



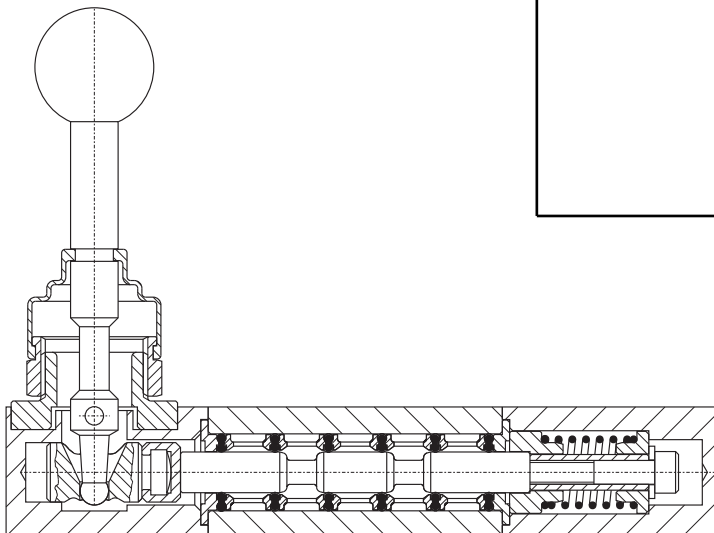
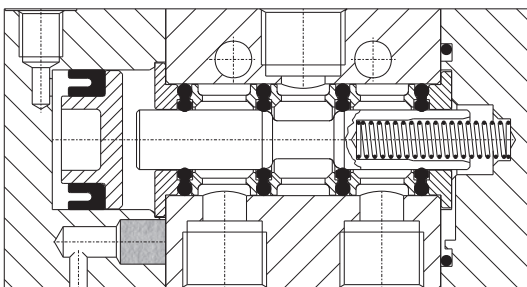
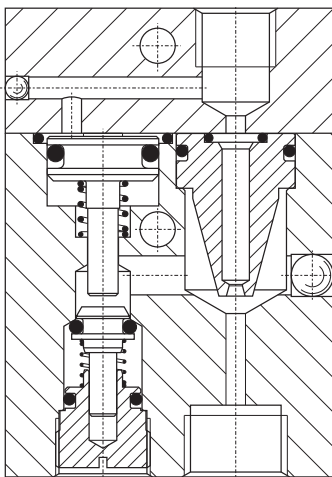
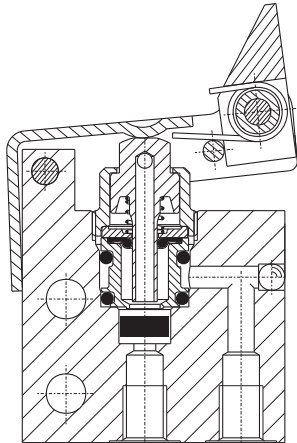
## **PNEUMATIC EQUIPMENT**

- The equipment and components which AZ Pneumatica manufactures are the result of thirty years experience in the field of compressed air distribution and control. The design and production techniques which are employed for the complete range of valves guarantee high reliability and performance that will satisfy all applications. Thanks to investment in the latest production techniques AZ Pneumatica can guarantee a high standard of quality and a flexible approach to adapt the product range to customer requirements.





	page
• <b>INFO</b>	
Technical information .....	13
• <b>CHAPTER I</b>	
Microvalves, spool valves .....	15
• <b>CHAPTER II</b>	
Standardized spool valves and solenoid valves .....	243
• <b>CHAPTER III</b>	
Ancillary valves and accessories .....	301
• <b>CHAPTER IV</b>	
Integrated elements .....	341
• <b>CHAPTER V</b>	
Vacuum generators .....	373
• <b>CHAPTER VI</b>	
Cylinders and accessories .....	383
• <b>CHAPTER VII</b>	
Air preparation units .....	539
• <b>ATEX</b>	
List of the certified products .....	657
• <b>INDEX</b>	
Product reference directories .....	668



- In-line or manifold mounted pneumatic valves (1/8" NPT, 1/4" NPT, 1/2" NPT)
- ISO 5599/1 size 1, 2, 3; VDMA and Namur specifications
- Integrated elements with control and regulation functions (1/8" NPT and 1/4" NPT)
- Special valves and custom built products are available on request

## Technical notes

- Materials: aluminium 11S, stainless steel, brass OT58, technopolymers; seals in NBR or viton
- Surface treatment: anodize and nickel plating
- Operating system: balanced spool or poppet
- Life expectation in standard conditions: 20 millions cycles
- Nominal flow rates: 30 to 4500 NI/min (0.03 to 4.76 Cv)
- Pneumatic functions: 2/2, 3/2 NC-NO; 5/2; 5/3 closed, open or pressurized centre position
- Actuation: mechanical, manual, pneumatic, solenoid
- Power consumption: 3W / 5VA with 10 mm, 15 mm, 22 mm, 30 mm coils
- Fluid: compressed air with or without lubrication - vacuum
- Threaded ports: M5, 1/8" NPT, 1/4" NPT, 3/8" NPT, 1/2" NPT"
- Push-in fittings: for  $\varnothing 4$  mm,  $\varnothing 6$  mm,  $\varnothing 8$  mm tube





	page
• Microvalves .....	16
• Mechanically actuated valves .....	37
• Manually actuated valves .....	48
• Actuators for panel mounting .....	56
• Pneumatically piloted valves (G1/8", G1/4") .....	81
• Pneumatically piloted G1/2" valves .....	84
• Pneumatic and electric foot pedals .....	86
• Solenoid valves and manifolds .....	92
• Solenoid valves on multiple sub-bases (22 mm) .....	109
• Coils and connectors 22 mm, 30 mm, explosion proof .....	113
• Solenoid actuated valves (G1/8", G1/4") .....	137
• Manifolds for spool valves .....	143
• Solenoid actuated G1/2" valves .....	149

- NC and NO poppet microvalves
- Installation in any position
- Threaded ports or push-in fittings for 5/32" or  $\phi 4$  mm tube
- Low actuating force
- Version with adaptor for panel mounting (with  $\phi 22$  mm hole)
- Special versions on request



## Materials

Body: aluminium 11S

Spring: stainless steel

Seals: NBR

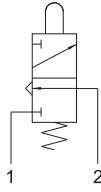
Cartridge: nicked brass

Internal parts: brass OT58

Nominal diameter	2.5 mm (0.1 in)
Nominal flow rate at 6 bar	100 NI/min (0.1 Cv)
Temperature range	max +60°C (140°F)
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Actuating force	6 N
Fluid	50 $\mu$ filtered, lubricated or non lubricated air

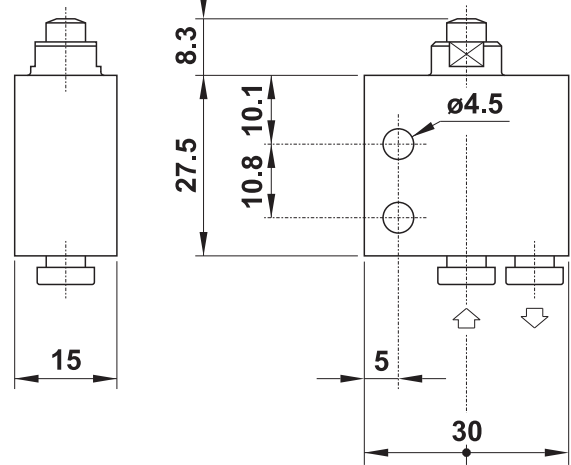
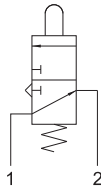
## 304 MA

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), tappet



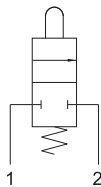
## 314 MA

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), tappet



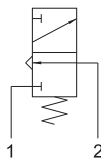
## 204 MA

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), tappet



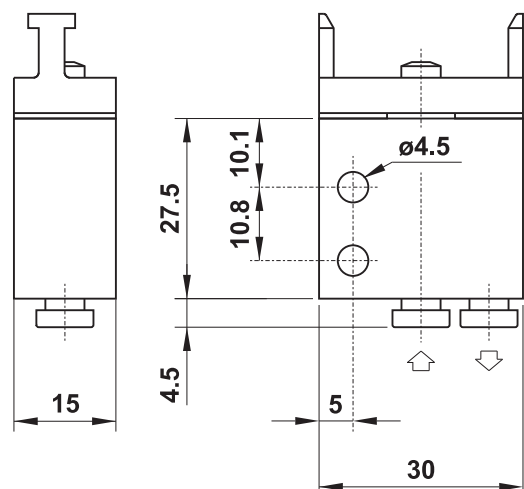
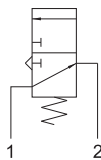
## 304 MB

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), actuator adaptor for panel mounting



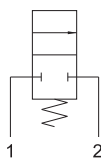
## 314 MB

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), actuator adaptor for panel mounting



## 204 MB

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), actuator adaptor for panel mounting

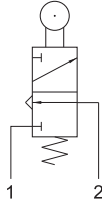






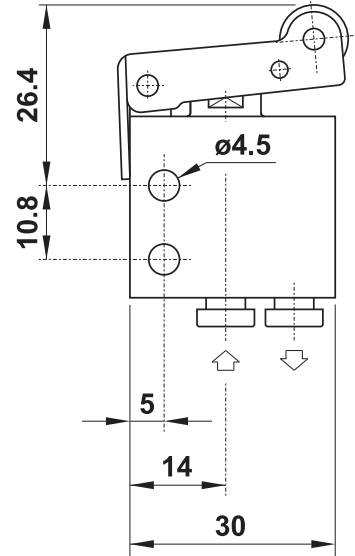
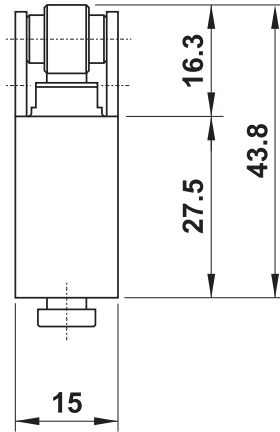
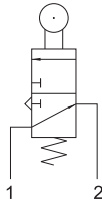
## 304 MR

3/2 N/C push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), roller lever



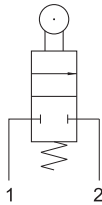
## 314 MR

3/2 N/O push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), roller lever



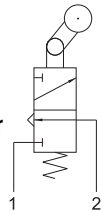
## 204 MR

2/2 N/C push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), roller lever



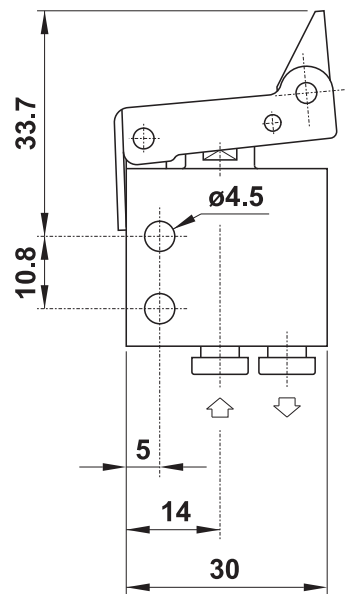
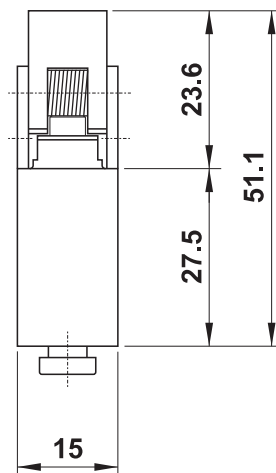
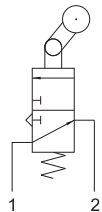
## 304 MS

3/2 N/C push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), uni-directional lever



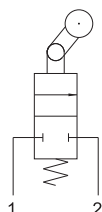
## 314 MS

3/2 N/O push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), uni-directional lever



## 204 MS

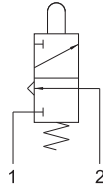
2/2 N/C push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom), uni-directional lever





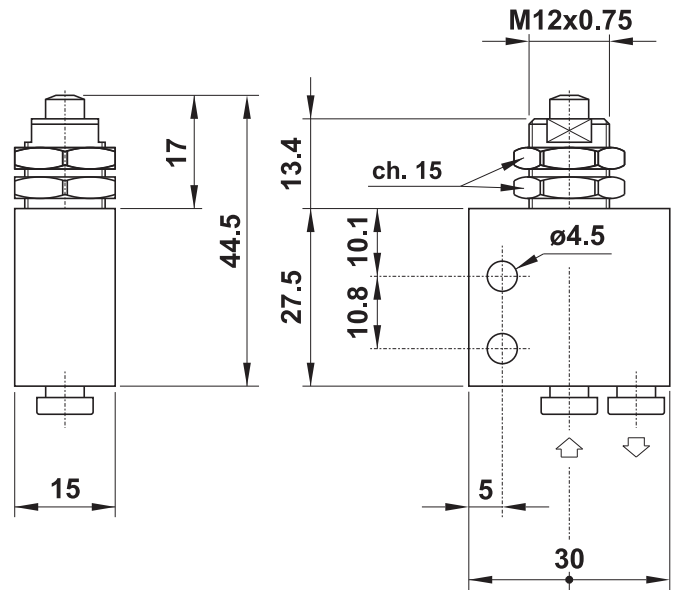
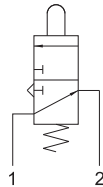
## 304 MV

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the bottom), panel mount tappet



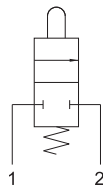
## 314 MV

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the bottom), panel mount tappet



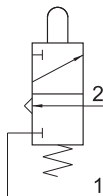
## 204 MV

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the bottom), panel mount tappet



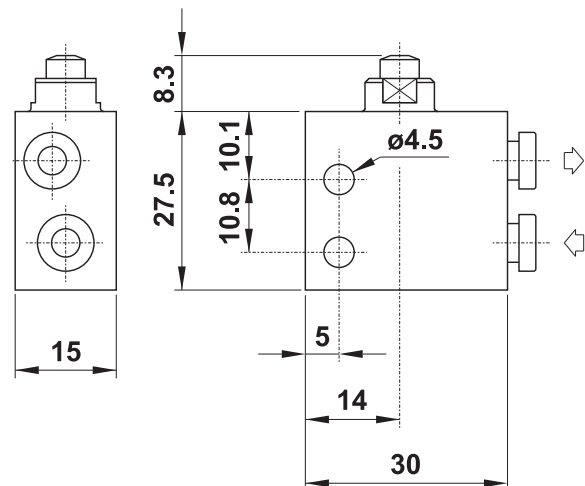
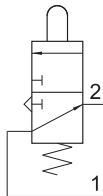
## 304 MA UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), tappet



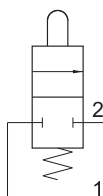
## 314 MA UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), tappet



## 204 MA UL

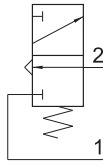
2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), tappet





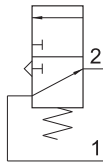
## 304 MB UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), actuator adaptor for panel mounting



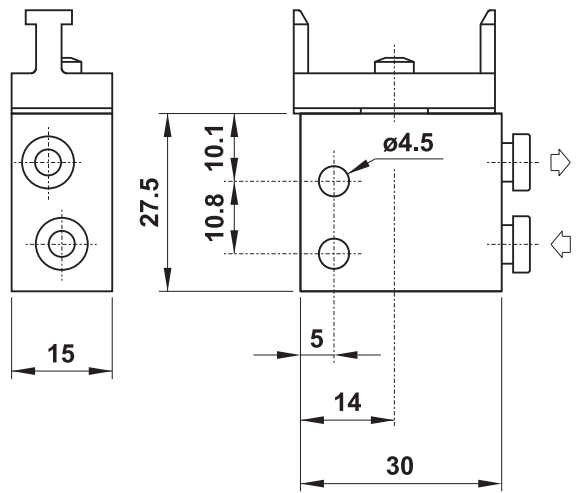
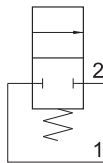
## 314 MB UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), actuator adaptor for panel mounting



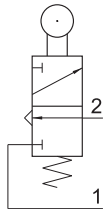
## 204 MB UL

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), actuator adaptor for panel mounting



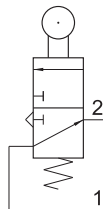
## 304 MR UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), roller lever



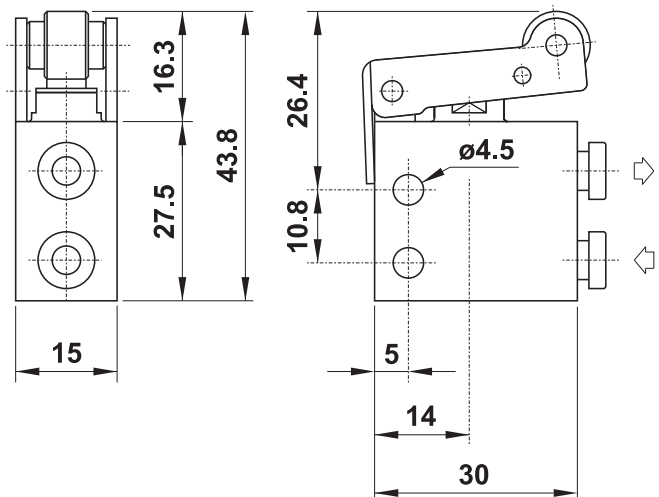
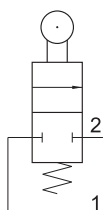
## 314 MR UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), roller lever



## 204 MR UL

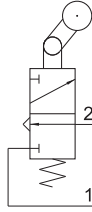
2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube  
(ports on the side), roller lever





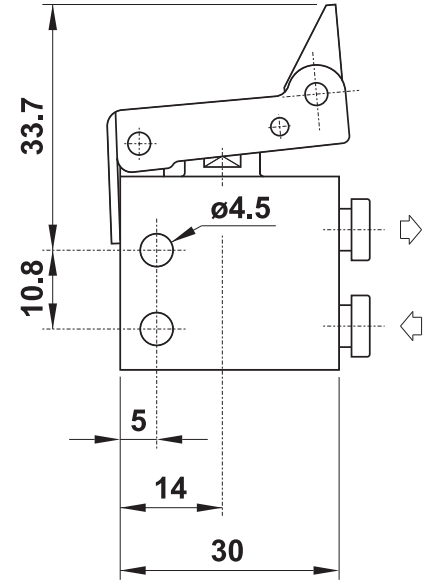
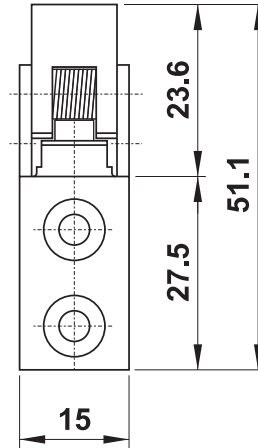
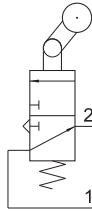
## 304 MS UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), uni-directional lever



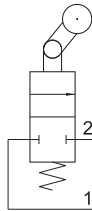
## 314 MS UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), uni-directional lever



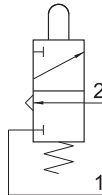
## 204 MS UL

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), uni-directional lever



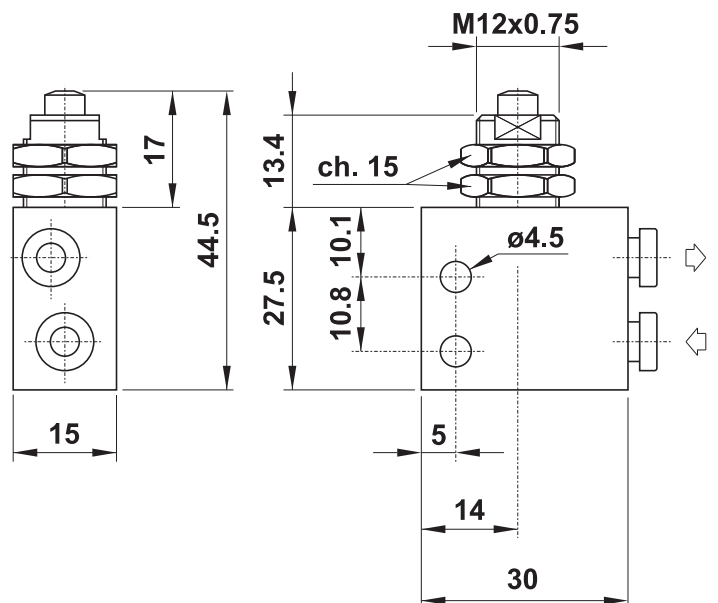
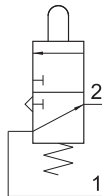
## 304 MV UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), panel mount tappet



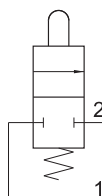
## 314 MV UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), panel mount tappet



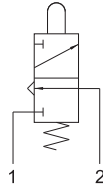
## 204 MV UL

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), panel mount tappet



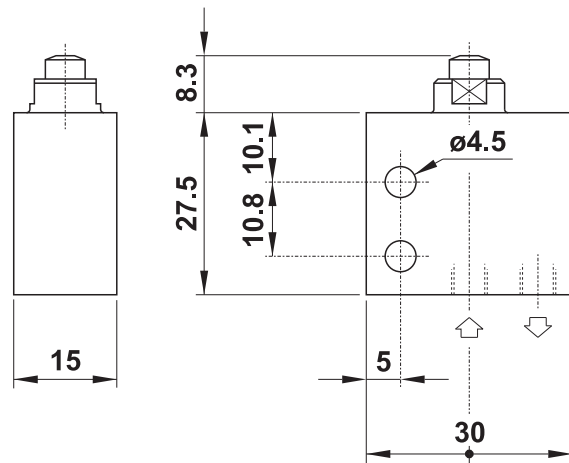
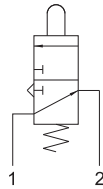
## 305 MA

3/2 N/C M5 threaded ports  
(on the bottom), tappet



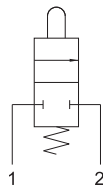
## 315 MA

3/2 N/O M5 threaded ports (on the bottom),  
tappet



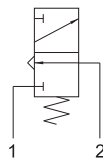
## 205 MA

2/2 N/C M5 threaded ports (on the bottom),  
tappet



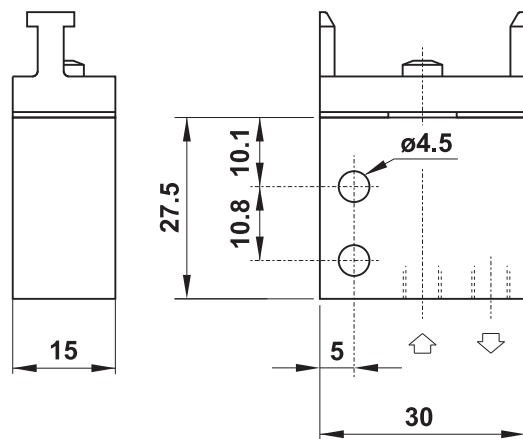
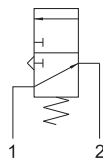
## 305 MB

3/2 N/C M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting



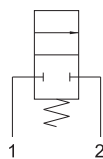
## 315 MB

3/2 N/O M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting



## 205 MB

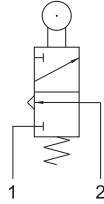
2/2 N/C M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting





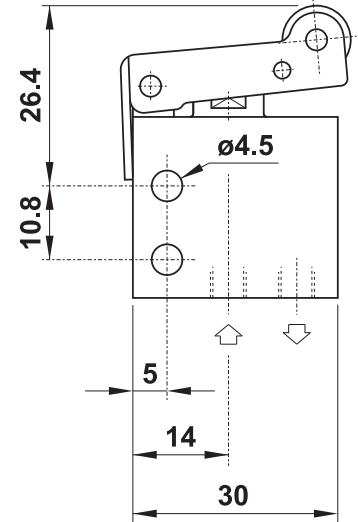
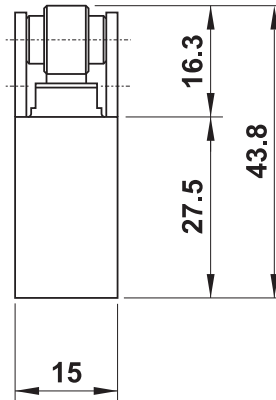
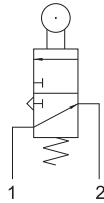
## 305 MR

3/2 N/C M5 threaded ports (on the bottom),  
roller lever



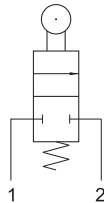
## 315 MR

3/2 N/O M5 threaded ports (on the bottom),  
roller lever



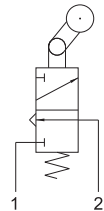
## 205 MR

2/2 N/C M5 threaded ports (on the bottom),  
roller lever



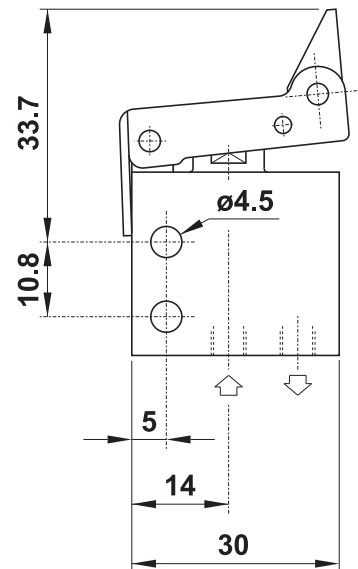
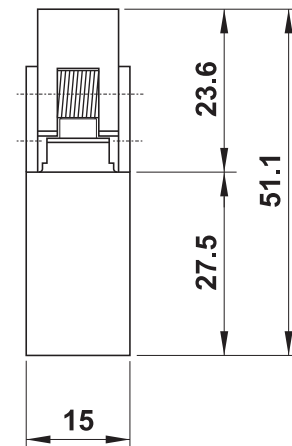
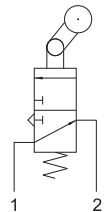
## 305 MS

3/2 N/C M5 threaded ports (on the bottom),  
uni-directional lever



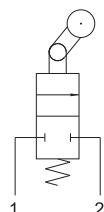
## 315 MS

3/2 N/O M5 threaded ports (on the bottom),  
uni-directional lever



## 205 MS

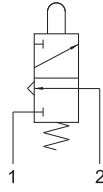
2/2 N/C M5 threaded ports (on the bottom),  
uni-directional lever





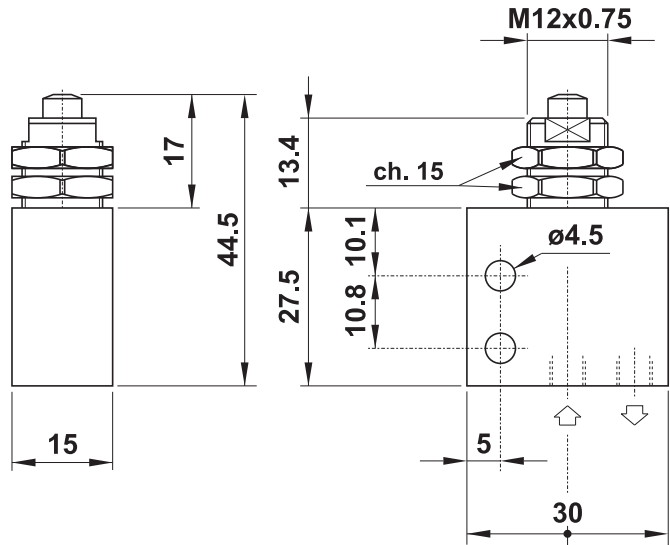
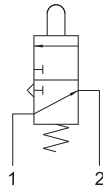
## 305 MV

3/2 N/C M5 threaded ports (on the bottom),  
panel mount tappet



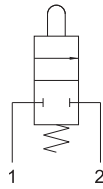
## 315 MV

3/2 N/O M5 threaded ports (on the bottom),  
panel mount tappet



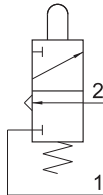
## 205 MV

2/2 N/C M5 threaded ports (on the bottom),  
panel mount tappet



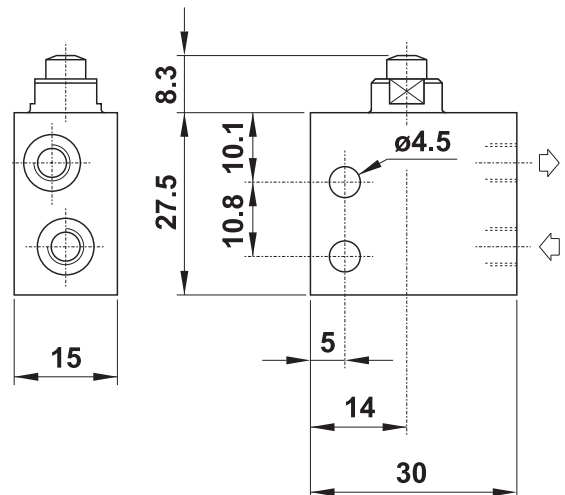
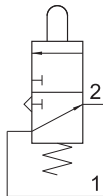
## 305 MA UL

3/2 N/C M5 threaded ports (on the side),  
tappet



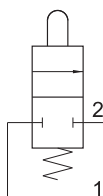
## 315 MA UL

3/2 N/O M5 threaded ports (on the side),  
tappet



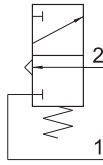
## 205 MA UL

2/2 N/C M5 threaded ports (on the side),  
tappet



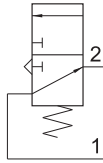
## 305 MB UL

3/2 N/C M5 threaded ports (on the side),  
actuator adaptor for panel mounting



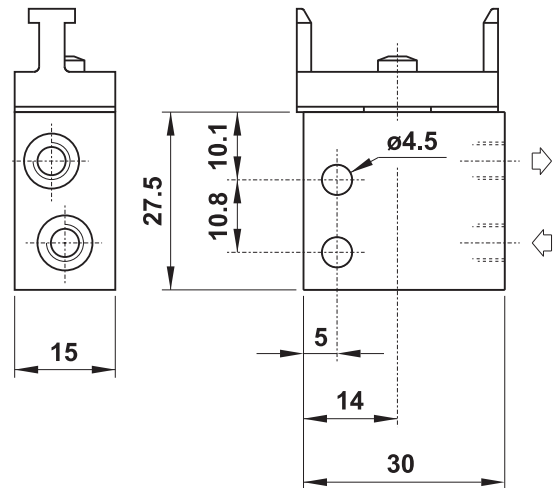
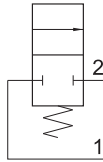
## 315 MB UL

3/2 N/O M5 threaded ports (on the side),  
actuator adaptor for panel mounting



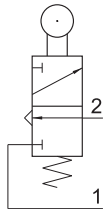
## 205 MB UL

2/2 N/C M5 threaded ports (on the side),  
actuator adaptor for panel mounting



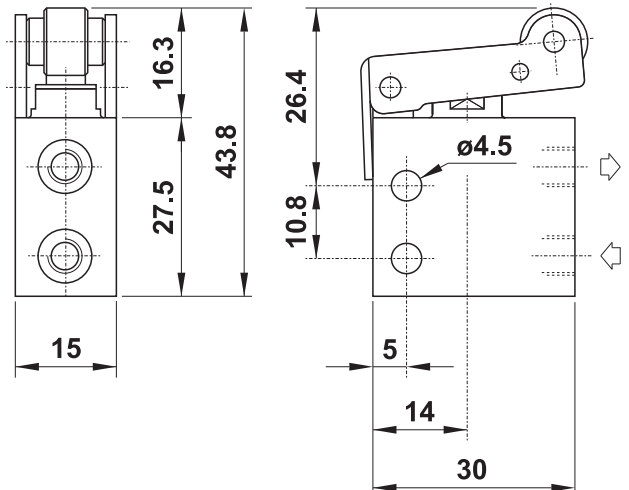
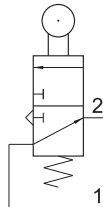
## 305 MR UL

3/2 N/C M5 threaded ports (on the side),  
roller lever



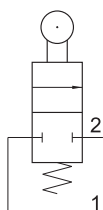
## 315 MR UL

3/2 N/O M5 threaded ports (on the side),  
roller lever



## 205 MR UL

2/2 N/C M5 threaded ports (on the side),  
roller lever

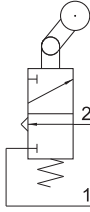






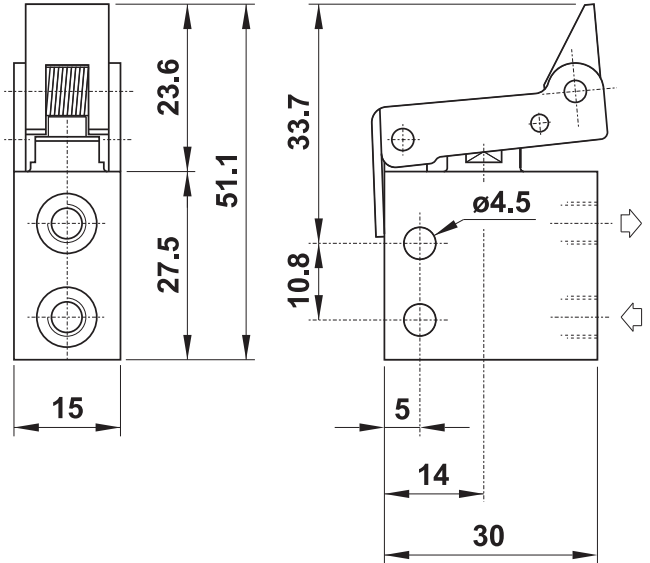
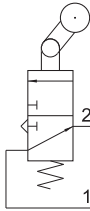
## 305 MS UL

3/2 N/C M5 threaded ports (on the side),  
uni-directional lever



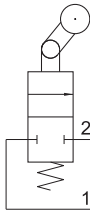
## 315 MS UL

3/2 N/O M5 threaded ports (on the side),  
uni-directional lever



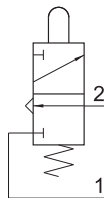
## 205 MS UL

2/2 N/C M5 threaded ports (on the side),  
uni-directional lever



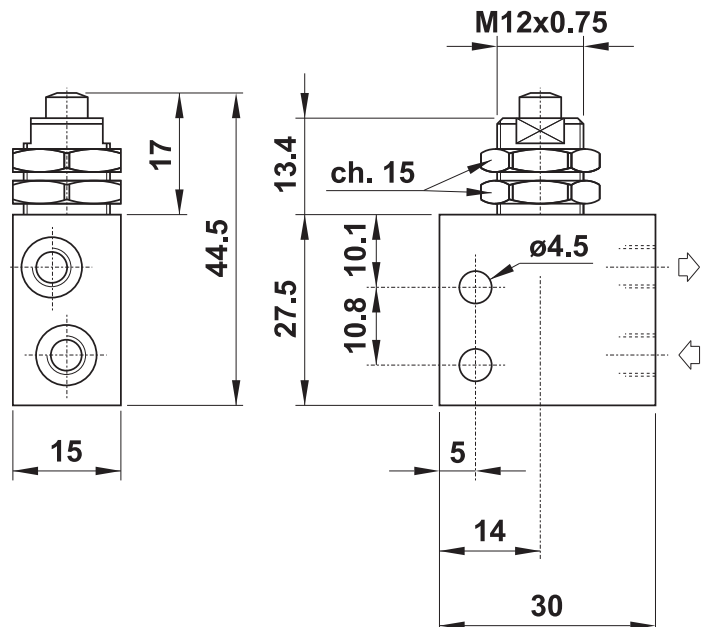
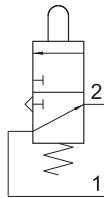
## 305 MV UL

3/2 N/C M5 threaded ports (on the side),  
panel mount tappet



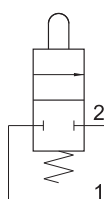
## 315 MV UL

3/2 N/O M5 threaded ports (on the side),  
panel mount tappet



## 205 MV UL

2/2 N/C M5 threaded ports (on the side),  
panel mount tappet

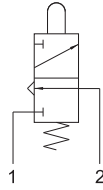


# Microvalves



## 304 MGx

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), push lever (4 colours - see explanation)



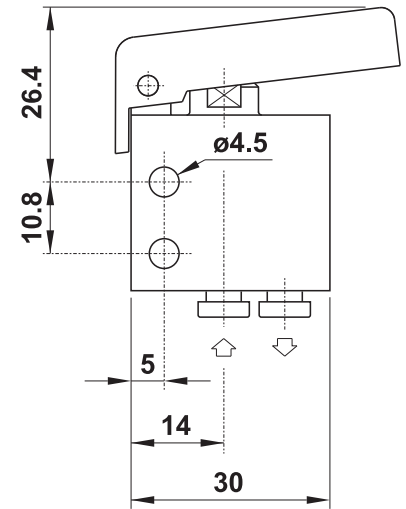
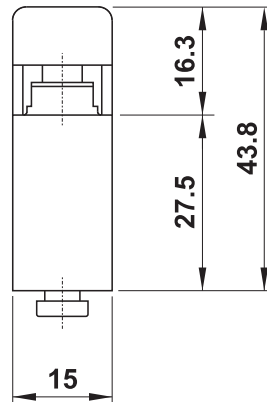
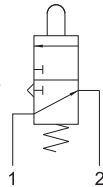
In the part number replace the letter "x" with the colour reference of the push lever.

RED	R
YELLOW	G
GREEN	V
BLACK	N



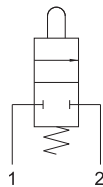
## 314 MGx

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), push lever (4 colours - see explanation)



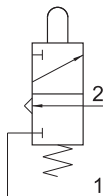
## 204 MGx

2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the bottom), push lever (4 colours - see explanation)



## 304 MGx UL

3/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), push lever (4 colours - see explanation)



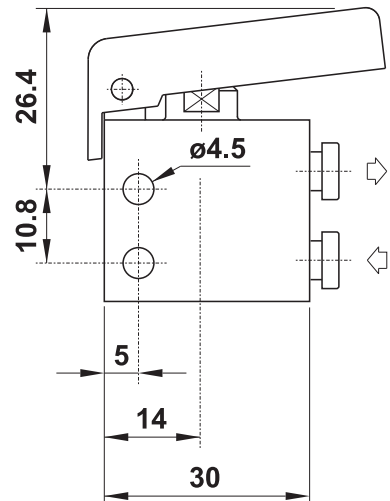
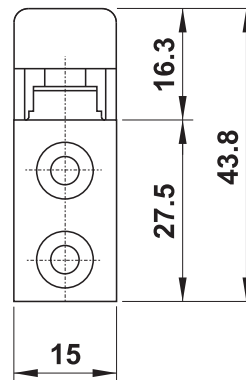
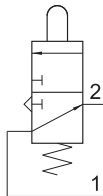
In the part number replace the letter "x" with the colour reference of the push lever.

RED	R
YELLOW	G
GREEN	V
BLACK	N



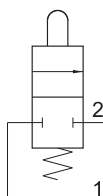
## 314 MGx UL

3/2 N/O push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), push lever (4 colours - see explanation)



## 204 MGx UL

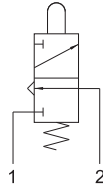
2/2 N/C push-in fittings for 5/32" or  $\phi 4$  mm tube (ports on the side), push lever (4 colours - see explanation)





## 305 MGx

3/2 N/C M5 threaded ports (on the bottom),  
push lever (4 colours - see explanation)



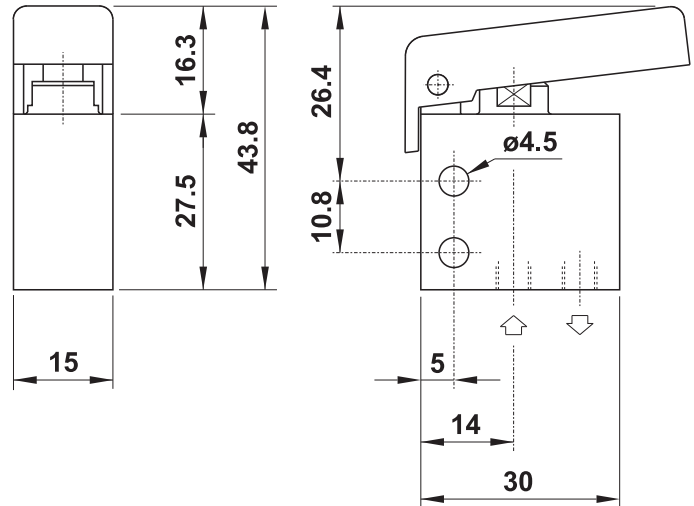
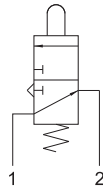
In the part number replace the letter  
"x" with the colour reference of the  
push lever.

RED	R
YELLOW	G
GREEN	V
BLACK	N



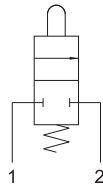
## 315 MGx

3/2 N/O M5 threaded ports (on the bottom),  
push lever (4 colours - see explanation)



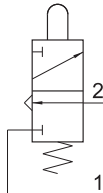
## 205 MGx

2/2 N/C M5 threaded ports (on the bottom),  
push lever (4 colours - see explanation)



## 305 MGx UL

3/2 N/C M5 threaded ports (on the side),  
push lever (4 colours - see explanation)



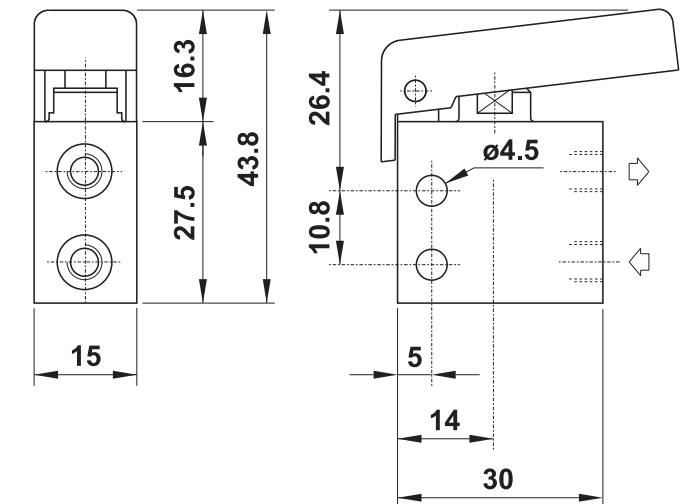
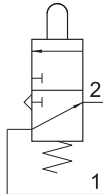
In the part number replace the letter  
"x" with the colour reference of the  
push lever.

RED	R
YELLOW	G
GREEN	V
BLACK	N



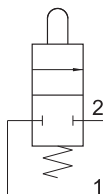
## 315 MGx UL

3/2 N/O M5 threaded ports (on the side),  
push lever (4 colours - see explanation)

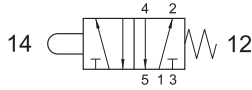


## 205 MGx UL

2/2 N/C M5 threaded ports (on the side),  
push lever (4 colours - see explanation)



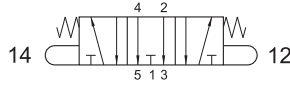
## 504 MB



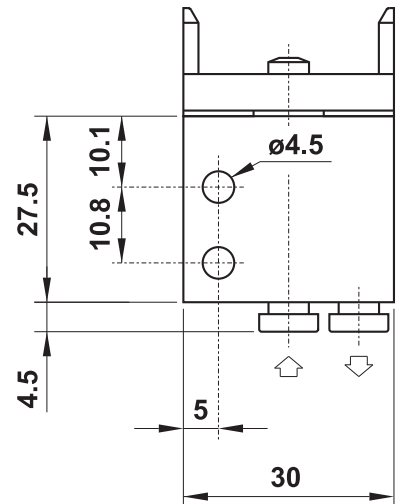
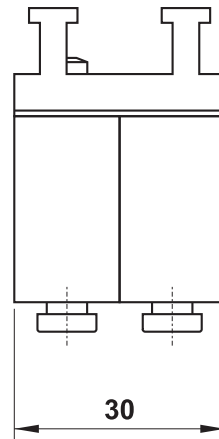
5/2 push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom),  
actuator adaptor for panel mounting



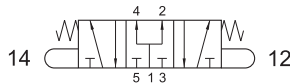
## 2.304 MB



5/3 open centers  
push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom),  
actuator adaptor for panel mounting

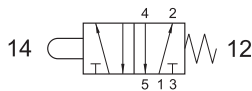


## 2.314 MB



5/3 pressurized centers  
push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the bottom),  
actuator adaptor for panel mounting

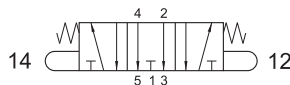
## 505 MB



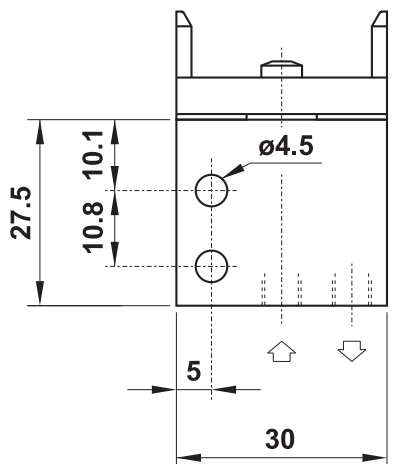
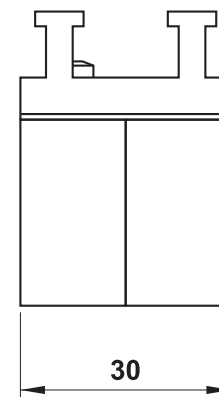
5/2 M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting



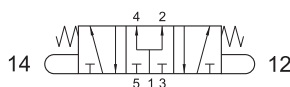
## 2.305 MB



5/3 open centers  
M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting



## 2.315 MB

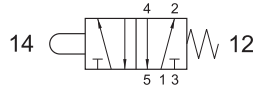


5/3 pressurized centers  
M5 threaded ports (on the bottom),  
actuator adaptor for panel mounting

# Microvalves



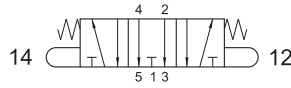
## 504 MB UL



5/2 push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the side),  
actuator adaptor for panel mounting

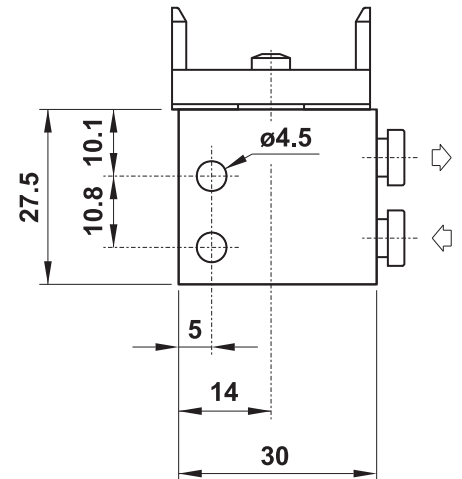
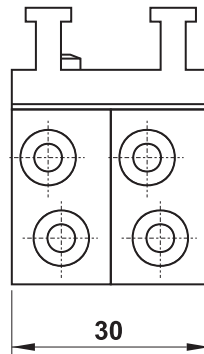


## 2.304 MB UL

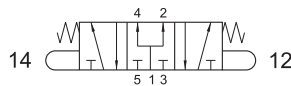


5/3 open centers

push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the side),  
actuator adaptor for panel mounting



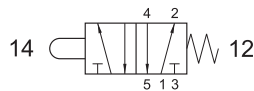
## 2.314 MB UL



5/3 pressurized centers

push-in fittings for 5/32" or  $\varnothing 4$  mm tube (ports on the side),  
actuator adaptor for panel mounting

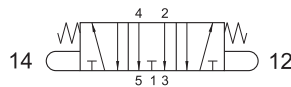
## 505 MB UL



5/2 threaded ports (on the side),  
actuator adaptor for panel mounting

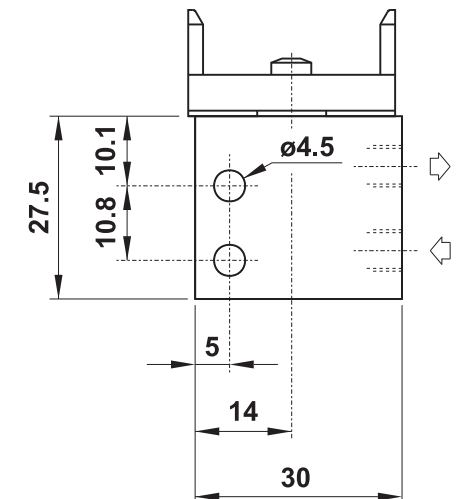
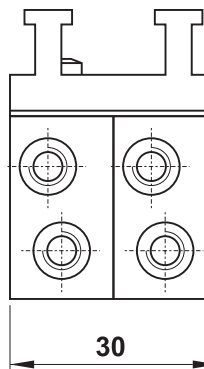


## 2.305 MB UL

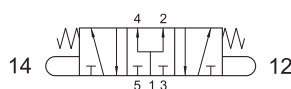


5/3 open centers

M5 threaded ports (on the side),  
actuator adaptor for panel mounting



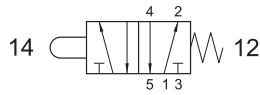
## 2.315 MB UL



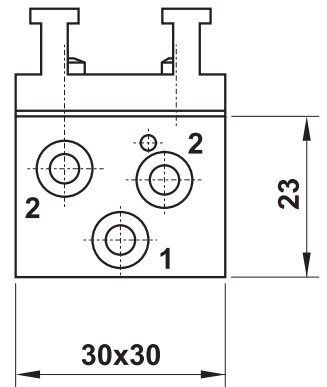
5/3 pressurized centers

M5 threaded ports (on the side),  
actuator adaptor for panel mounting

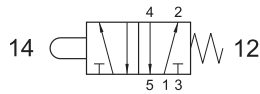
## 504 MB CU



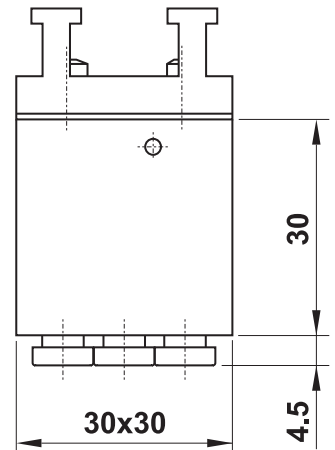
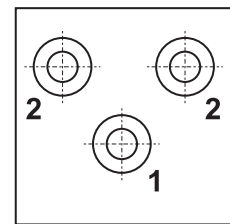
5/2 single valve body  
 push-in fittings for 5/32" or ø4 mm tube (ports on the side),  
 actuator adaptor for panel mounting



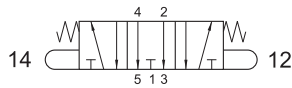
## 504 MB CU US



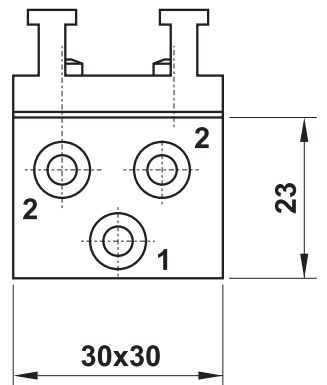
5/2 single valve body  
 push-in fittings for 5/32" or ø4 mm tube (ports on the bottom),  
 actuator adaptor for panel mounting



## 2.304 MB CU

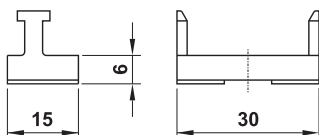


5/3 open centers, single valve body  
 push-in fittings for 5/32" or ø4 mm tube (ports on the side),  
 actuator adaptor for panel mounting



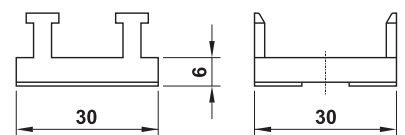
## 08.017.2

single adaptor for panel mounting actuator,  
 complete with fixing screws



## 08.015.2

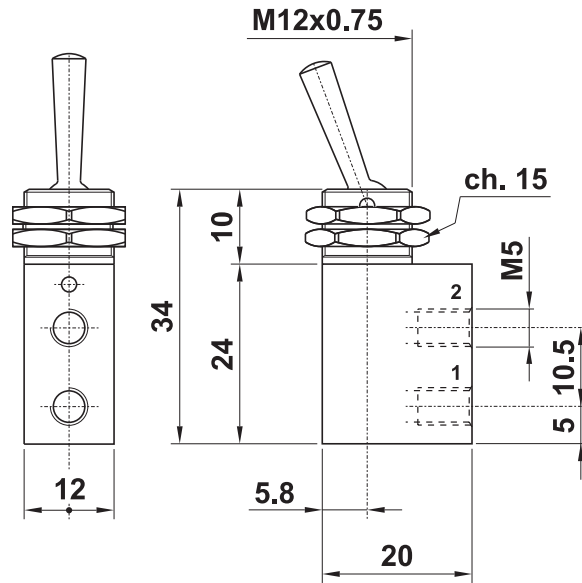
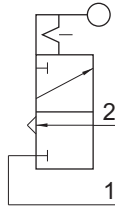
double adaptor for panel mounting actuator,  
 complete with fixing screws



## 305 LL - 03.011.4

3/2 NC M5 threaded ports  
 bi-stable lever  
 exhaust port without thread  
body material: nickel plated brass

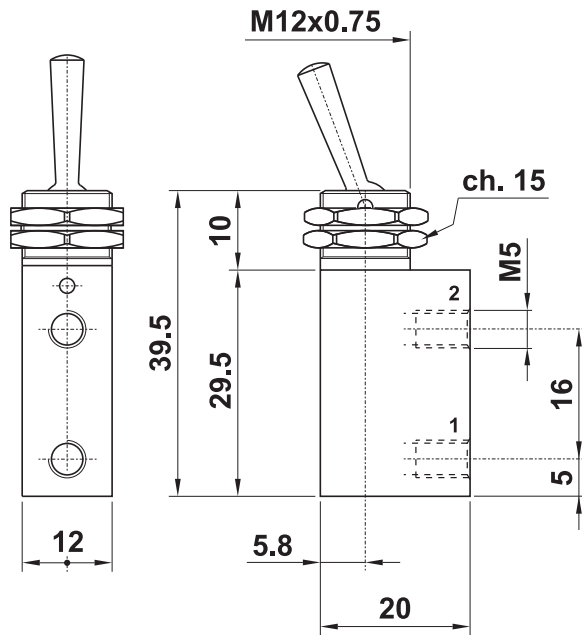
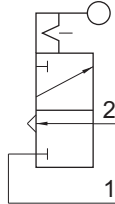
Operating pressure: 0 ... 10 bar (0 ... 145 PSI)



## 03.024.4

3/2 NC M5 threaded ports, longer valve body  
 bi-stable lever  
 exhaust port without thread  
body material: nickel plated brass

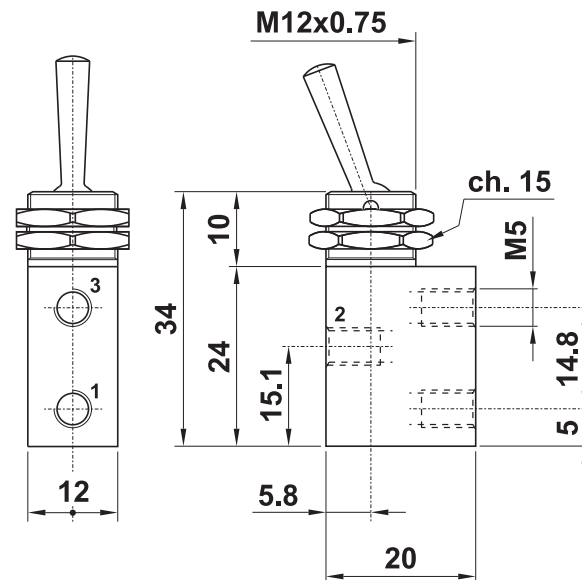
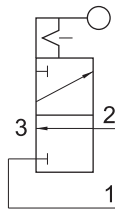
Operating pressure: 0 ... 10 bar (0 ... 145 PSI)



## 03.044.4

3/2 NC M5 threaded ports  
 bi-stable lever  
 exhaust port with thread M5  
body material: nickel plated brass

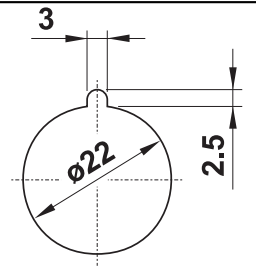
Operating pressure: 0 ... 10 bar (0 ... 145 PSI)



## Protected push button

code	standard colours
PR1/NRB	RED, BLACK and WHITE (supplied in kit)

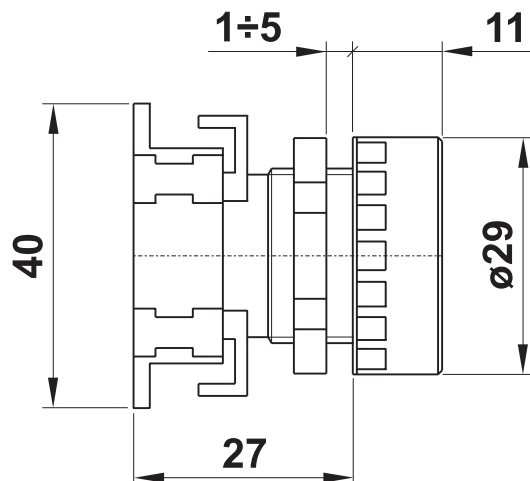
Panel mounting hole with antirotation feature



- The following colours can be ordered separately

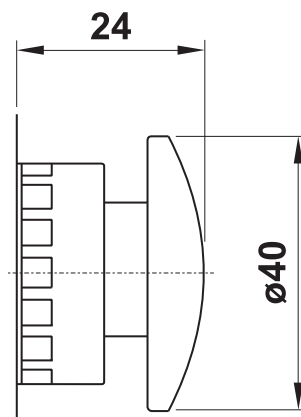
code	colour
DCV1	GREEN
DCG1	YELLOW
DCA1	LIGHT BLUE
DCB1	WHITE

code	colour
DCN1	BLACK
DCR1	RED



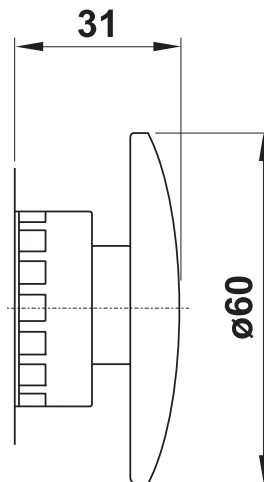
## ø40 mushroom

code	description	colour
PF2/40	axial mono-stable	RED
PF1/40	axial mono-stable	BLACK
PFB2/40	turn to unlock	RED



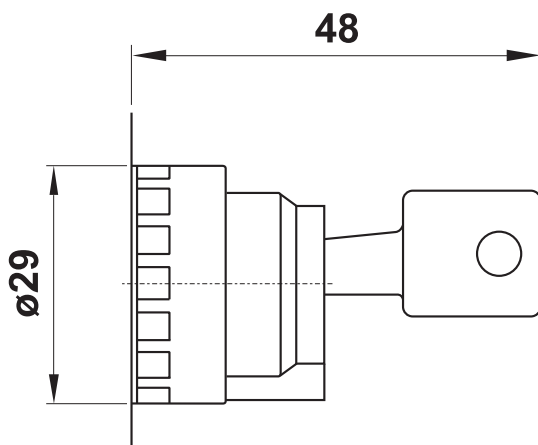


## ø60 palm



code	description	colour
PFBA2	multi-directional	RED
PFB2/60	turn to unlock	RED

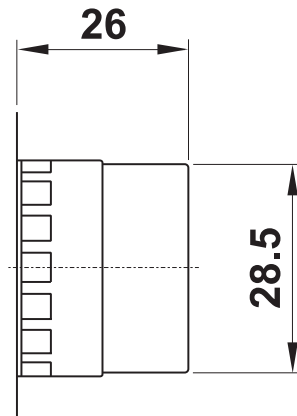
## Key selector



code	function	position to pull the key out
SSC/CD-V	0 1	only in central position
SSC/CD-Z	0 1	both positions
SSC/E-V	2 0 1	only in central position

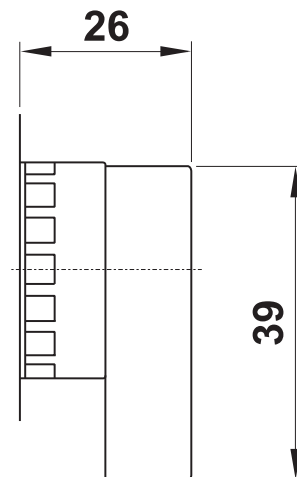
## Short lever selector

code	colour	function
SS1/CD	BLACK	0 1
SS1/CD-R	BLACK	0 ← 1
SS1/E	BLACK	2 0 1
SS1/E-RC	BLACK	2 → 0 ← 1



## Long lever selector

code	colour	function
SSP1/CD	BLACK	0 1
SSP1/CD/R	BLACK	0 ← 1
SSP1/E	BLACK	2 0 1
SSP1/E-RC	BLACK	2 → 0 ← 1



Material	High performance plastic material
Protection degree	IP 55
According to norms	EN 60947-5-1 VDE 0660 IEC 947-5
Temperature range	max +55°C (131°F)
Mechanical life time	500000 actuations

# Mechanically actuated valves



- 3/2-5/2 spool valves with 1/8" NPT threaded ports
- Installation in any position
- Comprehensive range of actuations, direct or servo-piloted
- Special versions on request



## Materials

Body: aluminium 11S

End cups: aluminium 11S

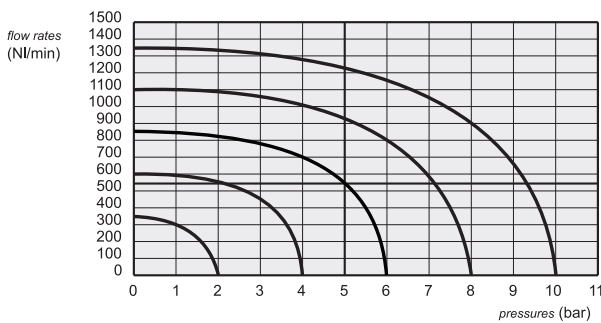
Springs: stainless steel

Seals: NBR

Spool: nickel plated aluminium

Internal parts: brass OT58

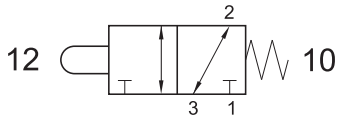
ATEX valves are only in aluminium.



