

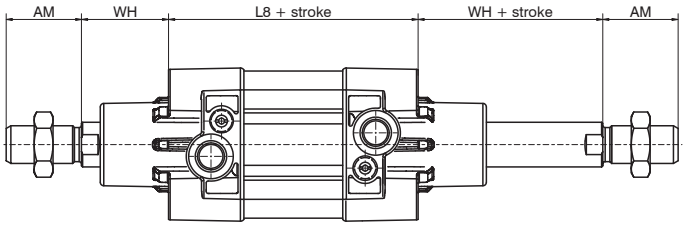




Through rod cylinder version "02"

Coding: 13Ⓥ.Ø.stroke.02Ⓣ

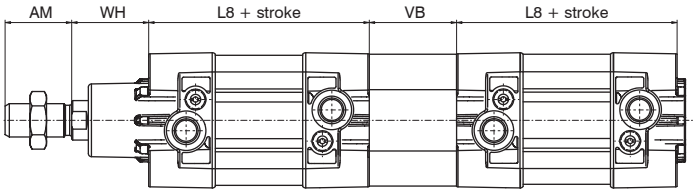
Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



Tandem push with a common rods “G”

Coding: 13Ⓥ.Ø.stroke.GⓉ

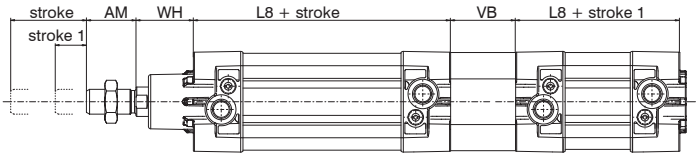
Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



Tandem push with independent rods”F”

Coding: 13Ⓥ.Ø.stroke.stroke1.FⓉ

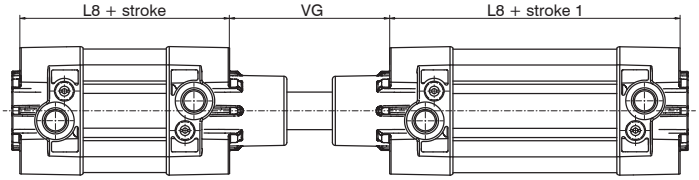
Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



Opposed tandem with common rod ”D”

Coding: 13Ⓥ.Ø.stroke.stroke1.DⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



Tandem with opposed rods "E"

Coding: 13Ⓥ.Ø.stroke.stroke1.EⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)

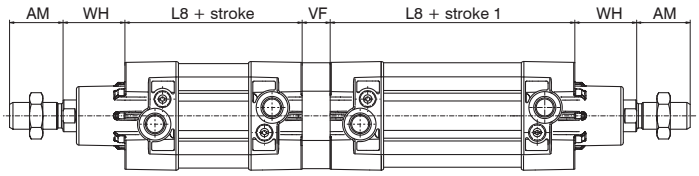
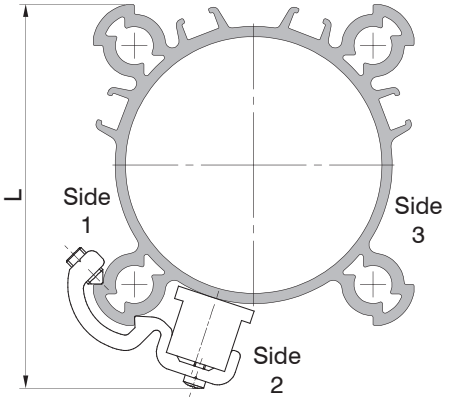