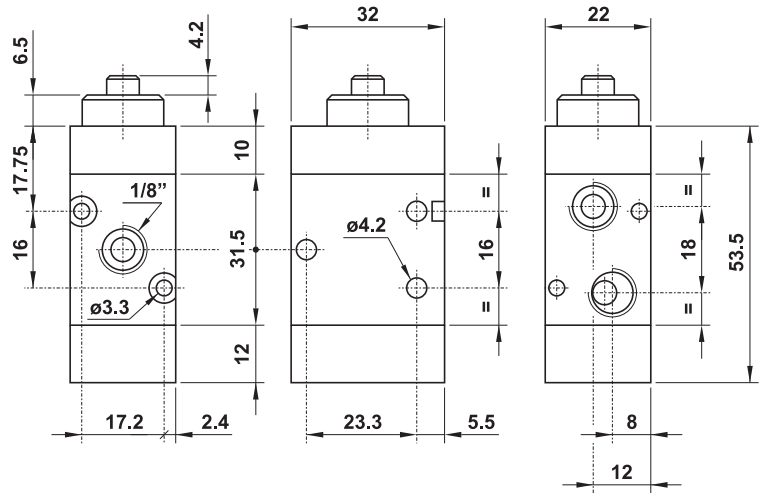
Nominal diameter	5 mm (0.2 in)	
Temperature range	max +60°C (140°F)	
Operating pressure	direct actuation	servo-piloted actuation
	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa
Actuating force (where not otherwise stated)	direct actuation	servo-piloted actuation
	~ 40 N	~ 4 N
Fluid	50µ filtered, lubricated or non lubricated air	

## US321 MP

3/2 1/8" NPT tappet - spring return

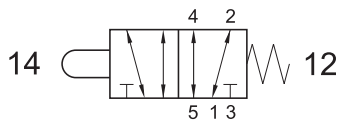


Actuating force: 32.36 N

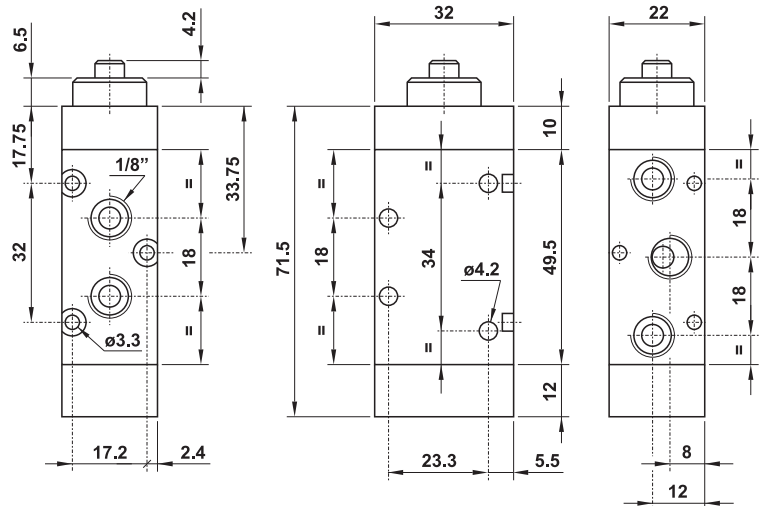


## US521 MP

5/2 1/8" NPT tappet - spring return

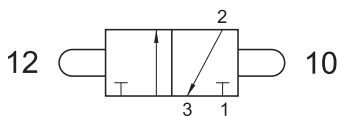


Actuating force: 32.36 N

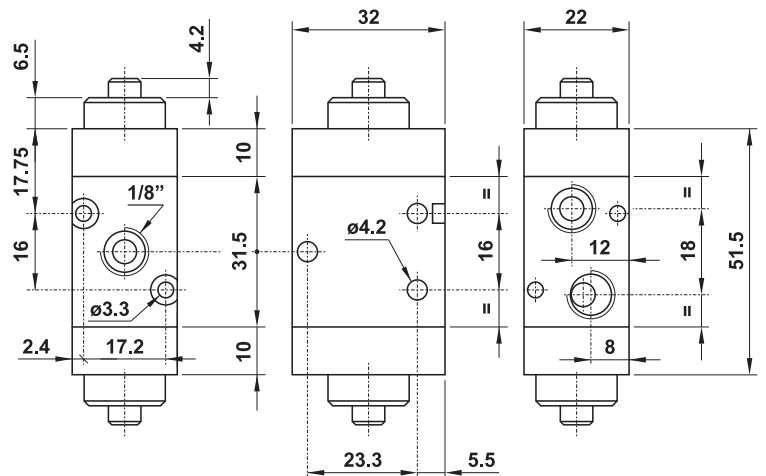


## US321 2P

3/2 1/8" NPT double tappet



ONLY ALUMINIUM VERSION

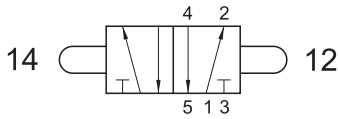


# Mechanically actuated valves

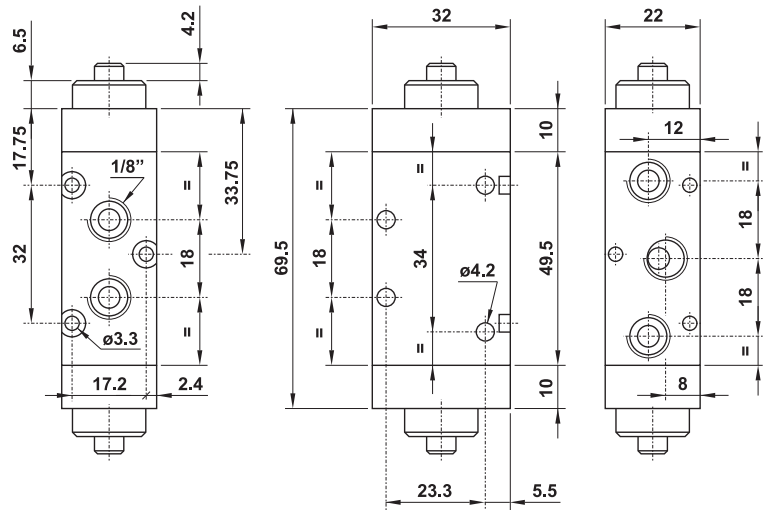


## US521 2P

5/2 1/8" NPT double tappet

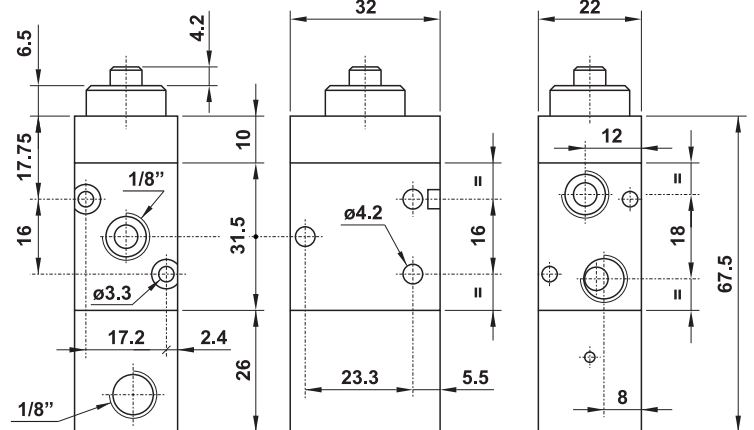
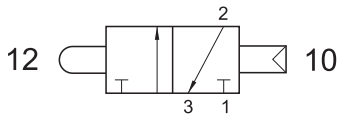


ONLY ALUMINIUM VERSION



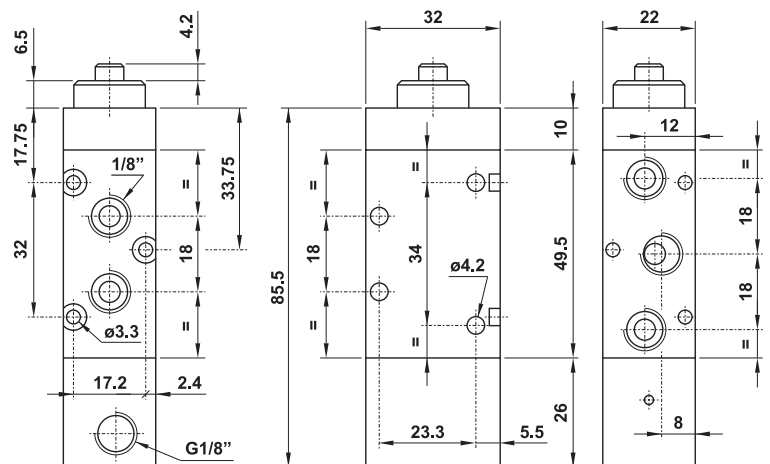
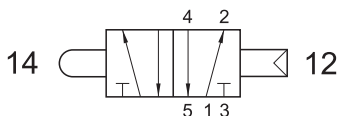
## US321 CP

3/2 1/8" NPT tappet - separate pneumatically piloted return



## US521 CP

5/2 1/8" NPT tappet - separate pneumatically piloted return

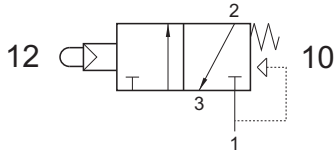


# Mechanically actuated valves



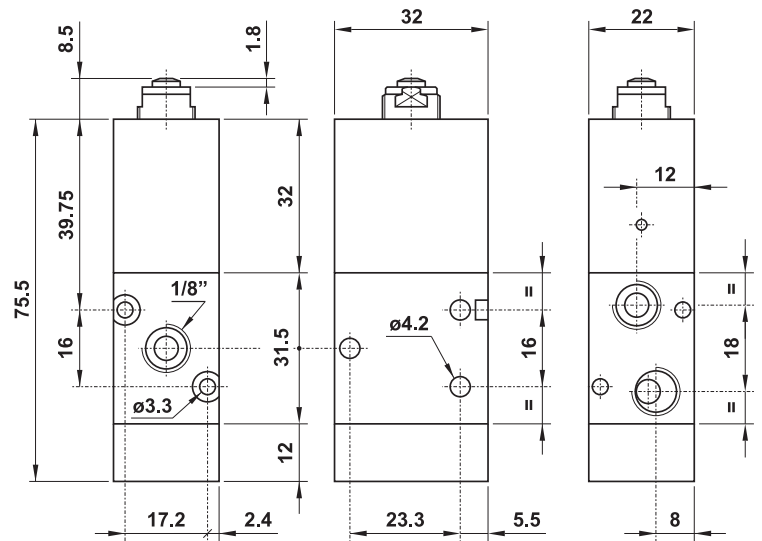
## US321 MPS

3/2 1/8" NPT N/C servo-piloted tappet - air and spring return



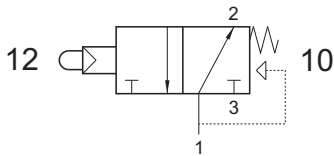
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 PSI)     $P_1$ : 10 bar (145 PSI)  
 F: 4.5 N                      F: 14.2 N



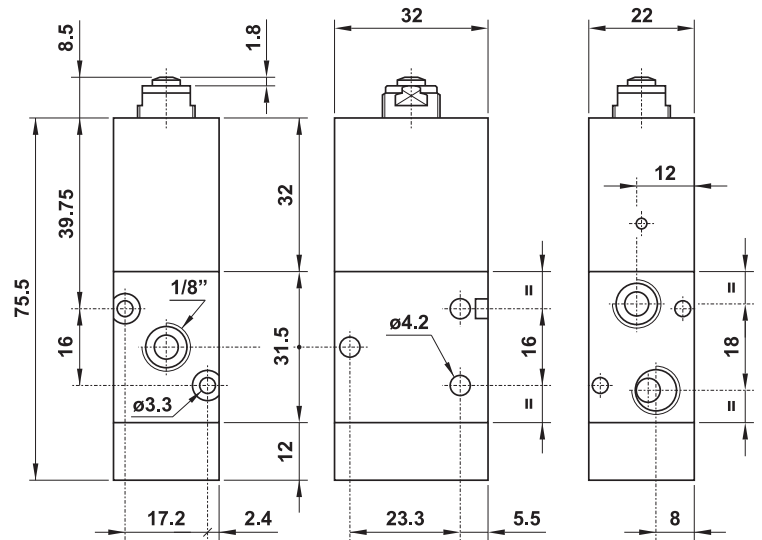
## US321 MPSA

3/2 1/8" NPT N/O servo-piloted tappet - air and spring return



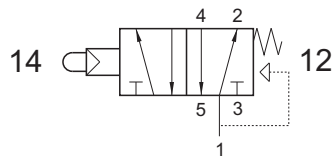
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 PSI)     $P_1$ : 10 bar (145 PSI)  
 F: 4.5 N                      F: 14.2 N



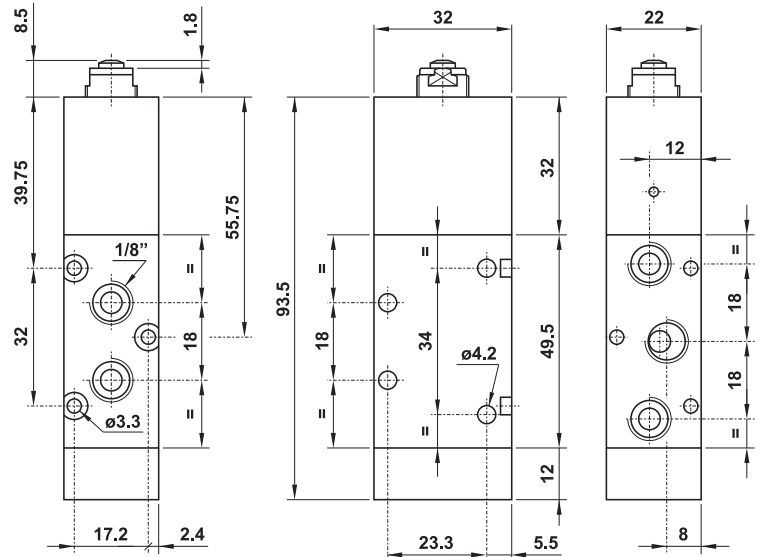
## US521 MPS

5/2 1/8" NPT servo-piloted tappet - air and spring return



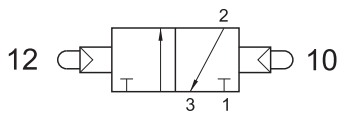
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 PSI)     $P_1$ : 10 bar (145 PSI)  
 F: 4.5 N                      F: 14.2 N

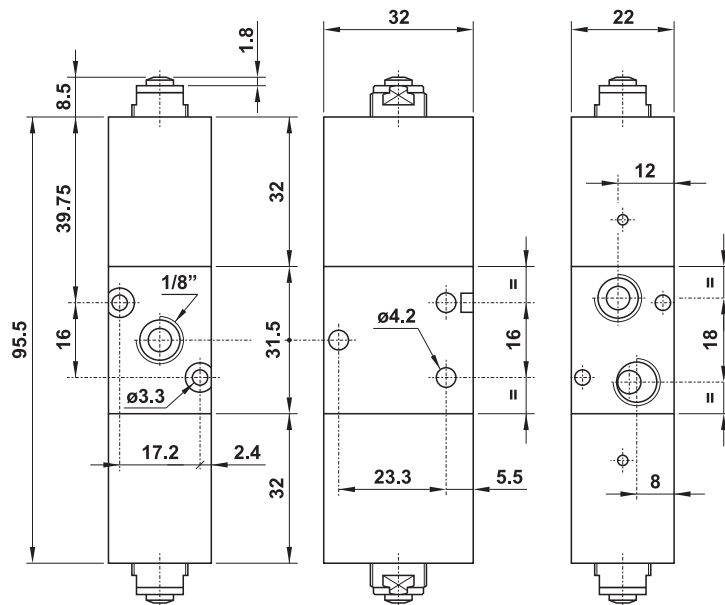


## US321 2PS

3/2 1/8" NPT double servo-piloted tappet

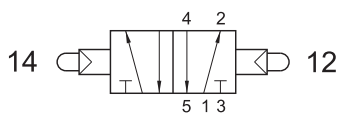


ONLY ALUMINIUM VERSION

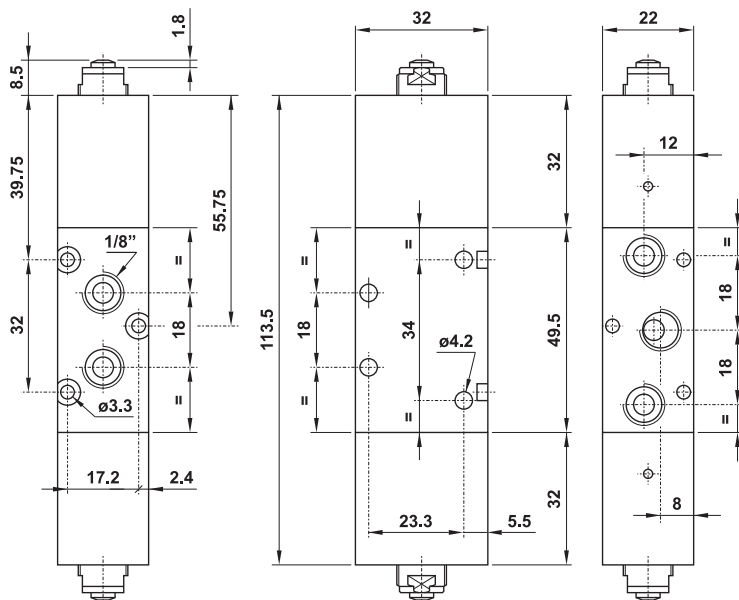
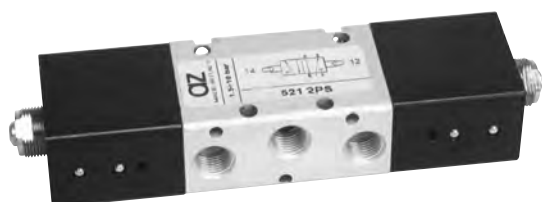


## US521 2PS

5/2 1/8" NPT double servo-piloted tappet

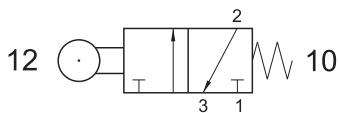


ONLY ALUMINIUM VERSION

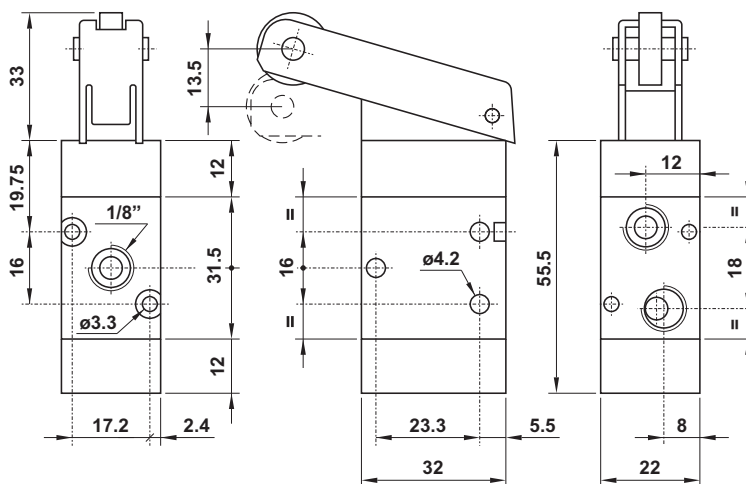


## US321 MR

3/2 1/8" NPT roller lever - spring return

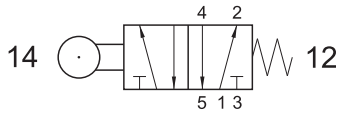


Actuating force: 9.81 N

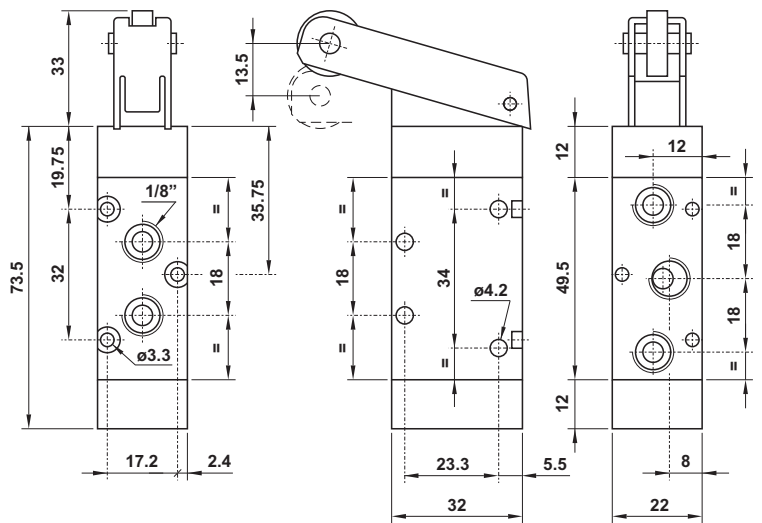


## US521 MR

5/2 1/8" NPT roller lever - spring return

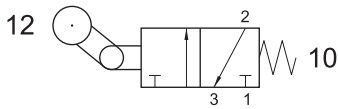


Actuating force: 9.81 N

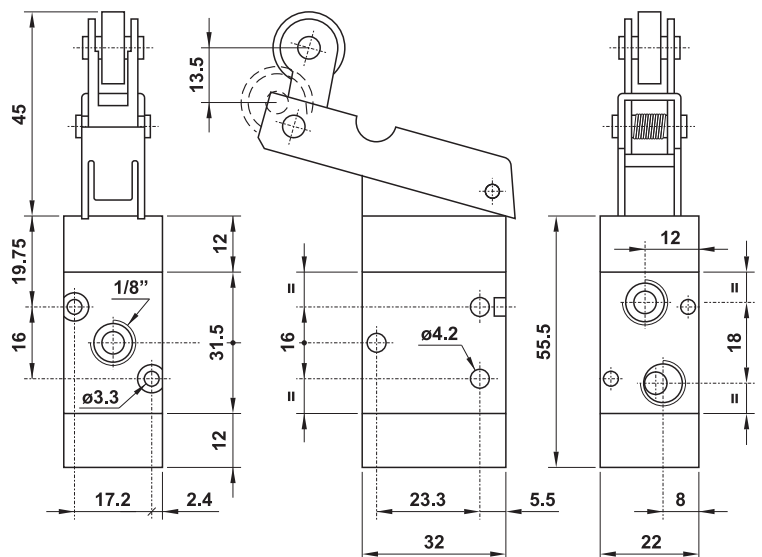


## US321 MRU

3/2 1/8" NPT uni-directional lever - spring return

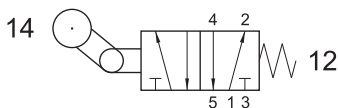


Actuating force: 9.81 N

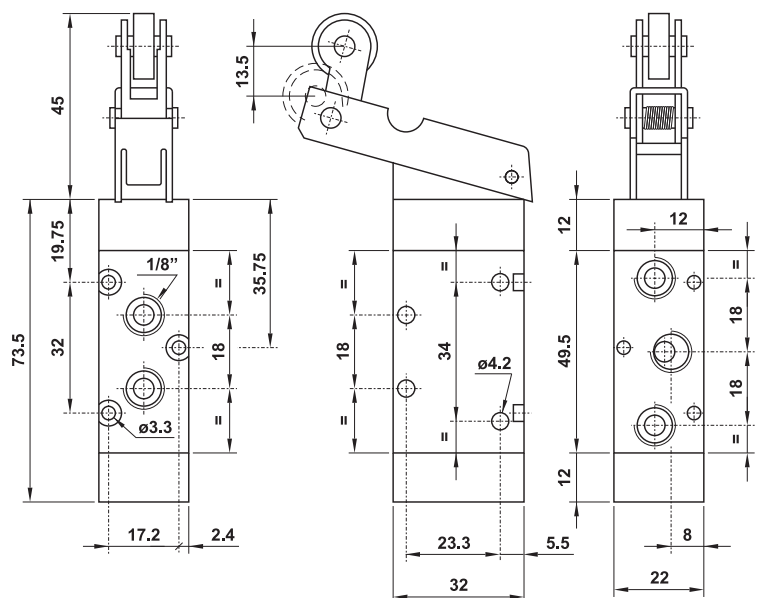


## US521 MRU

5/2 1/8" NPT uni-directional lever - spring return



Actuating force: 9.81 N



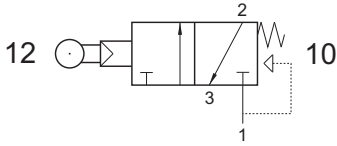


# Mechanically actuated valves



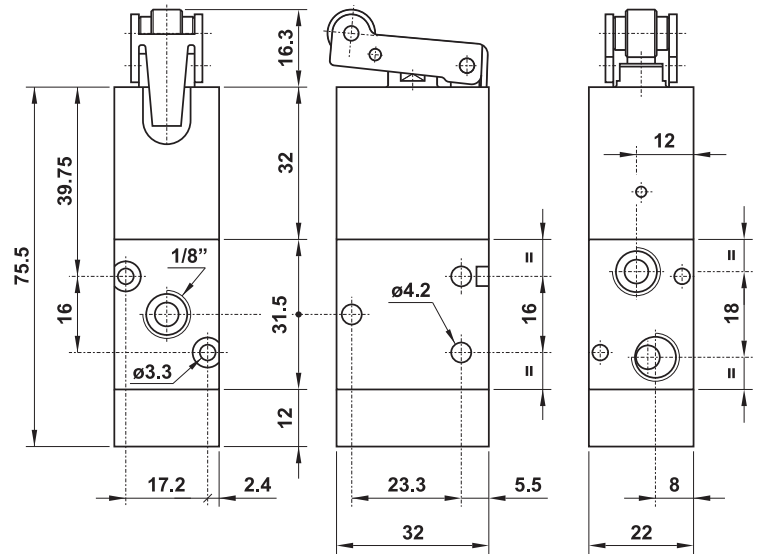
## US321 MRS

3/2 1/8" NPT N/C servo-piloted roller lever - air and spring return



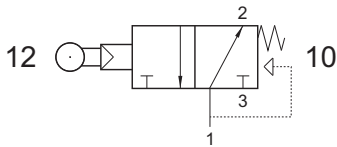
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 PSI)    $P_1$ : 10 bar (145 PSI)  
 F: 3.6 N                      F: 11.4 N



## US321 MRSA

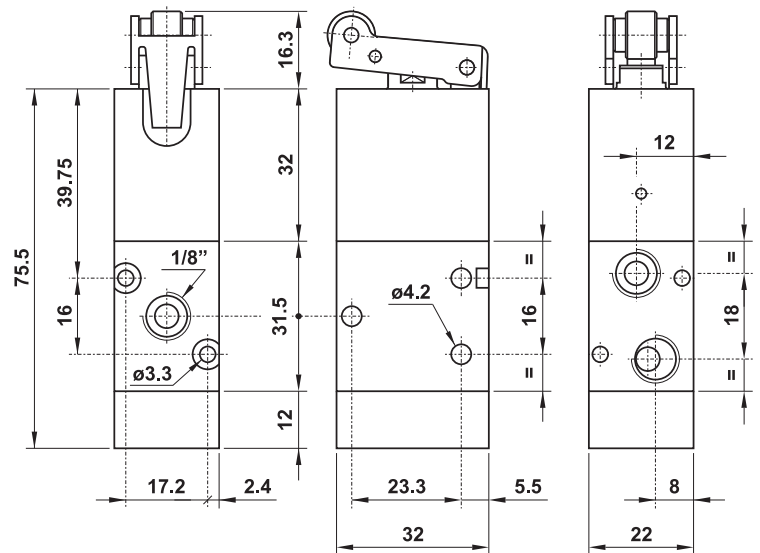
3/2 1/8" NPT N/O servo-piloted roller lever - air and spring return



Actuating force related to inlet pressure

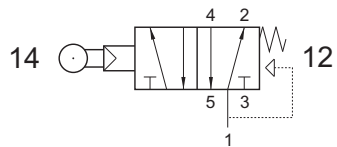
$P_1$ : 2.5 bar (36 psi)    $P_1$ : 10 bar (145 psi)  
 F: 3.6 N                      F: 11.4 N

ONLY ALUMINIUM VERSION



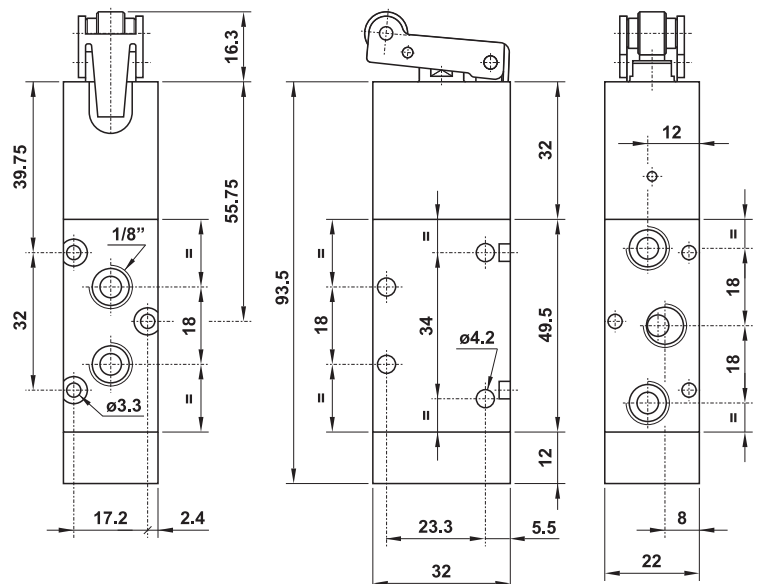
## US521 MRS

5/2 1/8" NPT servo-piloted roller lever - air and spring return



Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 PSI)    $P_1$ : 10 bar (145 PSI)  
 F: 3.6 N                      F: 11.4 N

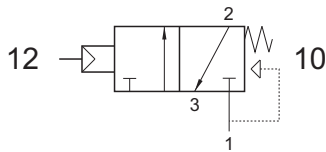


# Mechanically actuated valves



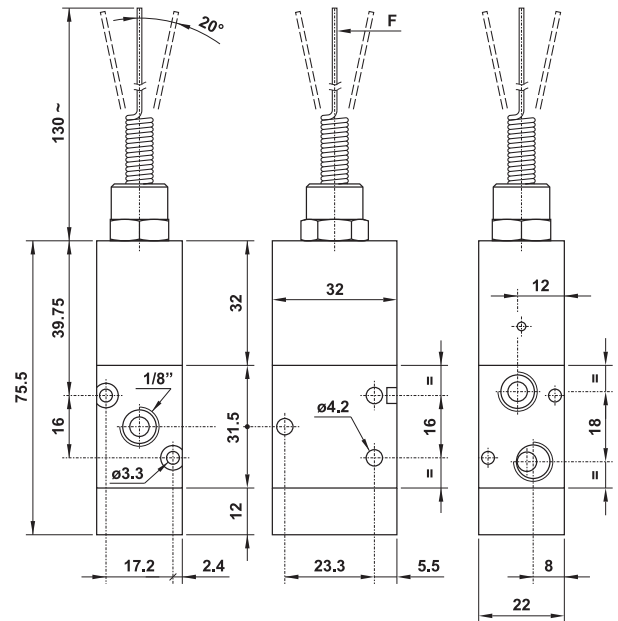
## US321 MN

3/2 1/8" NPT N/C servo-piloted whisker - air and spring return



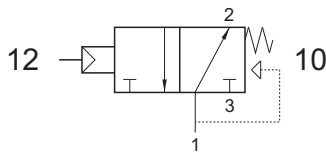
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 psi)    $P_1$ : 10 bar (145 psi)  
 $F$ : 0.3 N    $F$ : 0.8 N



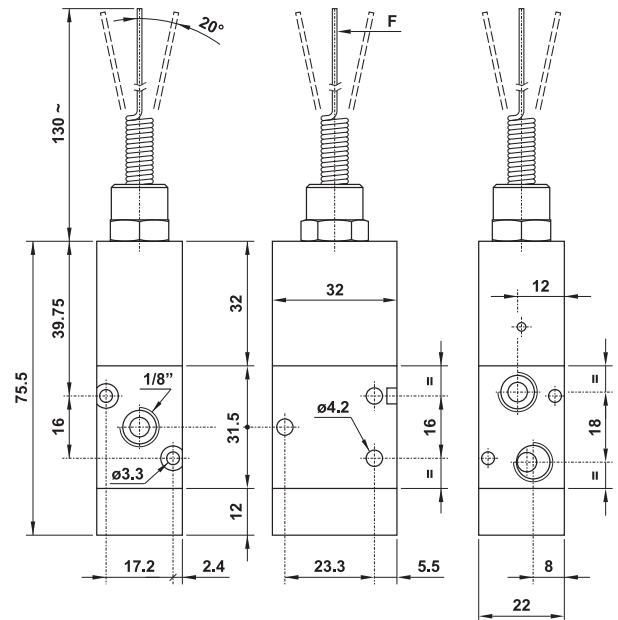
## US321 MNA

3/2 1/8" NPT N/O servo-piloted whisker - air and spring return



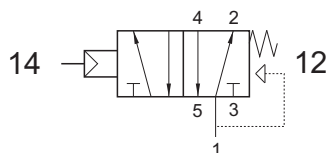
Actuating force related to inlet pressure

$P_1$ : 2.5 bar (36 psi)    $P_1$ : 10 bar (145 psi)  
 $F$ : 0.3 N    $F$ : 0.8 N



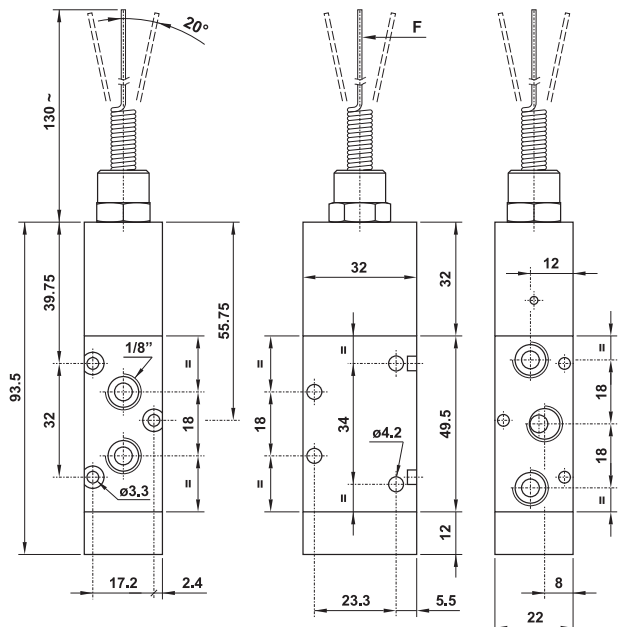
## US521 MN

5/2 1/8" NPT servo-piloted whisker - air and spring return



Actuating force related to inlet pressure

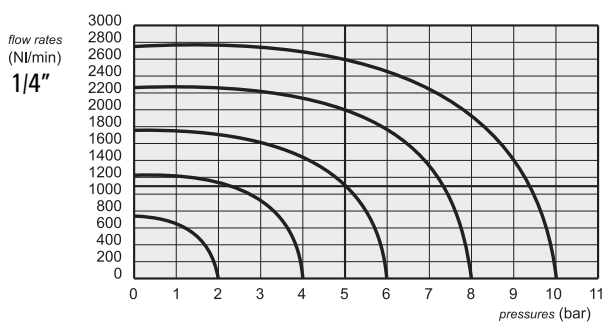
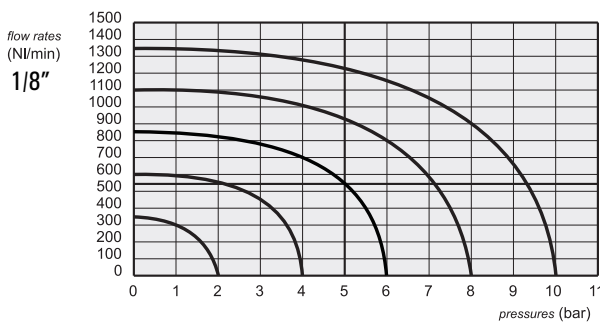
$P_1$ : 2.5 bar (36 psi)    $P_1$ : 10 bar (145 psi)  
 $F$ : 0.3 N    $F$ : 0.8 N



# Manually actuated valves



- 3/2-5/2-5/3 spool valves with 1/8" NPT-1/4" NPT threaded ports
- Installation in any position
- Comprehensive range of actuations
- Push/pull and lever valves: thread for panel mounting M18x1.5
- Version for actuator for panel mounting (with ø22 hole)
- Special versions on request



## Materials

**Body:** aluminium 11S

**End cups:** aluminium 11S

**Springs:** stainless steel

**Seals:** NBR

**Spool:** nickel plated aluminium

**Internal parts:** brass OT58

ATEX valves are only in aluminium.

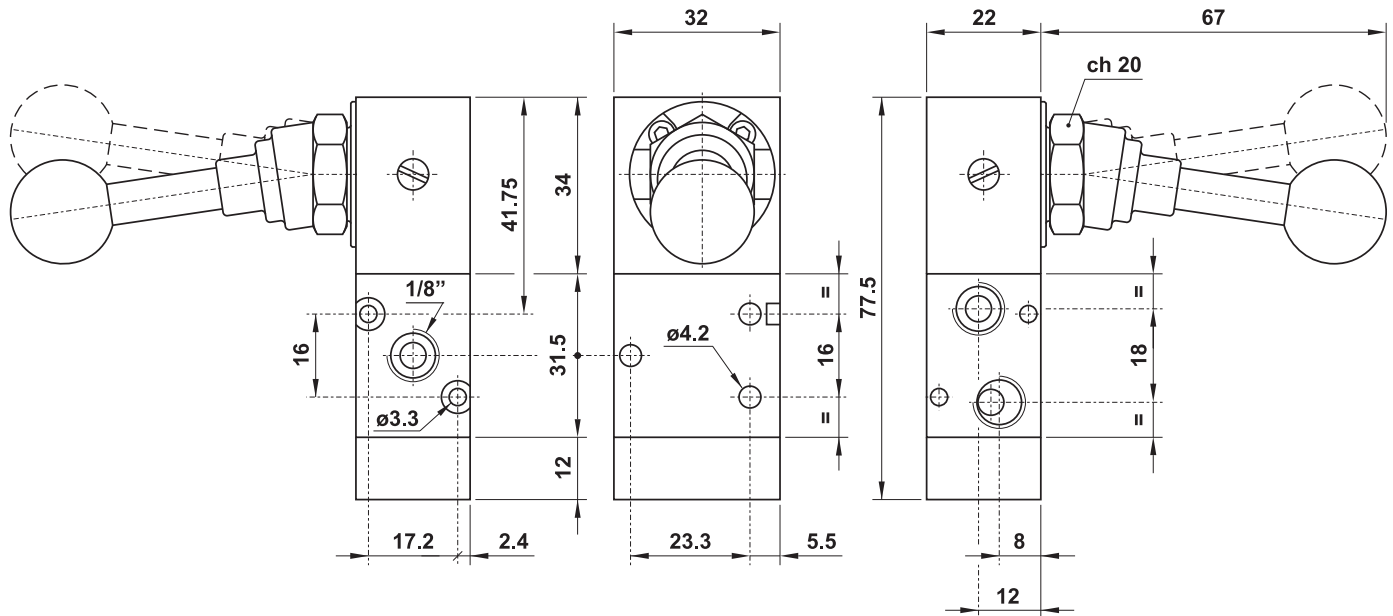
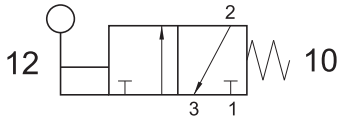
Nominal diameter		1/8" NPT: 5 mm 1/4" NPT: 7.5 mm			
Temperature range		max +60°C (140°F)			
Operating pressure		direct actuation -0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa		servo-piloted actuation 2.5 ... 10 bar (36 ... 145 PSI) 0.025 ... 1 MPa	
Actuating force	1/8" NPT mono-stable	1/4" NPT mono-stable	1/8" NPT bi-stable	1/4" NPT bi-stable	
	15 N	20 N	10 N	15 N	
Fluid		50µ filtered, lubricated or non lubricated air			

# Manually actuated valves



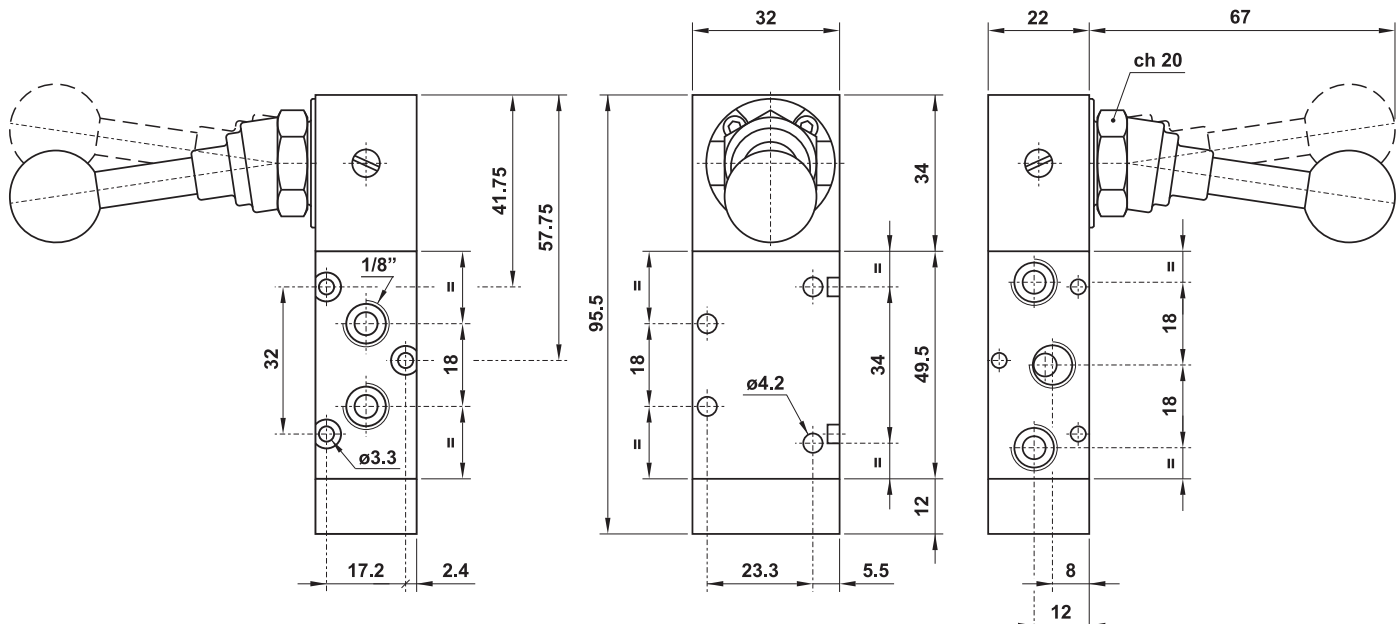
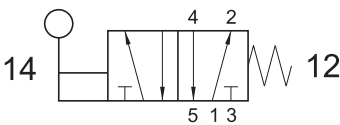
## US321 ML90

3/2 1/8" NPT 90° lever - spring return



## US521 ML90

5/2 1/8" NPT 90° lever - spring return

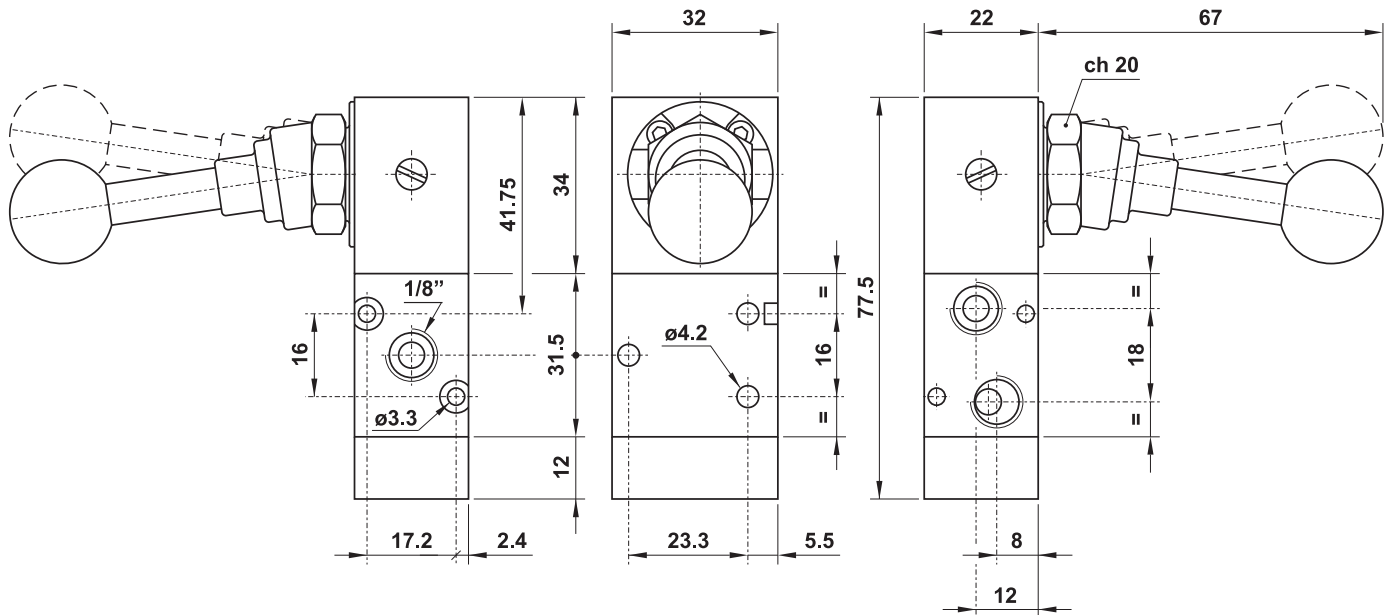
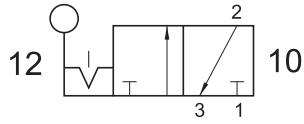


# Manually actuated valves



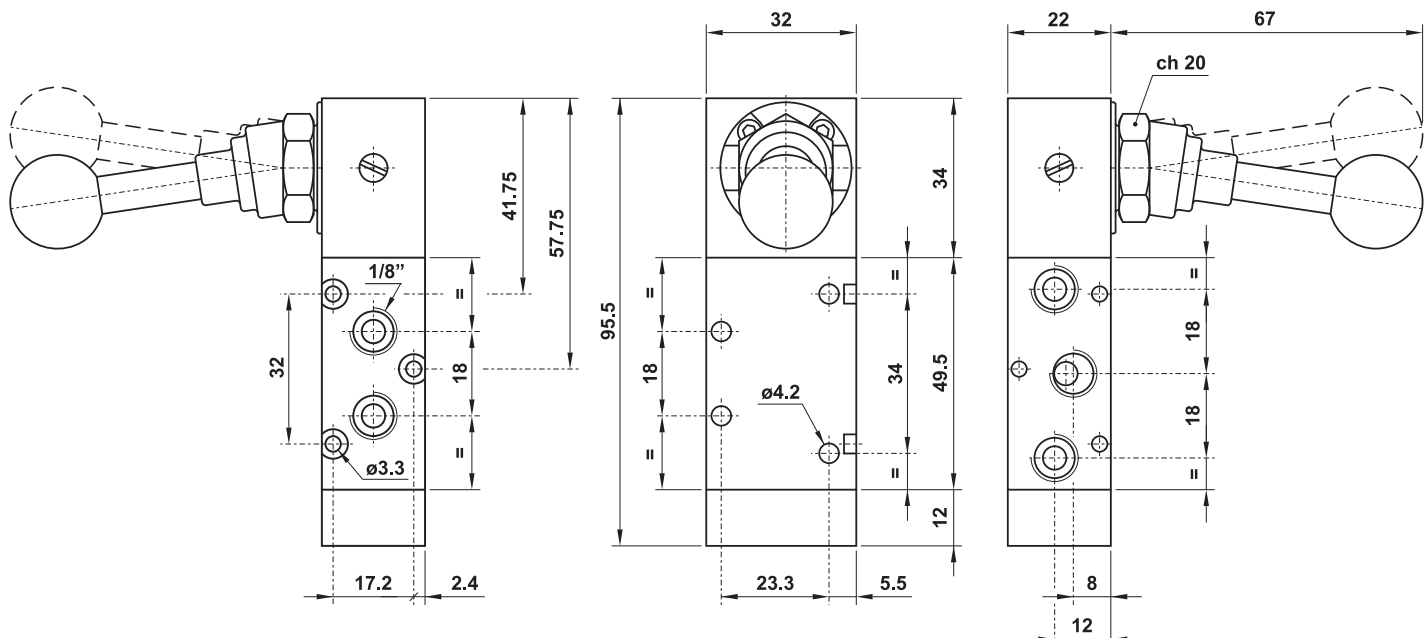
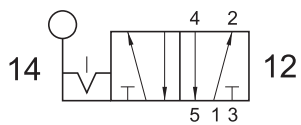
## US321 LL90

3/2 1/8" NPT 90° bi-stable lever



## US521 LL90

5/2 1/8" NPT 90° bi-stable lever

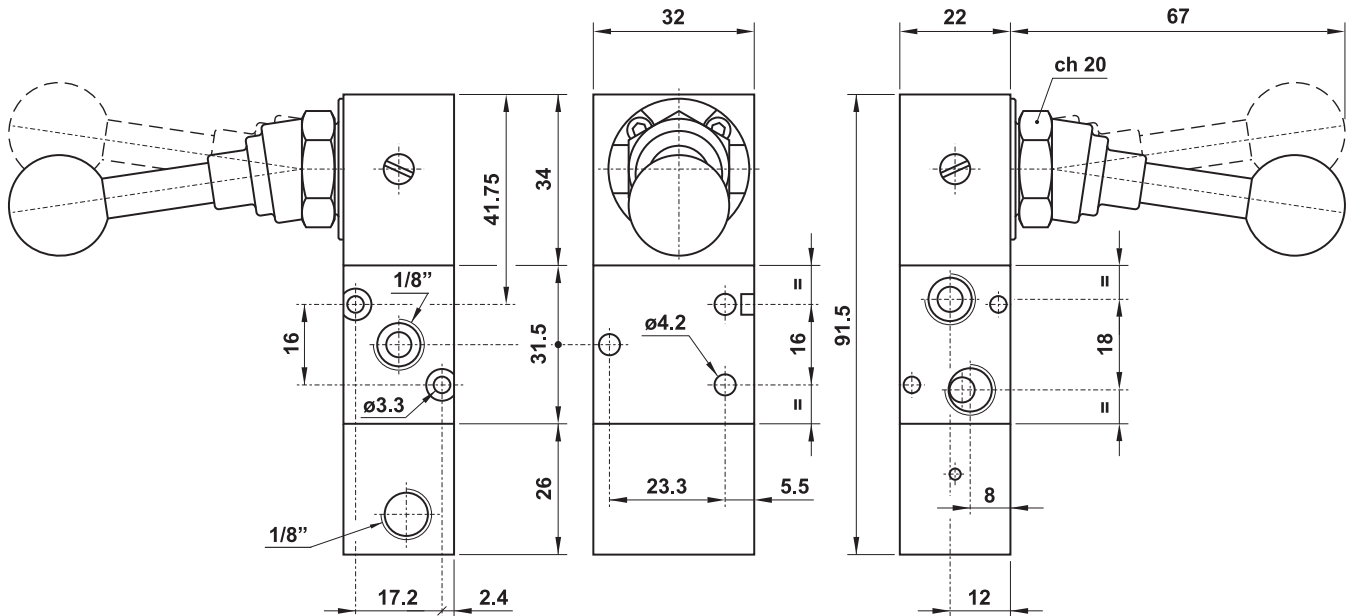
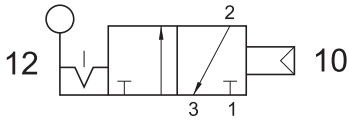


# Manually actuated valves



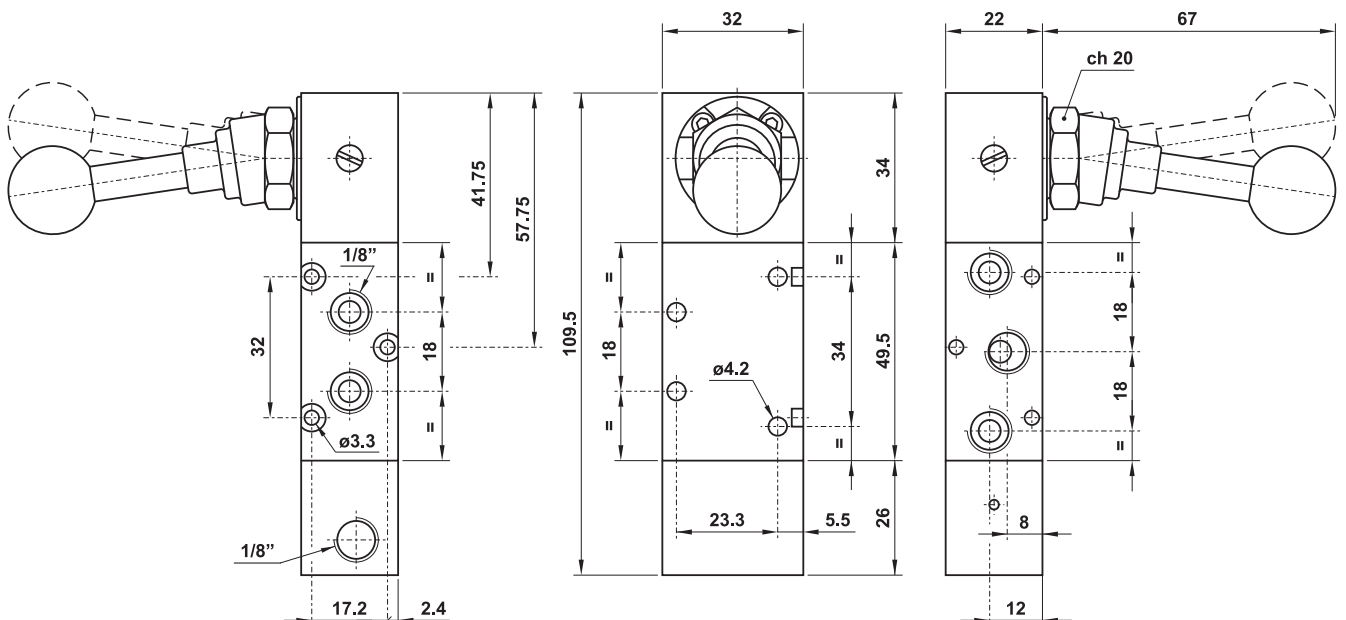
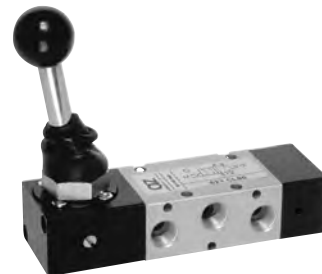
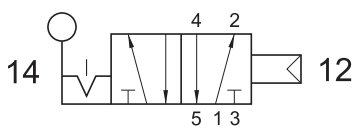
## US321 CL90

3/2 1/8" NPT 90° lever - separate pneumatically piloted return



## US521 CL90

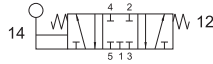
5/2 1/8" NPT 90° lever - separate pneumatically piloted return



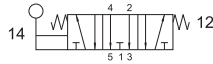
# Manually actuated valves



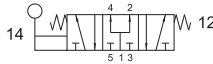
**US5213C ML90** closed centers



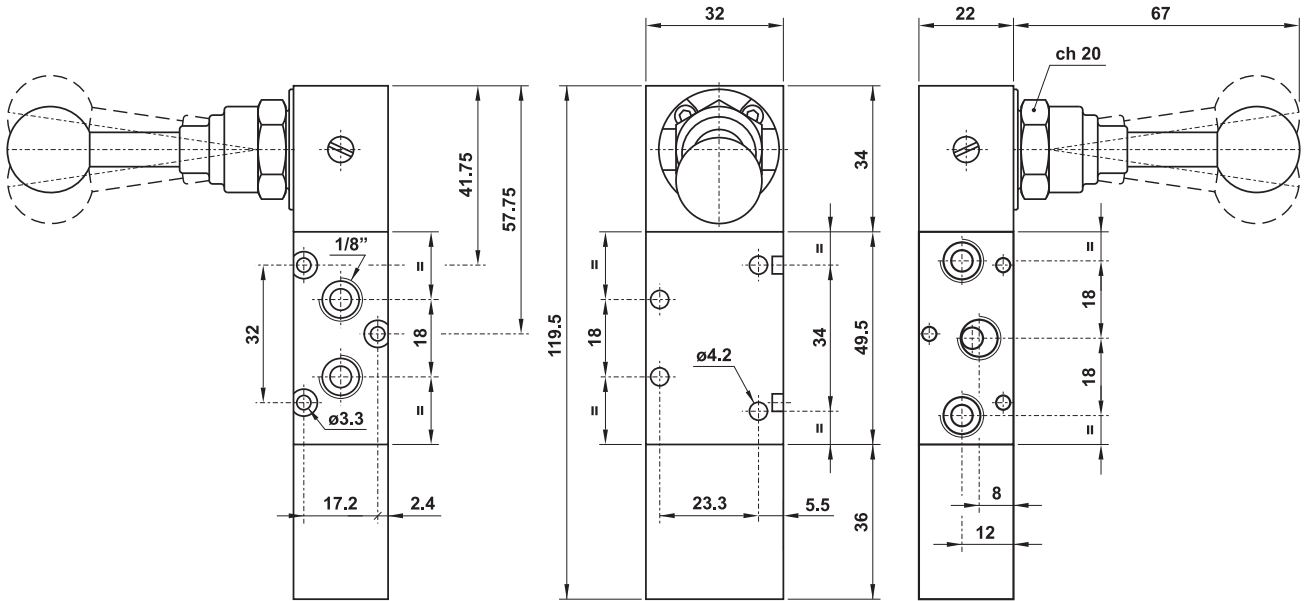
**US5213A ML90** open centers



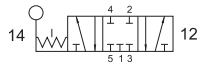
**US5213P ML90** pressurized centers



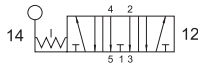
5/3 1/8" NPT 90° lever - spring return to center



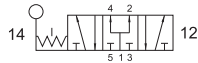
**US5213C LL90** closed centers



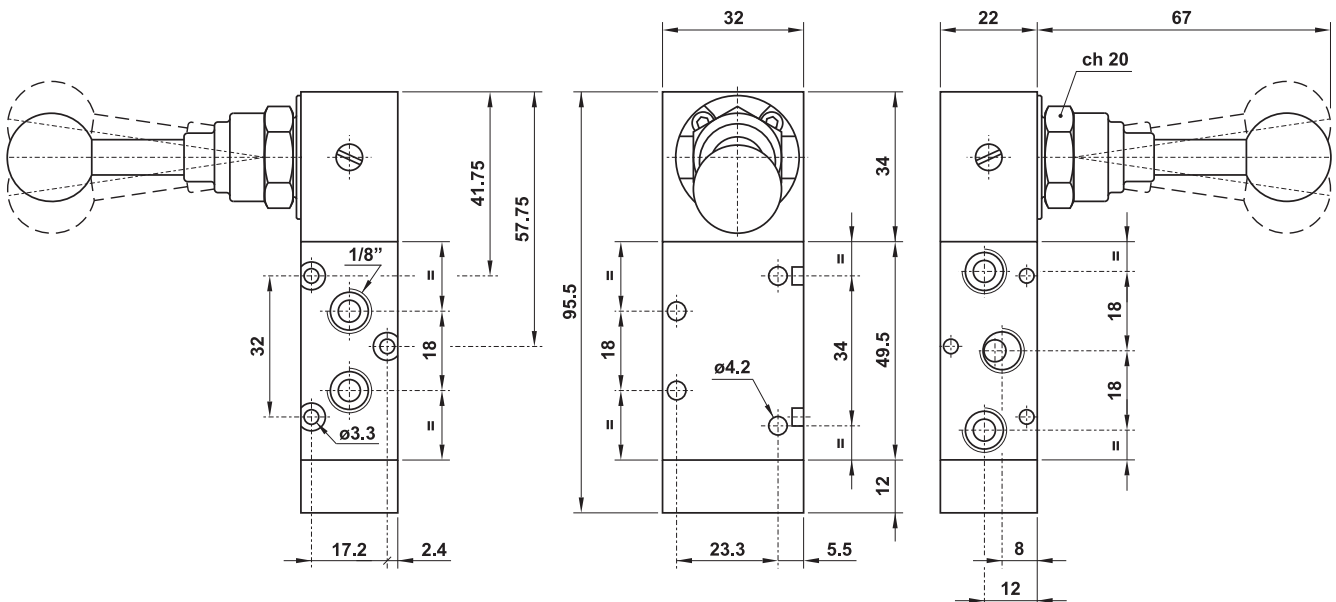
**US5213A LL90** open centers



**US5213P LL90** pressurized centers

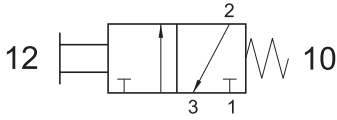


5/3 1/8" NPT 90° lever - three detented positions

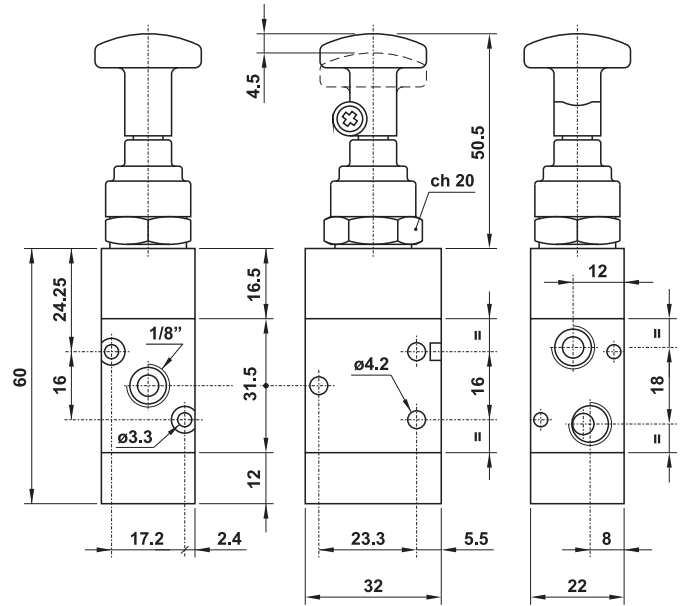


## US321 MT

3/2 1/8" NPT push/pull with spring return

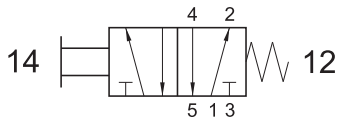


Standard push button: BLACK  
On request RED push button

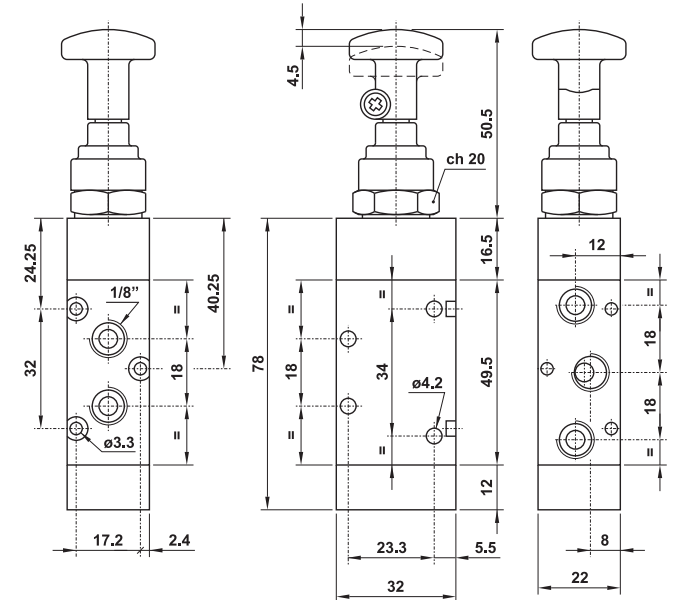


## US521 MT

5/2 1/8" NPT push/pull with spring return

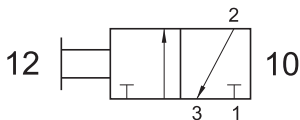


Standard push button: BLACK  
On request RED push button

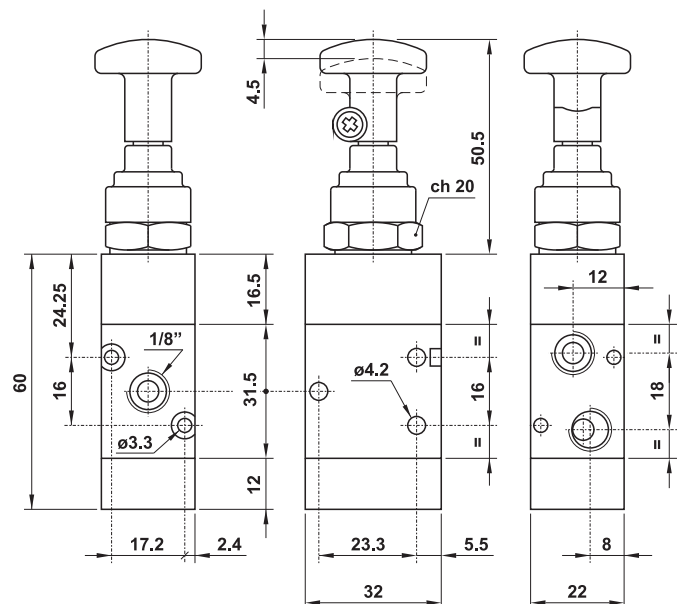


## US321 TT

3/2 1/8" NPT bi-stable push/pull



Standard push button: BLACK  
On request RED push button



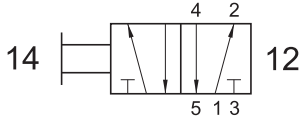


# Manually actuated valves

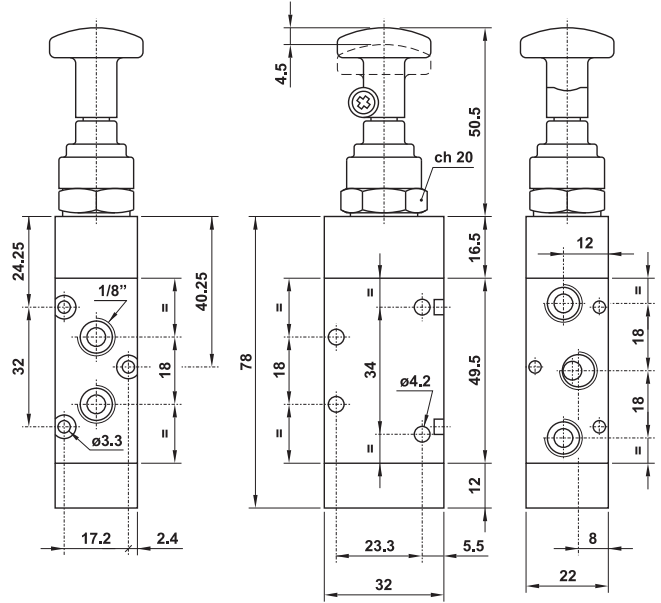


## US521 TT

5/2 1/8" NPT bi-stable push/pull

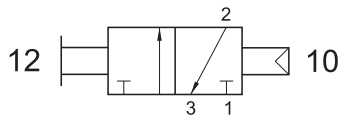


Standard push button: BLACK  
On request RED push button



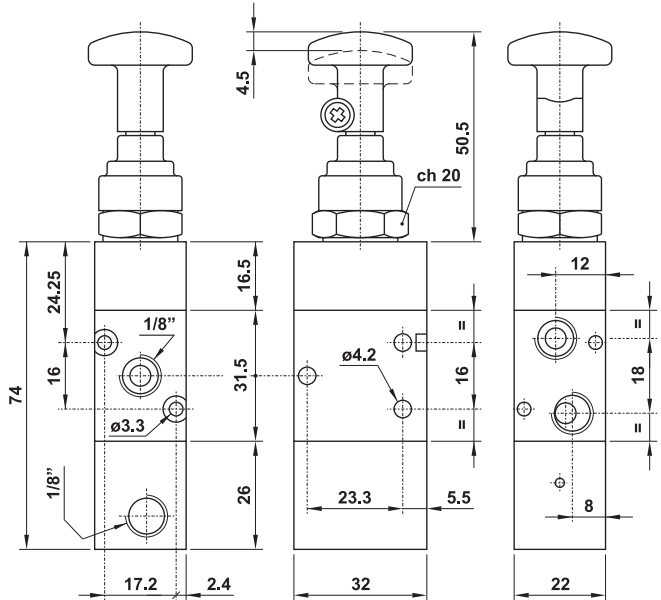
## US321 CT

3/2 1/8" NPT push/pull with separate pneumatically piloted return



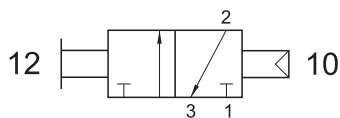
The return can be done only with pneumatic pilote signal.

Standard push button: BLACK  
On request RED push button



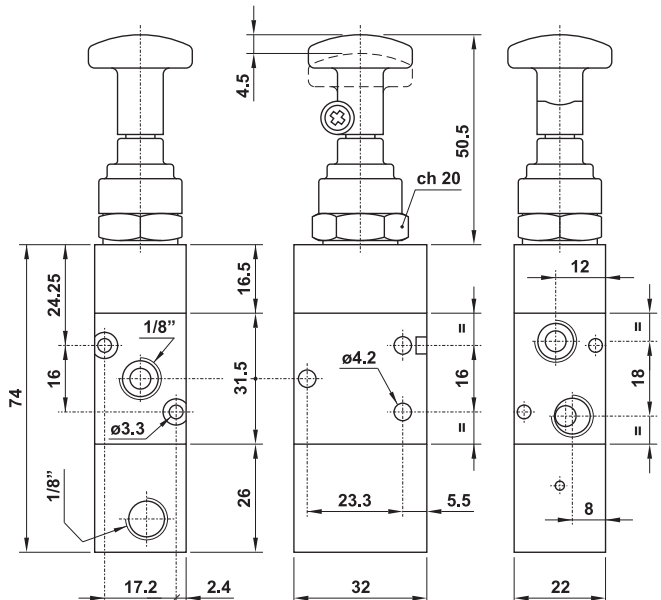
## US321 CTT

3/2 1/8" NPT bi-stable push/pull with separate pneumatically piloted return



The return can be done with pneumatic pilote signal or by pulling the knob.

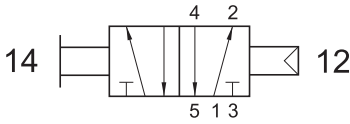
Standard push button: BLACK  
On request RED push button



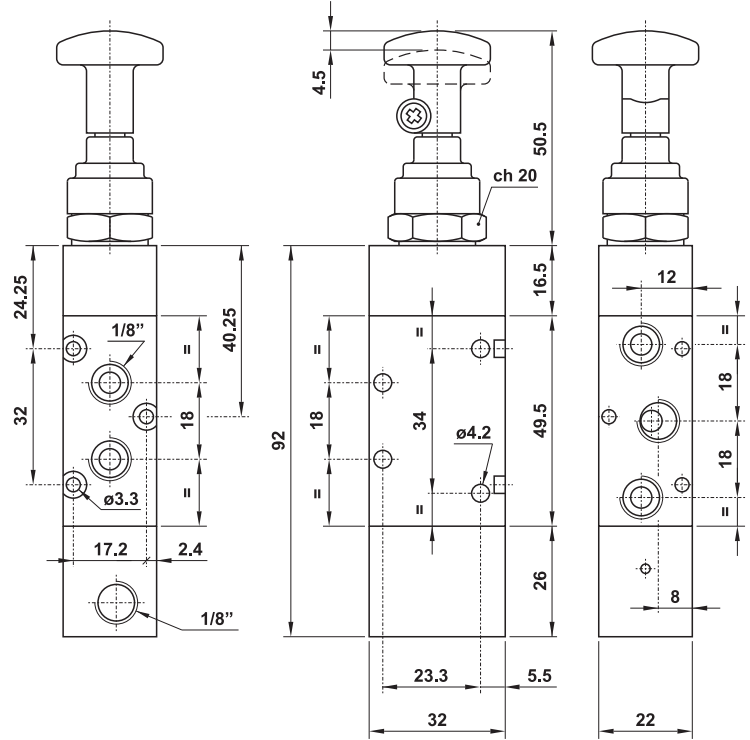
## US521 CT

5/2 1/8" NPT push/pull with separate pneumatically piloted return

The return can be done only with pneumatic pilote signal.



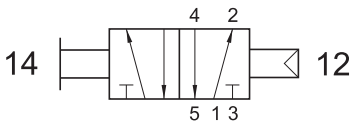
Standard push button: BLACK  
On request RED push button



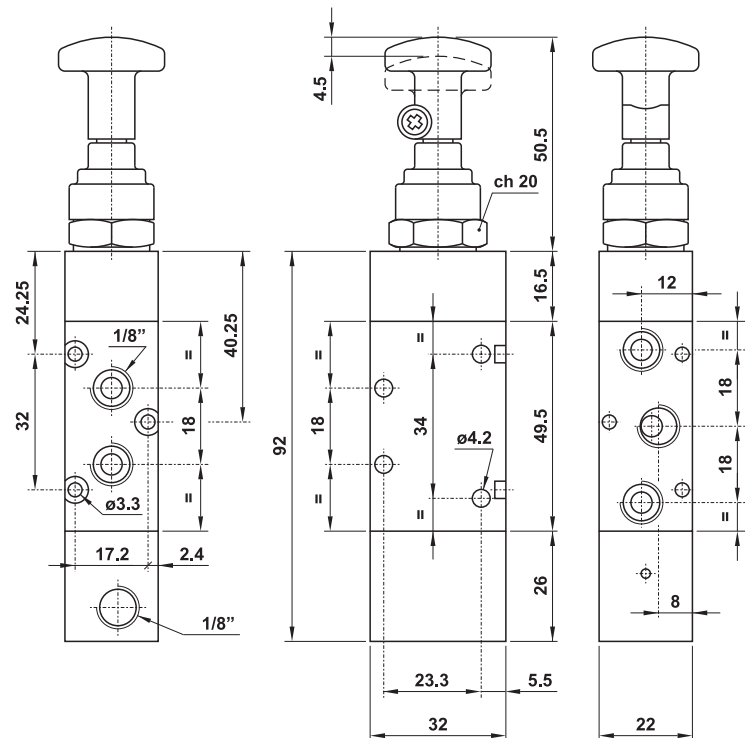
## US521 CTT

5/2 1/8" NPT bi-stable push/pull with separate pneumatically piloted return

The return can be done with pneumatic pilote signal or by pulling the knob.

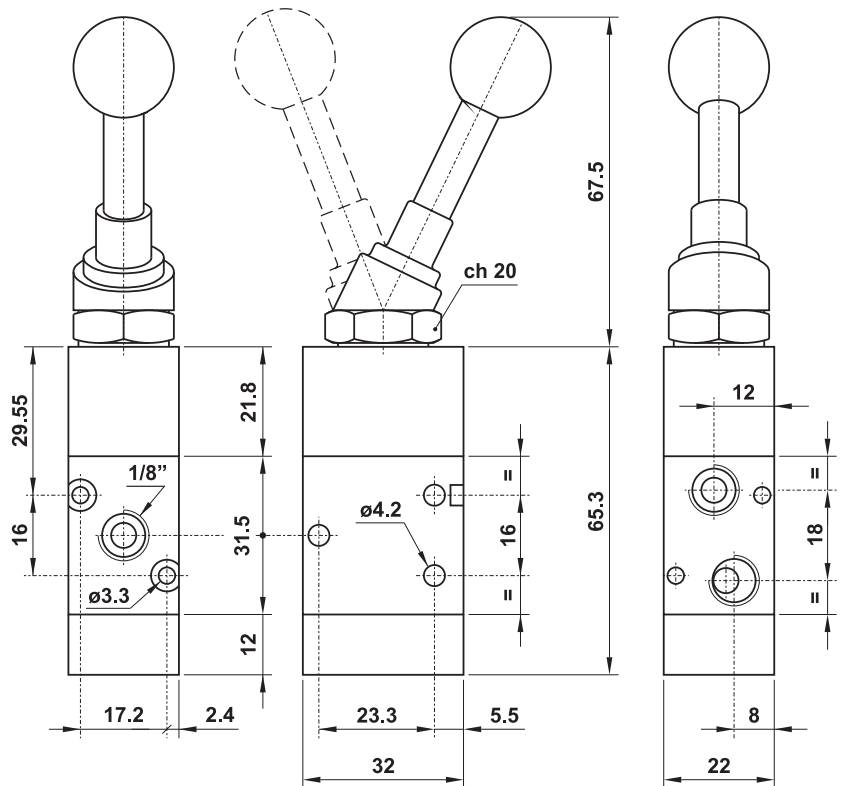
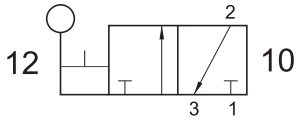


Standard push button: BLACK  
On request RED push button



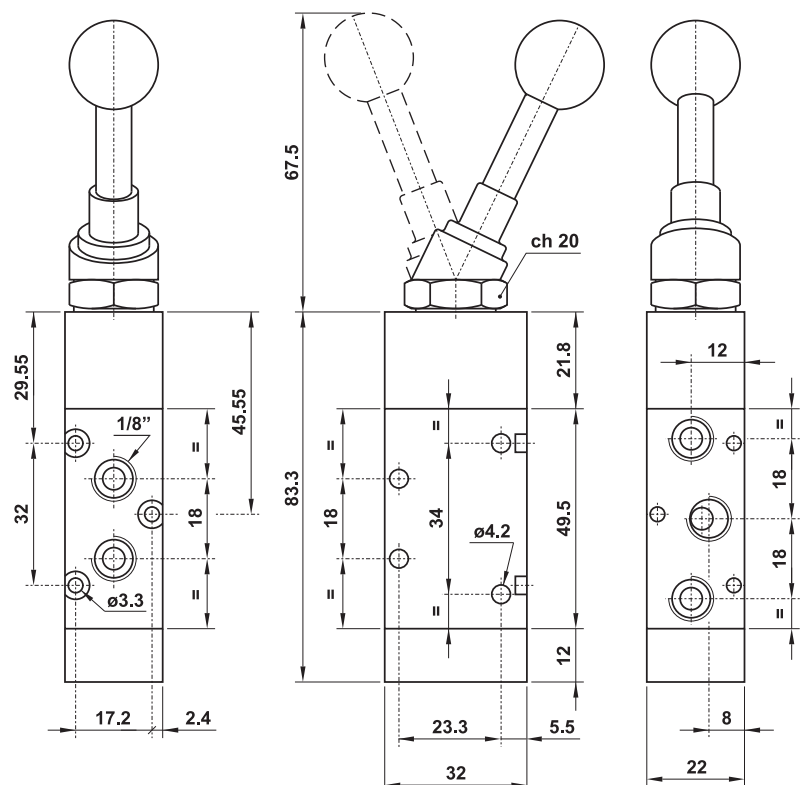
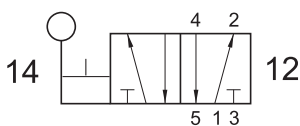
## US321 LL

3/2 1/8" NPT bi-stable top lever



## US521 LL

5/2 1/8" NPT bi-stable top lever

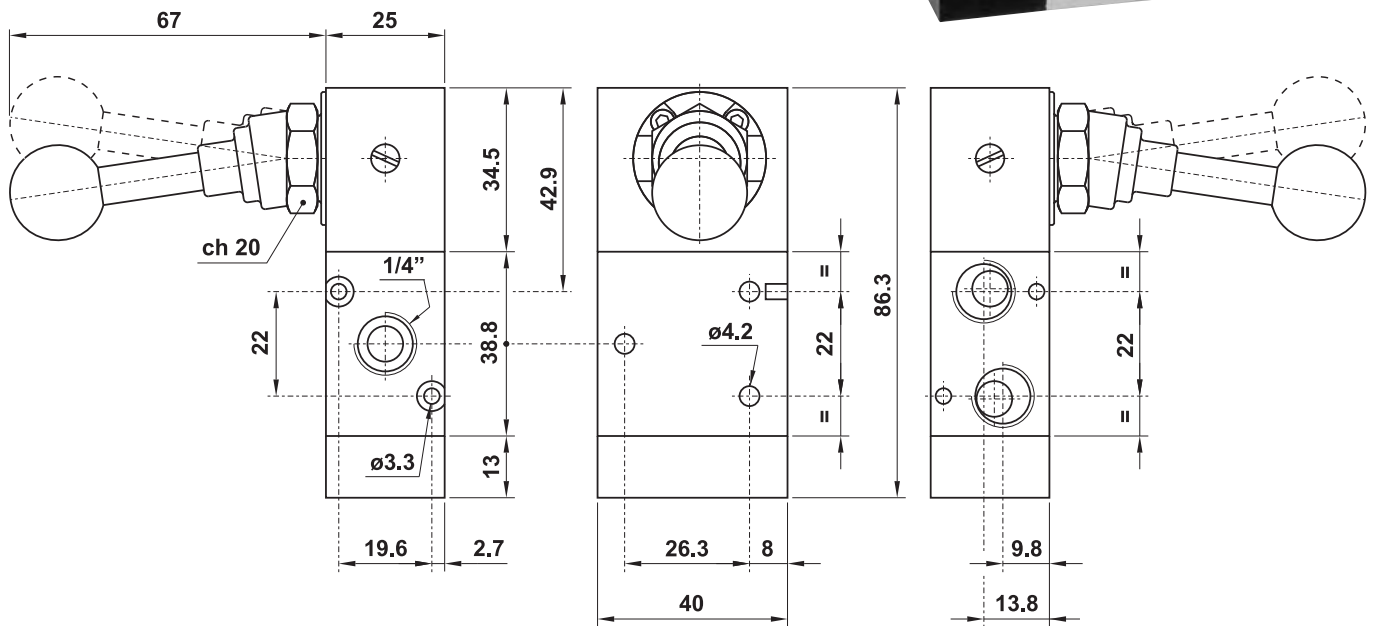
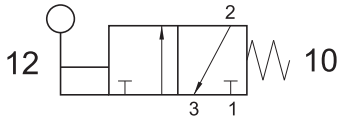


# Manually actuated valves



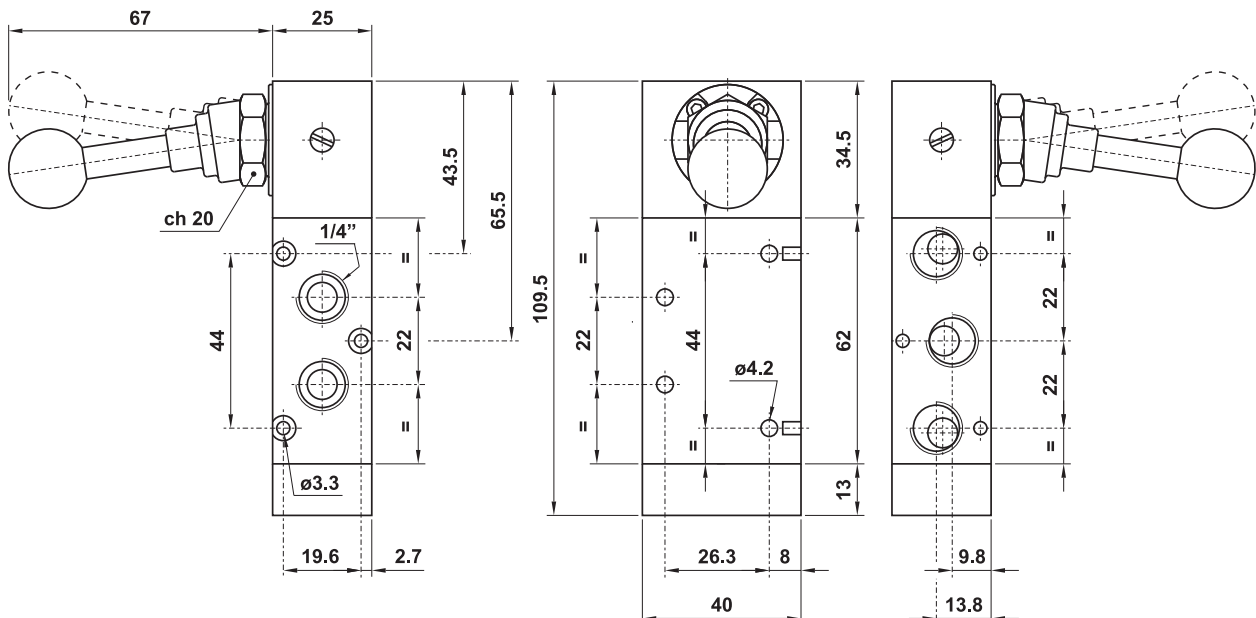
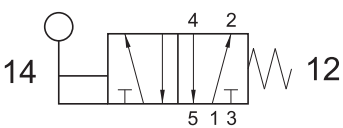
## US322 ML90

3/2 1/4" NPT 90° lever - spring return



## US522 ML90

5/2 1/4" NPT 90° lever - spring return

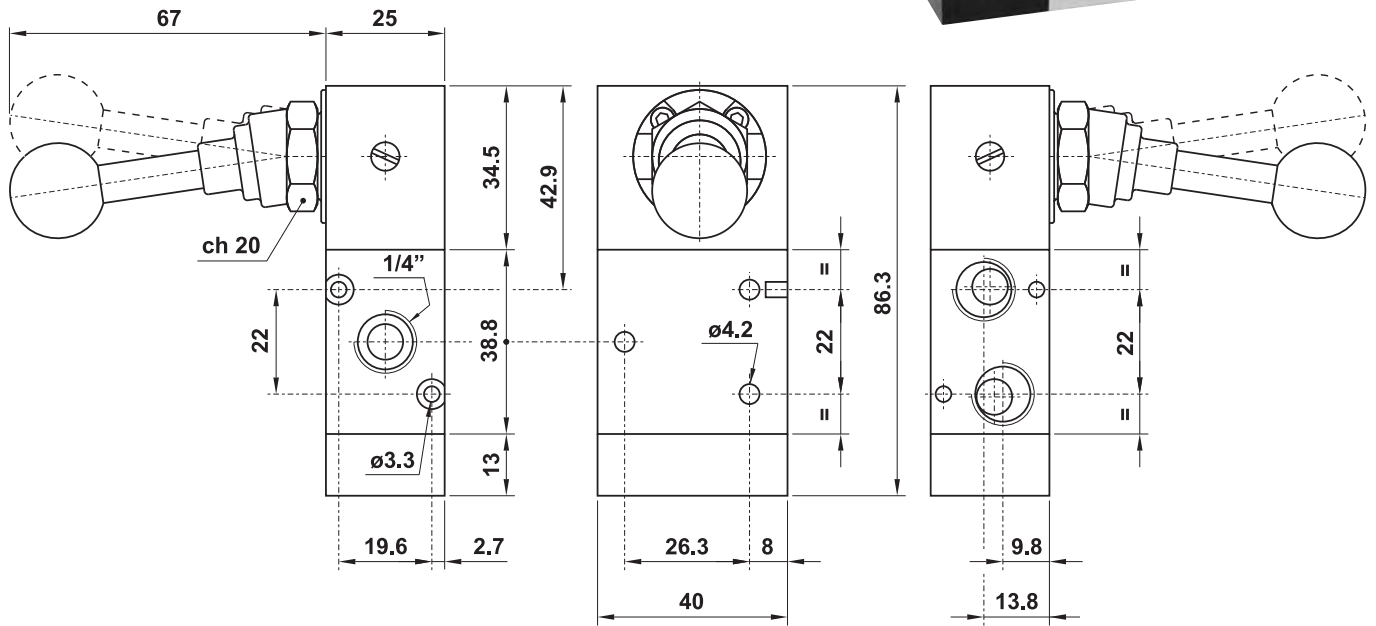
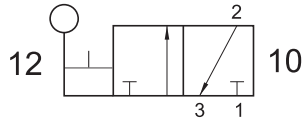


# Manually actuated valves



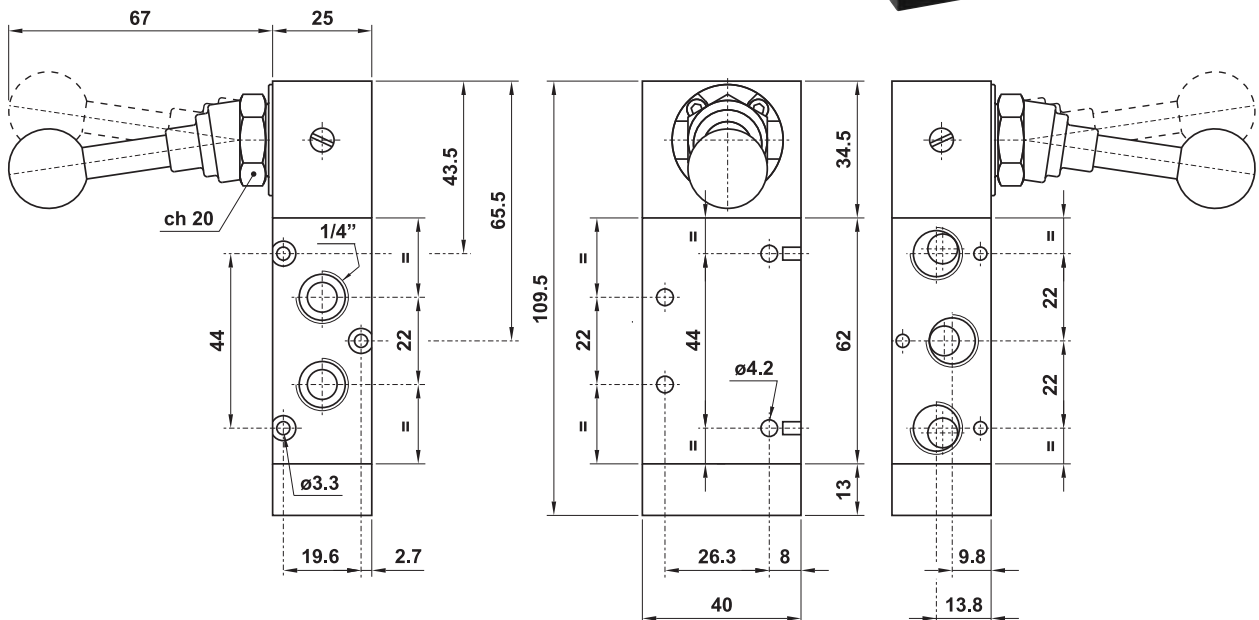
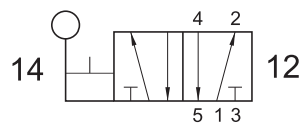
## US322 LL90

3/2 1/4" NPT 90° bi-stable lever



## US522 LL90

5/2 1/4" NPT 90° bi-stable lever

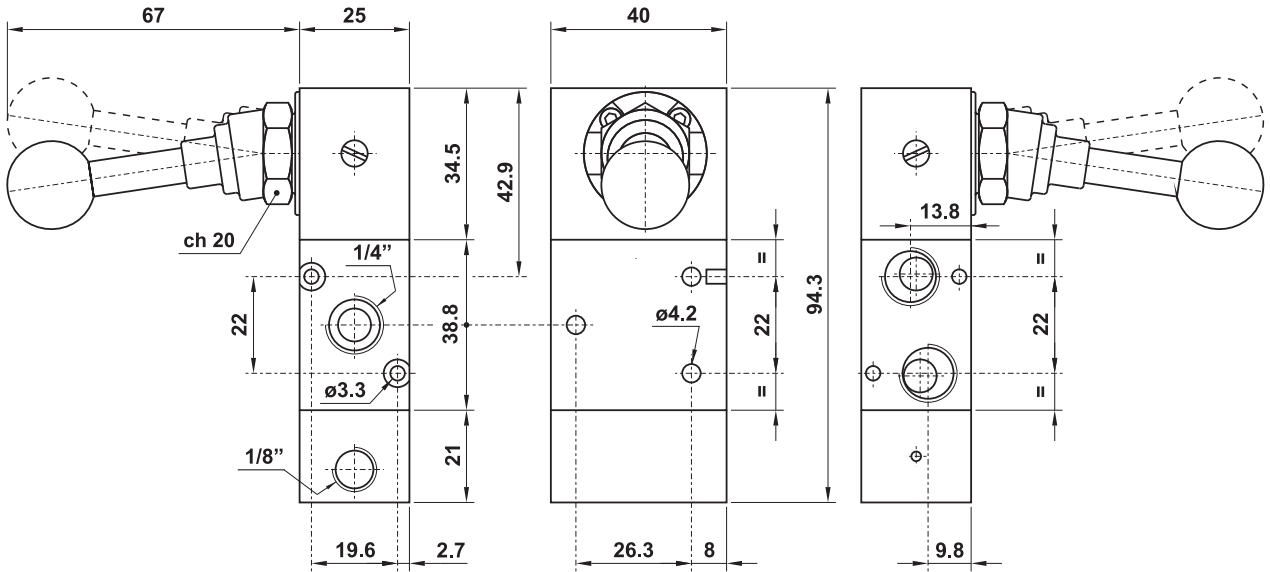
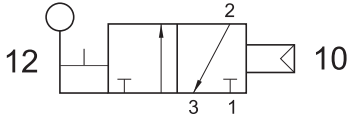


# Manually actuated valves



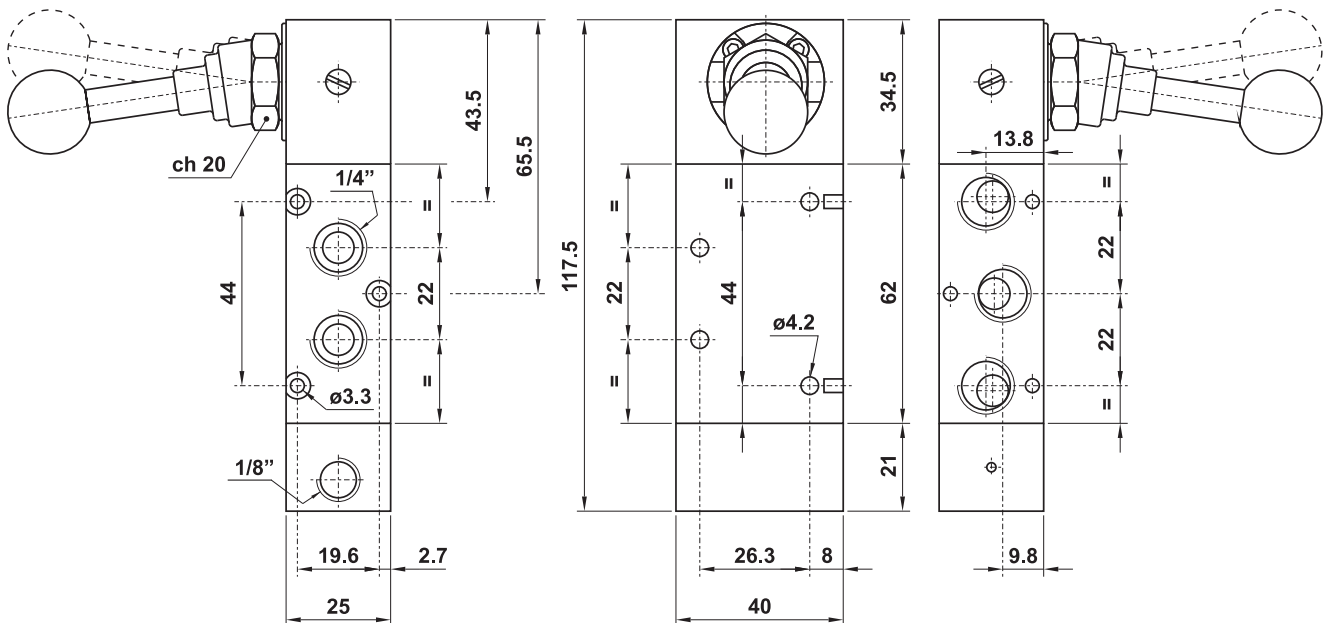
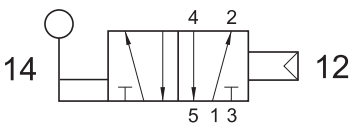
## US322 CL90