Table of dimensions

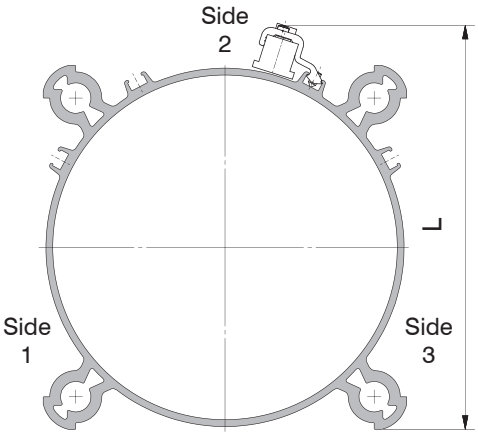
Bore		32	40	50	63	80	100	125	160	200
AM		22	24	32	32	40	40	54	72	72
B (d 11)		30	35	40	45	45	55	60	65	75
BG		16	16	18	18	16	16	21	25	25
E		47	54	65	76	95	113	138	180	216
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
G		29.5	33	32	36	38.5	41.5	48	49	49
KK		M10X1.25	M12X1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
KV		17	19	24	24	30	30	41	55	55
KW		6	7	8	8	9	9	12	18	18
L2		19	22	29	29	35	36	45	50	60
L3		4	4	5	5	/	/	/	/	/
L8		94	105	106	121	128	138	160	180	180
MM		12	16	20	20	25	25	32	40	40
PL		13	16	18	18	16	18	25	26	25
PM		3	4	5	4.5	2.5	6	8	11	11
RT		M6	M6	M8	M8	M10	M10	M12	M16	M16
SW		10	13	17	17	22	22	27	36	36
TG		32.5	38	46.5	56,5	72	89	110	140	175
VA		4	4	4	4	4	4	6	6	6
VB		33	41	51	51	65	71	75	70	75
VD		4	4	4	4	4	4	6	6	6
VF		12	12	16	16	20	20	25	30	30
VG		48	54	69	69	86	91	119	152	167
WH		26	30	37	37	46	51	65	80	95
Weight g	Stroke 0	460	650	1030	1360	2180	2890	5700	11200	14900
	every 10 mm	23	32	45	49	75	81	130	195	245

On the ECOLIGHT series it is possible to use three sensor types, according to bore, as indicated below:

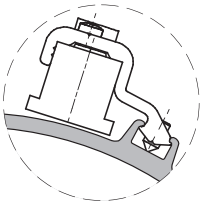
Sensors code **1500._**
RS._
HS._



Ø32 ... Ø100 the sensor can be fixed on the three sides as indicated in the drawing, by using suitable bracket (except for Ø32 on side 2)



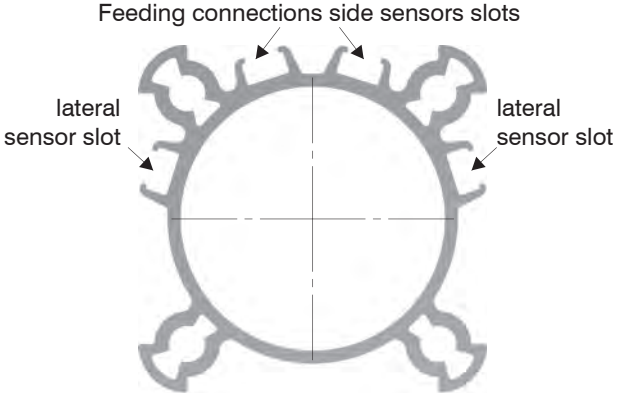
Ø125 ... Ø200 the sensor can be fixed on the three sides as indicated in the drawing, by using suitable bracket



Code	Bore	L
1390.A	Ø32	58
	Ø40	65
1390.B	Ø50	75
	Ø63	86
1390.C	Ø80	105
	Ø100	122
1390.D	Ø125	150
	Ø160	190
	Ø200	225

Sensors code **1580._**
MRS._
MHS._

Feeding connections side sensors slots



Sensors code **1590._**
LRS._
LHS._

1590 series sensor only

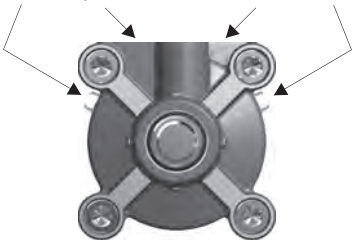
1580 and 1590 series sensors

1580 and 1590 series sensors

Ø32 ... Ø63

CYLINDERS - BORE SIZES Ø32 ... Ø63
The two slots on connection side are plugged, therefore only sensor 1590 can be used. Suiable for top housing and once placed by means of is screw,it can be fixed in desired position.