3/2 1/4" NPT 90° lever - separate pneumatically piloted return



## US522 CL90

5/2 1/4" NPT 90° lever - separate pneumatically piloted return



# Manually actuated valves



**US5223C ML90** closed centers



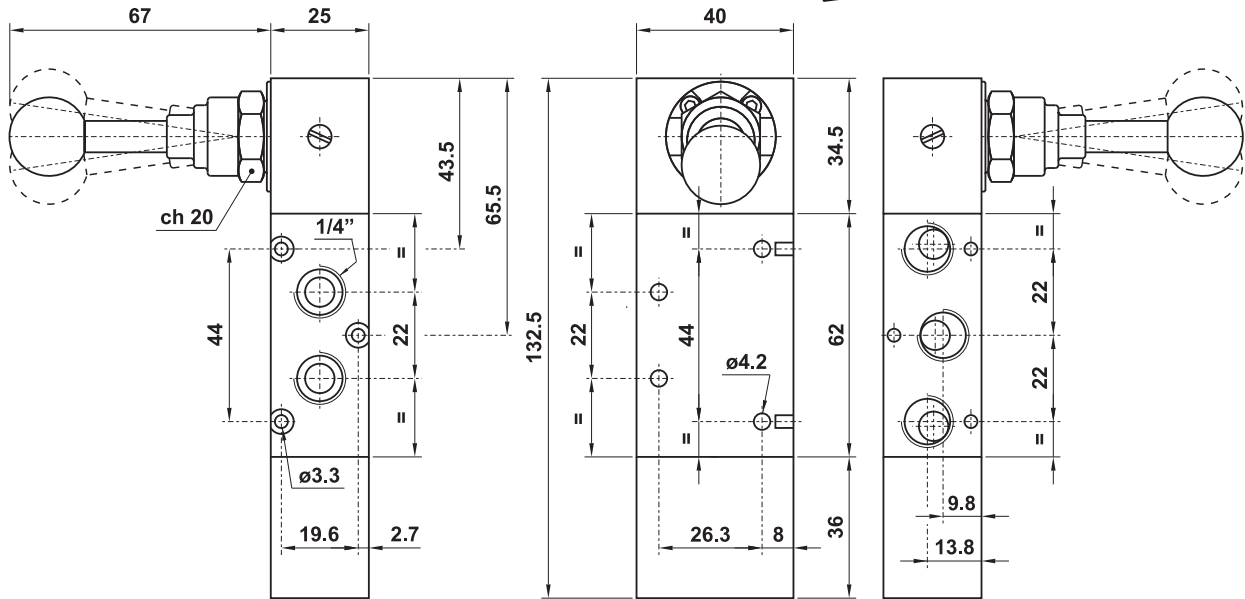
**US5223A ML90** open centers



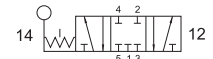
**US5223P ML90** pressurized centers



5/3 1/4" NPT 90° lever - spring return to center



**US5223C LL90** closed centers



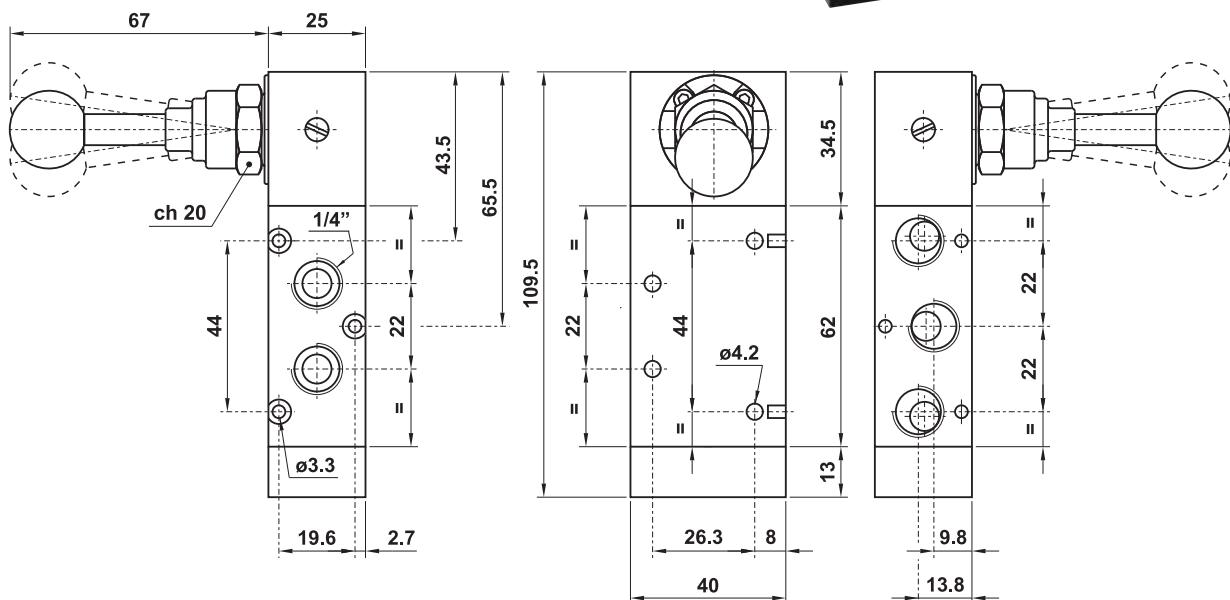
**US5223A LL90** open centers



**US5223P LL90** pressurized centers



5/3 1/4" NPT 90° lever - three stable positions

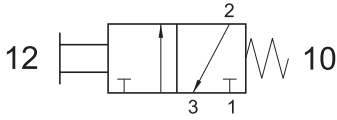


# Manually actuated valves

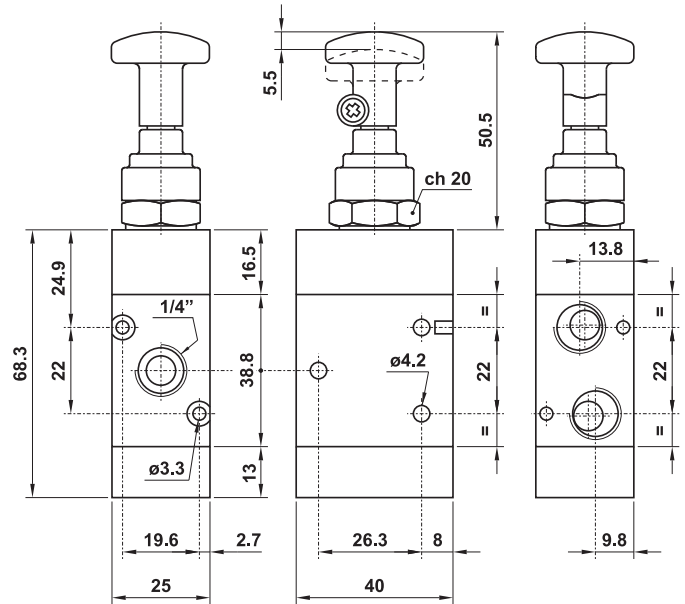


## US322 MT

3/2 1/4" NPT push/pull with spring return

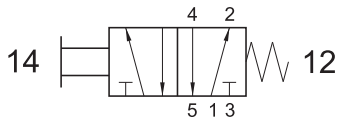


Standard push button: BLACK  
On request RED push button

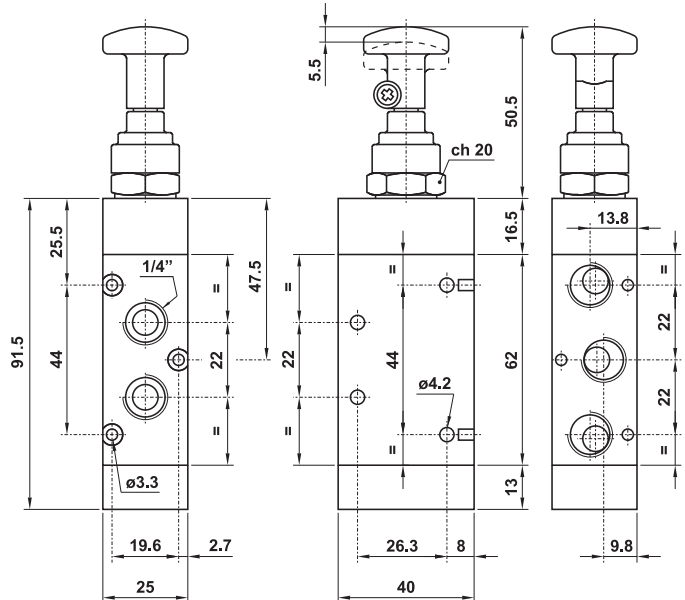


## US522 MT

5/2 1/4" NPT push/pull with spring return

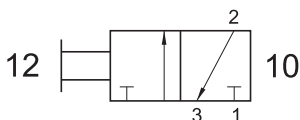


Standard push button: BLACK  
On request RED push button

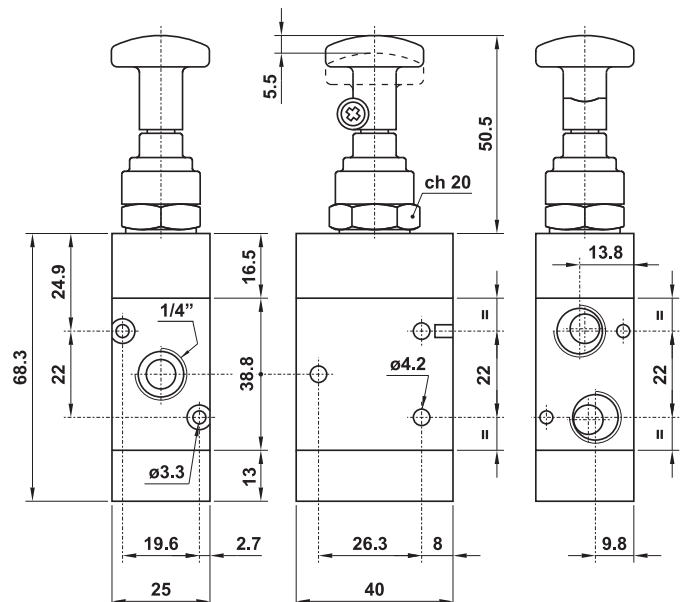


## US322 TT

3/2 1/4" NPT bi-stable push/pull



Standard push button: BLACK  
On request RED push button



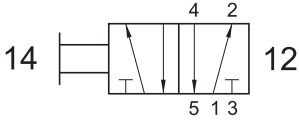


# Manually actuated valves

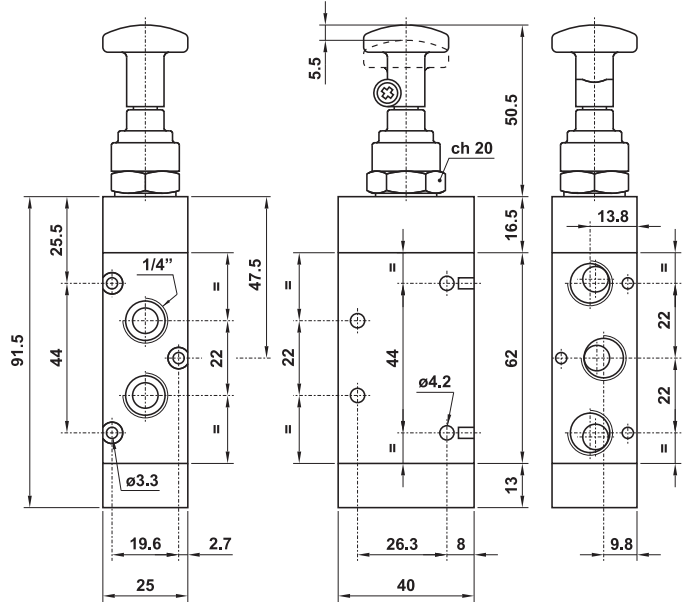


## US522 TT

5/2 1/4" NPT bi-stable push/pull

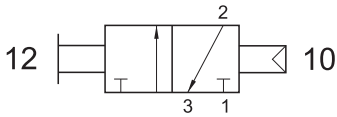


Standard push button: BLACK  
On request RED push button

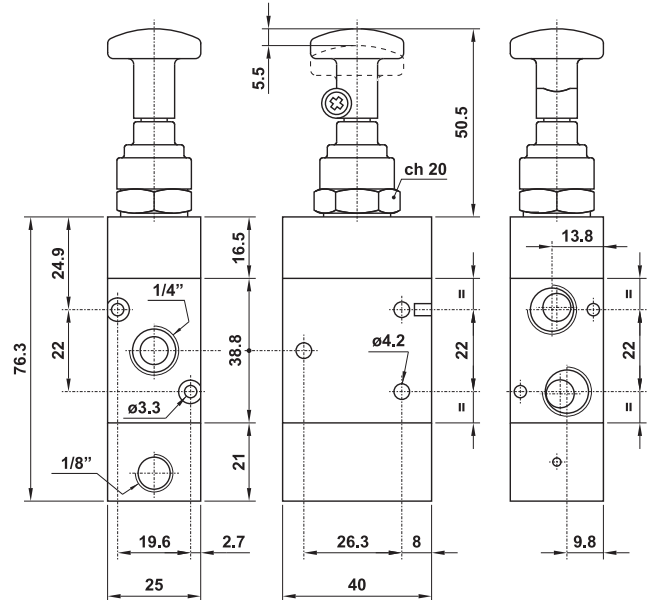


## US322 CT

3/2 1/4" NPT push/pull with separate pneumatically piloted return

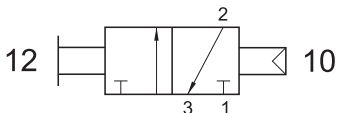


The return can be done only with pneumatic pilot signal.

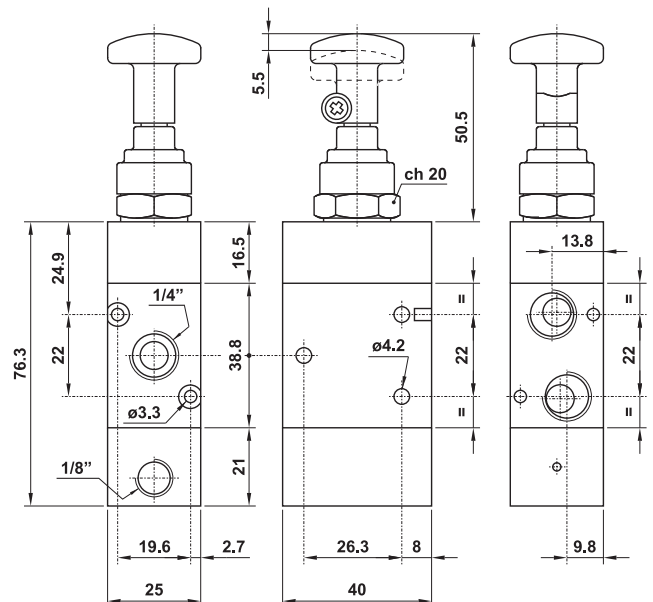


## US322 CTT

3/2 1/4" NPT bi-stable push/pull with separate pneumatically piloted return



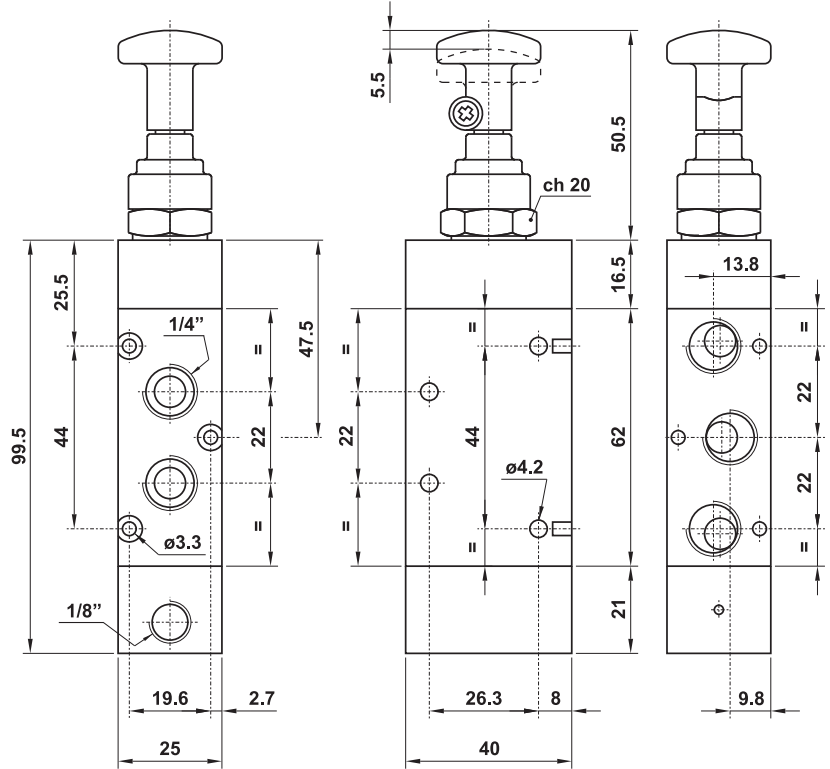
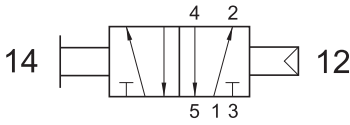
The return can be done with pneumatic pilot signal or by pulling the knob.



## US522 CT

5/2 1/4" NPT push/pull with separate pneumatically piloted return

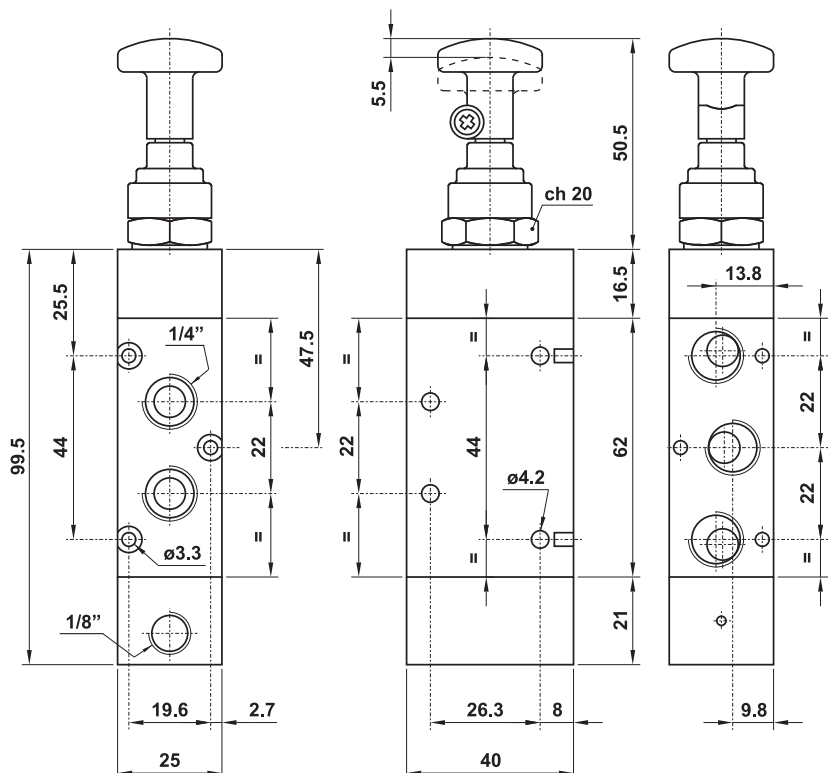
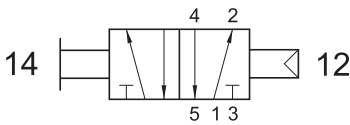
The return can be done only with pneumatic pilote signal.



## US522 CTT

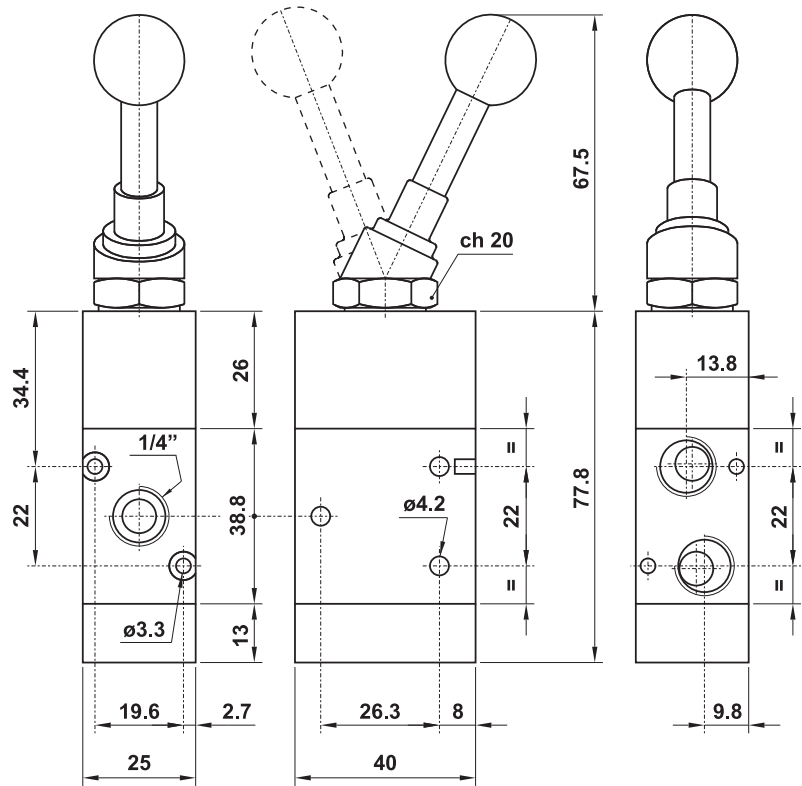
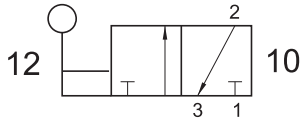
5/2 1/4" NPT bi-stable push/pull with separate pneumatically piloted return

The return can be done with pneumatic pilote signal or by pulling the knob.



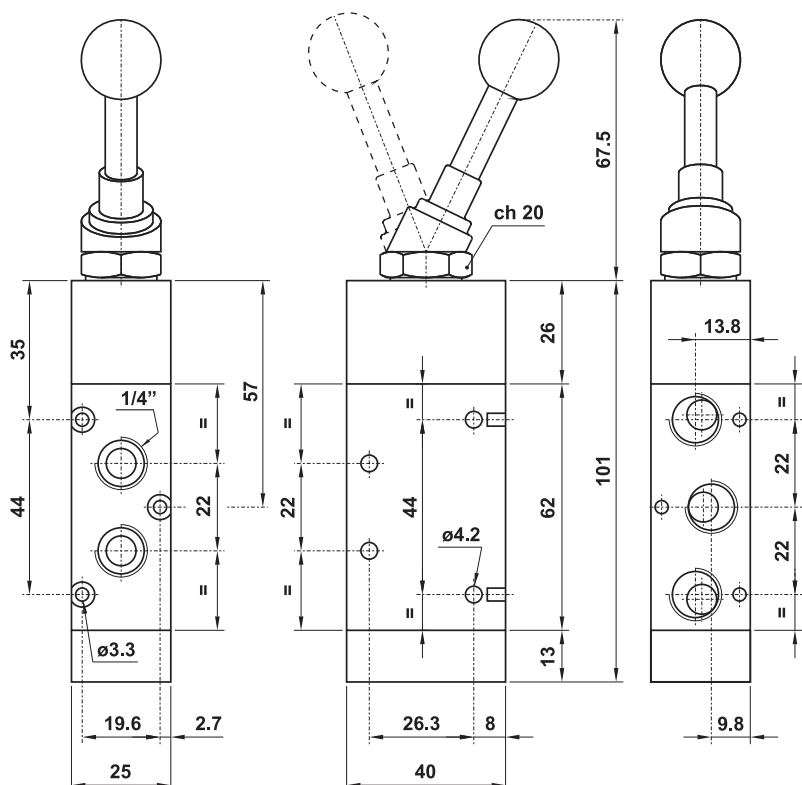
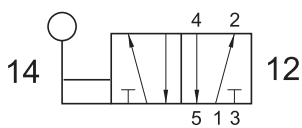
## US322 LL

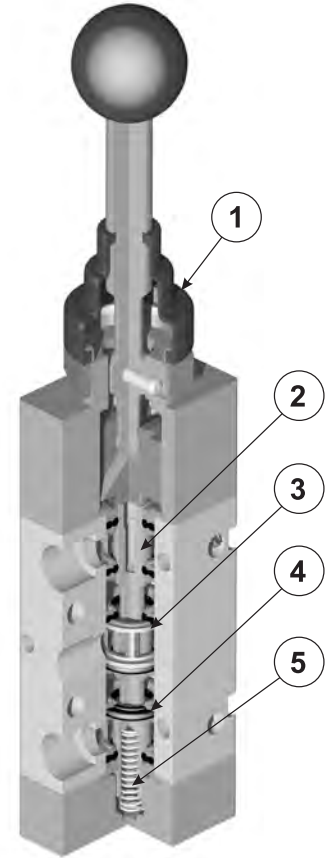
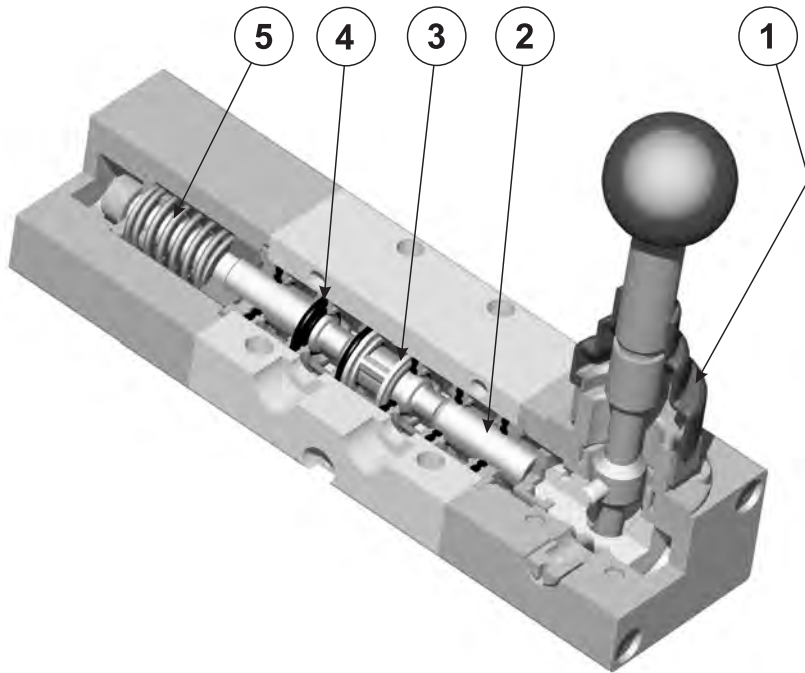
3/2 1/4" NPT bi-stable top lever



## US522 LL

5/2 1/4" NPT bi-stable top lever





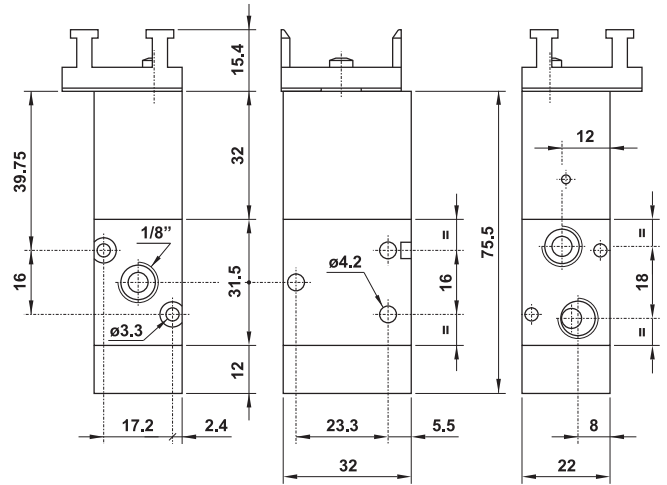
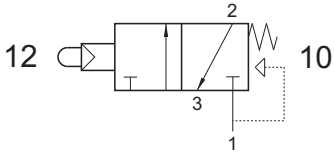
- 1. Cover for dust protection
- 2. Spool: aluminium 11S, nickered
- 3. Spacer: brass
- 4. Seal for spool: NBR
- 5. Spring: steel

code of kit	suitable for		
00.099.2	US321 LL	US321 LL90	US321 ML90
	US321 TT	US321 MT	
00.106.2	US521 LL	US521 LL90	US521 ML90
	US5213C LL90	US5213A LL90	US5213P LL90
	US5213C ML90	US5213A ML90	US5213P ML90
	US521 TT	US521 MT	
01.041.2	US322 LL	US322 LL90	US322 ML90
	US322 TT	US322 MT	
01.054.2	US522 LL	US522 LL90	US522 ML90
	US5223C LL90	US5223A LL90	US5223P LL90
	US5223C ML90	US5223A ML90	US5223P ML90
	US522 TT	US522 MT	

The kit contains the seals listed here and the necessary O-Rings for the functioning of the valve.

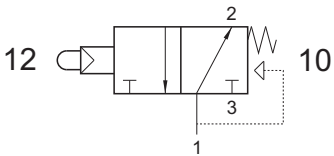
## US321 MB

3/2 1/8" NPT N/C servo-piloted tappet with actuator adaptor for panel mounting - air and spring return

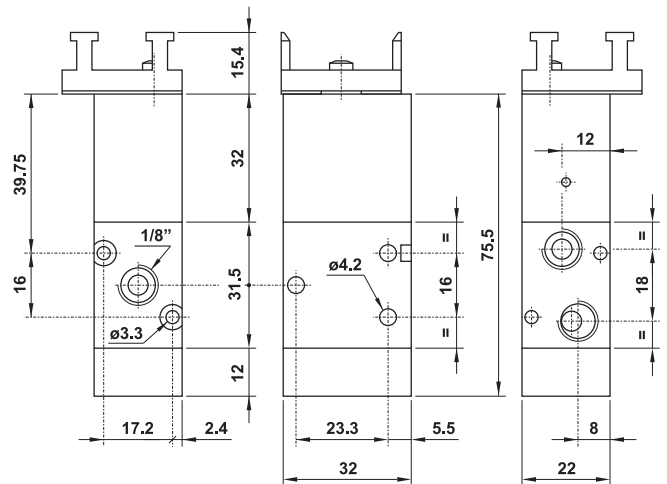


## US321 MBA

3/2 1/8" NPT N/O servo-piloted tappet with actuator adaptor for panel mounting - air and spring return

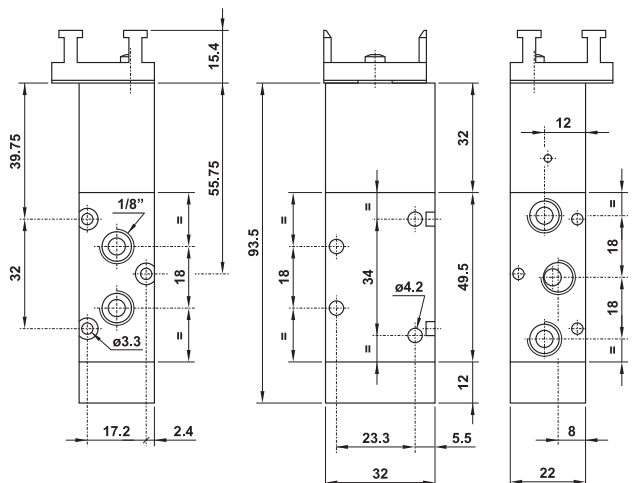
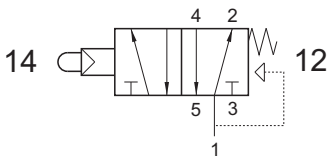


ONLY ALUMINIUM VERSION



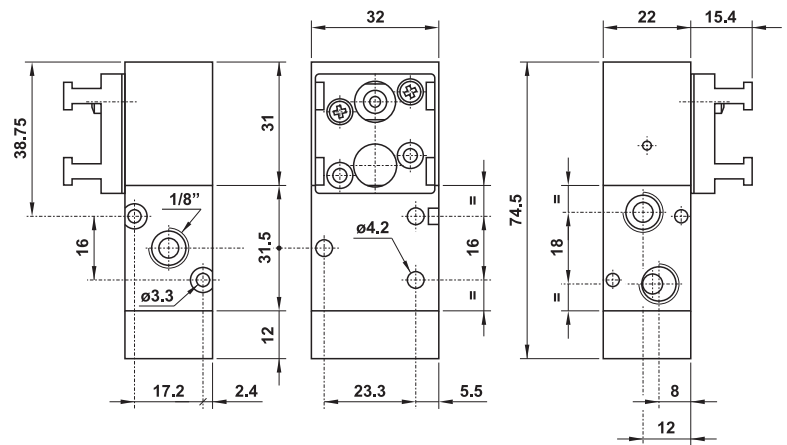
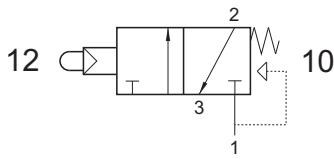
## US521 MB

5/2 1/8" NPT servo-piloted tappet with actuator adaptor for panel mounting - air and spring return



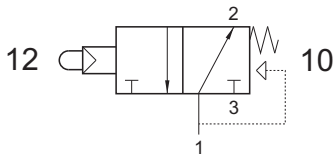
## US321 MB90

3/2 1/8" NPT N/C servo-piloted tappet with 90° actuator adaptor for panel mounting - air and spring return

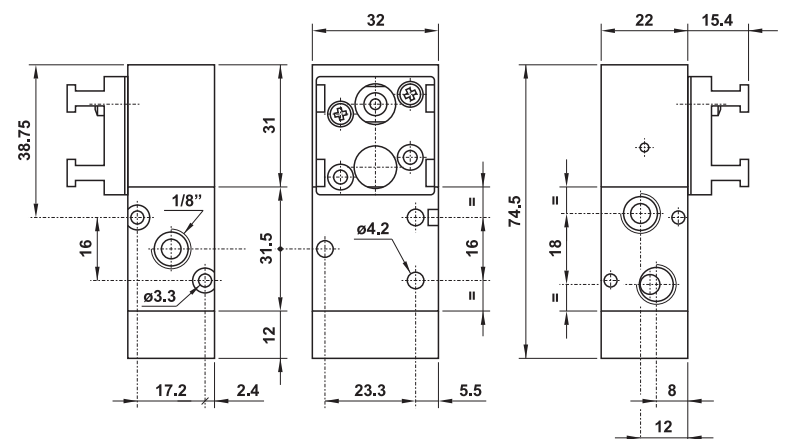


## US321 MBA90

3/2 1/8" NPT N/O servo-piloted tappet with 90° actuator adaptor for panel mounting - air and spring return

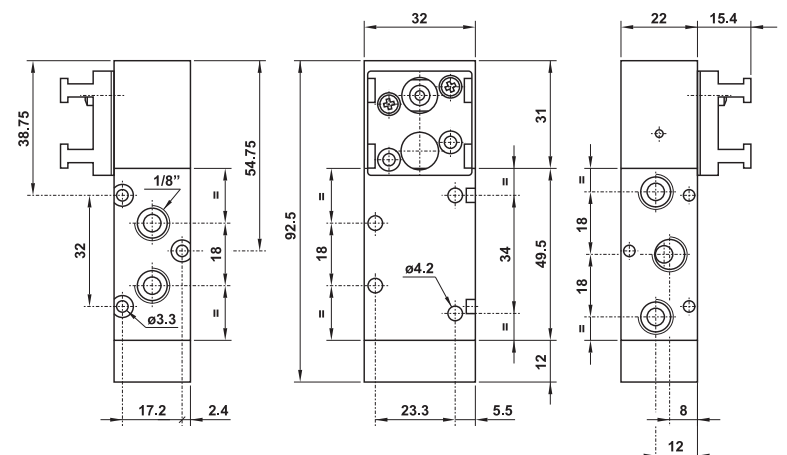
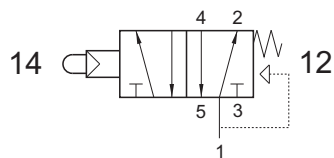


ONLY ALUMINIUM VERSION



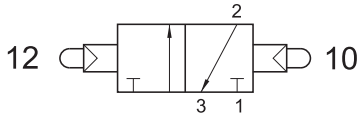
## US521 MB90

5/2 1/8" NPT servo-piloted tappet with 90° actuator adaptor for panel mounting - air and spring return

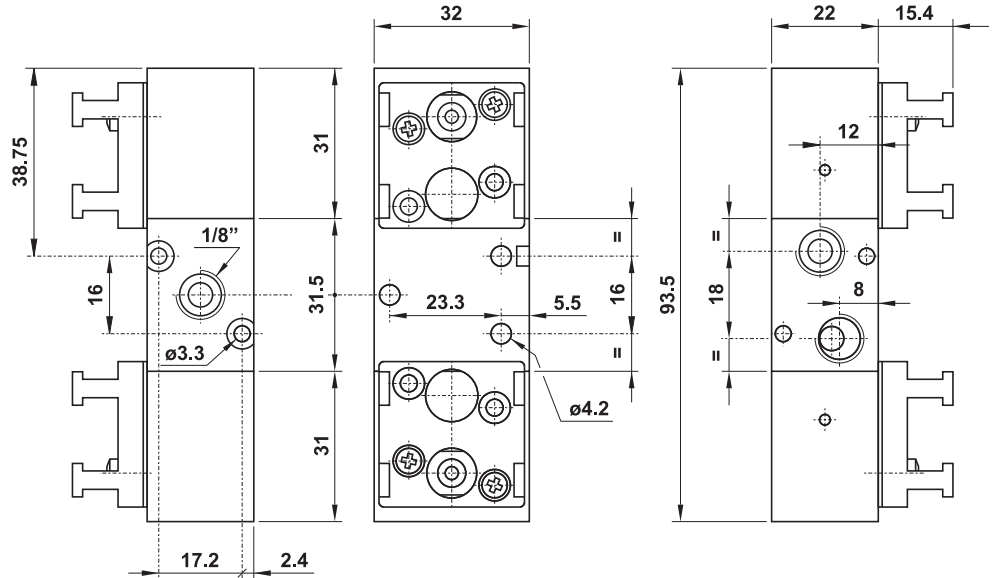


## US321 BB90

3/2 1/8" NPT double servo-piloted tappets with 90° actuator adaptor for panel mounting

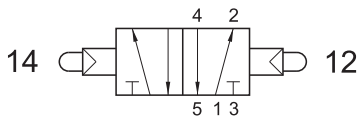


ONLY ALUMINIUM VERSION

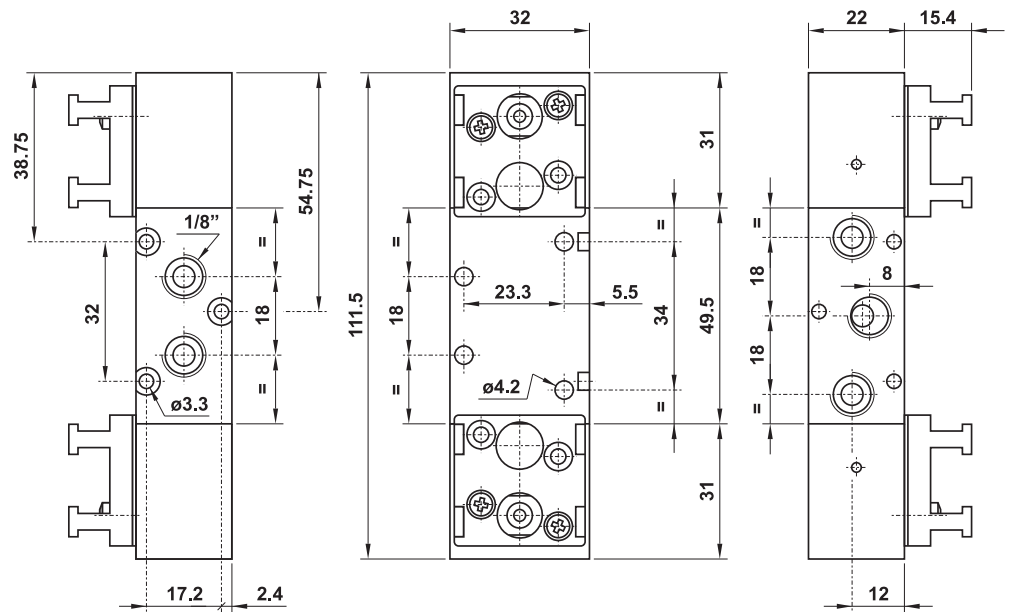
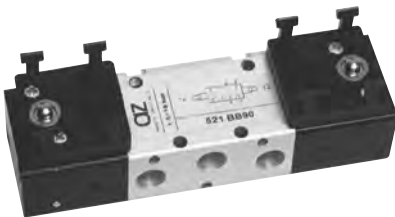


## US521 BB90

5/2 1/8" NPT double servo-piloted tappets with 90° actuator adaptor for panel mounting

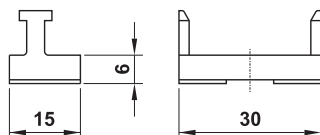


ONLY ALUMINIUM VERSION



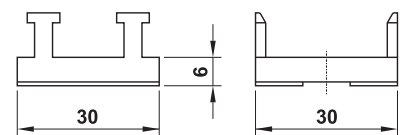
### 08.017.2

single adaptor for panel mounting actuator, complete with fixing screws



### 08.015.2

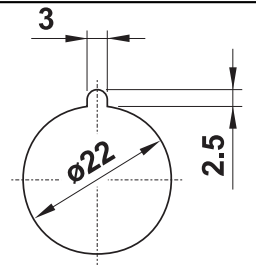
double adaptor for panel mounting actuator, complete with fixing screws



## Protected push button

code	standard colours
PR1/NRB	RED, BLACK and WHITE (supplied in kit)

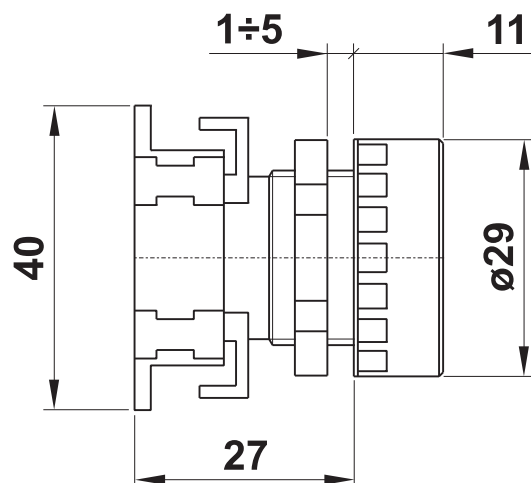
Panel mounting hole with antirotation feature



- The following colours can be ordered separately

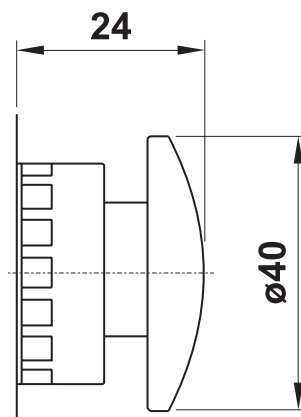
code	colour
DCV1	GREEN
DCG1	YELLOW
DCA1	LIGHT BLUE
DCB1	WHITE

code	colour
DCN1	BLACK
DCR1	RED



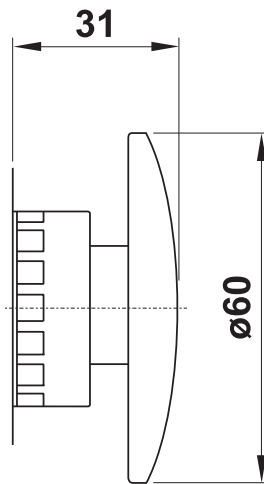
## ø40 mushroom

code	description	colour
PF2/40	axial mono-stable	RED
PF1/40	axial mono-stable	BLACK
PFB2/40	turn to unlock	RED



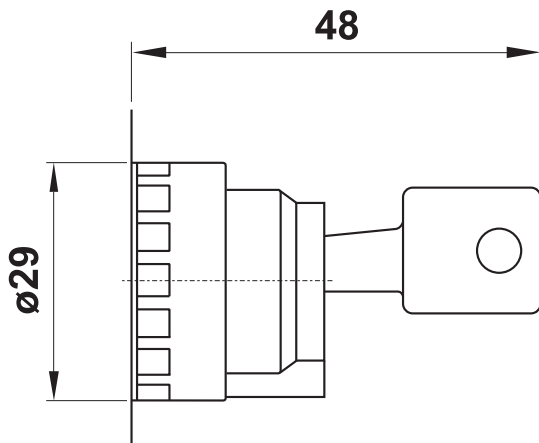


## ø60 palm



code	description	colour
PFBA2	multi-directional	RED
PFB2/60	turn to unlock	RED

## Key selector



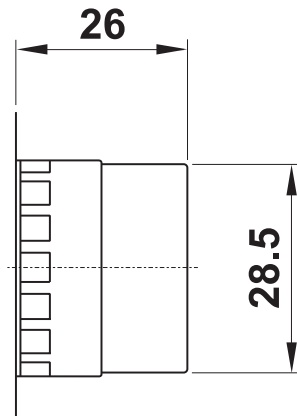
All locks and keys are identical

code	function	position to pull the key out
SSC/CD-V	0 1	only in central position
SSC/CD-Z	0 1	both positions
SSC/E-V	2 0 1	only in central position



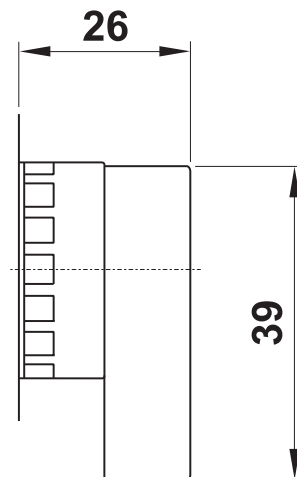
## Short lever selector

code	colour	function
SS1/CD	BLACK	0 1
SS1/CD-R	BLACK	0 ← 1
SS1/E	BLACK	2 0 1
SS1/E-RC	BLACK	2 → 0 ← 1



## Long lever selector

code	colour	function
SSP1/CD	BLACK	0 1
SSP1/CD/R	BLACK	0 ← 1
SSP1/E	BLACK	2 0 1
SSP1/E-RC	BLACK	2 → 0 ← 1

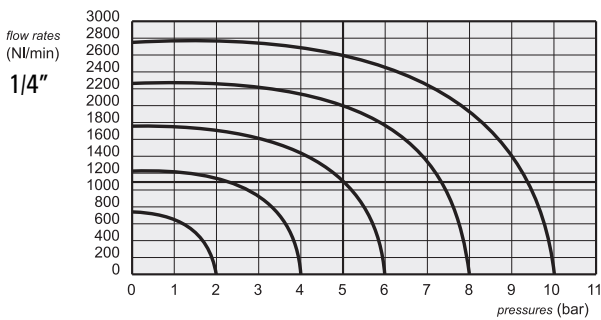
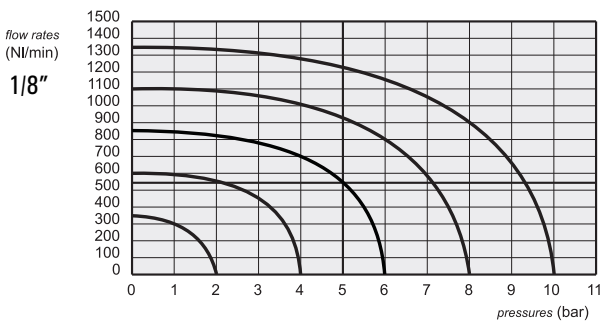


Material	High performance plastic material
Protection degree	IP 55
According to norms	EN 60947-5-1 VDE 0660 IEC 947-5
Temperature range	-15 +60°C (131°F)
Mechanical life time	500000 actuations

# Pneumatically piloted valves



- 3/2-5/2-5/3 spool valves with 1/8" NPT-1/4" NPT threaded ports
- Installation in-line, gang or manifold mounted (refer to pages 192-201)
- Comprehensive range of actuations
- Versions with integrated logic element
- Special versions on request



## Materials

Body: aluminium 11S

End cups: aluminium 11S

Springs: stainless steel

Seals: NBR

Spool: nickel plated aluminium

Internal parts: brass OT58

ATEX valves are only in aluminium.

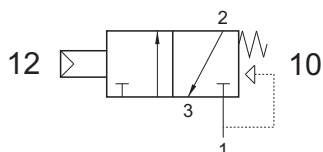
## Response times

	1/8"	1/4"
mono-stable	TRA (14): 6 ms TRR (12): 15 ms	TRA (14): 7 ms TRR (12): 15 ms
bi-stable	TRA (14): 7 ms TRR (12): 7 ms	TRA (14): 7 ms TRR (12): 7 ms

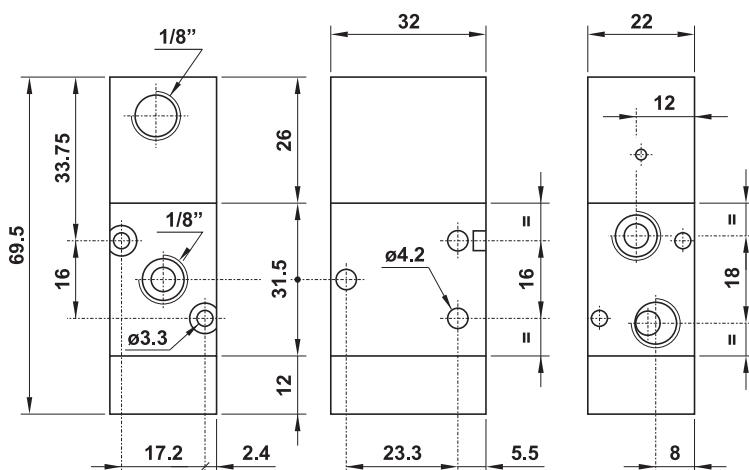
Nominal diameter	1/8" NPT: 5 mm 1/4" NPT: 7.5 mm	
Temperature range	max +60°C (140°F)	
Operating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50µ filtered, lubricated or non lubricated air	

## US321 MC

3/2 1/8" NPT N/C pneumatic pilot - air and spring return

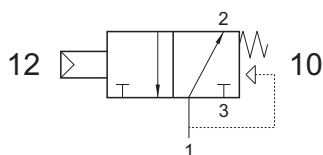


It cannot be used as normally open valve.

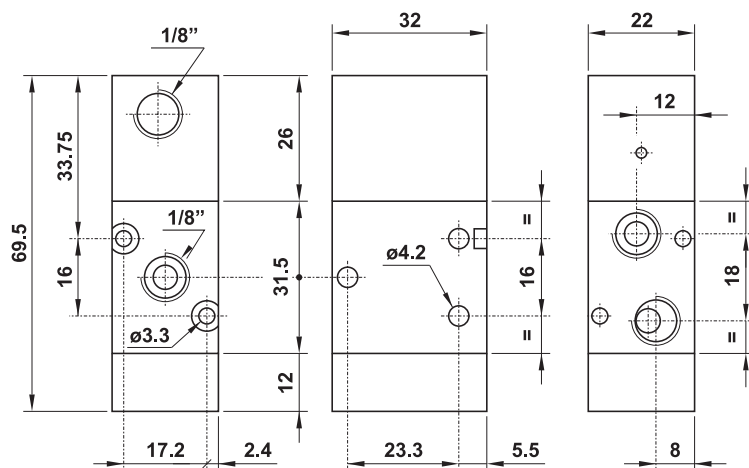


## US321 MCA

3/2 1/8" NPT N/O pneumatic pilot - air and spring return

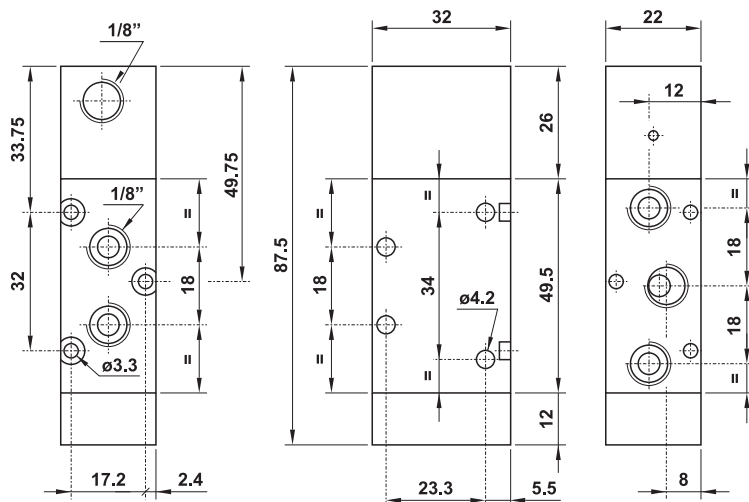
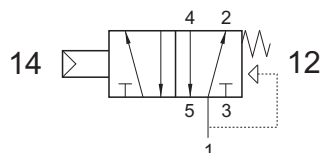


It cannot be used as normally closed valve.



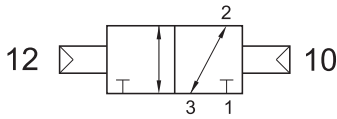
## US521 MC

5/2 1/8" NPT pneumatic pilot - air and spring return

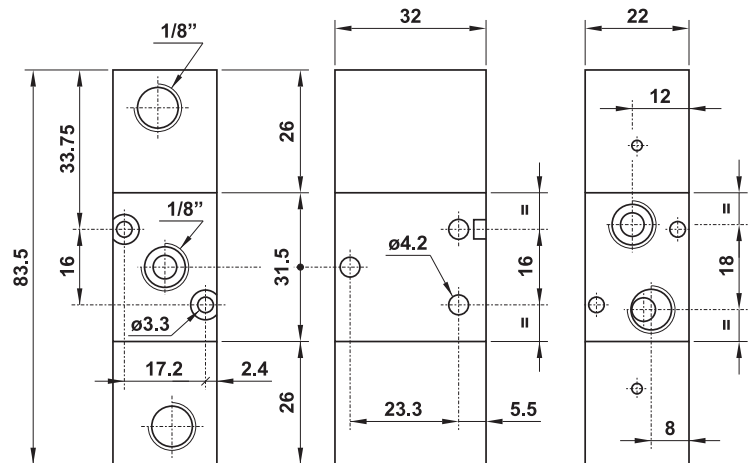


## US321 CC

3/2 1/8" NPT double pneumatic pilot

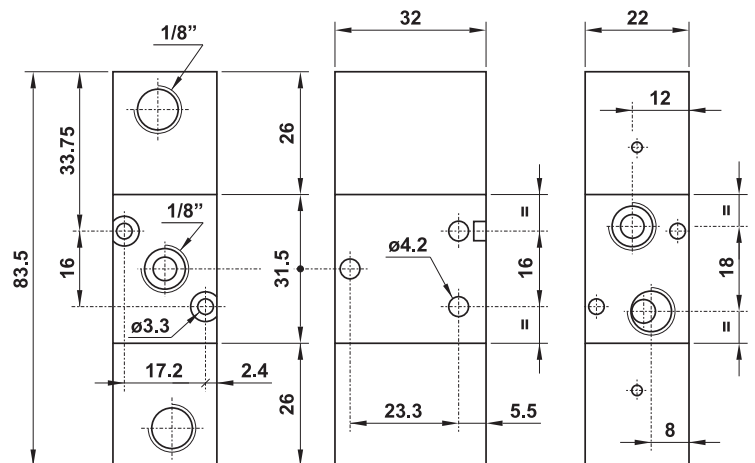
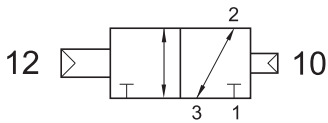


It can be used with vacuum.



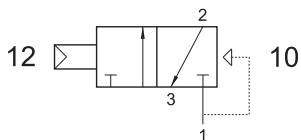
## US321 CCD

3/2 1/8" NPT double pneumatic pilot - with differential

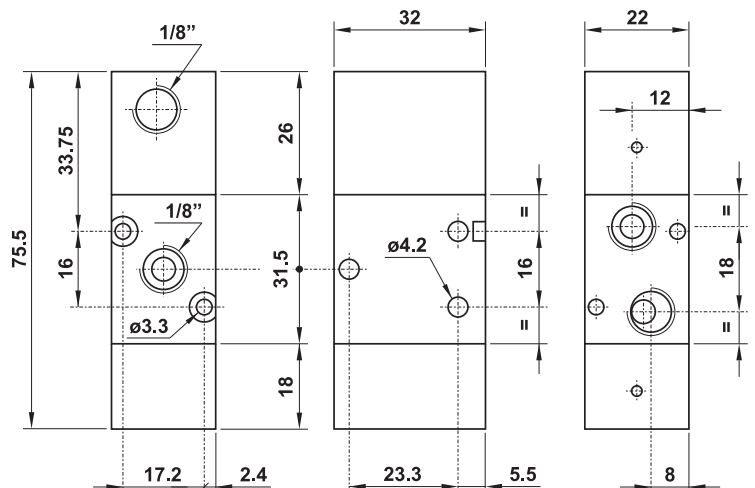
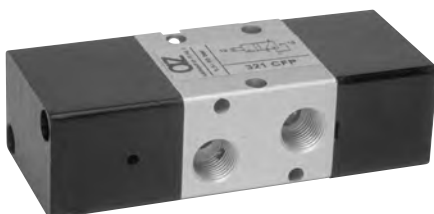


## US321 CFP

3/2 1/8" NPT N/C pneumatic pilot - pneumatic return



It cannot be used as normally open valve.

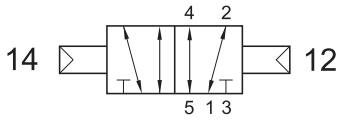


# Pneumatically piloted valves

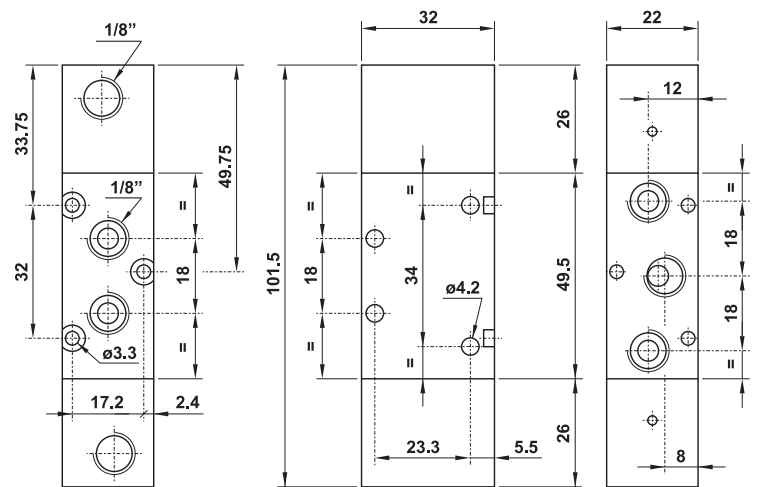


## US521 CC

5/2 1/8" NPT double pneumatic pilot

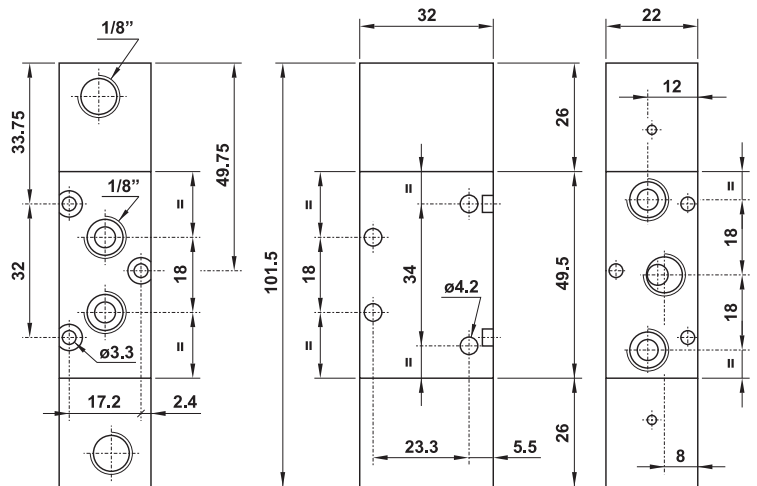
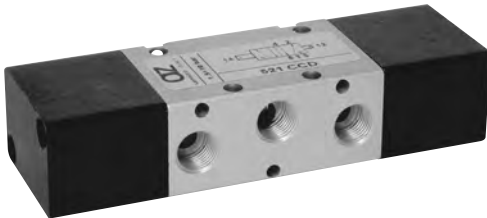
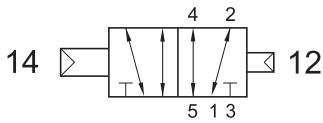


It can be used with vacuum.



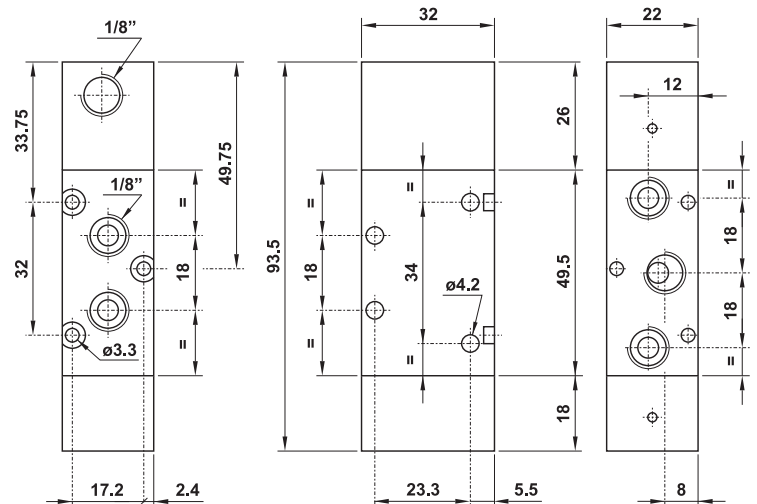
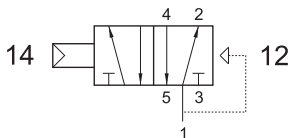
## US521 CCD

5/2 1/8" NPT double pneumatic pilot - with differential



## US521 CFP

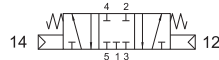
5/2 1/8" NPT pneumatic pilot - pneumatic return



# Pneumatically piloted valves



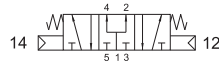
**US5213C CC** closed centers



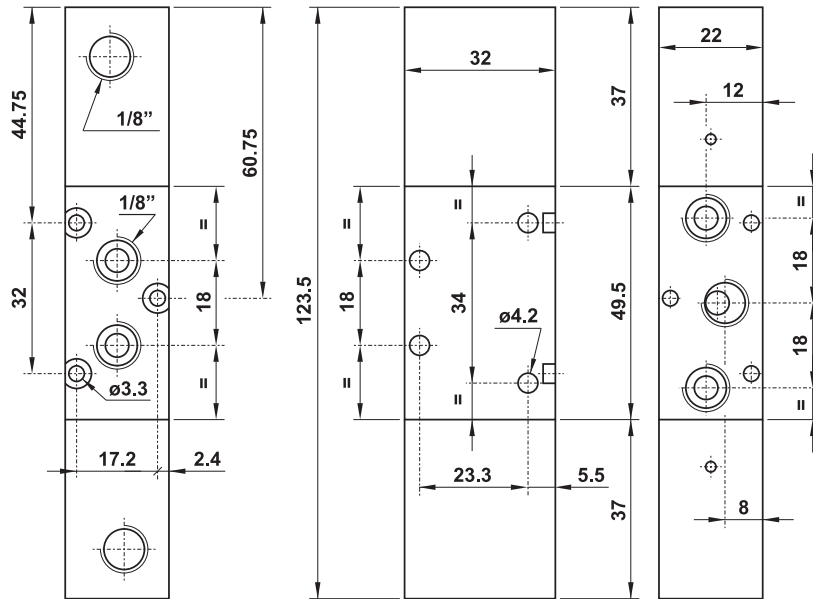
**US5213A CC** open centers



**US5213P CC** pressurized centers



5/3 1/8" NPT double pneumatic pilot



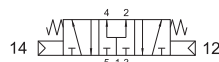
**US5223C CC** closed centers



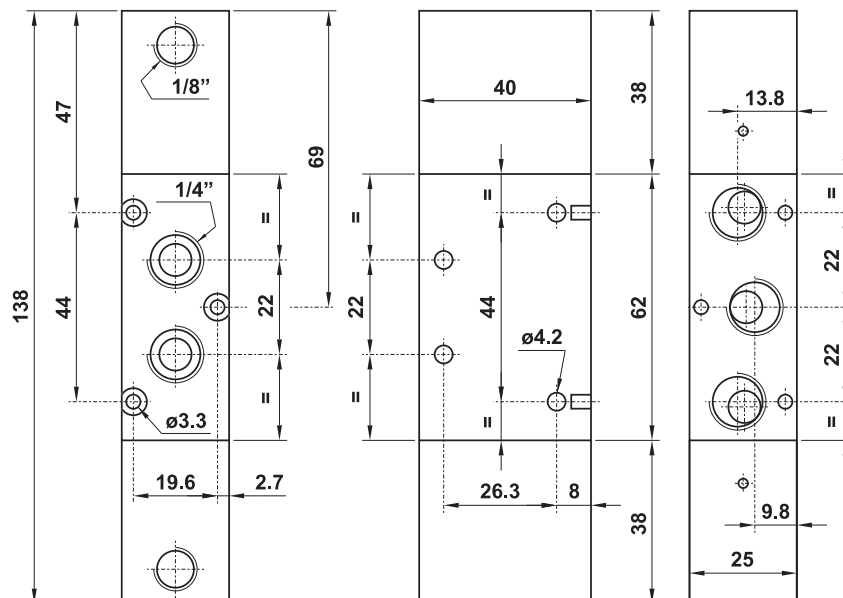
**US5223A CC** open centers



**US5223P CC** pressurized centers

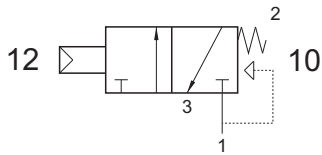


5/3 1/4" NPT double pneumatic pilot

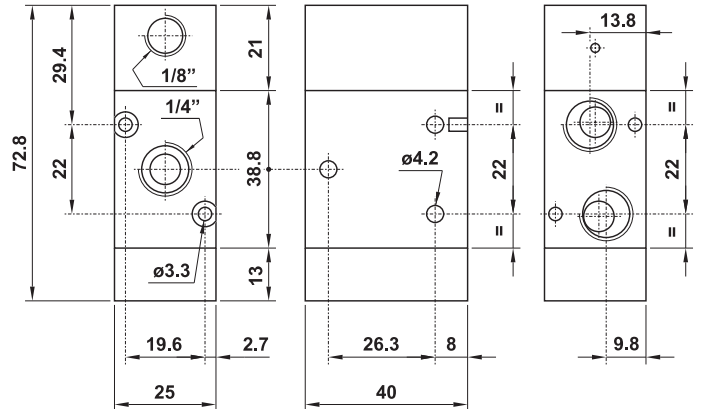
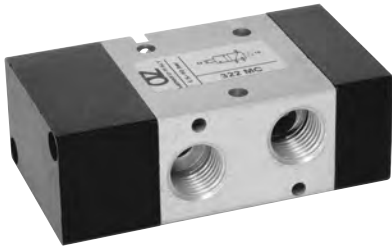


## US322 MC

3/2 1/4" NPT N/C pneumatic pilot - air and spring return

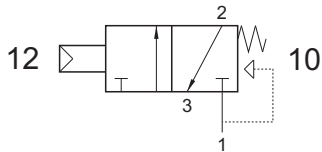


It cannot be used as normally open valve.

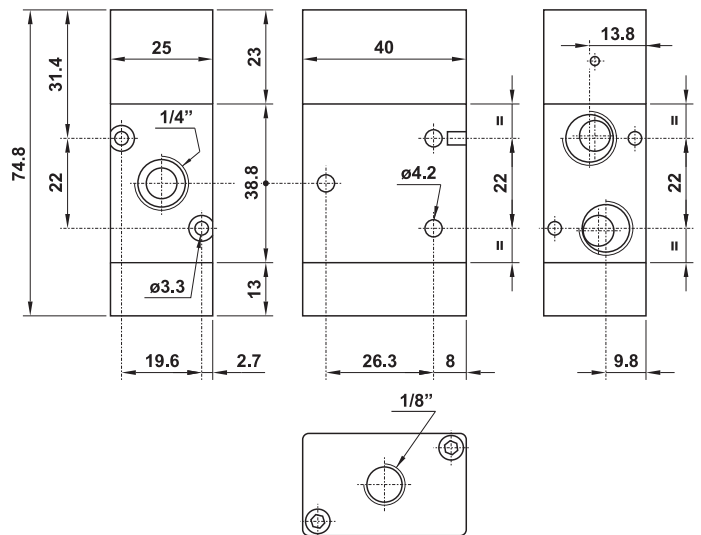


## US322 MC SUP

3/2 1/4" NPT N/C pneumatic pilot on the top - air and spring return

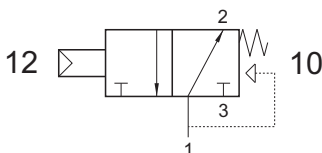


It cannot be used as normally open valve.

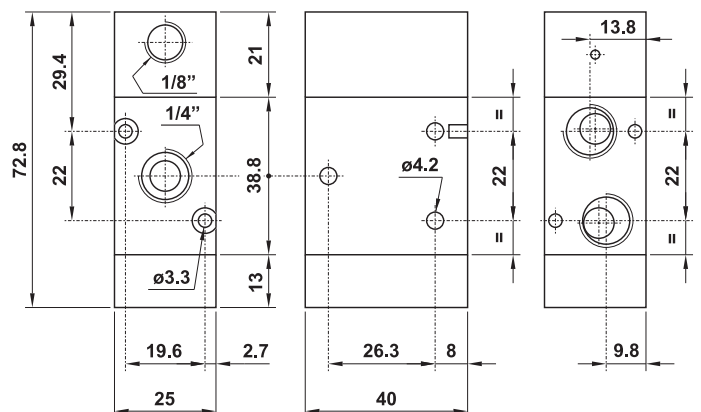
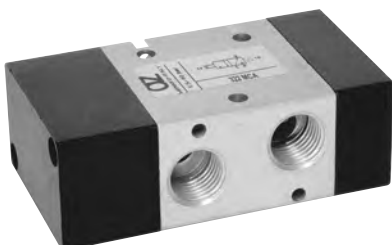


## US322 MCA

3/2 1/4" NPT N/O pneumatic pilot - air and spring return



It cannot be used as normally closed valve.

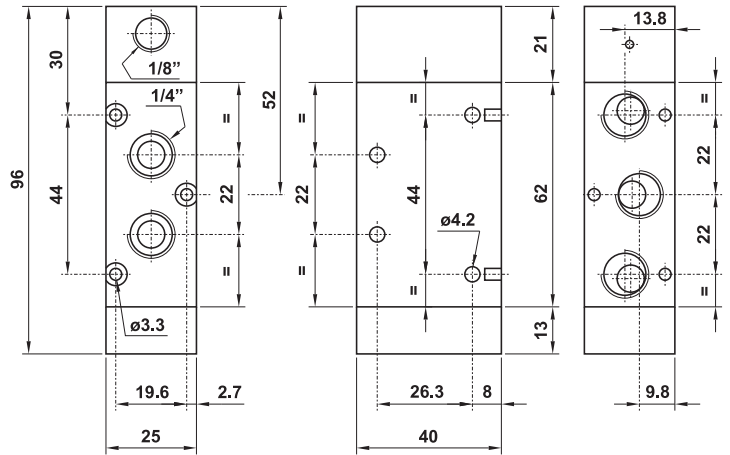
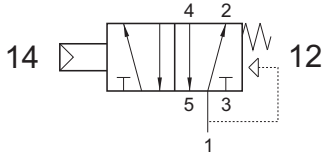






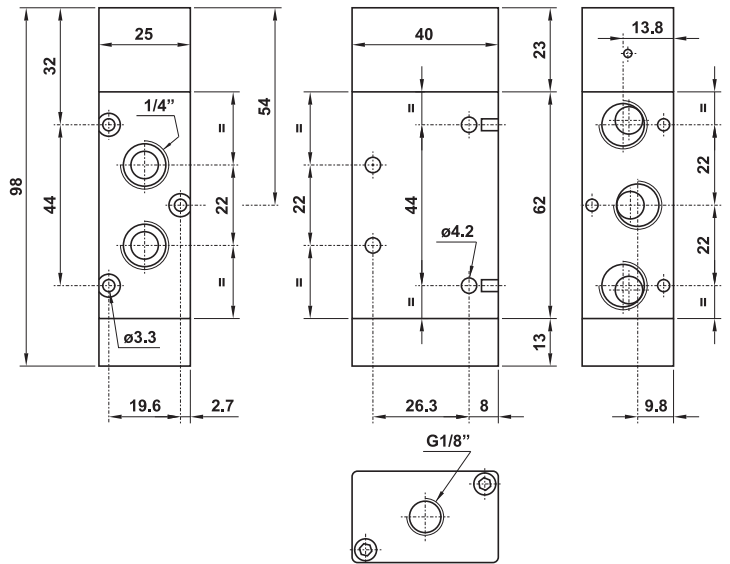
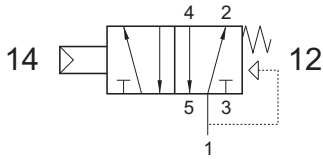
## US522 MC

5/2 1/4" NPT pneumatic pilot - air and spring return



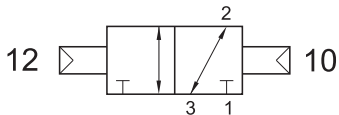
## US522 MC SUP

5/2 1/4" NPT pneumatic pilot on the top - air and spring return

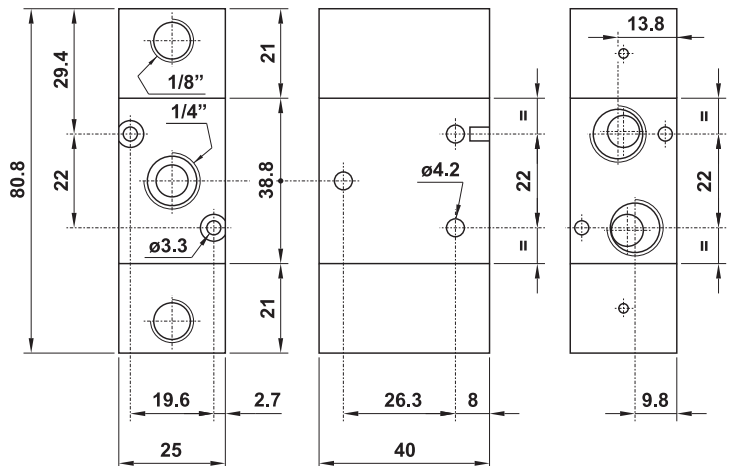


## US322 CC

3/2 1/4" NPT double pneumatic pilot

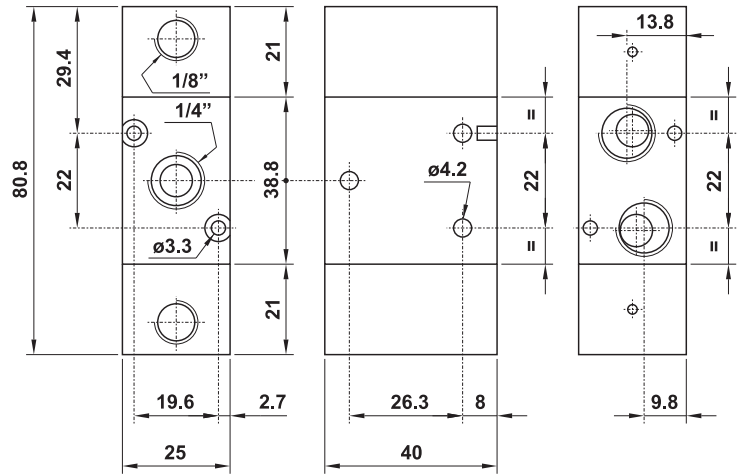
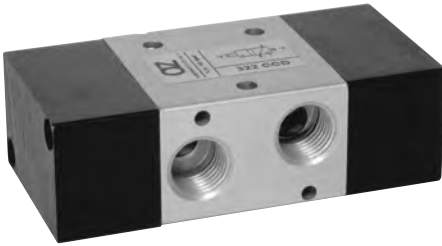
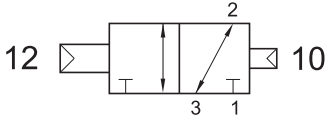


It can be used with vacuum.



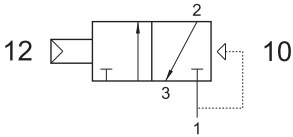
## US322 CCD

3/2 1/4" NPT double pneumatic pilot - with differential

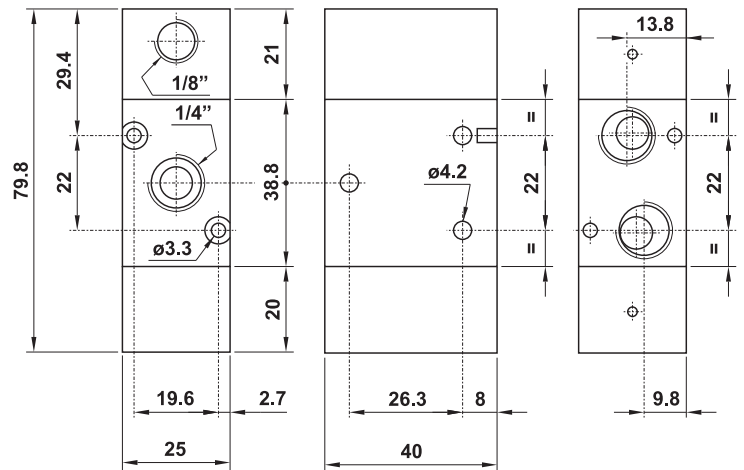
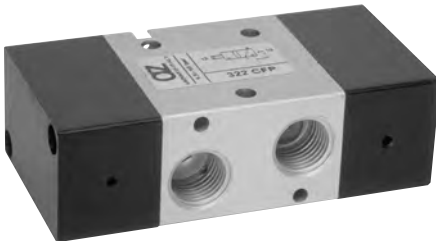


## US322 CFP

3/2 1/4" NPT N/C pneumatic pilot - pneumatic return

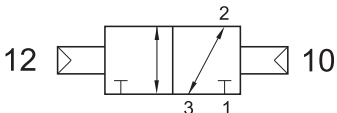


It cannot be used as normally open valve.

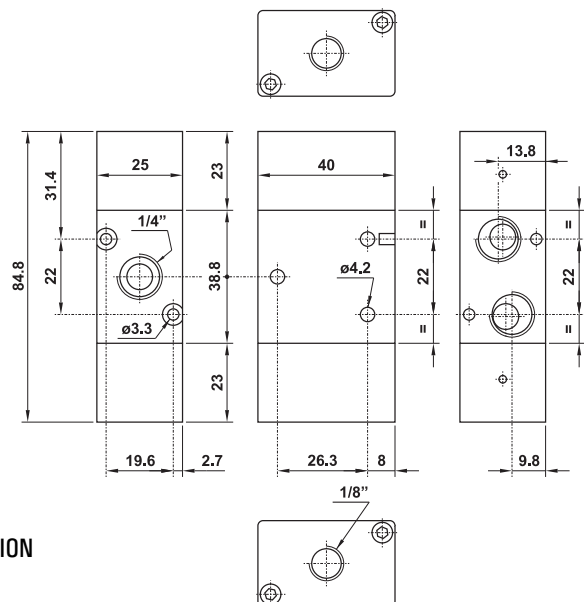


## US322 CC SUP

3/2 1/4" NPT double pneumatic pilot on the top



It can be used with vacuum.



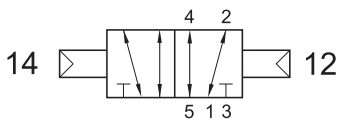
ONLY ALUMINIUM VERSION

# Pneumatically piloted valves

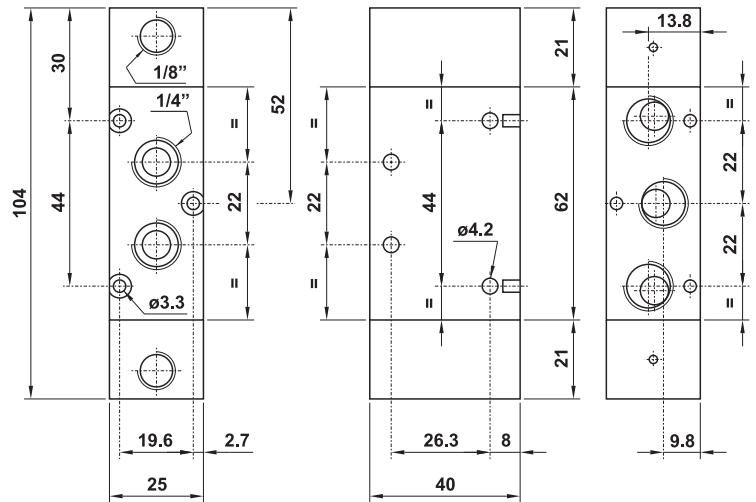


## US522 CC

5/2 1/4" NPT double pneumatic pilot

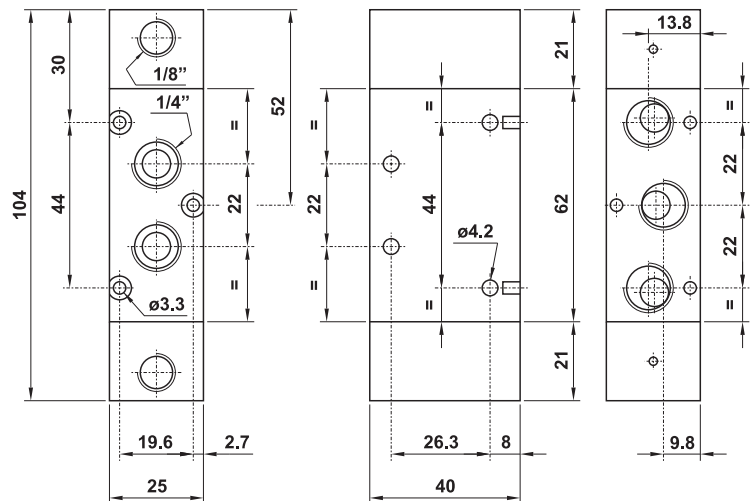
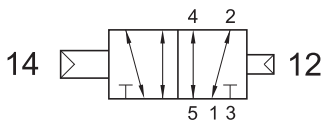


It can be used with vacuum.



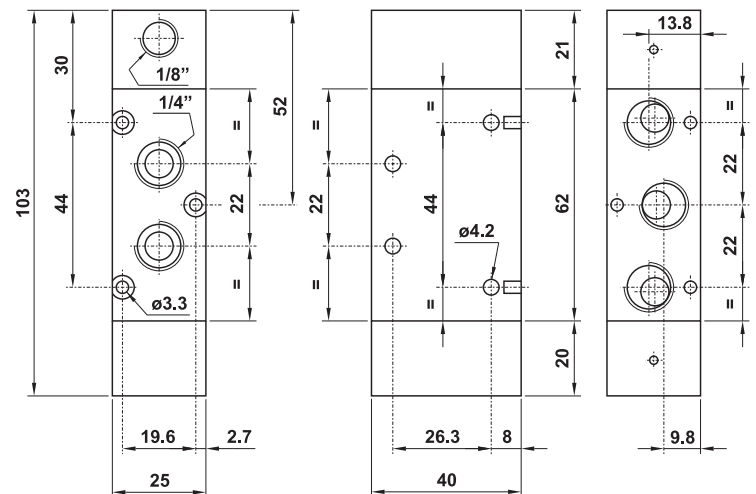
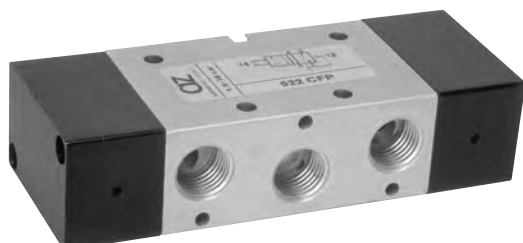
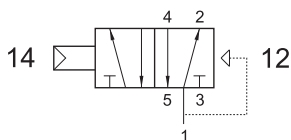
## US522 CCD

5/2 1/4" NPT double pneumatic pilot - with differential



## US522 CFP

5/2 1/4" NPT pneumatic pilot - pneumatic return

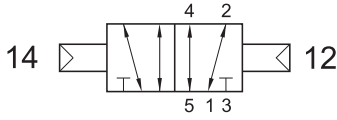


# Pneumatically piloted valves

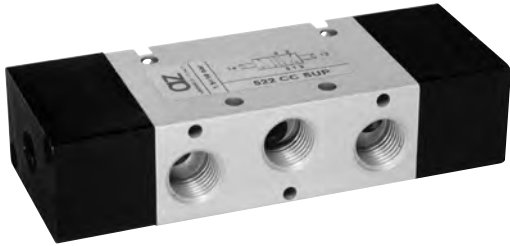


## US522 CC SUP

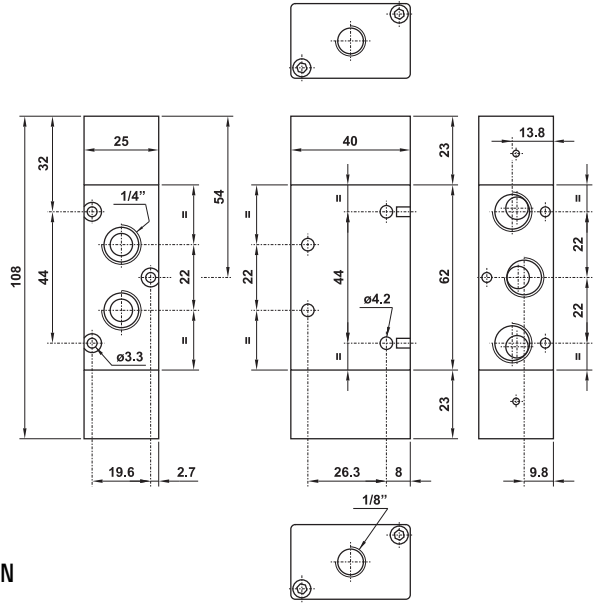
5/2 1/4" NPT double pneumatic pilot on the top



It can be used with vacuum.

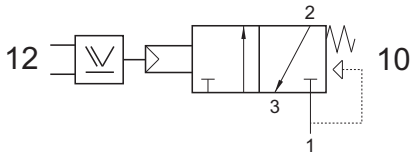


ONLY ALUMINIUM VERSION

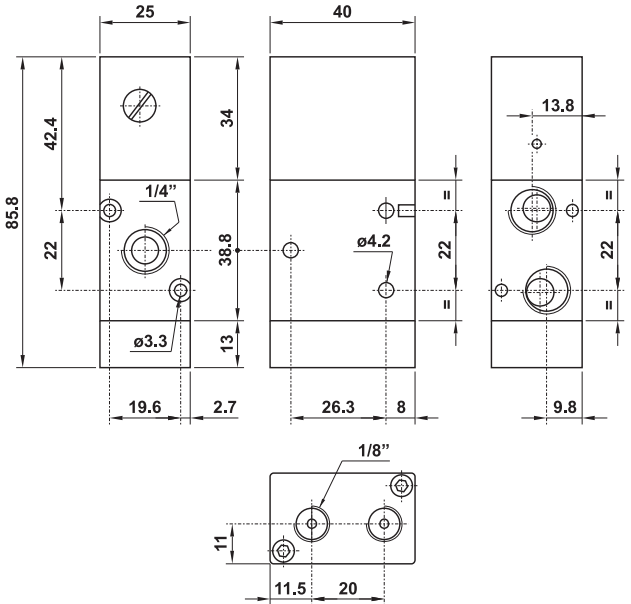


## US322 ORM

3/2 1/4" NPT N/C pneumatic pilot with integrated OR element - air and spring return

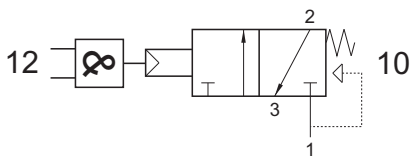


It cannot be used as normally open valve.

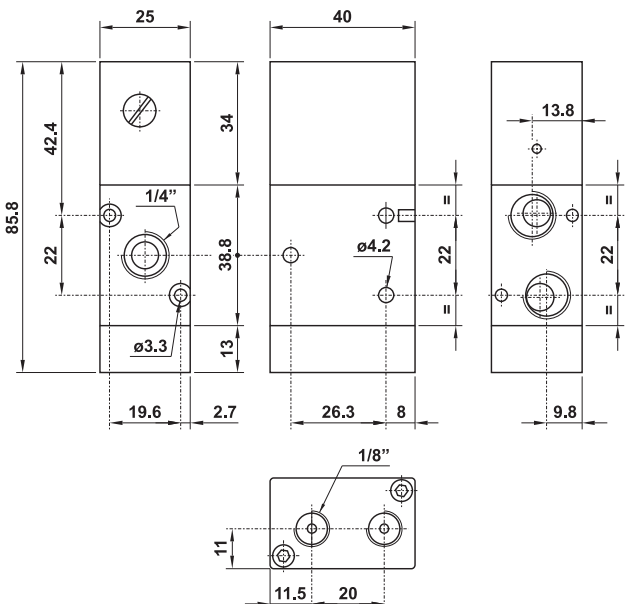


## US322 ANDM

3/2 1/4" NPT N/C pneumatic pilot with integrated AND element - air and spring return

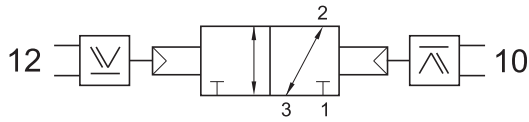


It cannot be used as normally open valve.

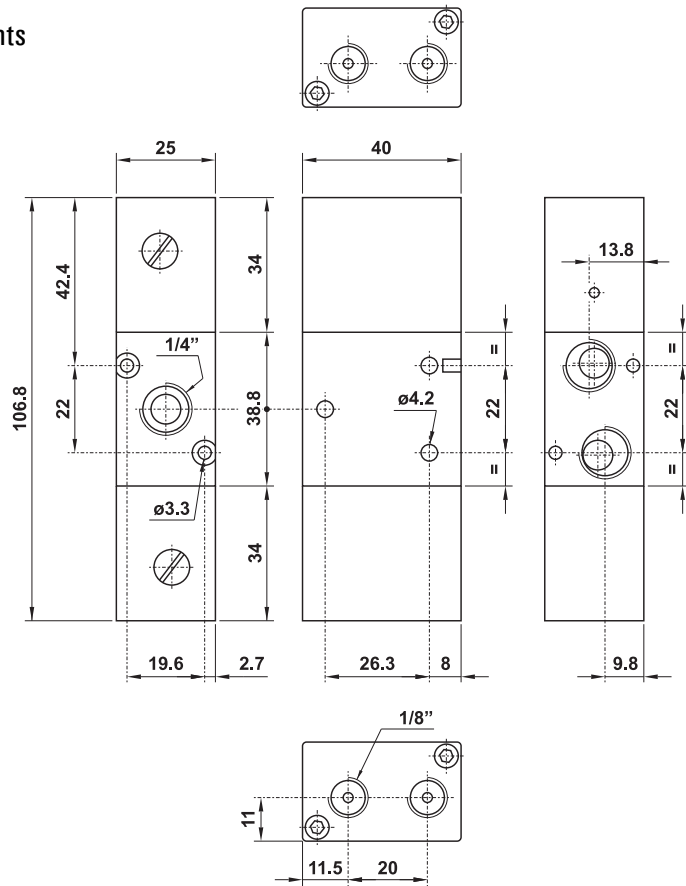


## US322 2OR

3/2 1/4" NPT double pneumatic pilot with integrated OR elements

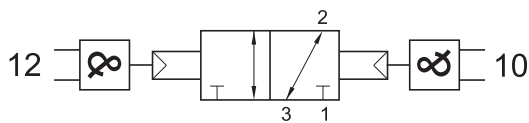


ONLY ALUMINIUM VERSION

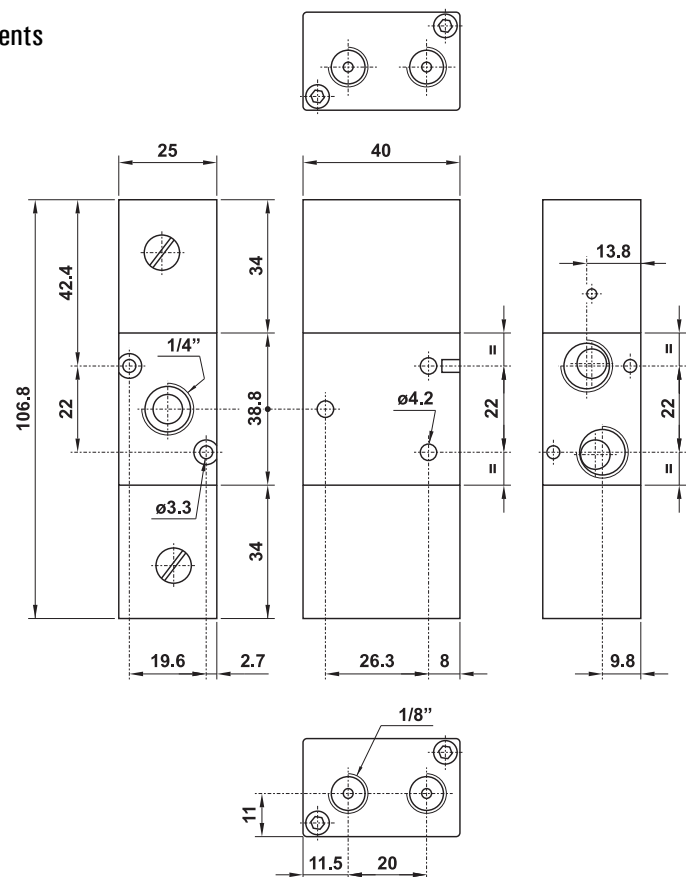


## US322 2AND

3/2 1/4" NPT double pneumatic pilot with integrated AND elements

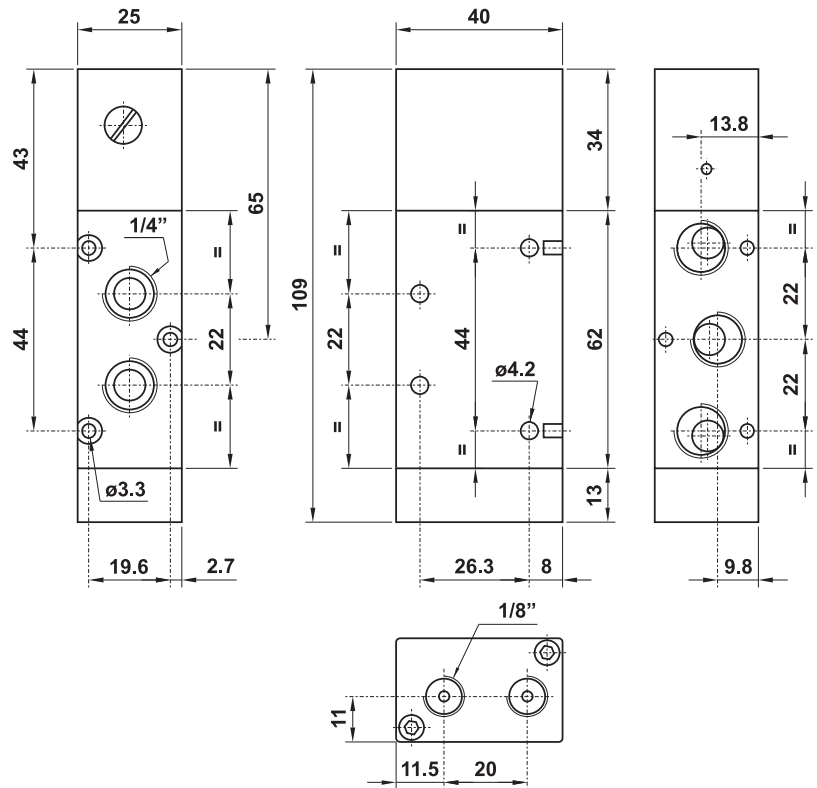
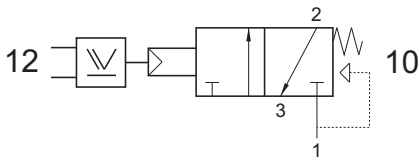


ONLY ALUMINIUM VERSION



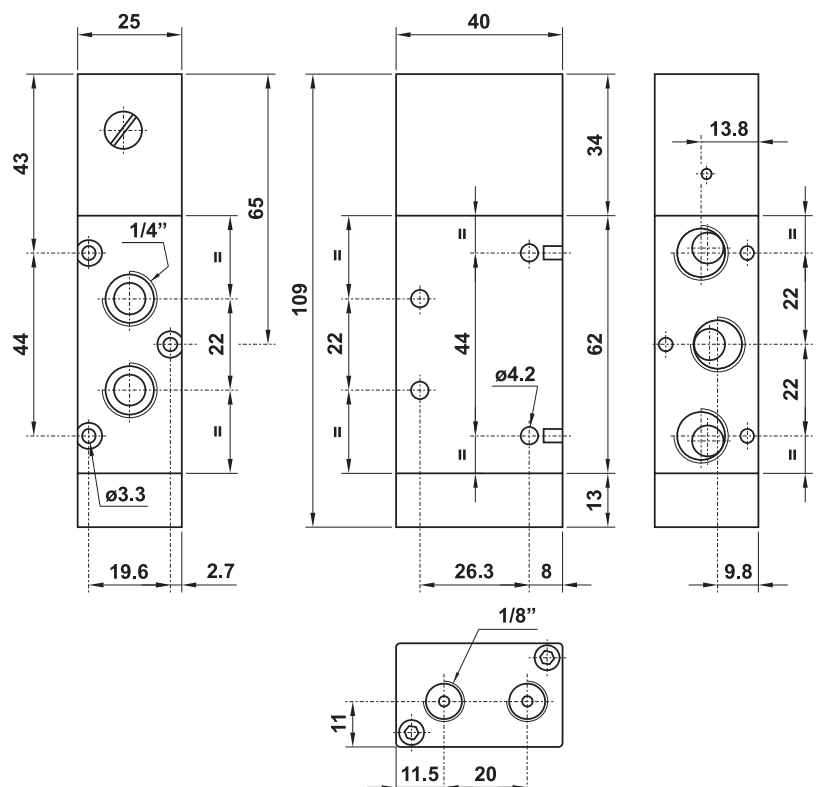
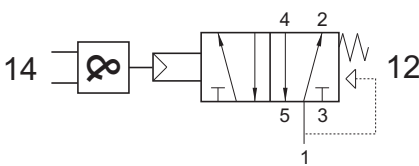
## US522 ORM

5/2 1/4" NPT pneumatic pilot with integrated OR element - air and spring return



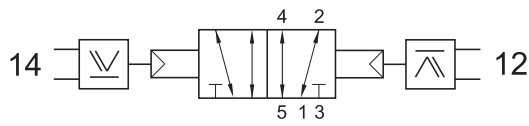
## US522 ANDM

5/2 1/4" NPT pneumatic pilot with integrated AND element - air and spring return

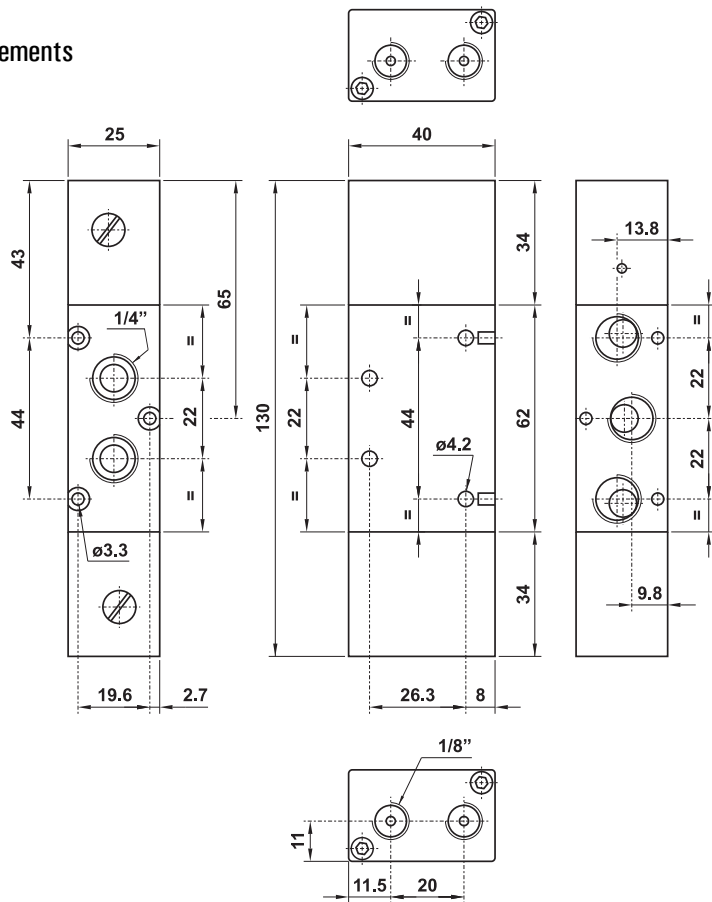


## US522 2OR

5/2 1/4" NPT double pneumatic pilot with integrated OR elements

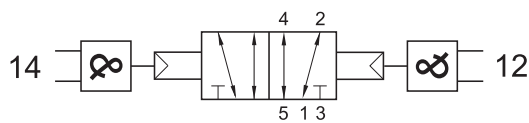


ONLY ALUMINIUM VERSION

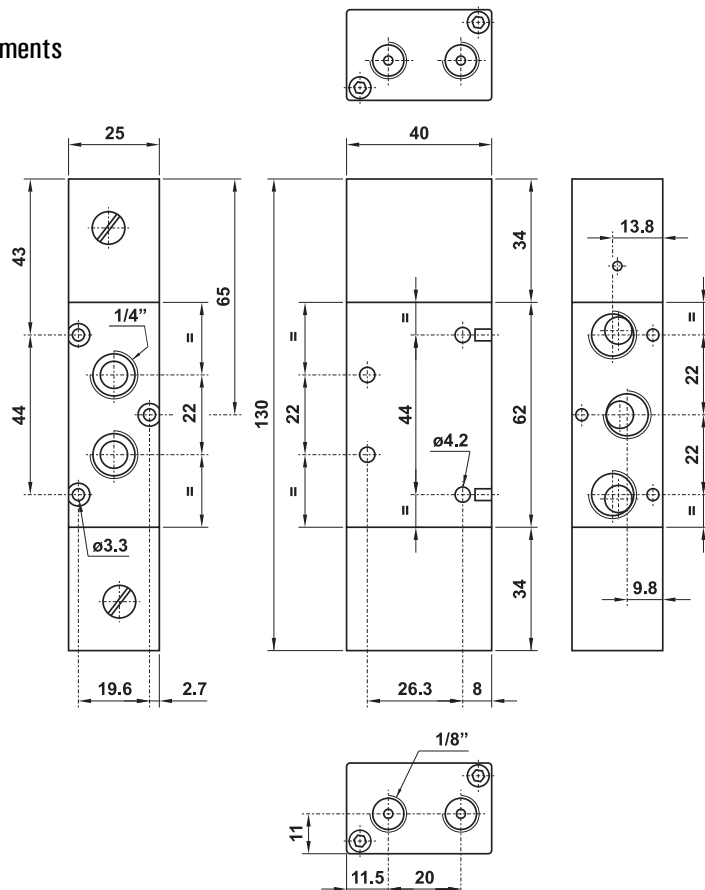


## US522 2AND

5/2 1/4" NPT double pneumatic pilot with integrated AND elements

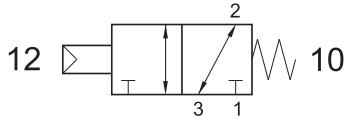


ONLY ALUMINIUM VERSION



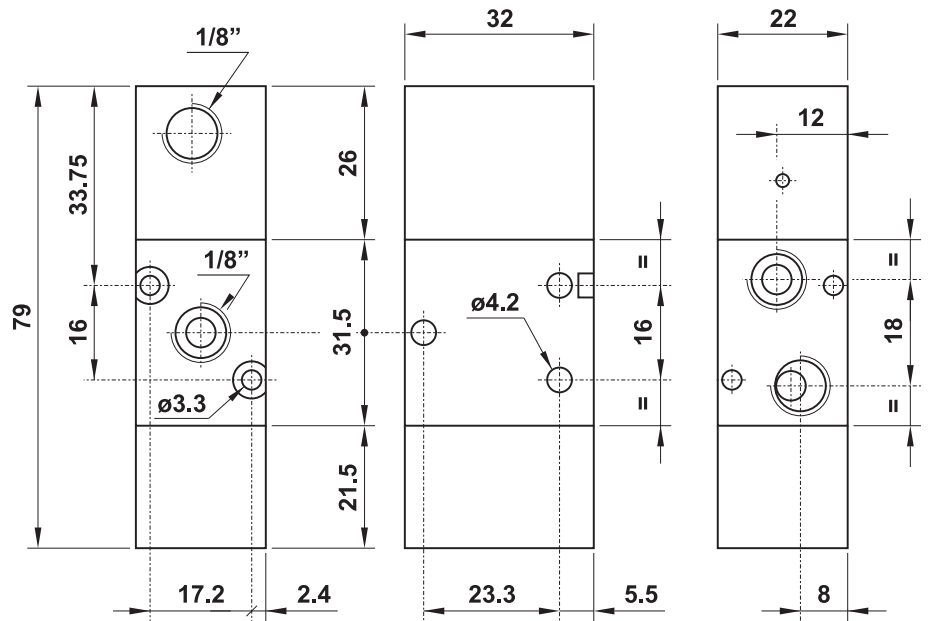
## US321 MRC

3/2 1/8" NPT pneumatic pilot - REINFORCED spring return



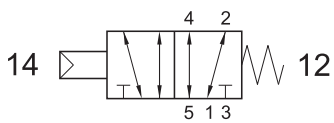
Operating pressure: -0.9 ... 10 bar (Vacuum ... 145 PSI)

Actuating pressure: 2.5 ... 10 bar (36 ... 145 PSI)



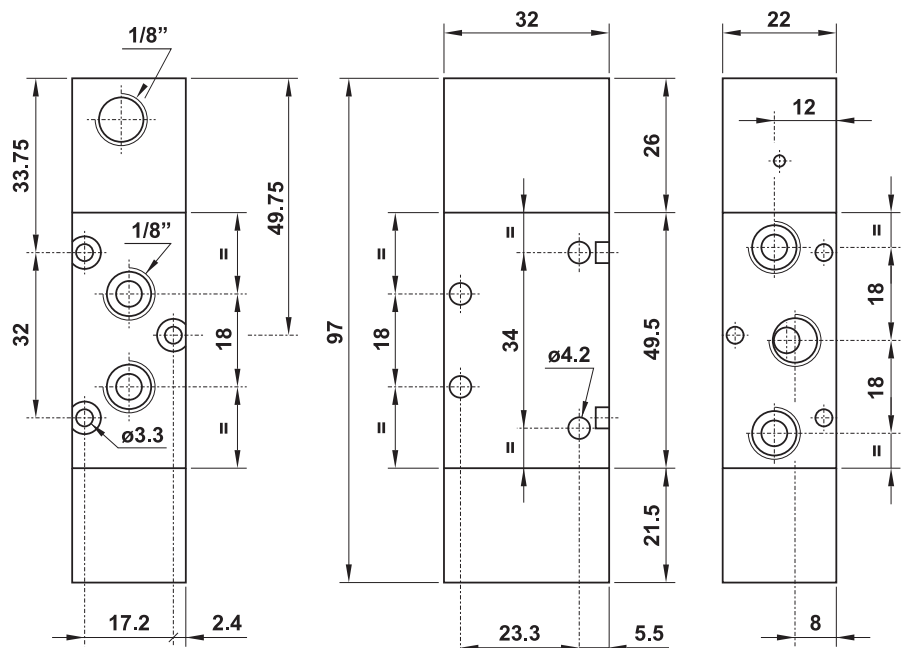
## US521 MRC

5/2 1/8" NPT pneumatic pilot - REINFORCED spring return



Operating pressure: -0.9 ... 10 bar (Vacuum ... 145 PSI)

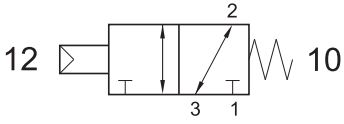
Actuating pressure: 2.5 ... 10 bar (36 ... 145 PSI)





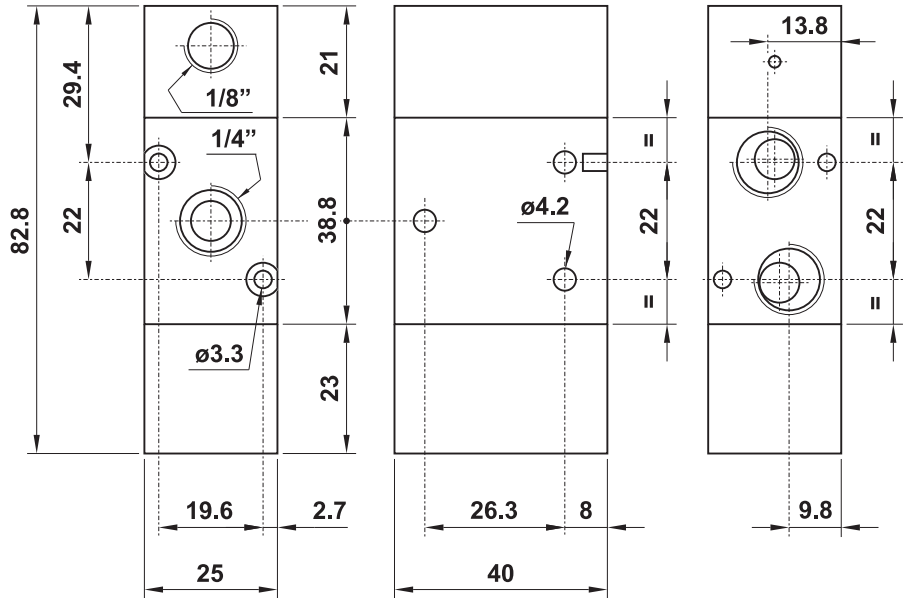
## US322 MRC

3/2 1/4" NPT pneumatic pilot - REINFORCED spring return



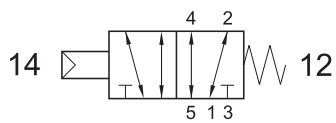
Operating pressure: -0.9 ... 10 bar (Vacuum ... 145 PSI)

Actuating pressure: 2.5 ... 10 bar (36 ... 145 PSI)



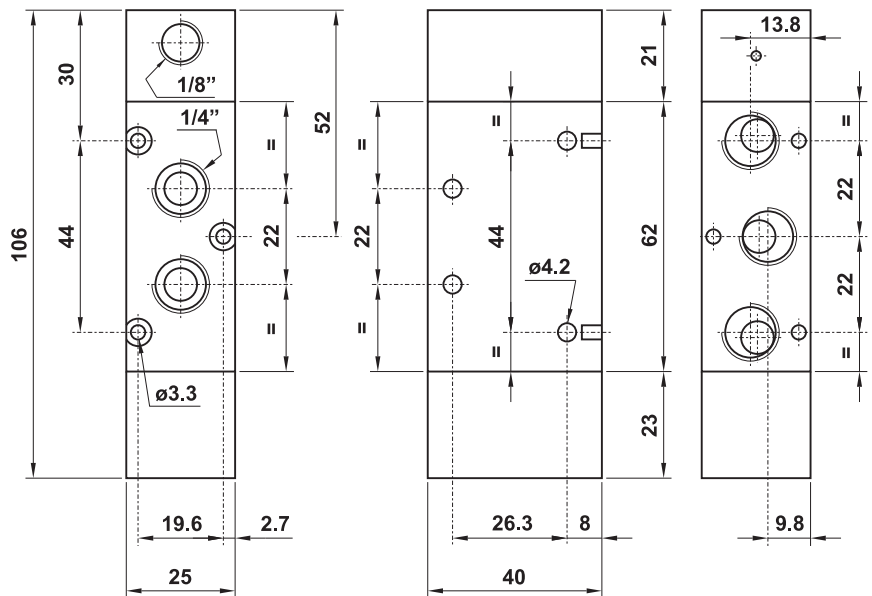
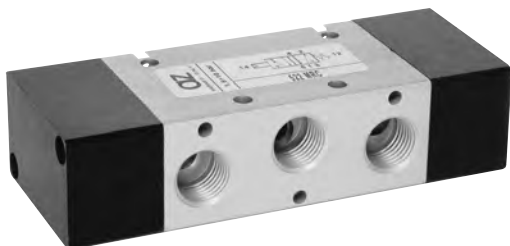
## US522 MRC

5/2 1/4" NPT pneumatic pilot - REINFORCED spring return



Operating pressure: -0.9 ... 10 bar (Vacuum ... 145 PSI)

Actuating pressure: 2.5 ... 10 bar (36 ... 145 PSI)