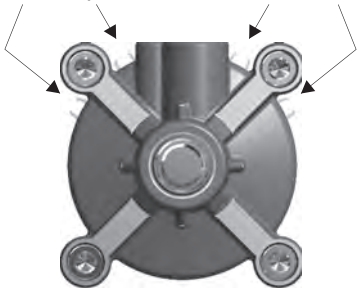
1580 and 1590 series sensors



Ø80

CYLINDERS - BORE SIZES Ø80
The two top housing can be accessed from the front of the unit, once housing can be accessed from the front end cap and opposite housing from the rear end cap. It is therefore possible to use both type of sensor: 1580-1590.

1580 and 1590 series sensors



Ø100 ... Ø200

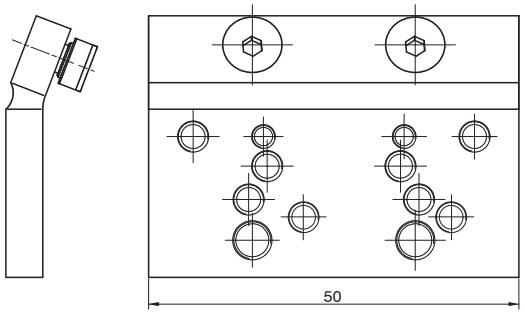
CYLINDERS - BORE SIZES Ø100 ... Ø200
All four housings can be accessed from the front of the unit. It is therefore possible to use both type of sensors: 1580-1590.

Support for solenoid valves

Coding: 1390.Ⓣ

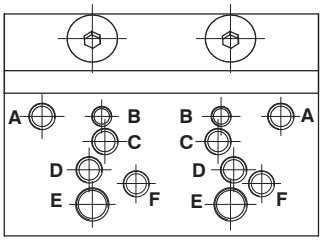
	SIZE
Ⓣ	**25** = Ø32
	26 = Ø40
	27 = Ø50
	28 = Ø63
	29 = Ø80
	30 = Ø100

Attention: do not use ISO distributor for base mounting



Fixing holes for valves series:

A = 488 / 484
B = 2400
C = T488
D = 2600
E = T424
F = 888_



This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Series Ecolight - with protective bellows

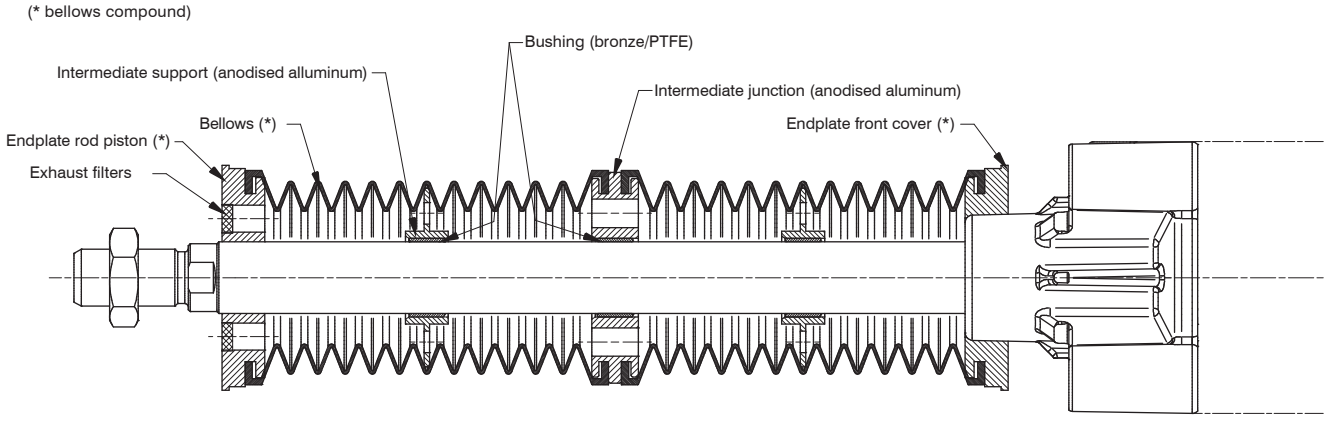
The modular bellows has the function of protecting the piston rod and piston rod nose seal on the Pneumax ECOLIGHT' cylinder range from Ø32 to Ø100 to a maximum stroke length of 1 mtr (all versions excluding cylinders fitted with the Q and R scraper seal).
It is constructed by mounting the bellows in series fixed with end plates mounted on the piston rod and front end cap.
There is also a guide washer with bushing (Sintered bronze/PTFE) placed in the middle of the bellows and guided by the piston rod to prevent the bellows sliding on the rod and to keep the orientation in line with the cylinder.
The bellows can be constructed from three different materials depending on the temperature, application or the possibility of any substance coming into contact with the cylinder.
During operation the bellows extend and retract which means the air contained within the bellows needs to be controlled, this is achieved by;
- NON CONVEYED: a series of breathers/filters on the end plate fitted to the piston rod.
- CONVEYED: a threaded connection on the end cover fitted to the cylinders front end cap.

Assembly is simple and requires a cylinder with extended rod (see ordering codes)

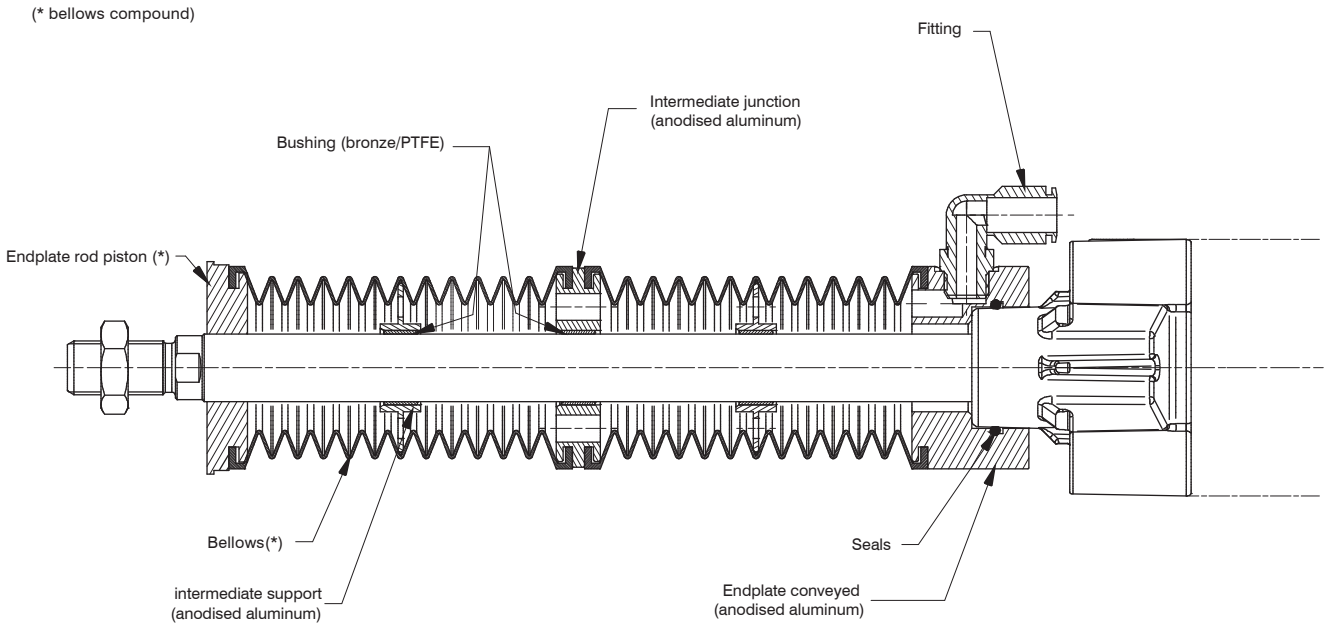
Are available:
-cylinder with bellows
-kit bellows (degrease the surface of the front cover and the piston rod before mounting the bellows terminals by interference).