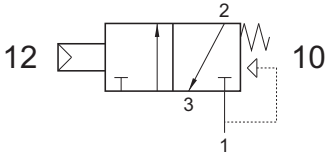


# Pneumatically piloted valves

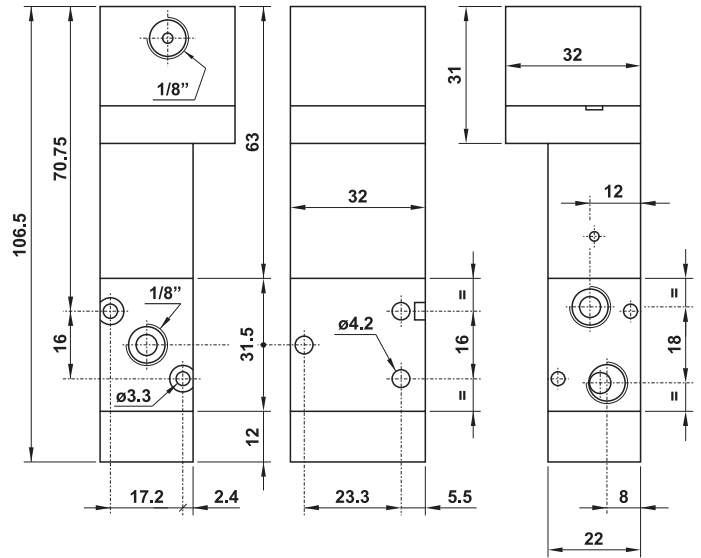
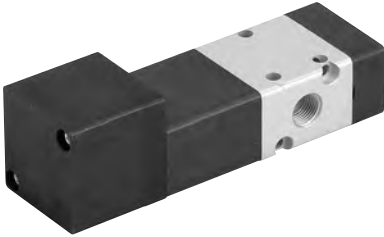


## US321 MCQ

3/2 1/8" NPT N/C pneumatic pilot 0.3 bar (4.35 PSI) - air and spring return

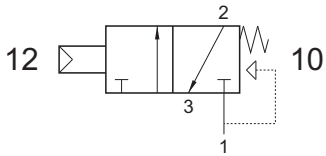


Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.3 bar (4.35 PSI)

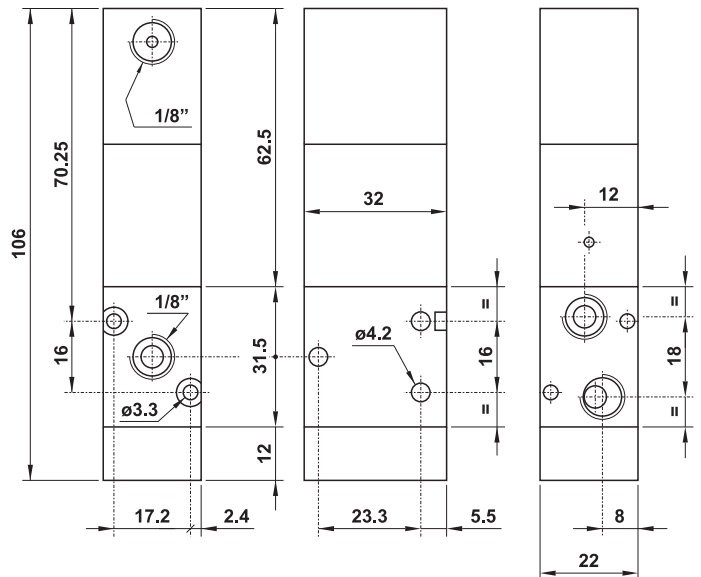


## US321 MCS

3/2 1/8" NPT N/C pneumatic pilot 0.6 bar (8.7 PSI) - air and spring return

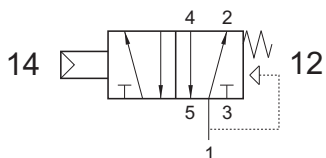


Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.6 bar (8.7 PSI)

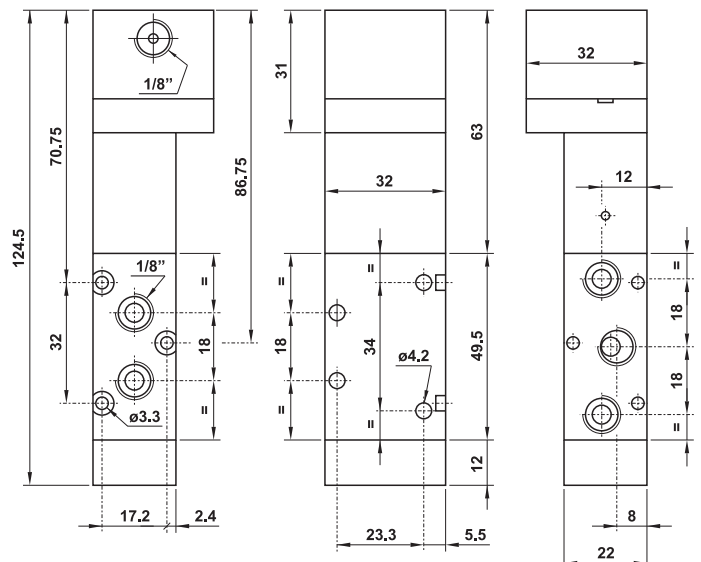


## US521 MCQ

5/2 1/8" NPT pneumatic pilot 0.3 bar (4.35 PSI) - air and spring return

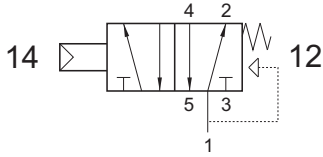


Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.3 bar (4.35 PSI)

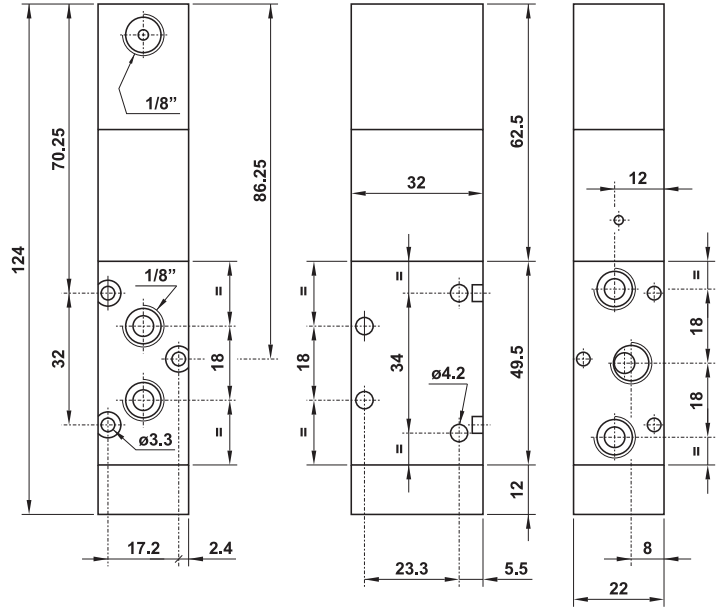


## US521 MCS

5/2 1/8" NPT pneumatic pilot 0.6 (8.7 PSI) bar - air and spring return

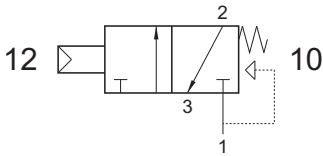


Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.6 bar (8.7 PSI)

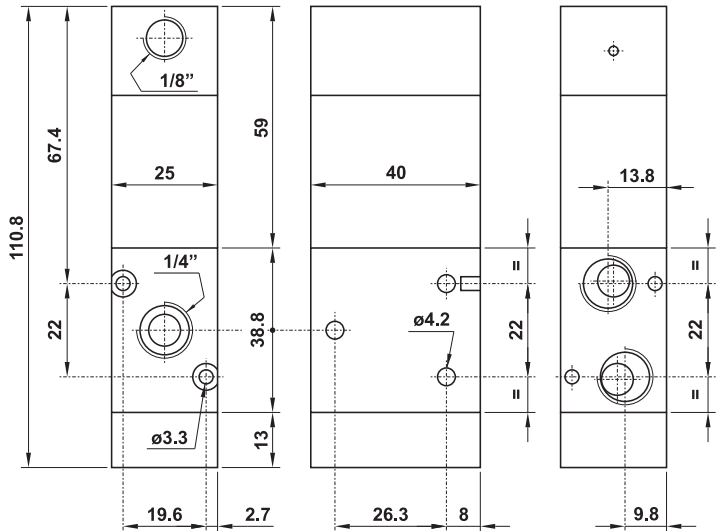


## US322 MCS

3/2 1/4" NPT N/C pneumatic pilot 0.6 bar (8.7 PSI) - air and spring return

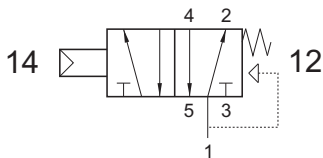


Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.6 bar (8.7 PSI)

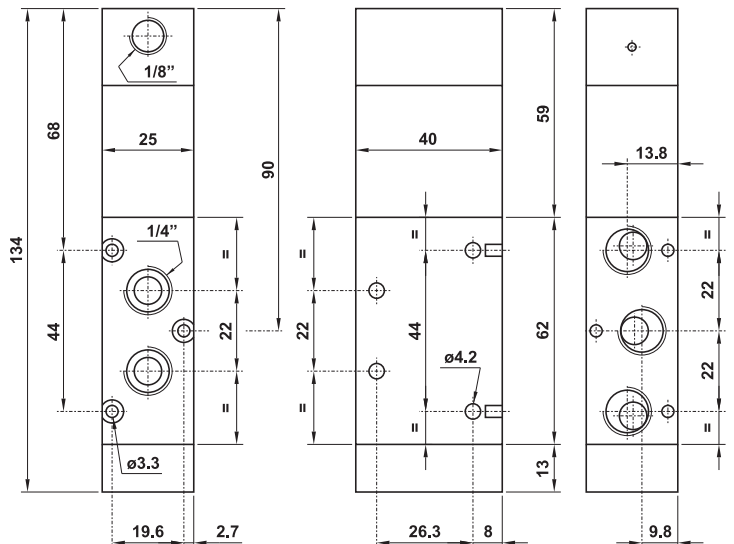


## US522 MCS

5/2 1/4" NPT pneumatic pilot 0.6 bar (8.7 PSI) - air and spring return



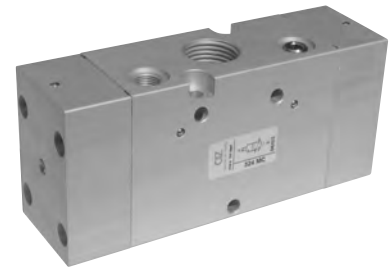
Operating pressure: min. 2.5 bar (36 PSI)  
Actuating pressure: min. 0.6 bar (8.7 PSI)



# Pneumatically piloted valves - 1/2" NPT



- 3/2-5/2-5/3 spool valves with 1/2" NPT threaded ports
- Very high flow rate
- Installation in-line
- Mono-stable or bi-stable pneumatic pilot



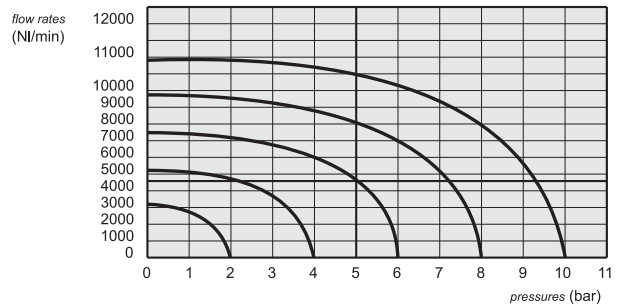
## Spare parts

**02.030.2** : for 3 way valves ME - ME AS - MC

**02.031.2** : for 5 way valves ME - ME AS - MC

**02.032.2** : for 3 way valves EE - EE AS - CC

**02.033.2** : for 5 way valves EE - EE AS - CC



## Response times

mono-stable	TRA (14): 24 ms TRR (12): 43 ms
bi-stable	TRA (14): 30 ms TRR (12): 30 ms

## Materials

**Body:** aluminium 11S

**Springs:** stainless steel

**Seals:** NBR

**Spool:** nickel plated aluminium

**Internal parts:** brass OT58

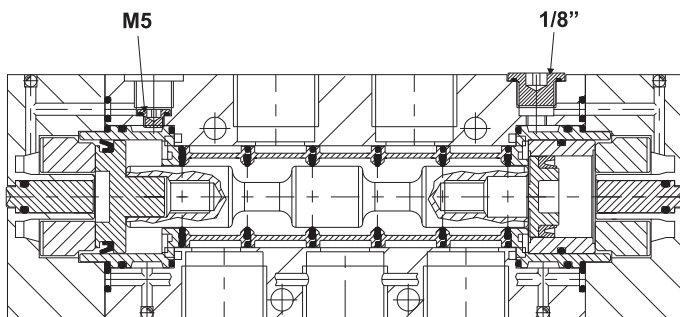
Nominal diameter	13 mm (0.5 in)	
Nominal flow rate at 6 bar (87 PSI), $\Delta p$ 1 bar (14 PSI)	4600 NI/min (4.87 Cv)	
Temperature range	max +60°C (140°F)	
Operating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50 $\mu$ filtered, lubricated or non lubricated air	



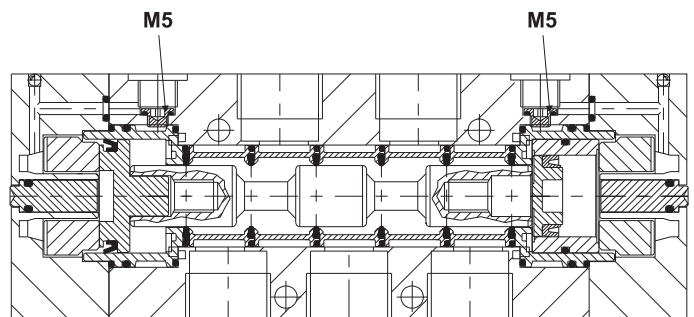
## Multifunction feature of the valve

Valve functionality can be changed at any time. To do so, please re-collocate from its position either the M5 or 1/8" NPT plugs, which are inserted into the body according to the scheme. The valve is supplied according to the clients' needs on order. Interchangeable plugs must be ordered separately.

**324 CFP**  
**524 CFP**



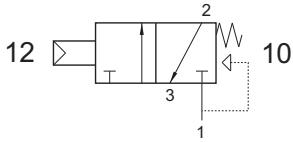
**324 CCD**  
**524 CCD**





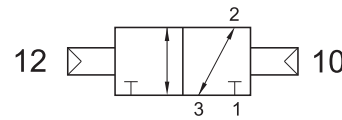
## US324 MC

3/2 1/2" NPT N/C pneumatic pilot - air and spring return



## US324 CC

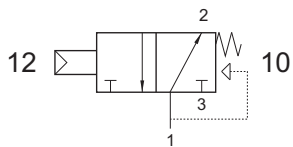
3/2 1/2" NPT double pneumatic pilot



It can be used with vacuum.

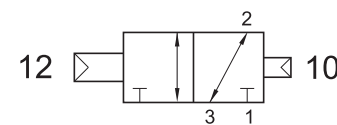
## US324 MCA

3/2 1/2" NPT N/O pneumatic pilot - air and spring return



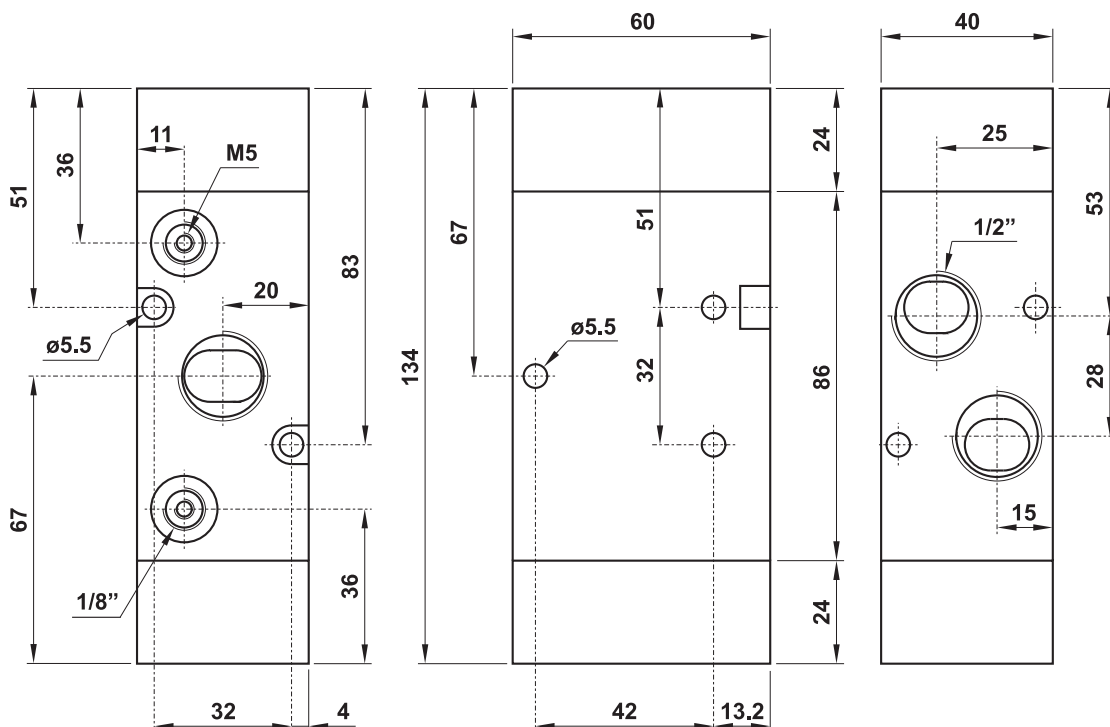
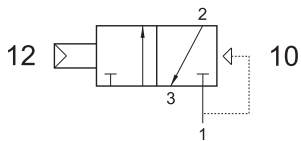
## US324 CCD

3/2 1/2" NPT double pneumatic pilot - with differential



## US324 CFP

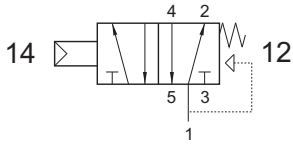
3/2 1/2" NPT N/C pneumatic pilot - pneumatic return





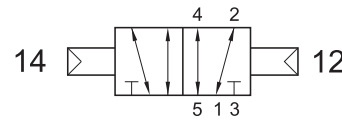
## US524 MC

5/2 1/2" NPT pneumatic pilot - air and spring return



## US524 CC

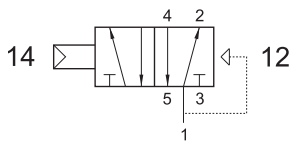
5/2 1/2" NPT double pneumatic pilot



It can be used with vacuum.

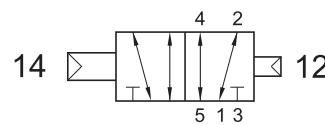
## US524 CFP

5/2 1/2" NPT pneumatic pilot - pneumatic return



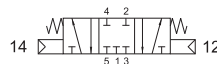
## US524 CCD

5/2 1/2" NPT double pneumatic pilot - with differential



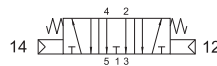
## US5243C CC

closed centers



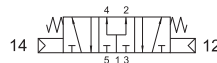
## US5243A CC

open centers

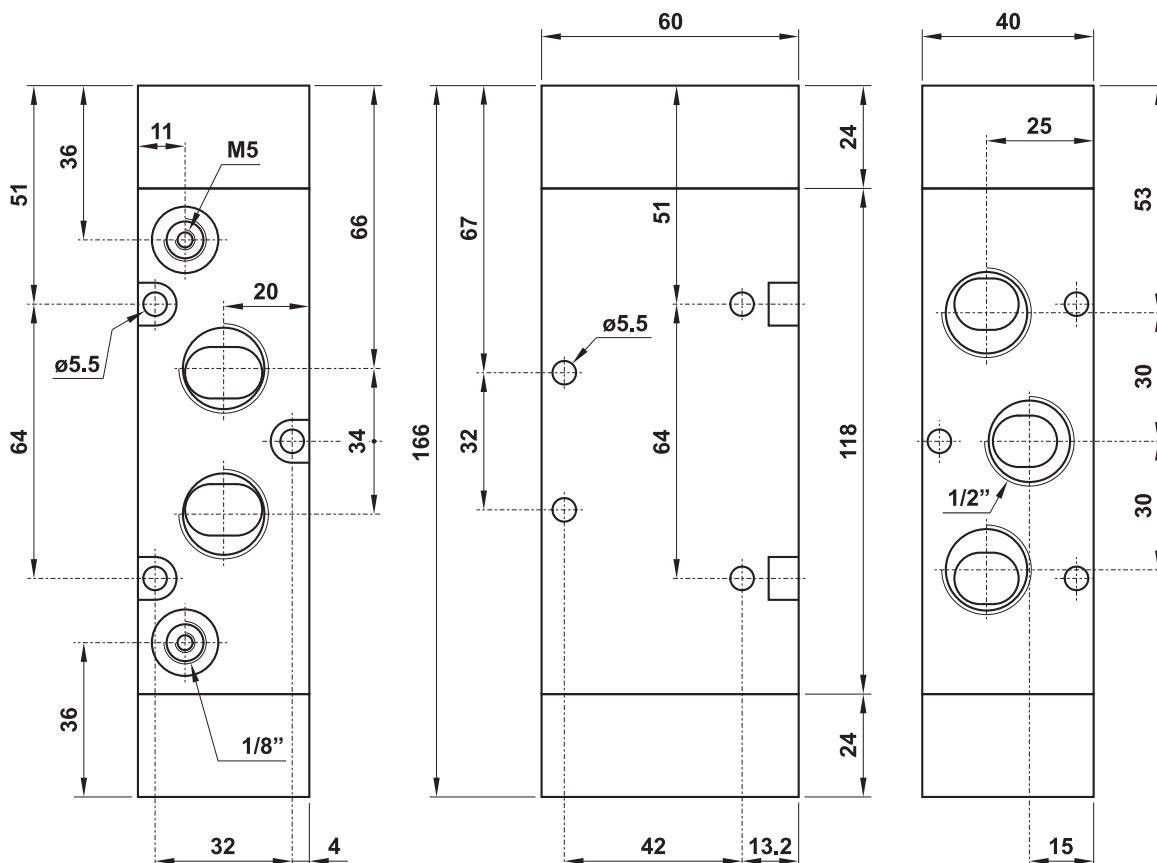
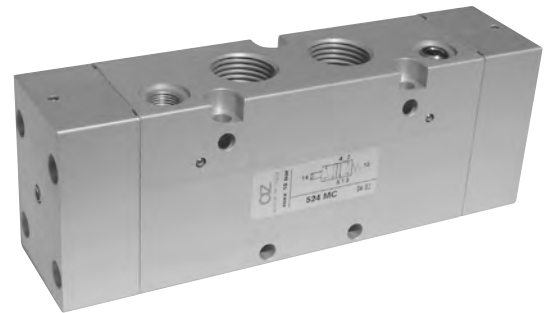


## US5243P CC

pressurized centers



5/3 1/2" NPT double pneumatic pilot



# Pneumatic and Electric Foot Pedals



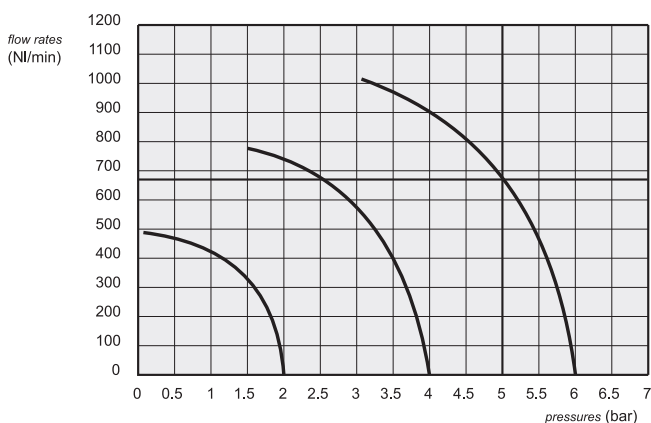
- 5/2 spool valve - it can be used as 3/2 or 2/2 by inserting stop plug in the unused ports
- 1/4" NPT threaded ports
- With or without pedal guard
- Mono-stable and detented
- Additional versions available with micro-valves, progressive flow rate valves and with special lateral security switch valves.



## Pneumatic & Electric Characteristics

### Materials

**Body:** aluminium 11S  
**Springs:** stainless steel  
**Seals:** NBR  
**Spool:** nickel plated aluminium  
**Internal parts:** brass OT58  
**Protection cover:** shock resistant plastic material



### Electric pedal

Lifetime (cycles)	10.000.000
Contact resistance	25 mΩ
Electrical protection degree	IP 54
Contacts	1 NO + 1 NC rapid switch

utilization power, according to IEC 337-1

UL Listed compliant electrical components

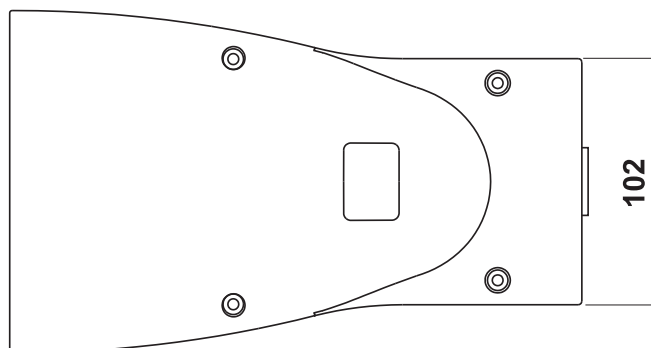
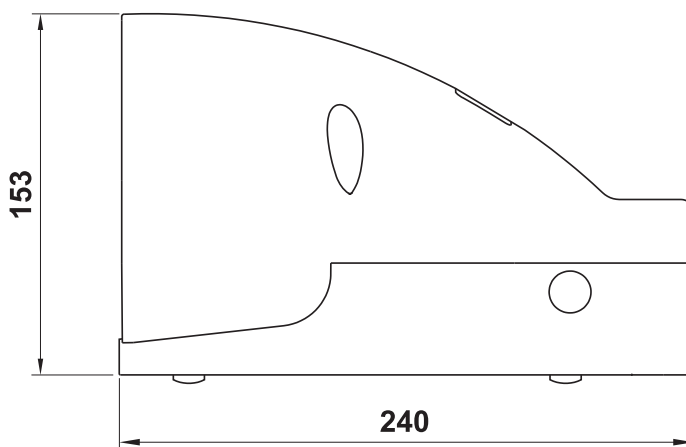
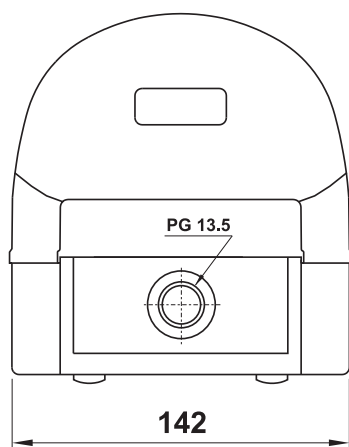
DC		
V	24	220
A	6	0.1

AC				
V	24	220	380	500
A	10	10	8	6

Nominal diameter	7.5 mm (0.3 in)
Ports	1/4" NPT
Temperature range	max +60°C (140°F)
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Fluid	50μ filtered, lubricated or non lubricated air



## PEDAL WITH ELECTRIC CONTACT N/C-N/O



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

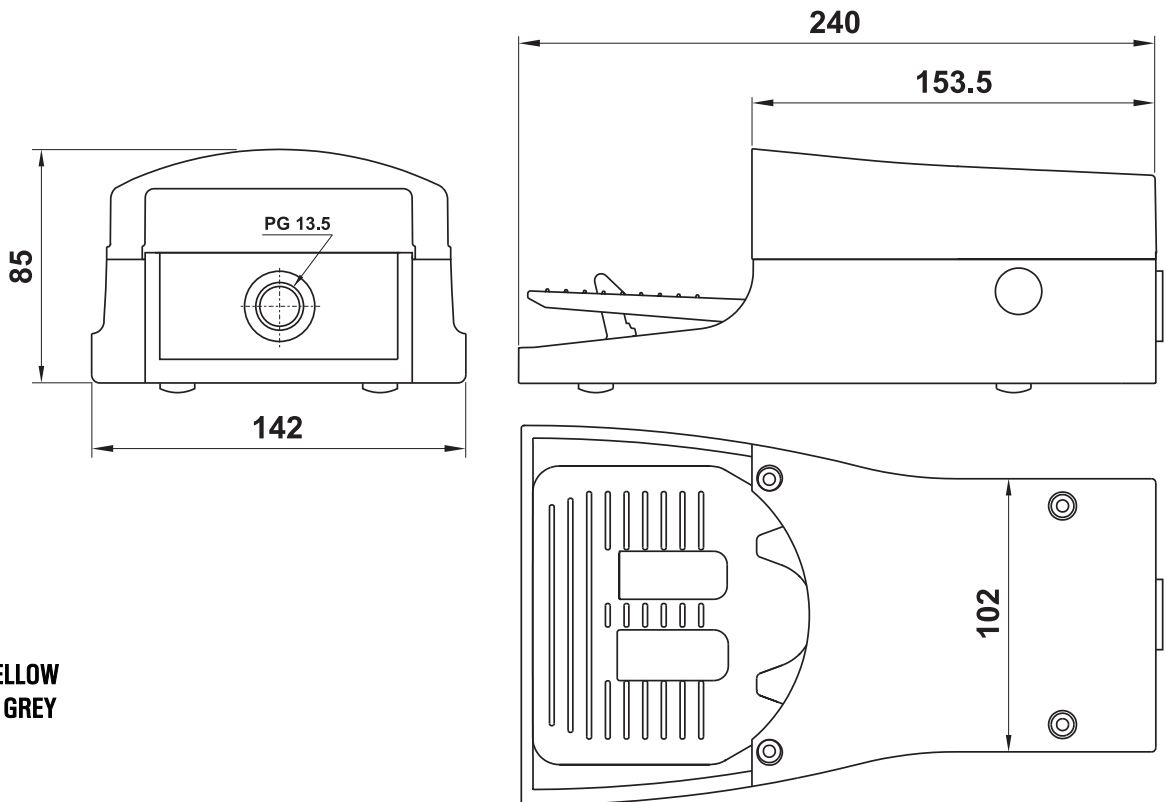
code	part number	description	symbol
<b>01.087.4N</b>	<b>PED EM</b>	Mono-stable pedal with electric contact N/C-N/O, with pedal guard	
<b>01.115.4N</b>	<b>PED EB</b>	Bi-stable pedal with electric contact N/C-N/O, with pedal guard	
<b>01.088.4N</b>	<b>PED ES</b>	Mono-stable pedal with electric contact N/C-N/O, with pedal guard and safety feature*	
<b>01.127.4N</b>	<b>PED EBS</b>	Bi-stable pedal with electric contact N/C-N/O, with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Electric pedals



## PEDAL WITH ELECTRIC CONTACT N/C-N/O - without pedal guard

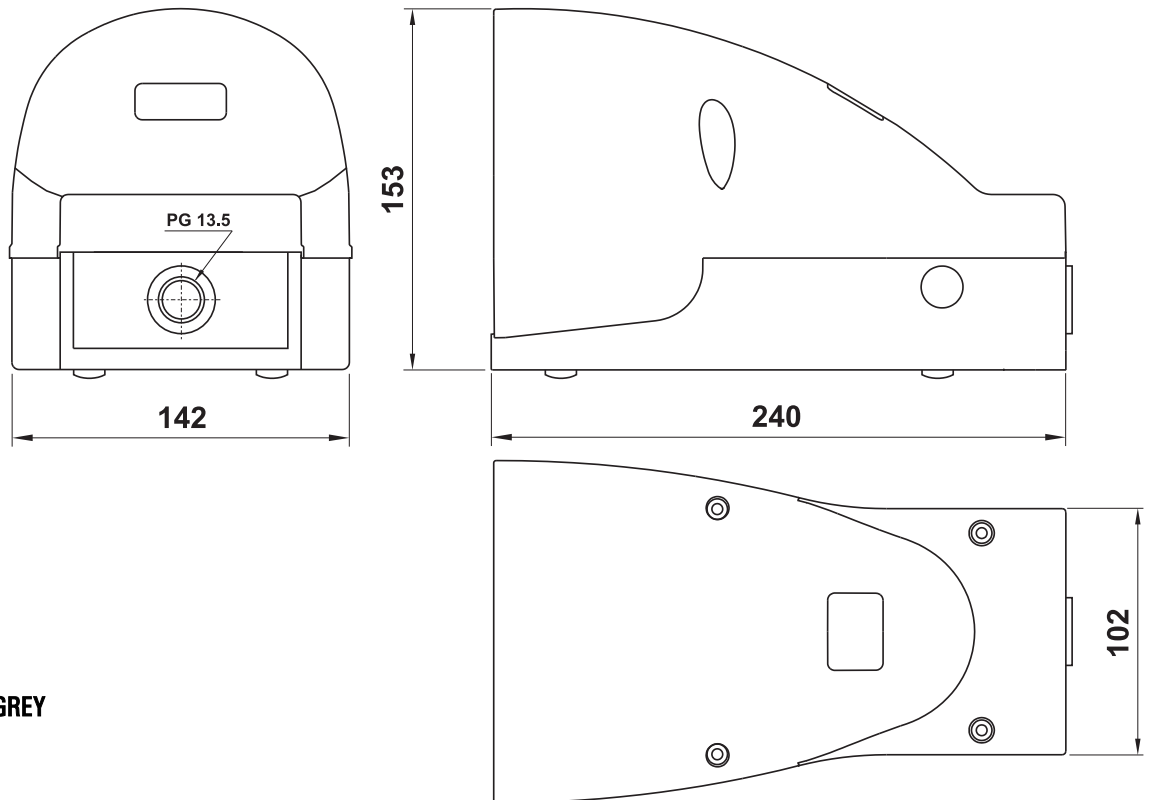
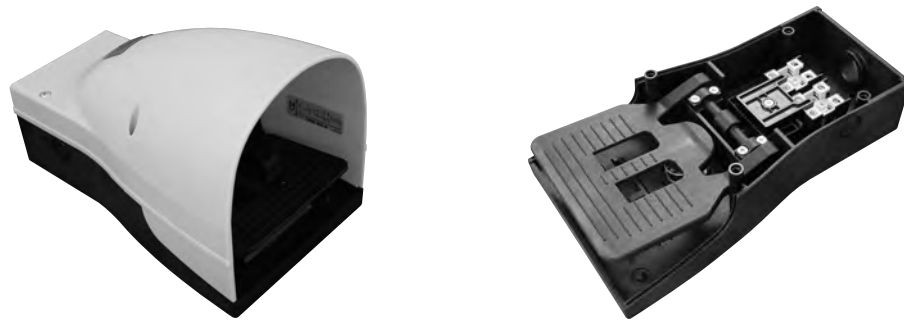


Standard cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

code	part number	description		symbol
<b>01.143.4N</b>	<b>PEDS EM</b>	Mono-stable pedal with electric contact N/C-N/O, without pedal guard		
<b>01.144.4N</b>	<b>PEDS EB</b>	yellow	Bi-stable pedal with electric contact N/C-N/O, without pedal guard	
<b>01.161.4N</b>	<b>PEDS EBR</b>	red		
<b>01.145.4N</b>	<b>PEDS ES</b>	Mono-stable pedal with electric contact N/C-N/O, without pedal guard, with safety feature*		
<b>01.146.4N</b>	<b>PEDS EBS</b>	Bi-stable pedal with electric contact N/C-N/O, without pedal guard, with safety feature*		

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

## PEDAL WITH DOUBLE ELECTRIC CONTACT N/C-N/O



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

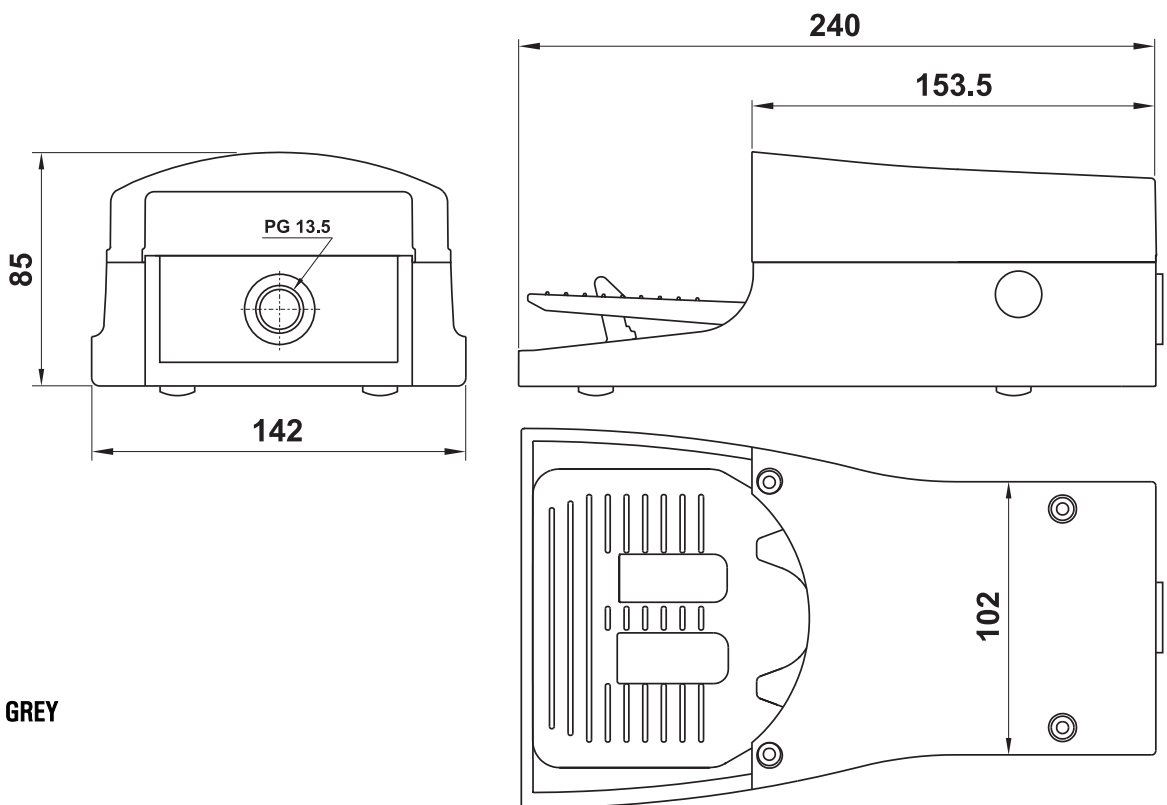
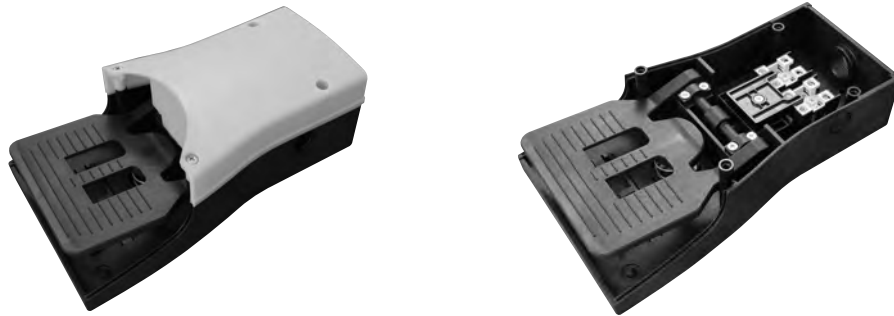
code	part number	description	symbol
<b>01.148.4N</b>	<b>PED EEM</b>	Mono-stable pedal with double electric contact N/C-N/O, with pedal guard	
<b>01.149.4N</b>	<b>PED EEB</b>	Bi-stable pedal with double electric contact N/C-N/O, with pedal guard	
<b>01.150.4N</b>	<b>PED EES</b>	Mono-stable pedal with double electric contact N/C-N/O, with pedal guard and safety feature*	
<b>01.151.4N</b>	<b>PED EEBS</b>	Bi-stable pedal with double electric contact N/C-N/O, with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Electric pedals



## PEDAL WITH DOUBLE ELECTRIC CONTACT N/C-N/O - without pedal guard



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

code	part number	description	symbol
<b>01.152.4N</b>	<b>PEDS EEM</b>	Mono-stable pedal with double electric contact N/C-N/O, without pedal guard	
<b>01.153.4N</b>	<b>PEDS EEB</b>	Bi-stable pedal with double electric contact N/C-N/O, without pedal guard	
<b>01.154.4N</b>	<b>PEDS EES</b>	Mono-stable pedal with double electric contact N/C-N/O, without pedal guard, with safety feature*	
<b>01.155.4N</b>	<b>PEDS EEBS</b>	Bi-stable pedal with double electric contact N/C-N/O, without pedal guard, with safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

## ELECTRIC MINI-PEDAL

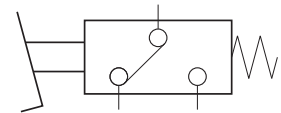
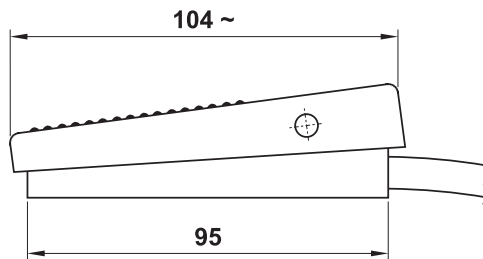
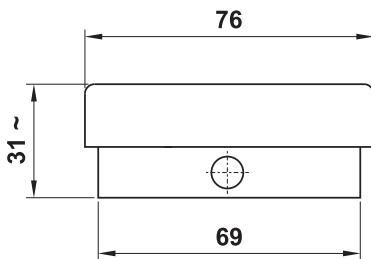
electric pedal with cable 2 m

ORDER CODE

**01.158.4**



Pedal body: shock resistant plastic material

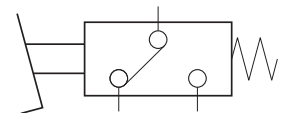


electric pedal without cable

ORDER CODE

**01.159.4**

Pedal body: shock resistant plastic material



Lifetime (cycles)	5.000.000
Rating	2 A 24 V ~ 6(3) A 250 V ~
Electrical protection degree	IP 43
Actuating force	20 N

# Pedal valves

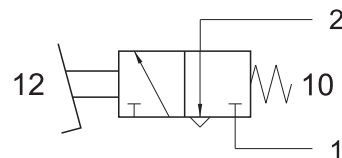


## MINI-PEDAL PNEUMATIC VALVE

mono-stable pedal with microvalve 3/2 N/C

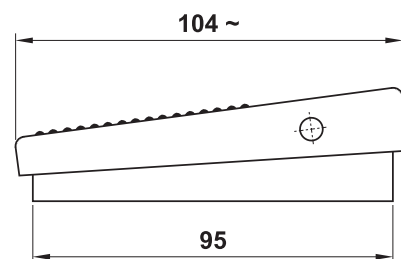
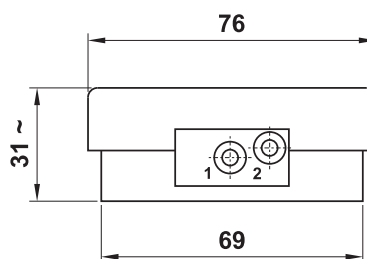
ORDER CODE

**PED 304 M**



Pedal body: shock resistant plastic material

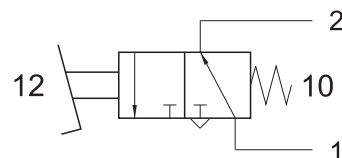
Ports	5/32" or ø4 mm push-in
Nominal flow rate at 6 bar (87 PSI)	100 NI/min (0.1 Cv)



mono-stable pedal with microvalve 3/2 NO

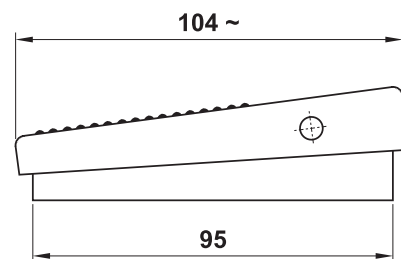
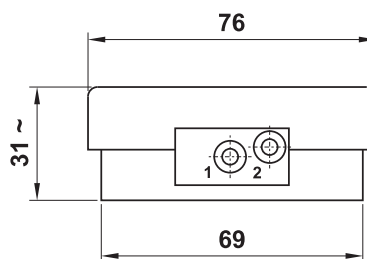
ORDER CODE

**PED 314 M**



Pedal body: shock resistant plastic material

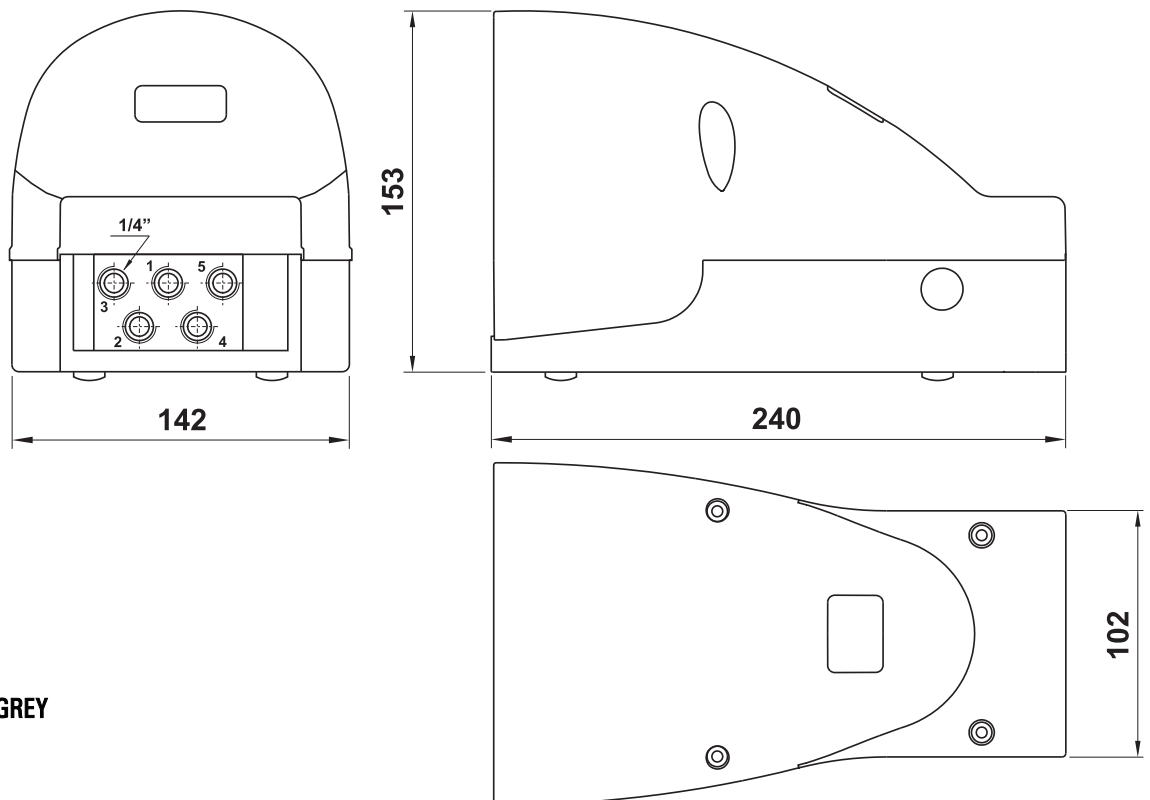
Ports	5/32" or ø4 mm push-in
Nominal flow rate at 6 bar (87 PSI)	100 NI/min (0.1 Cv)



# Pedal valves



## PEDAL WITH 5/2 1/4" NPT SERVO-PILOTED SPOOL VALVE WITH GUARD



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

code	part number	description	symbol
US01.052.4N	<b>PED 502 M</b>	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard	
US01.053.4N	<b>PED 502 B</b>	Bi-stable pedal valve 5/2 1/4" NPT with pedal guard	
US01.072.4N	<b>PED 502 S</b>	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard and safety feature*	
US01.126.4N	<b>PED 502 BS</b>	Bi-stable pedal valve 5/2 1/4" NPT with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

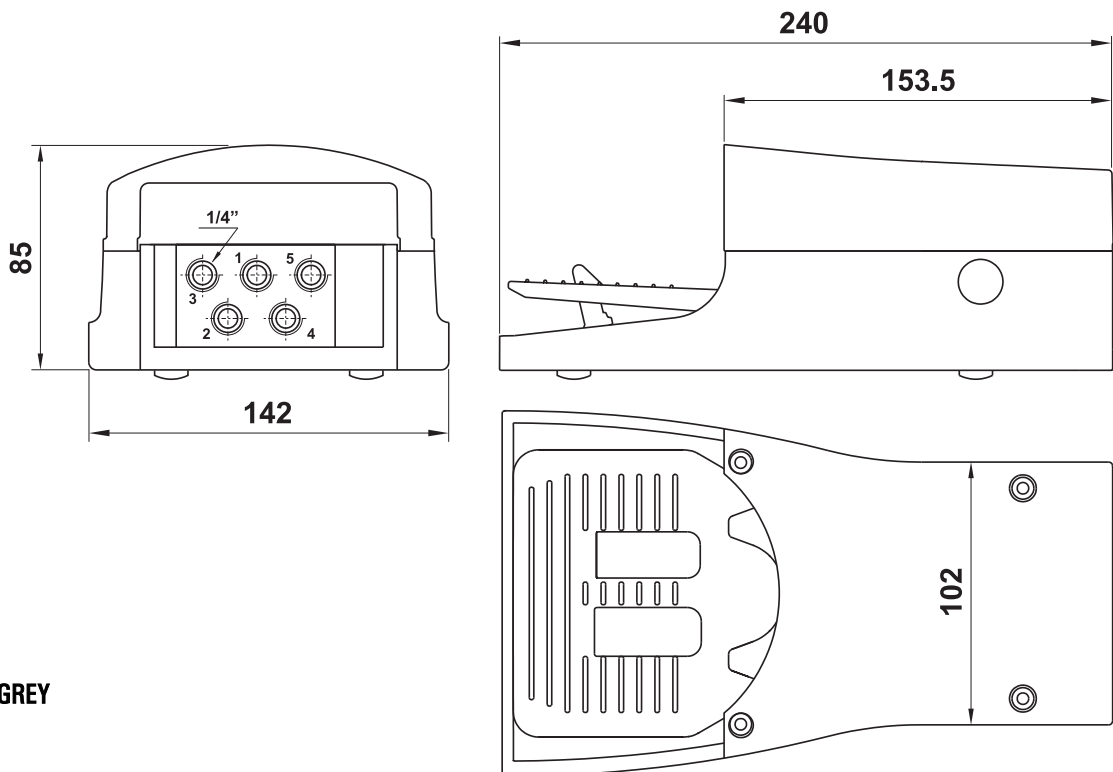
### Spare parts

**US01.051.3** : 5/2 1/4" NPT valve for pedal  
**01.023.2** : seals kit for 5/2 pedal valve

# Pedal valves



## PEDAL WITH 5/2 1/4" NPT SERVO-PILOTED SPOOL VALVE - without pedal guard



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

code	part number	description	symbol
US01.080.4N	PEDS 502 M	Mono-stable pedal valve 5/2 1/4" NPT without pedal guard	
US01.081.4N	PEDS 502 B	Bi-stable pedal valve 5/2 1/4" NPT without pedal guard	
US01.128.4N	PEDS 502 S	Mono-stable pedal valve 5/2 1/4" NPT without pedal guard, with safety feature*	
US01.129.4N	PEDS 502 BS	Bi-stable pedal valve 5/2 1/4" NPT without pedal guard, with safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

### Spare parts

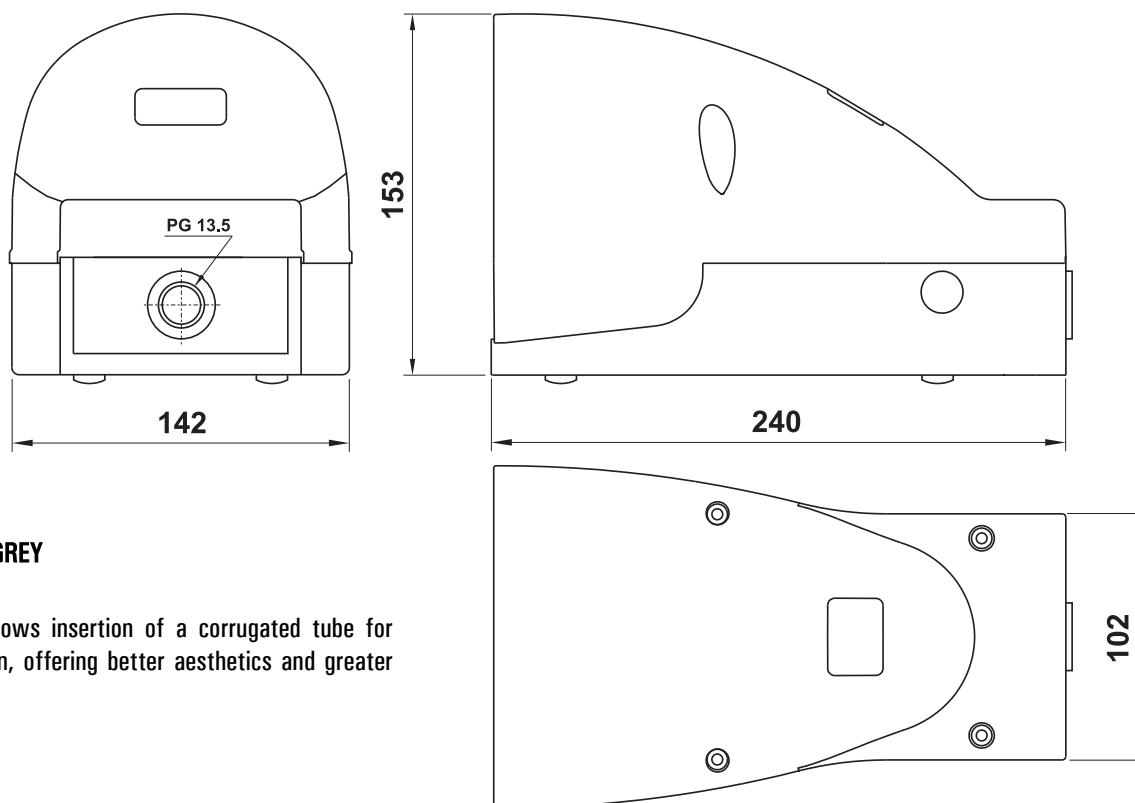
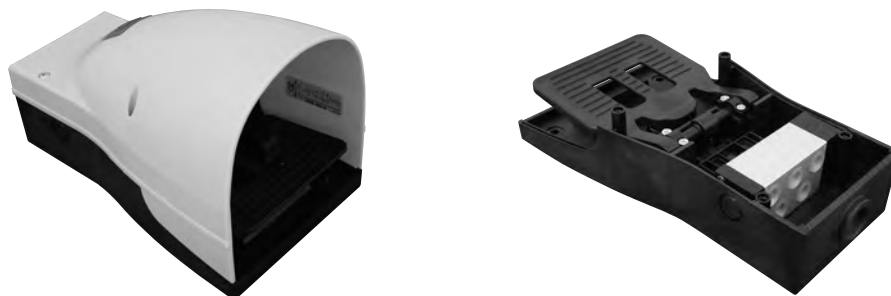
US01.051.3 : 5/2 1/4" NPT valve for pedal  
01.023.2 : seals kit for 5/2 pedal valve



# Pedal valves



## PEDAL WITH 5/2 1/4" NPT SERVO-PILOTED SPOOL VALVE WITH GUARD - valve in retracted position



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

code	part number	description	symbol
US01.135.4N	<b>PED 502 MA</b>	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard	
US01.136.4N	<b>PED 502 BA</b>	Bi-stable pedal valve 5/2 1/4" NPT with pedal guard	
US01.137.4N	<b>PED 502 SA</b>	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard and safety feature*	
US01.138.4N	<b>PED 502 BSA</b>	Bi-stable pedal valve 5/2 1/4" NPT with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

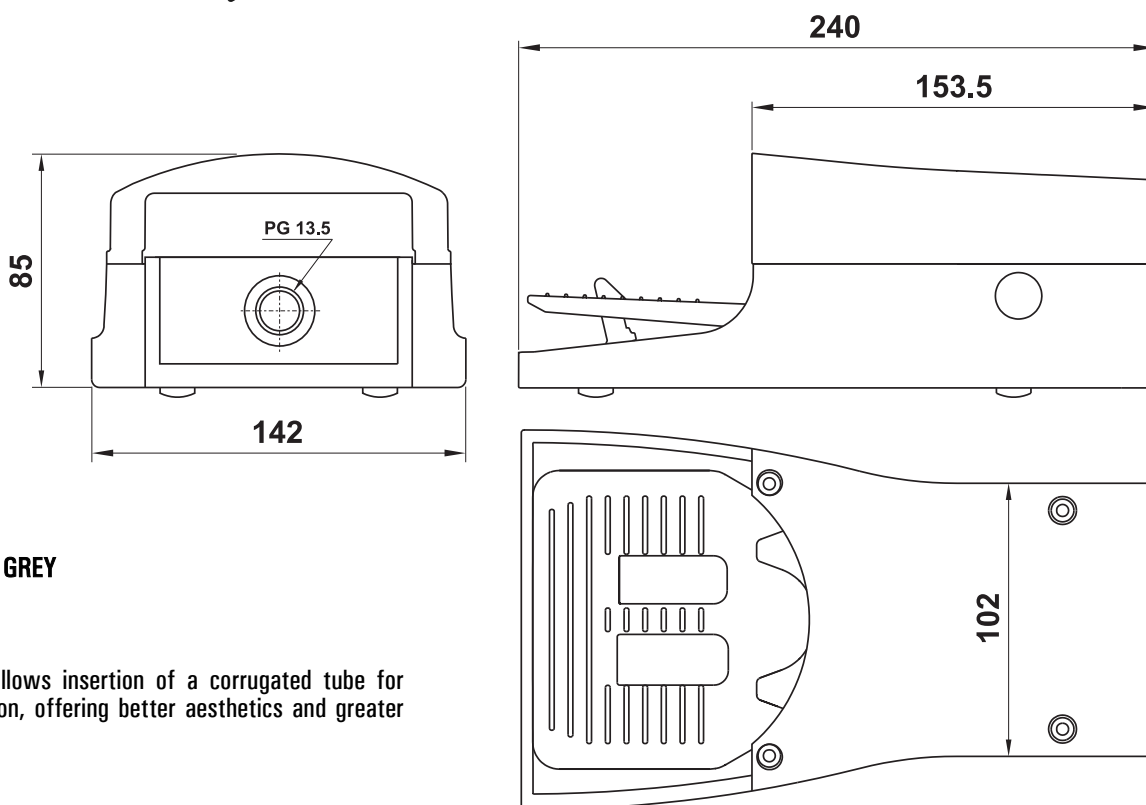
### Spare parts

**US01.051.3** : 5/2 1/4" NPT valve for pedal  
**01.023.2** : seals kit for 5/2 pedal valve

# Pedal valves



## PEDAL WITH 5/2 1/4" NPT SERVO-PILOTED SPOOL VALVE - valve in retracted position - without pedal guard



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

code	part number	description	symbol
US01.139.4N	PEDS 502 MA	Mono-stable pedal valve 5/2 1/4" NPT without pedal guard	
US01.140.4N	PEDS 502 BA	Bi-stable pedal valve 5/2 1/4" NPT without pedal guard	
US01.141.4N	PEDS 502 SA	Mono-stable pedal valve 5/2 1/4" NPT without pedal guard, with safety feature*	
US01.142.4N	PEDS 502 BSA	Bi-stable pedal valve 5/2 1/4" NPT without pedal guard, with safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

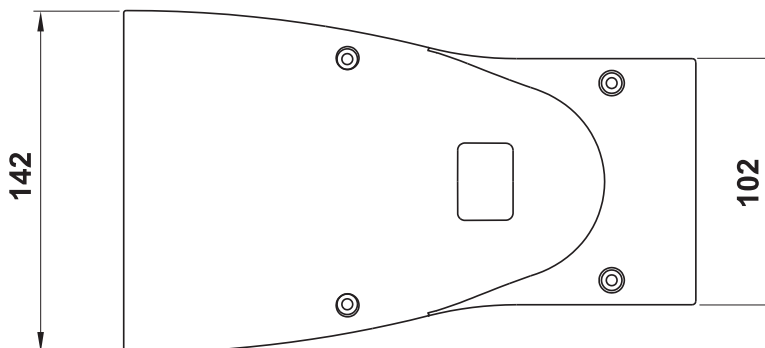
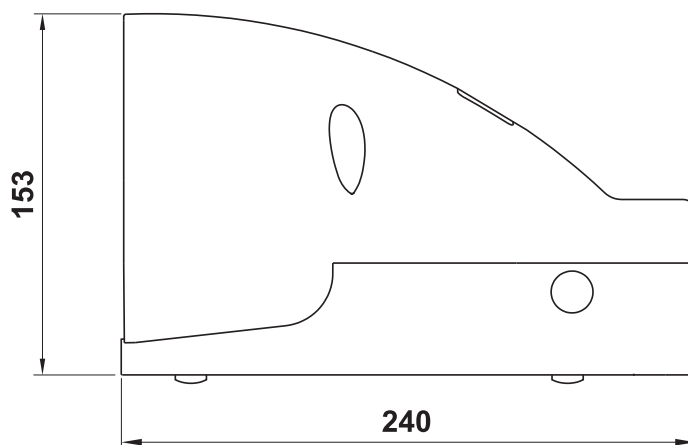
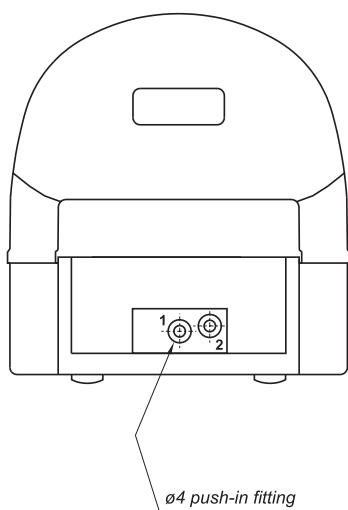
### Spare parts

US01.051.3 : 5/2 1/4" NPT valve for pedal  
01.023.2 : seals kit for 5/2 pedal valve

# Pedal valves



**PEDAL WITH 3/2 NC MICROVALVE , push-in fittings for 5/32" NPT or ø4 mm tube**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

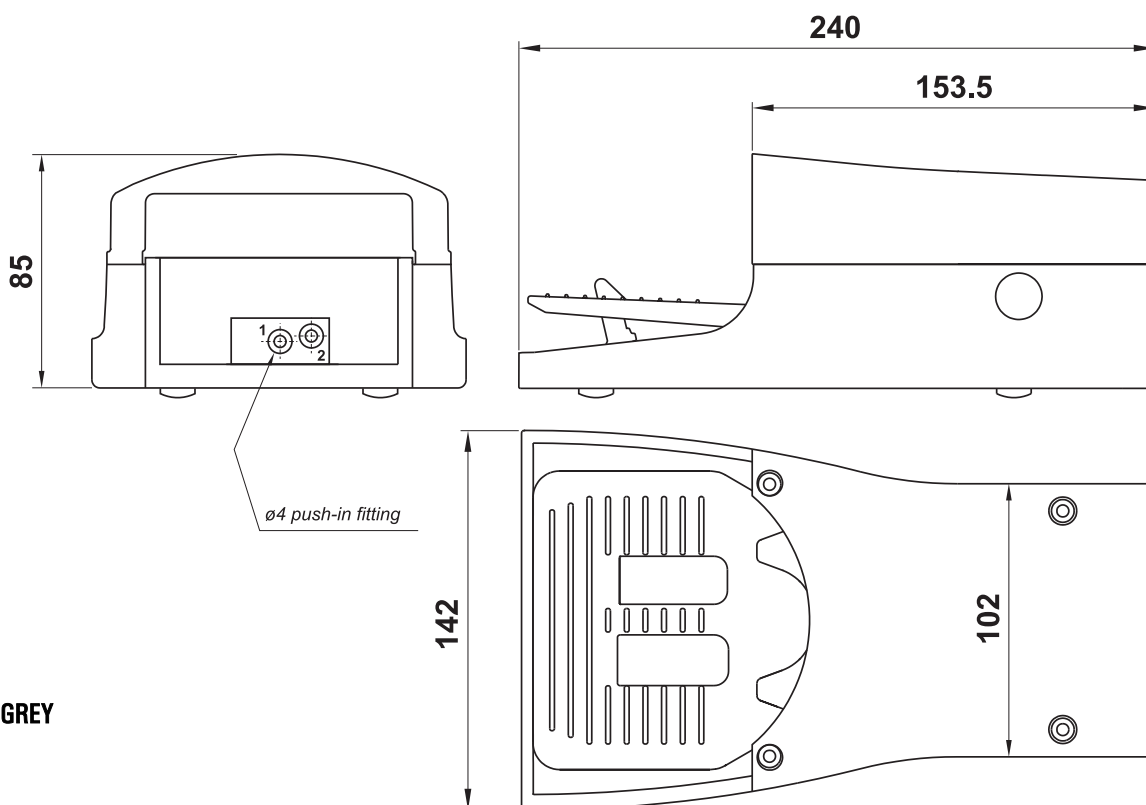
code	part number	description	symbol
<b>08.197.4N</b>	<b>PEDN 304 M</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, with pedal guard	
<b>08.198.4N</b>	<b>PEDN 304 B</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4mm, with pedal guard	
<b>08.207.4N</b>	<b>PEDN 304 S</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, with pedal guard and safety feature*	
<b>08.209.4N</b>	<b>PEDN 304 BS</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 3/2 N/C MICROVALVE, push-in fittings for 5/32 " NPT or ø4 mm tube - without pedal guard**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

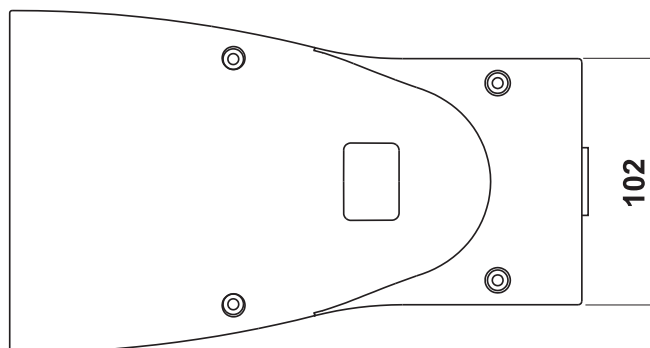
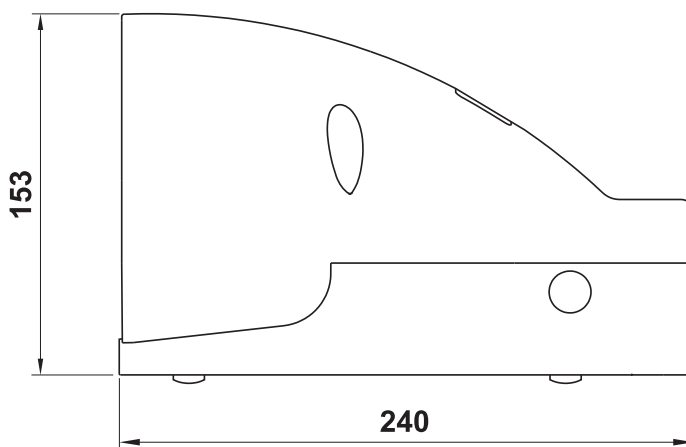
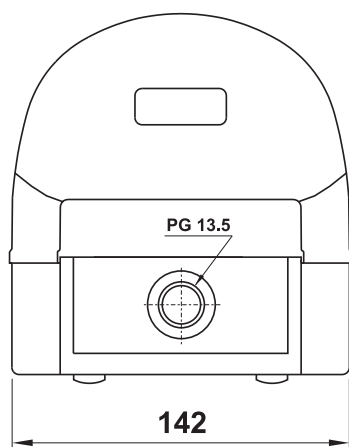
code	part number	description	symbol
<b>08.307.4N</b>	<b>PEDS 304 M</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, without pedal guard	
<b>08.308.4N</b>	<b>PEDS 304 B</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, without pedal guard	
<b>08.309.4N</b>	<b>PEDS 304 S</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, without pedal guard, with safety feature*	
<b>08.310.4N</b>	<b>PEDS 304 BS</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" or ø4 mm, without pedal guard, with safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 3/2 N/C MICROVALVE, push-in fittings for 5/32" NPT or ø4 mm tube - valve in retracted position**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

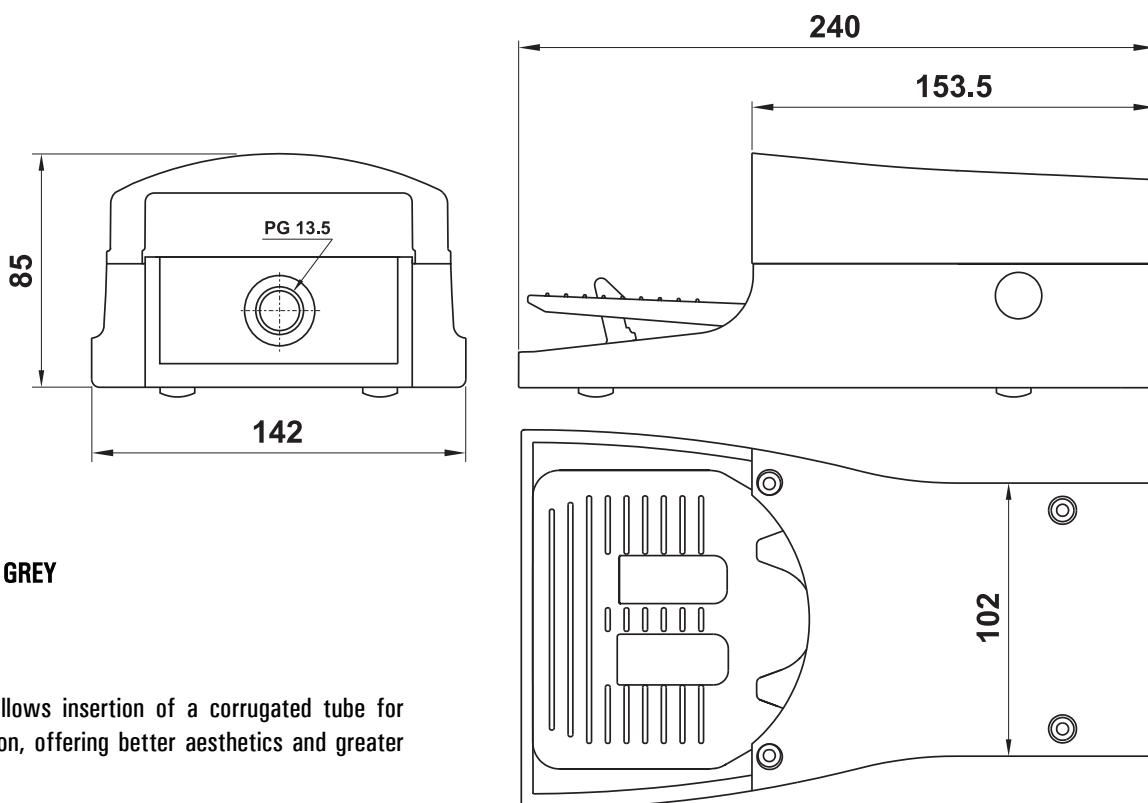
code	part number	description	symbol
<b>08.311.4N</b>	<b>PEDN 304 MA</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.312.4N</b>	<b>PEDN 304 BA</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.313.4N</b>	<b>PEDN 304 SA</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, with pedal guard and safety feature*	
<b>08.314.4N</b>	<b>PEDN 304 BSA</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 3/2 NC MICROVALVE, push-in fittings for 5/32" NPT or ø4 mm tube - valve in retracted position - without pedal guard**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

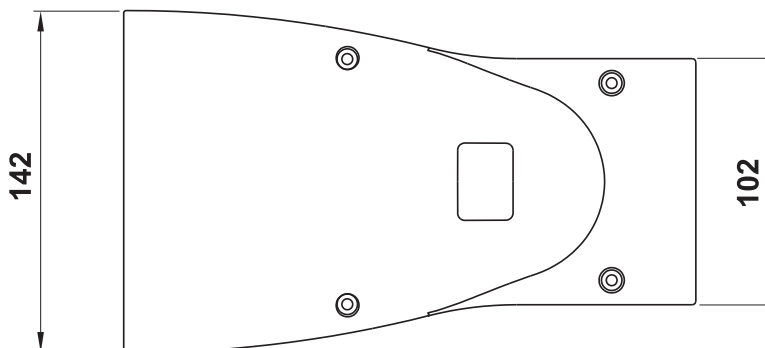
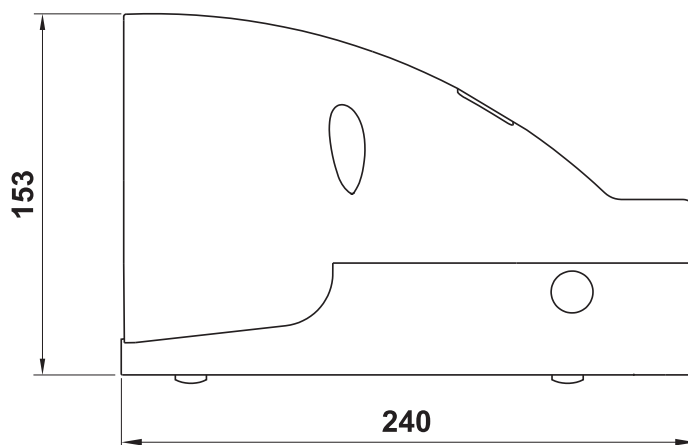
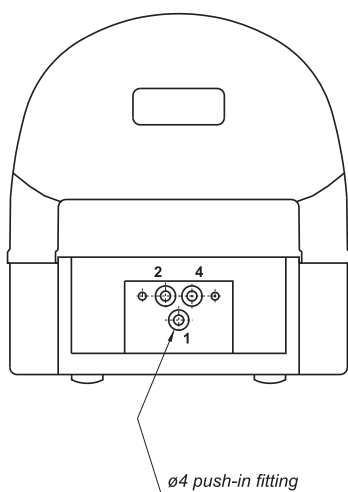
code	part number	description	symbol
<b>08.315.4N</b>	<b>PEDS 304 MA</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, without pedal guard	
<b>08.316.4N</b>	<b>PEDS 304 BA</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, without pedal guard	
<b>08.317.4N</b>	<b>PEDS 304 SA</b>	Mono-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, without pedal guard, with safety feature*	
<b>08.318.4N</b>	<b>PEDS 304 BSA</b>	Bi-stable pedal valve 3/2 N/C, push-in fittings 5/32" NPT or ø4 mm, without pedal guard, with safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 5/2 MICROVALVE, push-in fittings for 5/32" NPT or ø4 mm tube**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

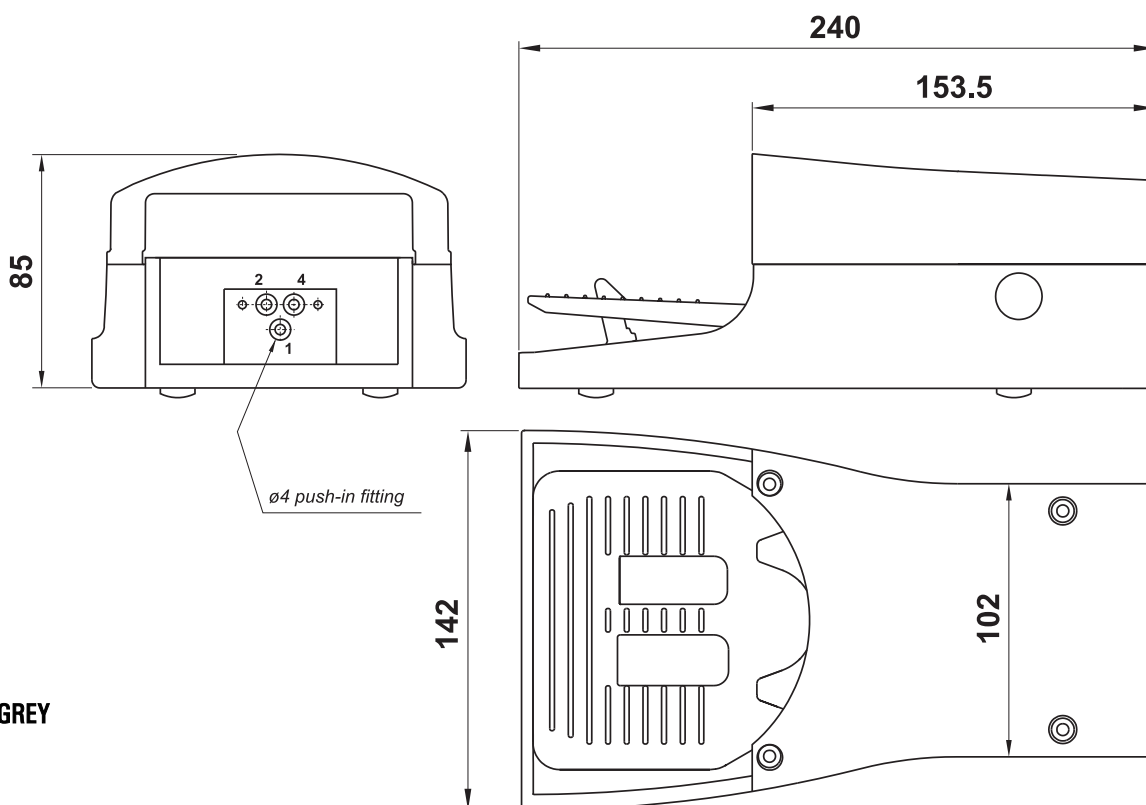
code	part number	description	symbol
<b>08.303.4N</b>	<b>PED 504 M</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.304.4N</b>	<b>PED 504 B</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.305.4N</b>	<b>PED 504 S</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPY or ø4 mm, with pedal guard and safety feature*	
<b>08.306.4N</b>	<b>PED 504 BS</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard and safety feature*	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 5/2 MICROVALVE, push-in fittings for 5/32" NPT or  $\phi 4$  mm tube - without pedal guard**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

code	part number	description	symbol
<b>08.319.4N</b>	<b>PEDS 504 M</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or $\phi 4$ mm, without pedal guard	
<b>08.320.4N</b>	<b>PEDS 504 B</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or $\phi 4$ mm, without pedal guard	
<b>08.321.4N</b>	<b>PEDS 504 S</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or $\phi 4$ mm, without pedal guard, with safety feature*	
<b>08.322.4N</b>	<b>PEDS 504 BS</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or $\phi 4$ mm, without pedal guard, with safety feature*	

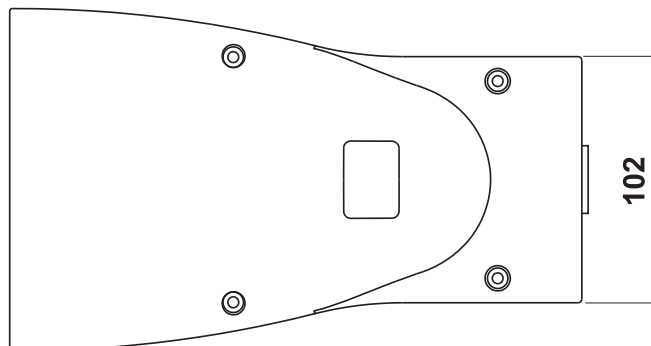
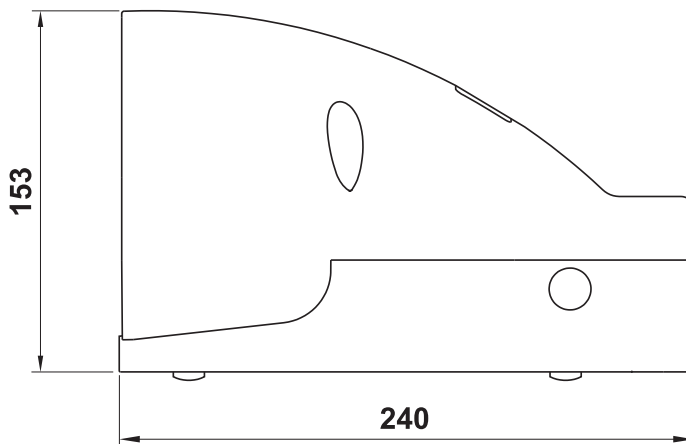
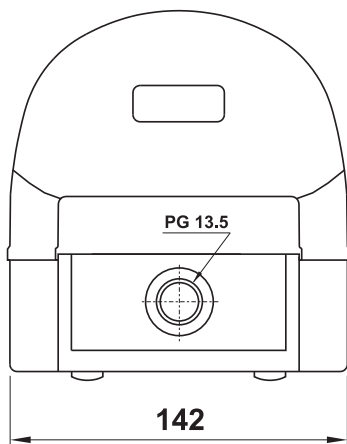
\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.



# Pedal valves



**PEDAL WITH 5/2 MICROVALVE, push-in fittings for 5/32" NPT or ø4 mm tube - valve in retracted position**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

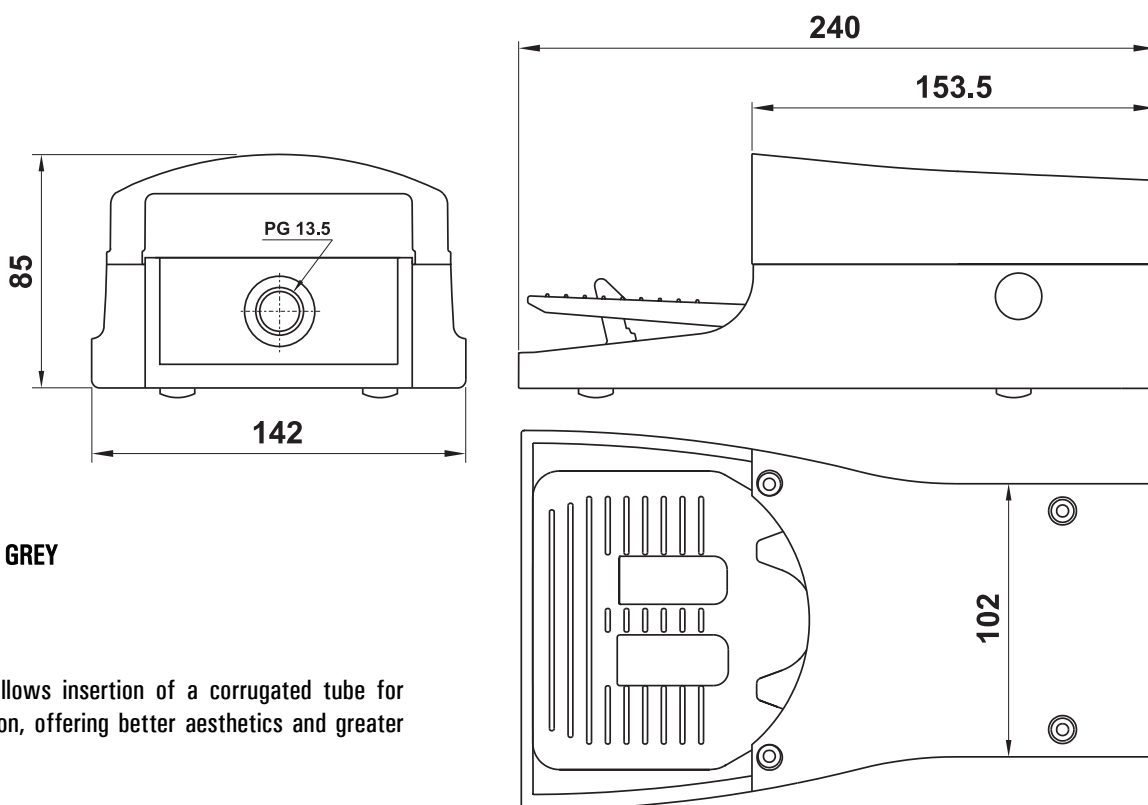
code	part number	description	symbol
<b>08.323.4N</b>	<b>PED 504 MA</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.324.4N</b>	<b>PED 504 BA</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard	
<b>08.325.4N</b>	<b>PED 504 SA</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard and safety feature*	
<b>08.326.4N</b>	<b>PED 504 BSA</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, with pedal guard and safety feature*	

\***Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

# Pedal valves



**PEDAL WITH 5/2 MICROVALVE, push-in fittings for 5/32" NPT or ø4 mm tube - valve in rear position - without protection cover**



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**

The retracted position allows insertion of a corrugated tube for pneumatic tube connection, offering better aesthetics and greater safety.

code	part number	description	symbol
<b>08.327.4N</b>	<b>PEDS 504 MA</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, without pedal guard	
<b>08.328.4N</b>	<b>PEDS 504 BA</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, without pedal guard	
<b>08.329.4N</b>	<b>PEDS 504 SA</b>	Mono-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, without pedal guard, with safety feature*	
<b>08.330.4N</b>	<b>PEDS 504 BSA</b>	Bi-stable pedal valve 5/2, push-in fittings 5/32" NPT or ø4 mm, without pedal guard, with safety feature*	

\***Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

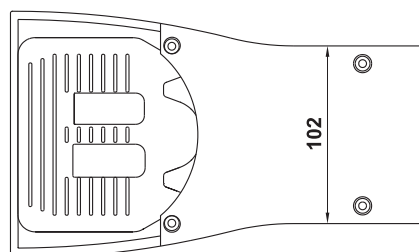
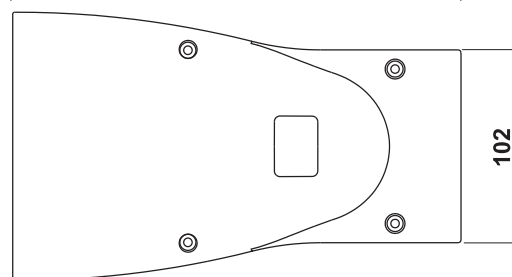
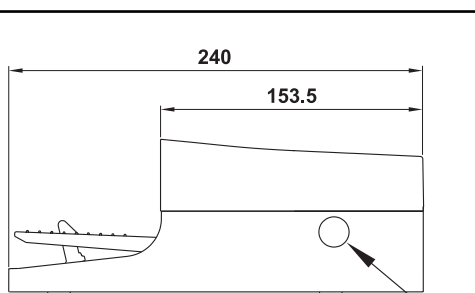
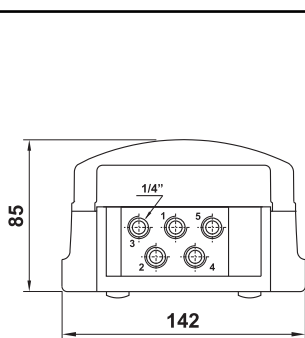
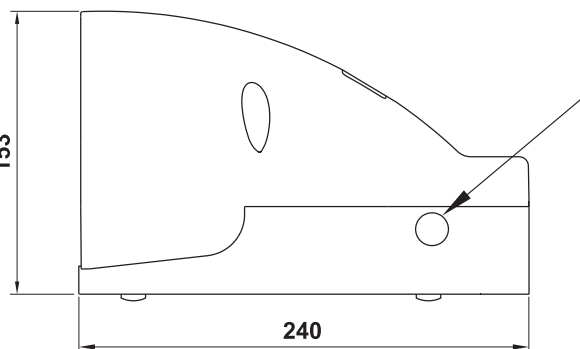
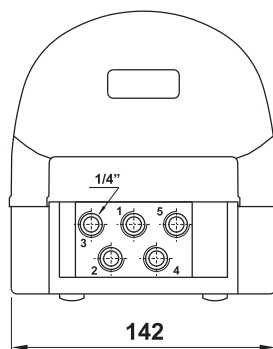
# Pedal valves



## PEDAL WITH 5/2 1/4" NPT SERVO-PILOTED SPOOL VALVE LATERAL SECURITY SWITCH



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**



**Security Switch:** after connecting air supply, for proper operations, simply push the button to activate the valve. The same operation is necessary to re-start the valve if air supply is interrupted or missing.

code	part number	description	symbol
US01.125.4N	PED 502 SR	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard, safety feature* and security switch	
US01.147.4N	PEDS 502 SR	Mono-stable pedal valve 5/2 1/4" NPT without pedal guard, with safety feature* and with security switch	

\* **Safety feature:** to avoid accidental operation the pedal must be fully depressed. Press on the pedal with the whole shoe surface.

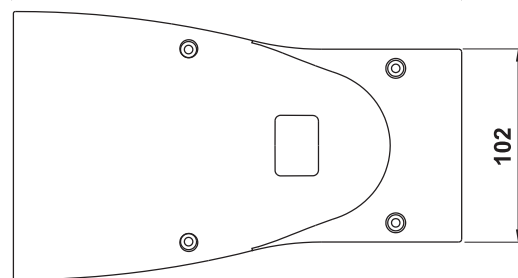
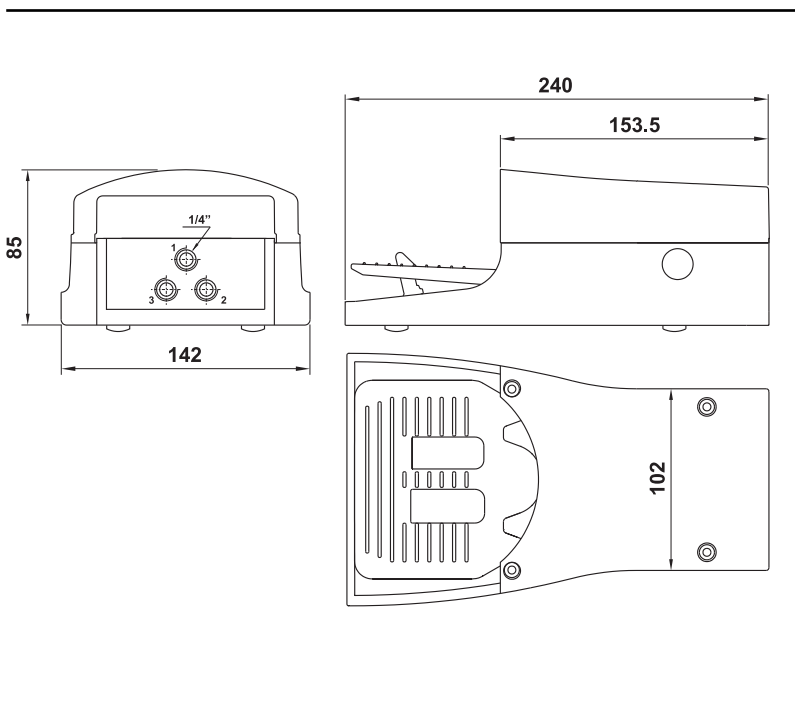
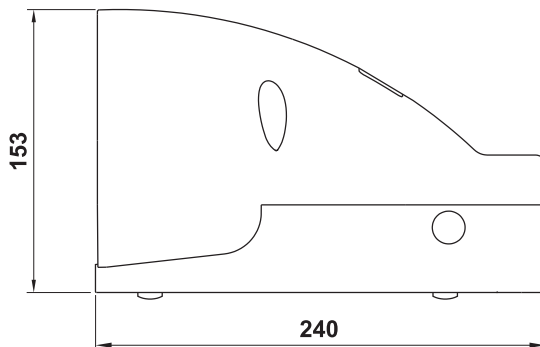
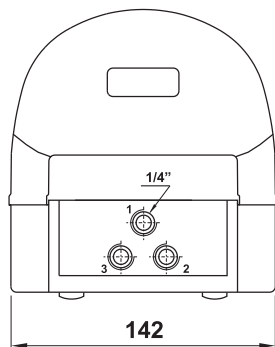
# Pedal valves



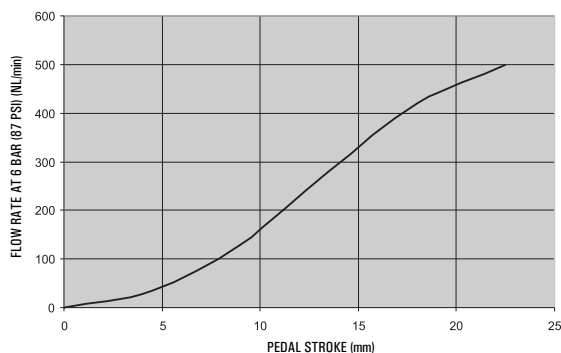
## PEDAL WITH DIRECTLY ACTUATED VALVE WITH PROGRESSIVE FLOW RATE



Cover colour: **YELLOW**  
On request: **ORANGE** and **GREY**



Valve flow rate related to pedal stroke



code	part number	description	symbol
US01.133.4N	PED 302 P	Mono-stable pedal valve 3/2 N/C 1/4" NPT progressive flow rate, with pedal guard	
US01.156.4N	PEDS 302 P	Mono-stable pedal valve 3/2 N/C 1/4" NPT progressive flow rate, without pedal guard	

**Attention:** the valve cannot be used as normally open.

## DOUBLE PEDAL



The two pedals are connected by a connecting block (aluminium). The hand grip is made of chromed steel.  $\phi 10$ , height mm 700

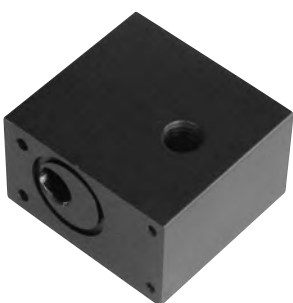
code	part number	description
US01.157.4N	<b>PED 502 M</b> + <b>PEDS EB</b>	Mono-stable pedal valve 5/2 1/4" NPT with pedal guard + bi-stable pedal with electric contact N/C-N/O, without pedal guard

Other combinations are possible upon request.

## ACCESSORIES FOR DOUBLE PEDAL ASSEMBLY

kit connecting block

**01.081.2**



stick  $\phi 10$ ; height mm 700

**01.080.2**



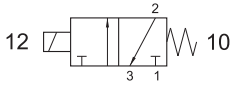
# **COILS, CONNECTORS, SOLENOID VALVES**



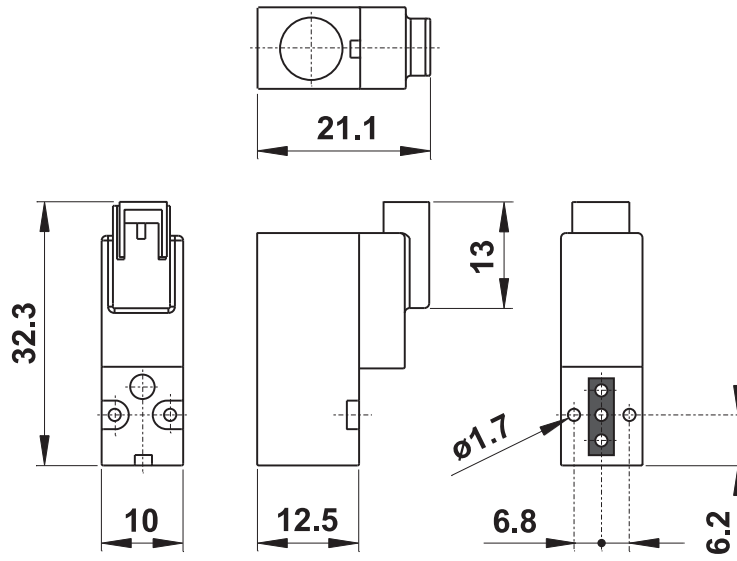
# 10 mm solenoids



## Solenoid valve 10 mm



00.441.0

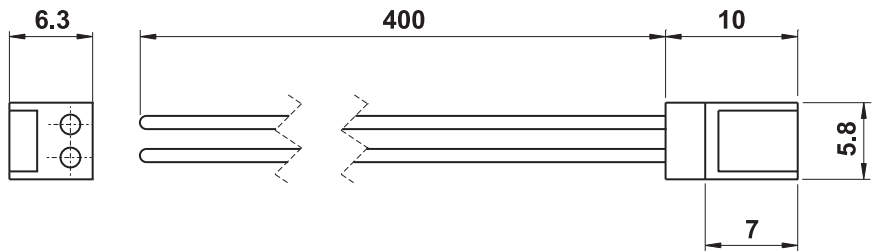
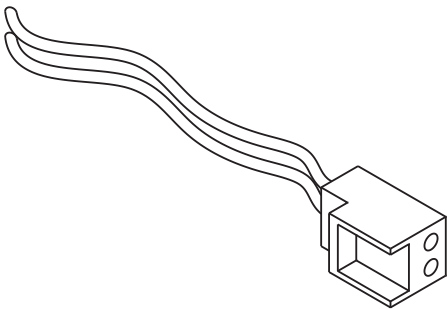


Tension	24V DC $\pm$ 10%
Power	0.5 ... 1 W
Nominal flow rate at 6 bar (87 PSI), $\Delta$ p 1 bar (14 PSI)	15 NI/min (0.01 Cv)

Temperature range	-5°C ... +60°C (23°F ... 140 ° F)
Operating pressure	0 ... 7 bar (0 ... 101 PSI) 0 ... 0.7 MPa
Fluid	5 $\mu$ filtered, lubricated or non lubricated air

## ACCESSORIES

07.049.0 Connector for 10 mm solenoid with cable red/black, length 400 mm





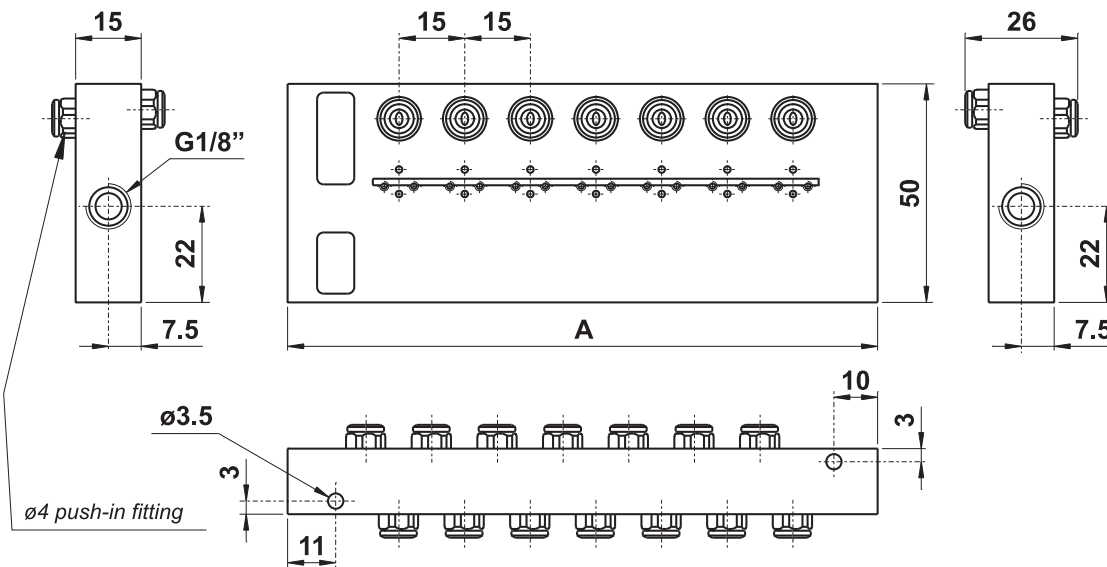
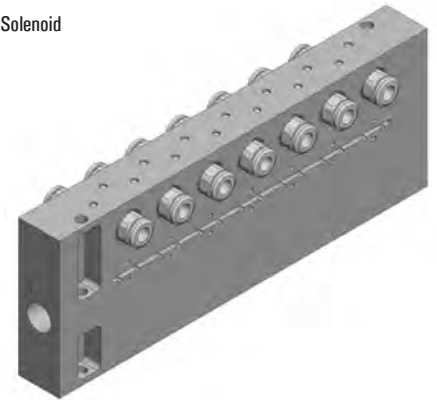
# 10 mm solenoids



## manifolds for 10 mm solenoid valves

The following codes refers only to manifolds. Solenoid valves can be bought separately (see above).

- These manifolds can be used independently or mounted in multiconnection systems (refer to pages 209-211)
- Attention: maximum torque for mounting screws of the solenoid valves: 0.25 Nm

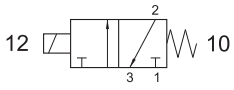


model	no. stations	A
07.090.2	4	60
07.091.2	6	75
07.092.2	8	90
07.093.2	10	105
07.094.2	12	120
07.095.2	14	135
07.096.2	16	150
07.097.2	18	165
07.098.2	20	180
07.099.2	22	195
07.100.2	24	210

# 15 mm solenoids and connectors





15 mm

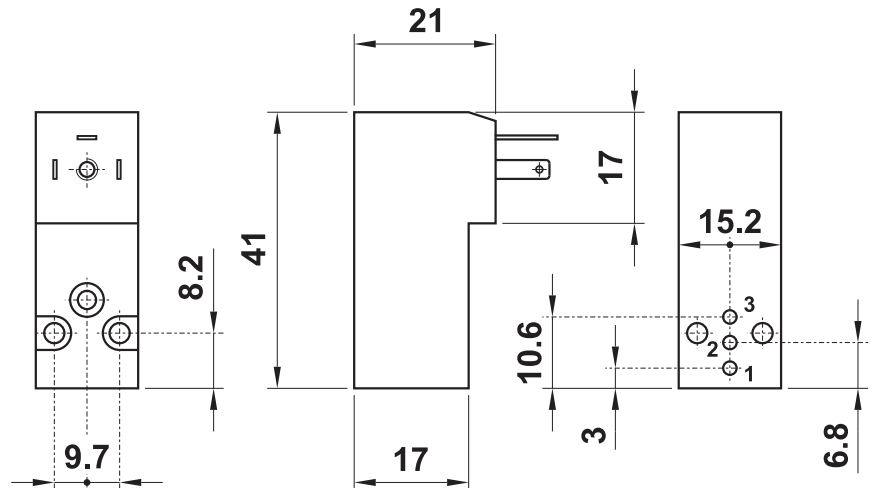


valve function	3/2 NC
nominal diameter	1.1 mm
flow rate 1-2	30 NI/min (0.032 Cv)
flow rate 2-3	35 NI/min (0.038 Cv)
operating pressure	max 10 bar (145 PSI)
lifetime (cycles)	100x10 <sup>6</sup>
response time	10 ms
max operating temperature	+50 °C (122 °F)
duty cycle	ED 100%
rated power consumption	DC: 2W
	AC: 1.3VA
protection	IP 51
tension tolerance	-10%; +15%

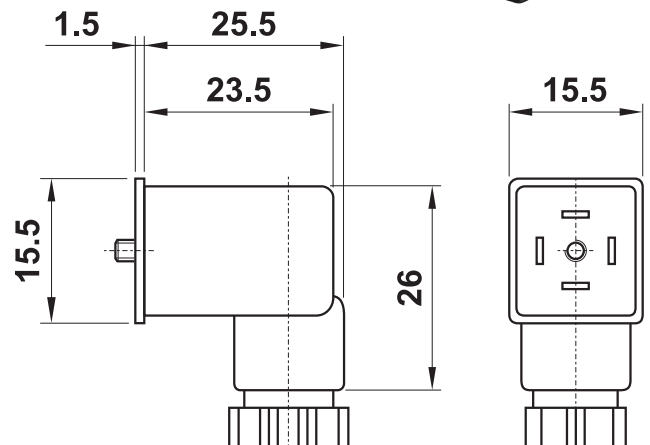
- Electrical connection: DIN 43650, C form
- With non-detented manual override

ACCESSORIES	
mounting plate with gasket	
<b>00.414.0</b>	
mounting screw (2 screws are necessary)	
<b>00.413.0</b>	

code	tension
00.253.0	12V DC
00.254.0	24V DC
00.255.0	24V 50/60Hz
00.256.0	110V 50/60Hz
00.257.0	220V 50/60Hz



code	colour	cable	type
00.252.0	black	PG07	standard
00.340.0	transparent	PG07	with LED 24V
00.341.0	transparent	PG07	with LED 24V and VDR
00.342.0	transparent	PG07	with LED 115V
00.343.0	transparent	PG07	with LED 115V and VDR
00.398.0	transparent	PG07	with LED 230V
00.399.0	transparent	PG07	with LED 230V and VDR



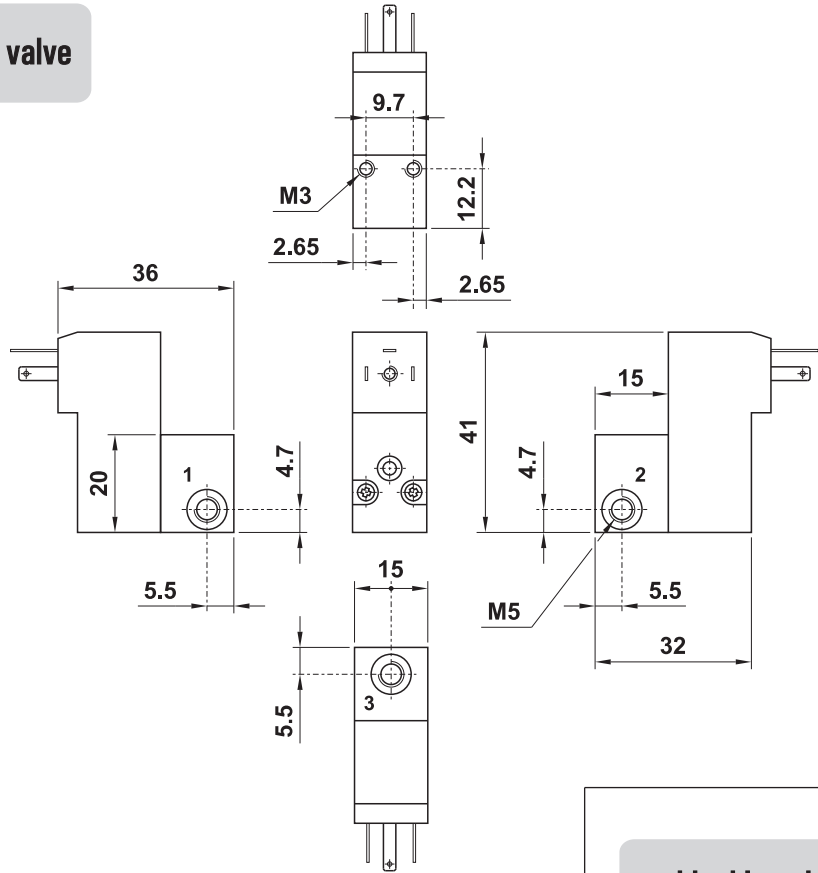
# Manifolds for 15 mm solenoid valves



The following codes refers only to manifolds. Solenoid valves can be bought separately (refer to page 138).

## single manifold for 15 mm N/C solenoid valve

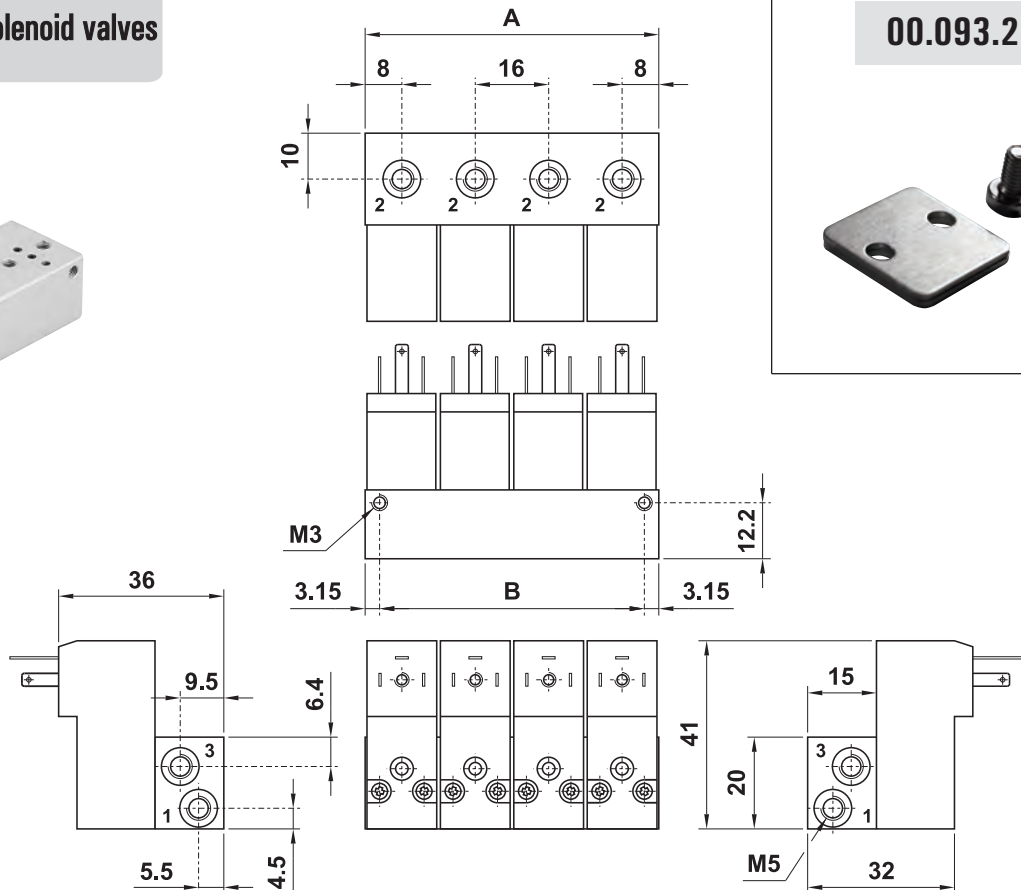
**AU.061.1**



## manifolds for 15 mm N/C solenoid valves



model	no. stations	A	B
AU.062.1	2	32	25.7
AU.063.1	3	48	41.7
AU.064.1	4	64	57.7
AU.065.1	5	80	73.7
AU.066.1	6	96	89.7
AU.067.1	7	112	105.7
AU.068.1	8	128	121.7
AU.069.1	9	144	137.7
AU.070.1	10	160	153.7



blanking plate

**00.093.2**



# Solenoid valves on manifold



The following products are sold without coils. These can be bought separately (refer to page 149).