Construction characteristics

Version with bellows exhaust NOT CONVEYED



Version with bellows exhaust CONVEYED



Notice: with cylinders Ø32 ... 63, use fitting G1/4 tube Ø10 and Ø12
with cylinders Ø80 – 100, use fitting G3/8 tube Ø12 and Ø14

Operational characteristics

Maximum Speed admissible	1m/sec
Maximum stroke	Ø32 ... Ø63: 980mm – Ø80 ... Ø100: 1140mm
Assembly	endplates for interference with piston rod and front cover (in the conveyed exhaust version, endplate front cover fixed with grub screws)
cylinder orientation	unconcerned
EPDM (black color)	Limit temperatures of using: -40°C/+110°C Ideal for outdoor uses and water applications, Excellent resistance to atmospheric agents, ozone, direct sunlight, water and steam, good resistance to acids and oxygenated solvents, high resistance to permanent deformations, low resistance to oils, mineral greases and hydrocarbons contact.
NBR (black color)	Limit temperatures of using: -40°C/+130°C Application include: aerospace, automotive, high temperature, gas and vaccum application, Not adapted for external using, High resistance to oils, grease, hydrocarbons, water and alcohol, good resistance to air and gas impermeability.
SILICONE (orange color)	Limit temperatures of using: -60°C / +200°C ideal for applications: food, clean, high temperature, atmospheric agents (ozone, water), Maintenance of flexibility even at low temperatures, good elasticity, excellent electro-insulating characteristics, low resistance to oils, mineral greases and hydrocarbons contact, not recommended for contact with ketones or concentrated acids, benzene, High gas pemeability.

The temperatures indicated above refer to the material of the bellows. Therefore, the operating temperature of the assembled bellows + cylinder kit will correspond to the minimum values of the temperatures of the two components, ie those of the cylinders.

Order codes

Cylinder complete with bellows

_ _ . _ . _ _ _ _ . S . _ _ . _ . _ . _

Series cylinder	Bore cylinder	Cylinder stroke	Cylinder seals	Cylinder version	Compounds bellows	Bellows exhaust
FA= 1390	**A**= Ø32	Maximum stroke Ø32 ... Ø63: 980 mm Ø80 ... Ø100: 1140 mm (ATTENTION: for the number of bellows, see the **KIT BELLOWS** order codes)	**0N**= NBR seals	**1**= BASIC version	**N**= NBR	**0**= not conveyed
FB= 1391	**B**= Ø40		**0P**= PUR seals	**2**= THROUGH ROD CYLINDER version	**E**= EPDM	**1**= conveyed
FC= 1392	**C**= Ø50		**0V**=FPM seals for high temperatures		**S**= SILICONE	
	D= Ø63		**0L**=seals for low temperatures			
	E= Ø80		**0K**= NBR seals Aluminum piston			
	F= Ø100		**PK**=PUR seals Aluminum piston			

Kit bellows (without cylinder)

FA . _ . _ _ _ _ . S . 0 . 0 . _ . _

Cylinder bore	Cylinder stroke		Bellows compound	Bellows exhaust
	cylinders Ø32 ... Ø63	cylinders Ø80 ... Ø100		
A= Ø32	**0001**= from 0 to 240mm (n° 1 bellows)	**0001**= from 0 to 280mm (n° 1 bellows)	**N**= NBR	**0**=not conveyed
B= Ø40	**0002**= from 241 to 485mm (n° 2 bellows)	**0002**= from 281 to 570mm (n° 2 bellows)	**E**= EPDM	**1**= conveyed
C= Ø50	**0003**= from 486 to 730mm (n° 3 bellows)	**0003**= from 571 to 855mm (n° 3 bellows)	**S**= SILICONE	
D= Ø63	**0004**= from 731 to 980mm (n° 4 bellows)	**0004**= from 856 to 1140mm (n° 4 bellows)		
E= Ø80				
F= Ø100				

Version with bellows exhaust NOT CONVEYED

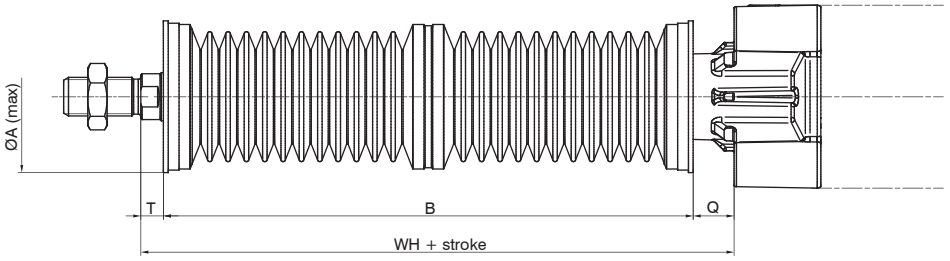


Table of dimensions

Bore	ØA	T	B + stroke				Q	WH + stroke			
Ø32	60	10	60	115	170	225	7	77	132	187	242
Ø40		10,5	60	115	170	225	10	80,5	135,5	190,5	245,5
Ø50		12	60	115	170	225	17	89	144	199	254
Ø63		12	60	115	170	225	17	89	144	199	254
strokes	/	/	0 ... 240	241 ... 485	486 ... 730	731... 980	/	0 ... 240	241 ... 485	486 ... 730	731 ... 980
Ø80	83	14	70	130	195	260	23	107	167	232	297
Ø100		14	70	130	195	260	24	108	168	233	298
strokes	/	/	0 ... 280	281 ... 570	271 ... 855	856 ... 1140	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140

Version with bellows exhaust CONVEYED

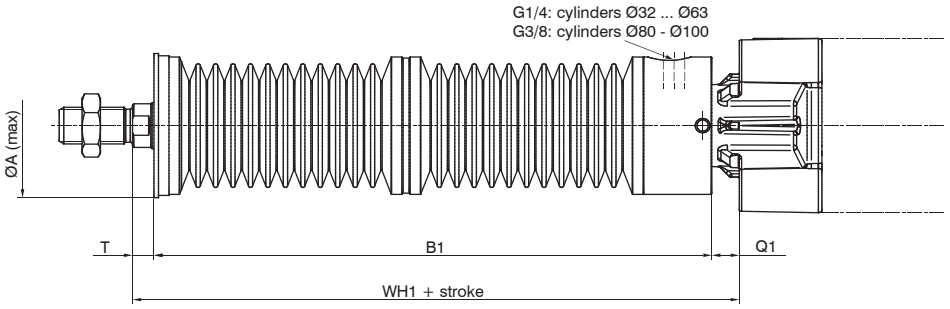


Table of dimensions

Bore	ØA	T	B1 + stroke				Q1	WH1 + stroke			
Ø32	60	10	75	130	185	240	10	95	150	205	260
Ø40		10,5	75	130	185	240	13	98,5	153,5	208,5	263,5
Ø50		12	83	138	193	248	12	107	162	217	272
Ø63		12	83	138	193	248	12	107	162	217	272
strokes	/	/	0 ... 240	241 ... 485	286 ... 730	731 ... 980	/	0 ... 240	241 ... 485	486 ... 730	731 ... 980
Ø80	83	14	94	154	219	284	18	126	186	251	316
Ø100		14	94	154	219	284	19	127	187	252	317
strokes	/	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140

Fixing device

All ISO 15552 series ECOLIGHT cylinder fixing device/accessories and sensors available in the general catalog can be used except to:

- front clevis
- front clevis and normal foot code, not available for Ø32 cylinders in the version with not conveyed exhaust bellows.

in case of cylinder complete of bellows, for the accessories assembly on the front cover is require to take off the bellows kit.
therefore, for the re-assembling, consider the dimension in preceding page about the overall dimensions.