To use these products as 2/2 valves, for each solenoid valve it is necessary to order the aluminium nut (code **00.125.2**) with M5 plug (code **36.643.0**).

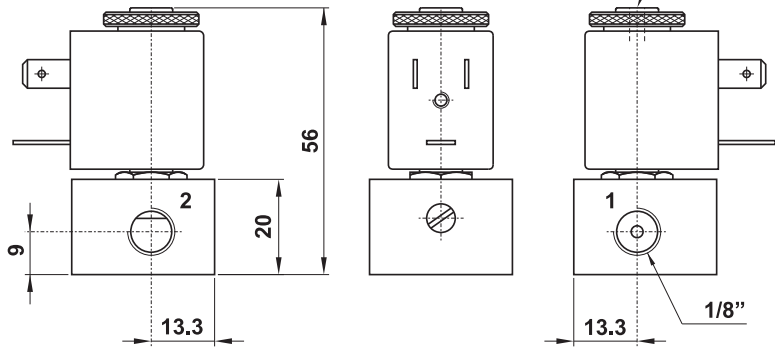
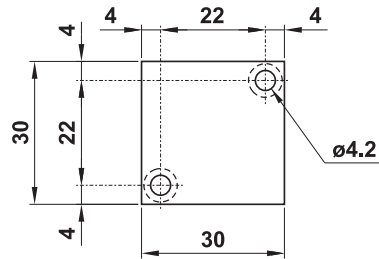
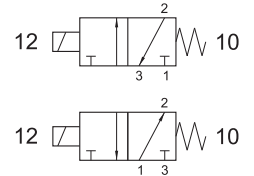
## 3/2 single solenoid valve with or without detented manual override

1/8" NPT

coil 22 mm

	ORDER CODES	
	N/C	N/O
without manual override	<b>US00.071.3</b>	<b>US00.088.3</b>
with manual override	<b>US00.051.3</b>	

Temperature range	max +60°C (140°F)
Operating pressure	-0.7 ... 10 bar (Vacuum ... 145 PSI) -0.07 ... 1 MPa
Nominal diameter	1.1 mm
Nominal flow rate 1-2	30 NI/min (0.03 Cv)
Fluid	50µ filtered, lubricated or non lubricated air



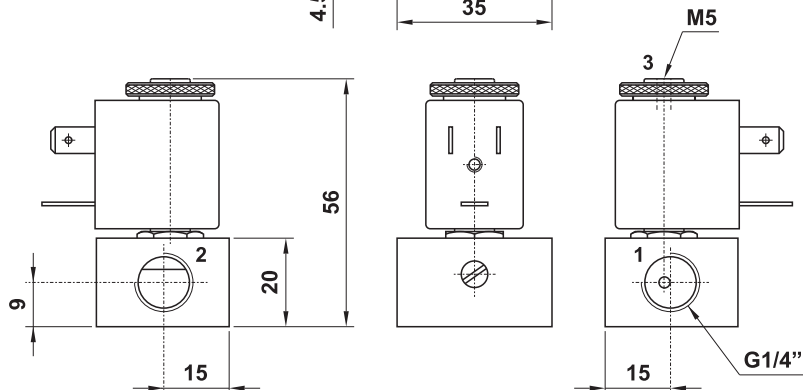
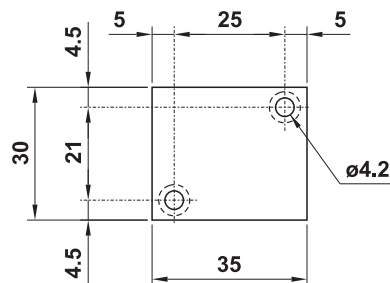
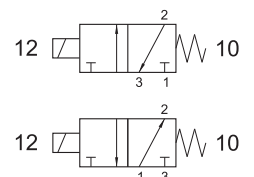
## 3/2 single solenoid valve with or without detented manual override

1/4" NPT

coil 22 mm

	ORDER CODES	
	N/C	N/O
without manual override	<b>US01.068.3</b>	<b>US01.066.3</b>
with manual override	<b>US01.005.3</b>	

Temperature range	max +60°C (140 °F)
Operating pressure	-0.7 ... 10 bar (Vacuum ... 145 PSI) 0.07 ... 1 MPa
Nominal diameter	1.1 mm
Nominal flow rate 1-2	30 NI/min (0.03 Cv)
Fluid	50µ filtered, lubricated or non lubricated air



# Solenoid valves on manifold



The following products are sold without coils. These can be bought separately (refer to page 149).

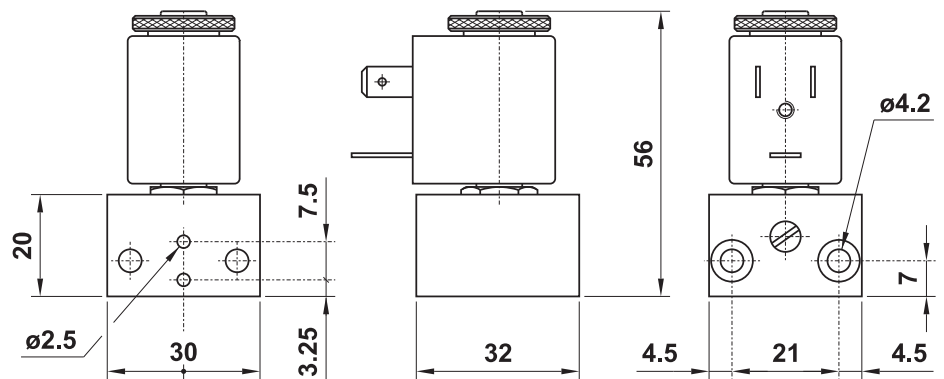
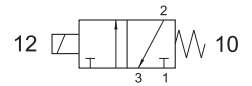
To use these products as 2/2 valves, for each solenoid valve it is necessary to order the aluminium nut (code **00.125.2**) with M5 plug (code **36.643.0**).

## 3/2 N/C single solenoid valve on CNOMO-base with manual override

coil **22 mm**

**US00.004.3** with detented manual override

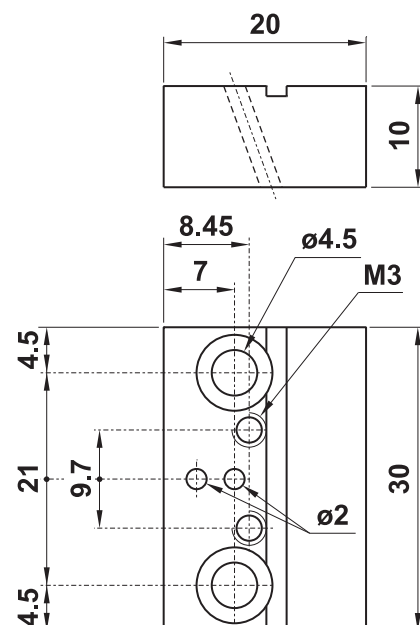
**US00.064.3** with non-detented manual override



Temperature range	max +60°C (140°F)
Operating pressure	-0.7 ... 10 bar (Vacuum... 145 PSI) -0.07 ... 1 MPa
Nominal diameter	1.1 mm
Nominal flow rate 1-2	30 NI/min (0.03 Cv)
Fluid	50 $\mu$ filtered, lubricated or non lubricated air

## interface for 15 mm solenoid valve on CNOMO-base

**00.441.1**



# Solenoid valves on manifold



The following products are sold without coils. These can be bought separately (refer to page 149).

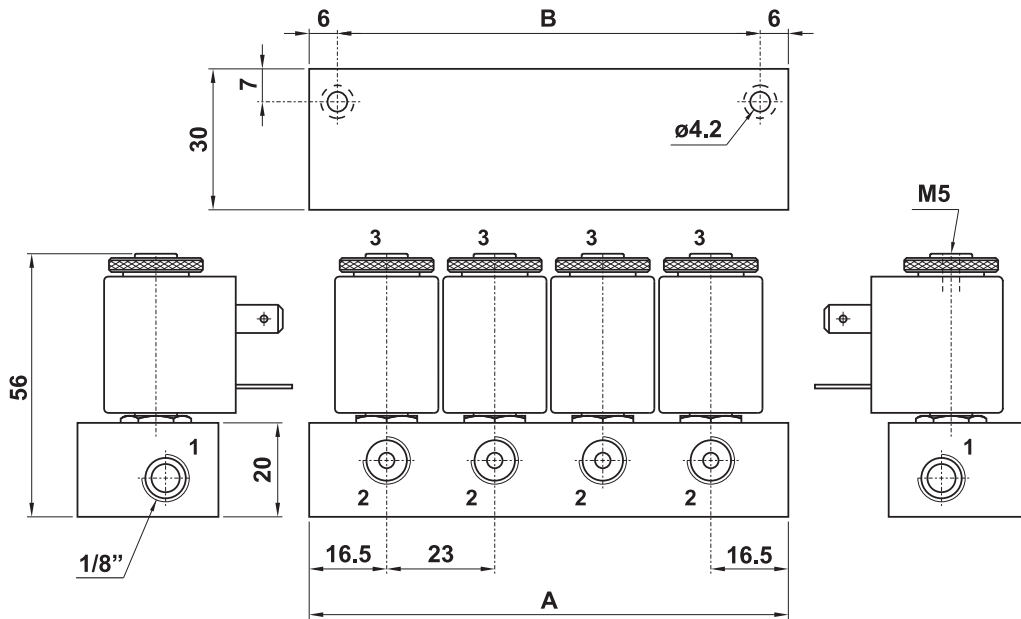
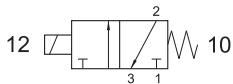
To use these products as 2/2 valves, for each solenoid valve it is necessary to order the aluminium nut (code **00.125.2**) with M5 plug (code **36.643.0**).



## 3/2 N/C solenoid valves on manifold without manual override

22 mm

- nominal diameter 1.1 mm (0.04 in)

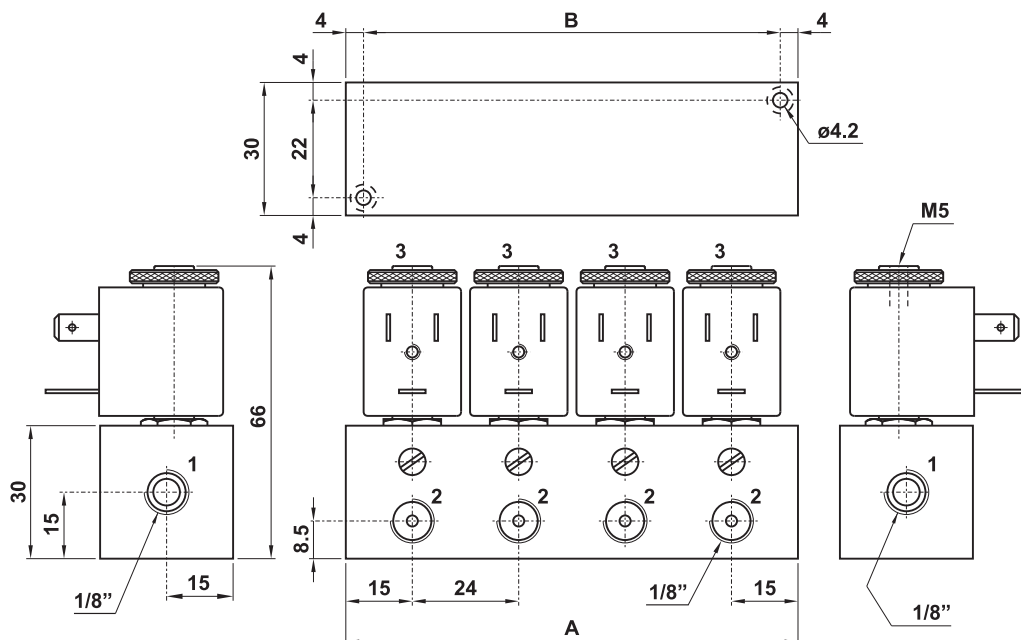
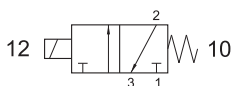


model	no. stations	A	B
US00.072.3	2	56	44
US00.073.3	3	79	67
US00.074.3	4	102	90
US00.075.3	5	125	113
US00.076.3	6	148	136
US00.077.3	7	171	159
US00.078.3	8	194	182
US00.079.3	9	217	205
US00.080.3	10	240	228

## 3/2 N/C solenoid valves on manifold with detented manual override

22 mm

- nominal diameter 1.1 mm (0.04 in)

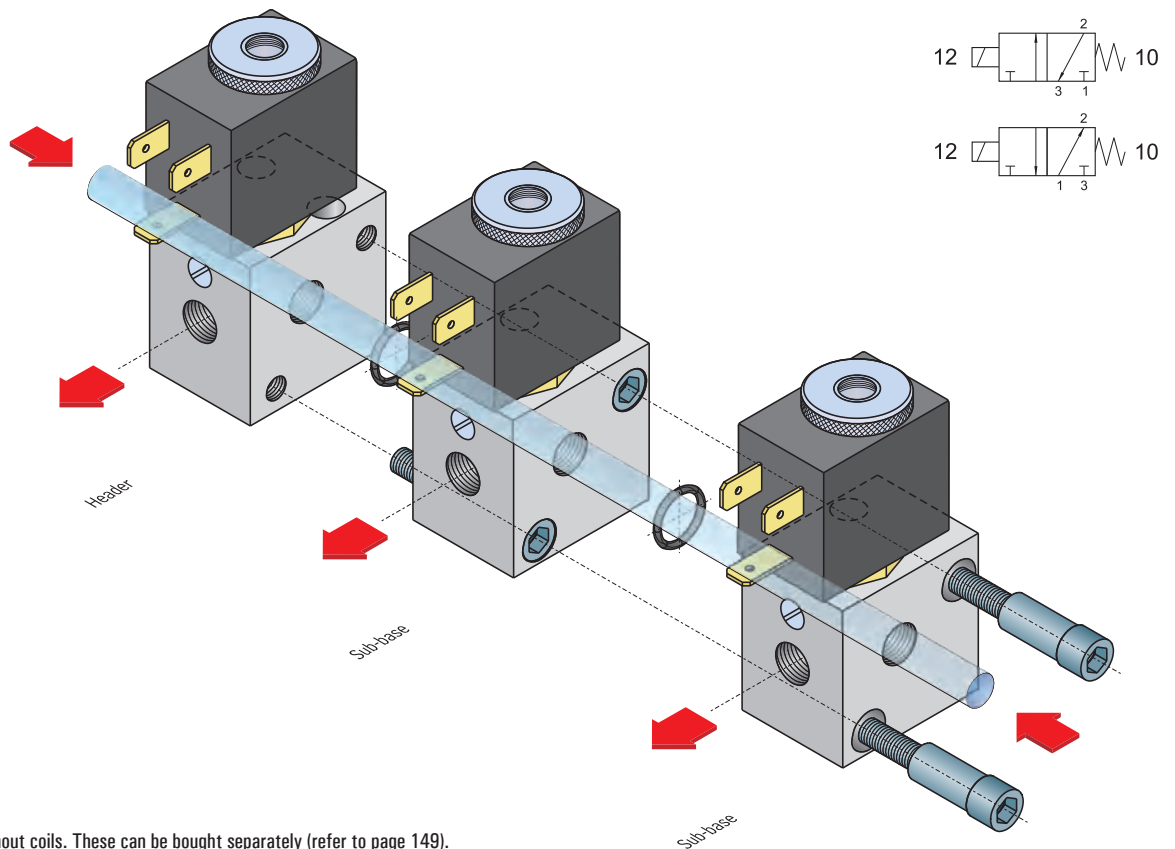


model	no. stations	A	B
US00.052.3	2	54	46
US00.053.3	3	78	70
US00.054.3	4	102	94
US00.055.3	5	126	118
US00.056.3	6	150	142

# Solenoid valves on multiple sub-bases



- User ports: 1/8" NPT or push-in fittings for 5/32" NPT or  $\varnothing 4$  mm tube
- Headers can be used also as bases for standing-alone solenoid valves
- With or without detented manual override
- Normally closed and normally open 3/2 version
- For 22 mm coils



The following products are sold without coils. These can be bought separately (refer to page 149).

Temperature range	max +60°C (140°F)
Operating pressure	-0.7 ... 10 bar (Vacuum ... 145 PSI) -0.07 ... 1 MPa
Nominal diameter	1.1 mm (0.04 in)
Fluid	50 $\mu$ filtered, lubricated or non lubricated air

To use these products as 2/2 valves, for each solenoid valve it is necessary to order the aluminium nut (code **00.125.2**) with M5 plug (code **36.643.0**).

Sub-bases and headers are sold with all necessary pieces for installation.

# Solenoid valves on multiple sub-bases

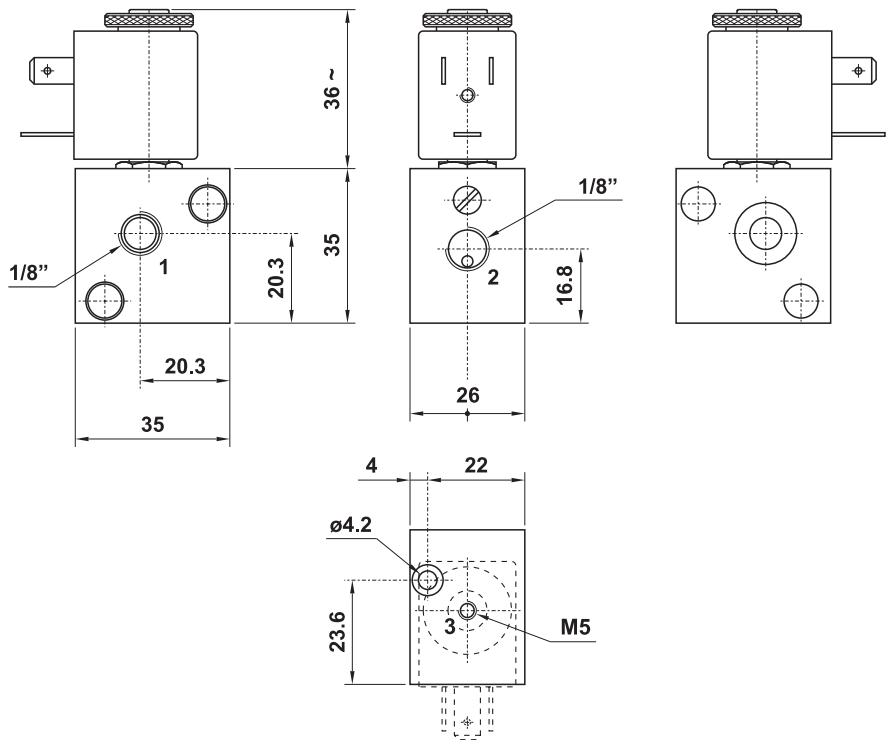


sub-base

with detented manual override

1/8" NPT

ORDER CODE
N/C
<b>US00.094.3</b>

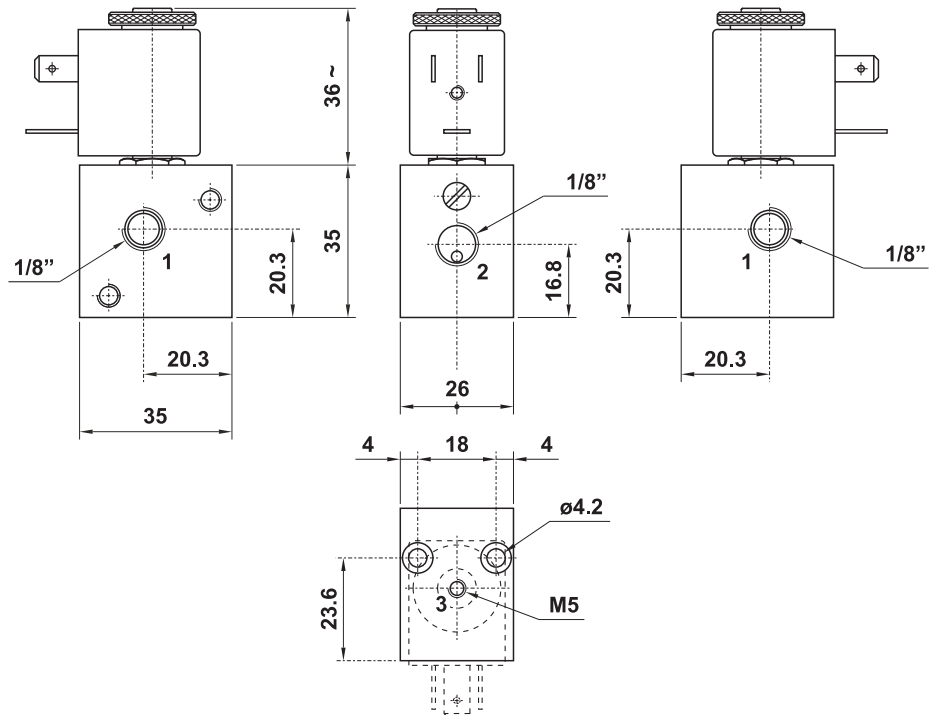


header

with detented manual override

1/8" NPT

ORDER CODE
N/C
<b>US00.095.3</b>





# Solenoid valves on multiple sub-bases

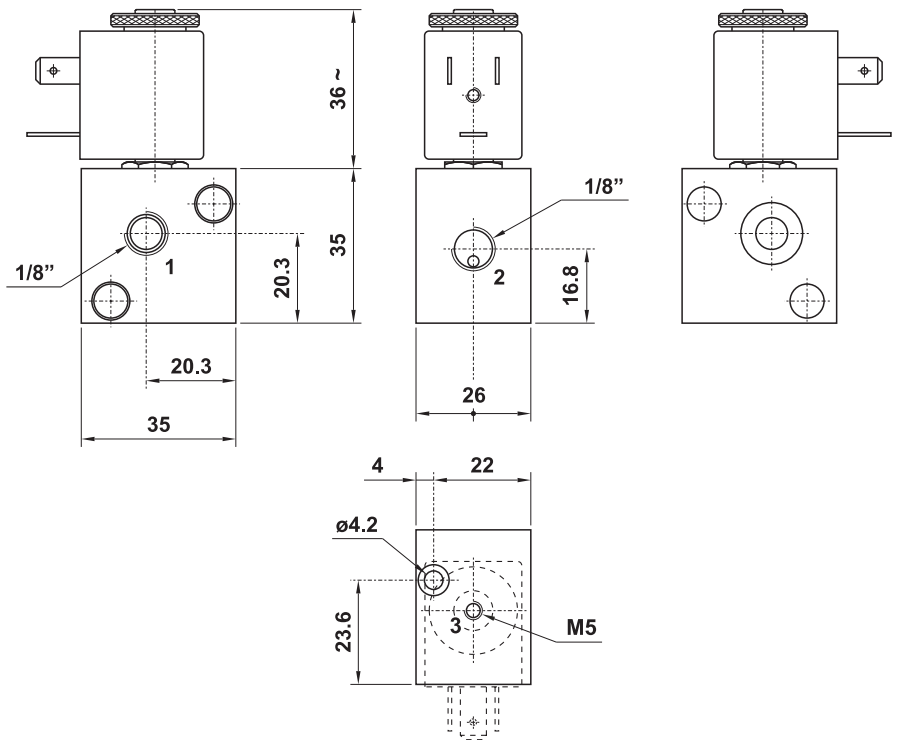


sub-base

without manual override

1/8" NPT

ORDER CODES	
N/C	N/O
<b>US00.096.3</b>	<b>US00.130.3</b>

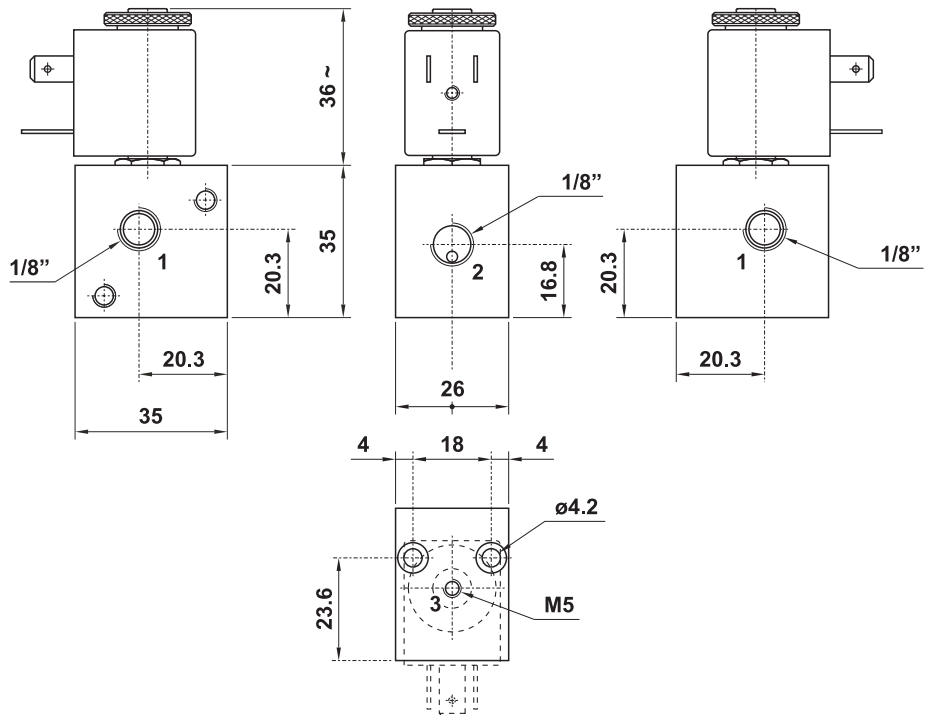


header

without manual override

1/8" NPT

ORDER CODES	
N/C	N/O
<b>US00.097.3</b>	<b>US00.131.3</b>



# Solenoid valves on multiple sub-bases



sub-base

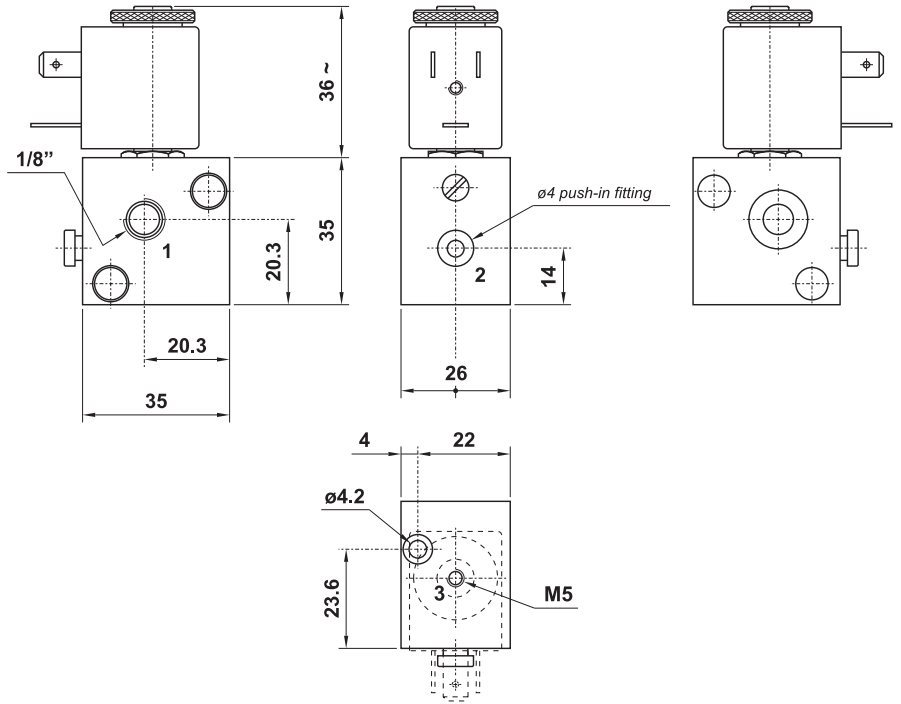
with detented manual override

ø4

ORDER CODE

N/C

**US00.098.3**



header

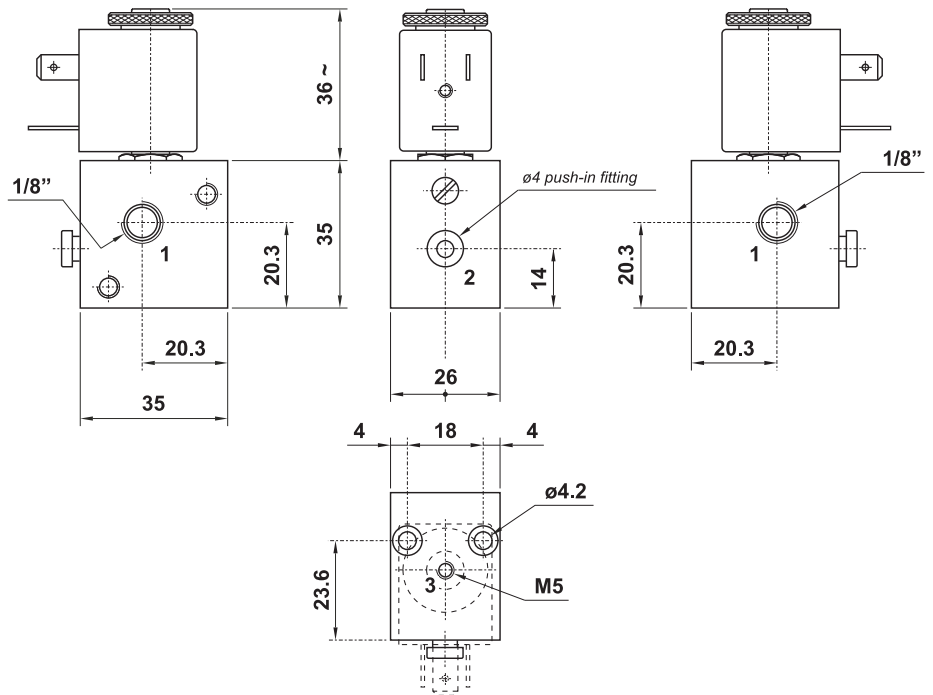
with detented manual override

ø4

ORDER CODE

N/C

**US00.099.3**



# Solenoid valves on multiple sub-bases

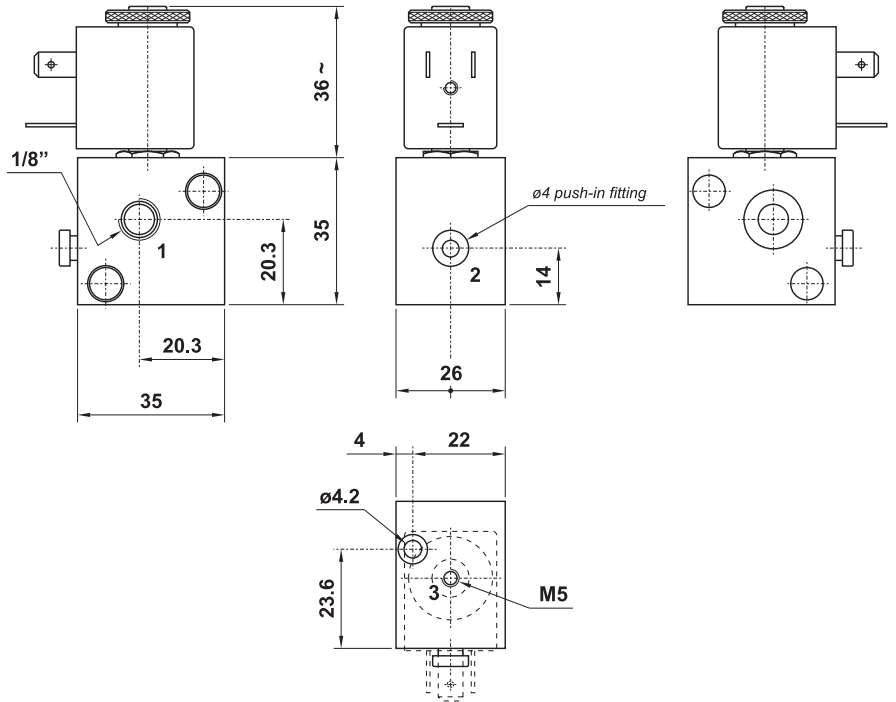


sub-base

without manual override

ø4

ORDER CODES	
N/C	N/O
<b>US00.100.3</b>	<b>US00.134.3</b>

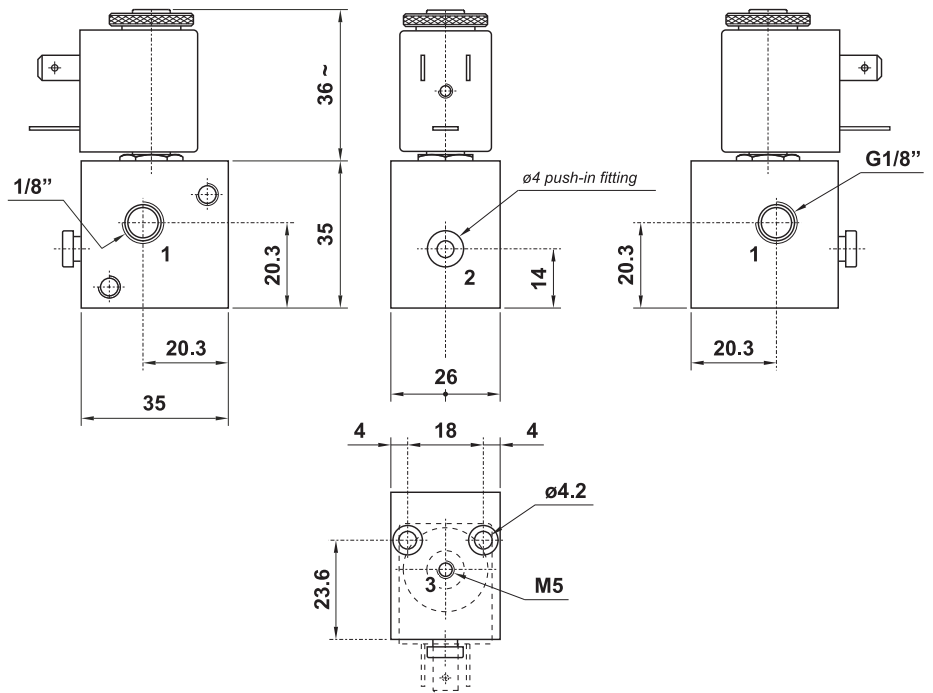


header

without manual override

ø4

ORDER CODES	
N/C	N/O
<b>US00.101.3</b>	<b>US00.135.3</b>



# Solenoid valves on multiple sub-bases



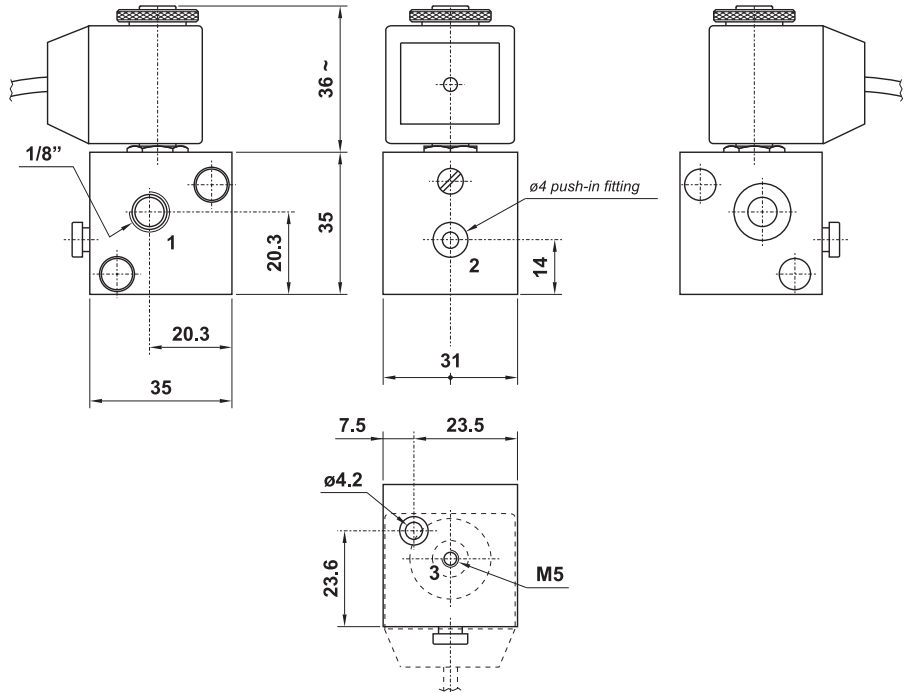
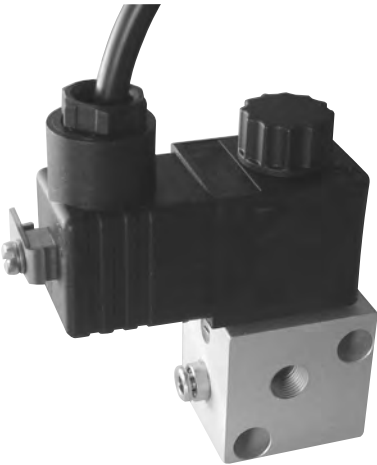
sub-base

ATEX

with manual override

ø4

ORDER CODE
N/C
<b>US00.104.3X</b>

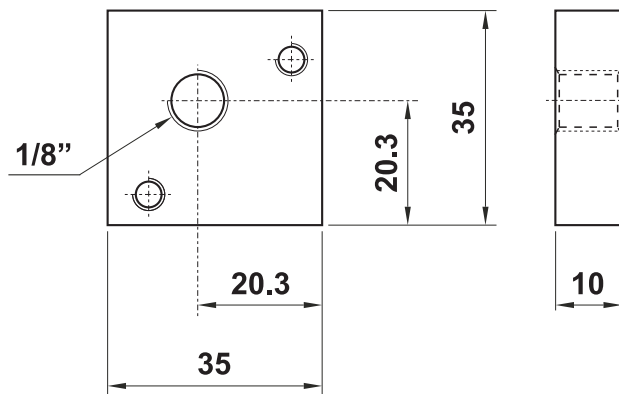


The following products are sold without coils. These can be bought separately (refer to page 151: ATEX 30 mm coils). They can be used only as 3/2 NC valve.

closed header

ATEX

US00.360.1



# 22 mm coils and connectors



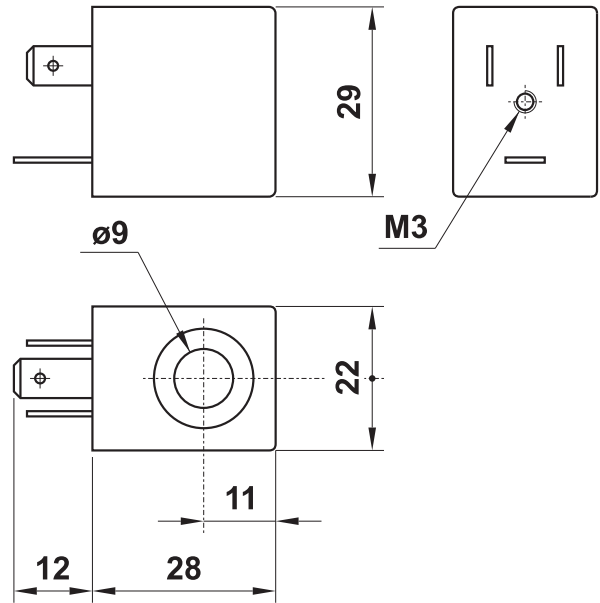
## 22 mm



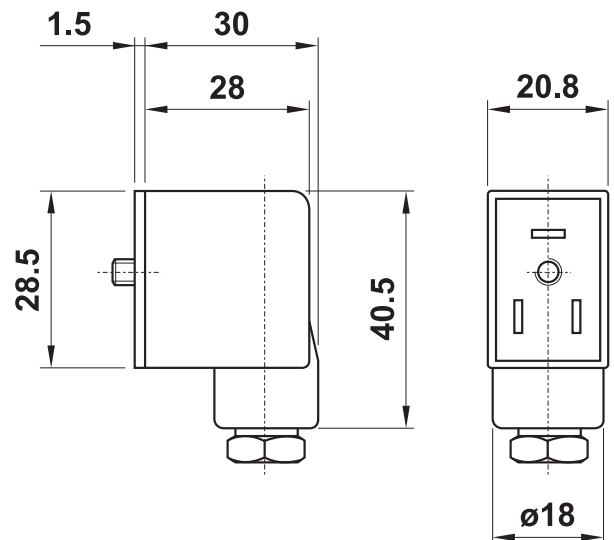
max working temperature	+50°C (122 °F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	± 10%

- low consumption (1.5W) on request

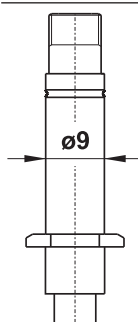
code	tension	power	
		rated	inrush
00.167.0	12V DC	3W	
00.028.0	24V DC	3W	
00.029.0	24V 50/60Hz	5VA	7.5VA
00.030.0	110V 50/60Hz	5VA	7.5VA
00.031.0	220V 50/60Hz	5VA	7.5VA



code	colour	cable	type
00.197.0	black	PG09	standard
00.344.0	transparent	PG09	with LED 24V
00.345.0	transparent	PG09	with LED 24V and VDR
00.346.0	transparent	PG09	with LED 115V
00.347.0	transparent	PG09	with LED 115V and VDR
00.394.0	transparent	PG09	with LED 230V
00.395.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

NC : 00.088.0  
NO : 00.306.0



aluminium nut and elastic ring

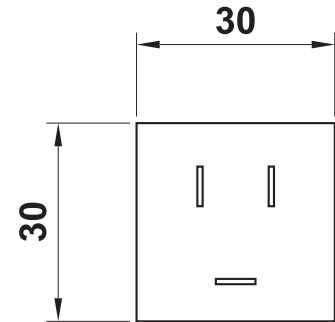
00.125.2

# 30 mm coils and connectors

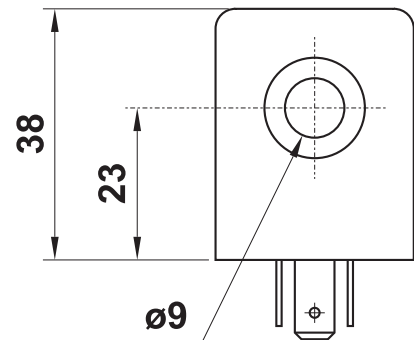


## 30 mm

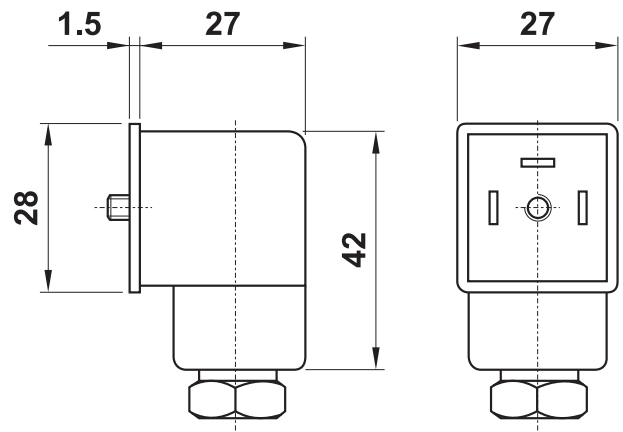
max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%



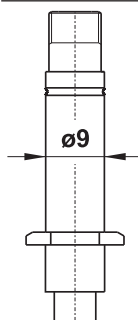
code	tension	power	
		rated	inrush
00.258.0	24V DC	2W	
00.259.0	24V 50/60Hz	5VA	9VA
00.260.0	110V 50/60Hz	5VA	9VA
00.261.0	220V 50/60Hz	5VA	9VA



code	colour	cable	type
00.251.0	black	PG09	standard
00.348.0	transparent	PG09	with LED 24V
00.349.0	transparent	PG09	with LED 24V and VDR
00.350.0	transparent	PG09	with LED 115V
00.351.0	transparent	PG09	with LED 115V and VDR
00.396.0	transparent	PG09	with LED 230V
00.397.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



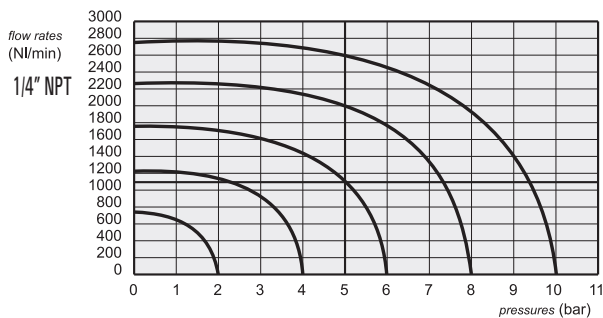
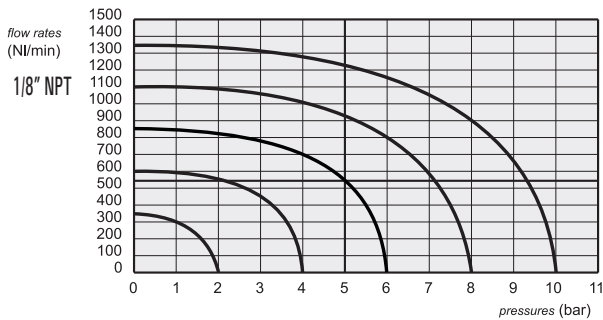
aluminium nut and elastic ring

00.125.2

# Solenoid actuated valves



- 3/2-5/2-5/3 spool valves with 1/8" NPT-1/4" NPT threaded ports
- Installation in-line, on gang or modular manifolds
- Solenoid pilots with detented manual override as standard
- On request with low consumption 1.5W
- Special versions on request
- Coil sold separately on request



## Materials

Body: aluminium 11S

End cups: aluminium 11s

Springs: stainless steel

Seals: NBR

Spool: nickel plated aluminium

Internal parts: brass OT58

On request and upon extra charge, the valves are available also with body and end caps entirely in aluminium. Some valves, as specified in the next pages, are available only in the aluminium version. ATEX valves are only in aluminium.

## Response times

	1/8" NPT	1/4" NPT
mono-stable	TRA (14): 15 ms TRR (12): 35 ms	TRA (14): 19 ms TRR (12): 45 ms
bi-stable	TRA (14): 20 ms TRR (12): 20 ms	TRA (14): 22 ms TRR (12): 22 ms

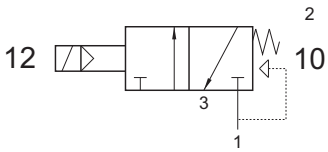
The following products are sold without coils. These can be bought separately (refer to page 185).

Nominal diameter	1/8" NPT: 5 mm 1/4" NPT: 7.5 mm		
Temperature range	max +60°C (140 °F)		
Operating pressure	mono-stable internal air supply	bi-stable internal air supply	separate air supply
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure (for separate air supply)	mono-stable		bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa		1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50µ filtered, lubricated or non lubricated air		

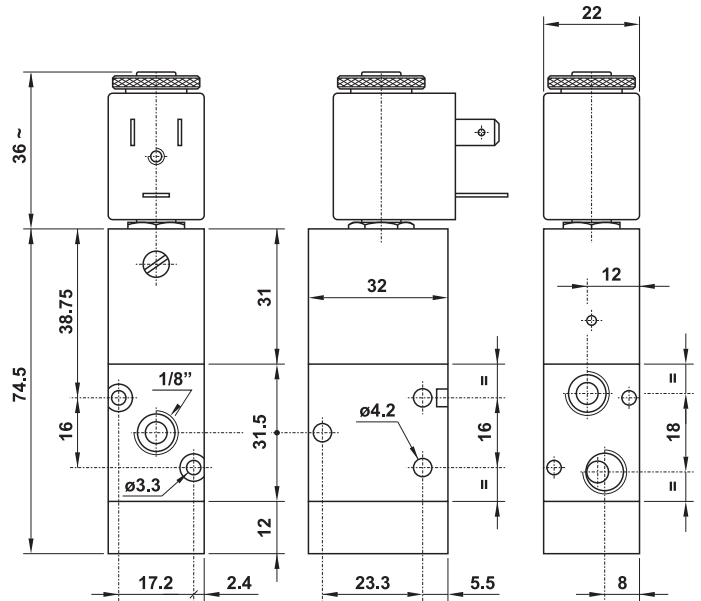


## US321 ME

3/2 1/8" NPT N/C solenoid pilot - air and spring return

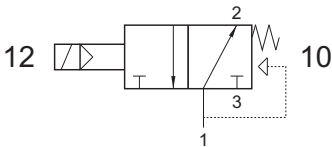


It cannot be used as normally open valve.



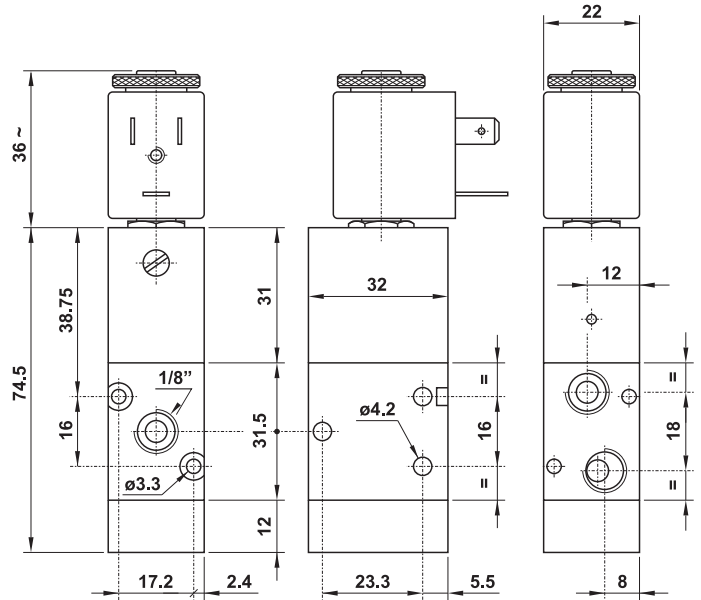
## US321 MEA

3/2 1/8" NPT N/O solenoid pilot - air and spring return



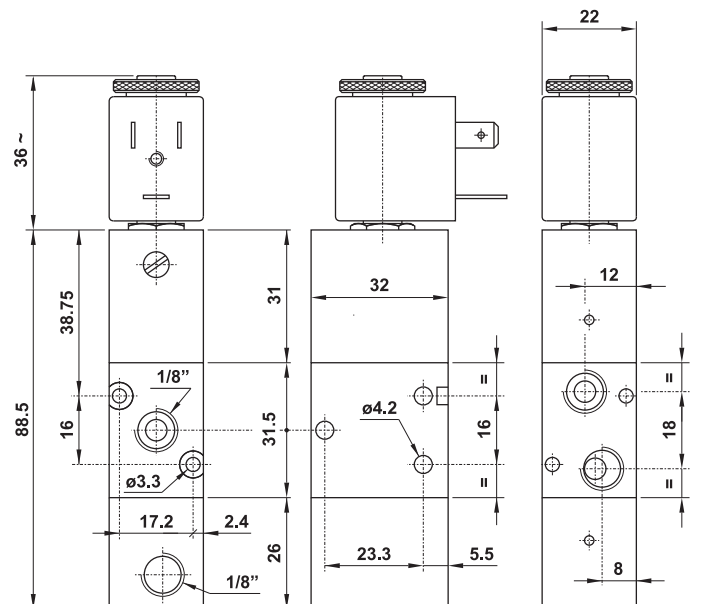
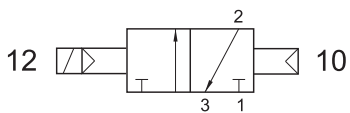
It cannot be used as normally closed valve.

ONLY ALUMINIUM VERSION



## US321 CE

3/2 1/8" NPT solenoid pilot - separate pneumatically piloted return



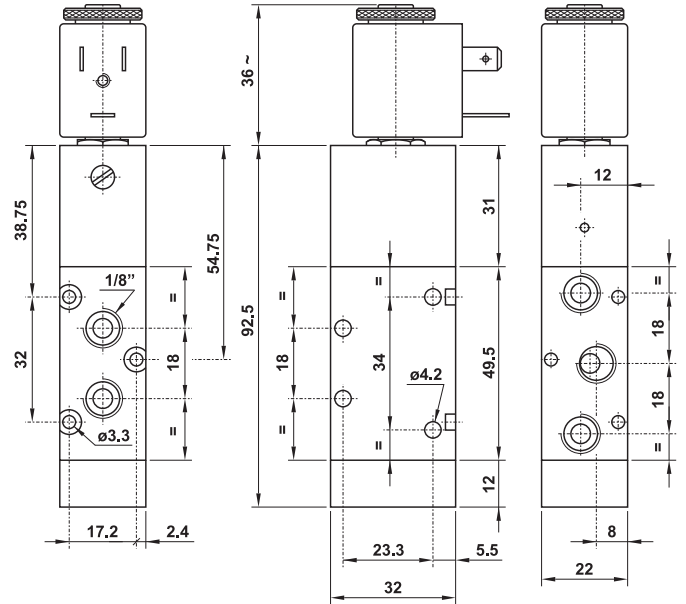
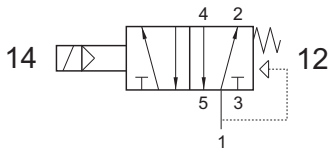


# Solenoid actuated valves



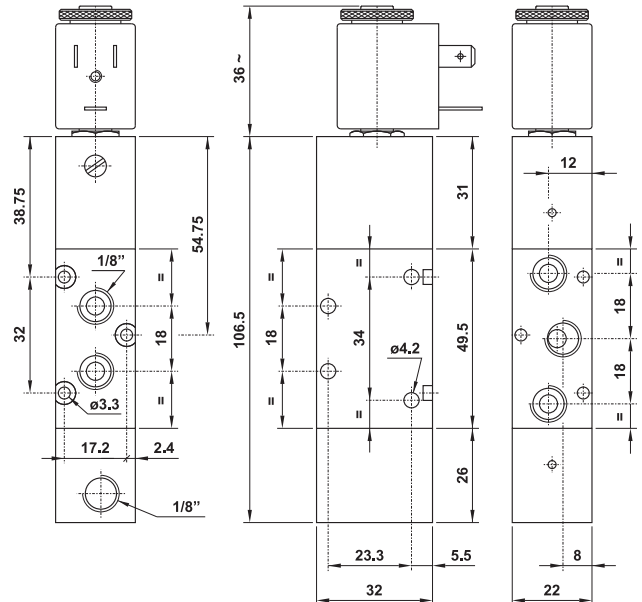
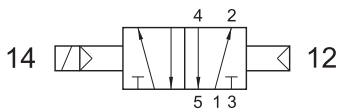
## US521 ME

5/2 1/8" NPT solenoid pilot - air and spring return



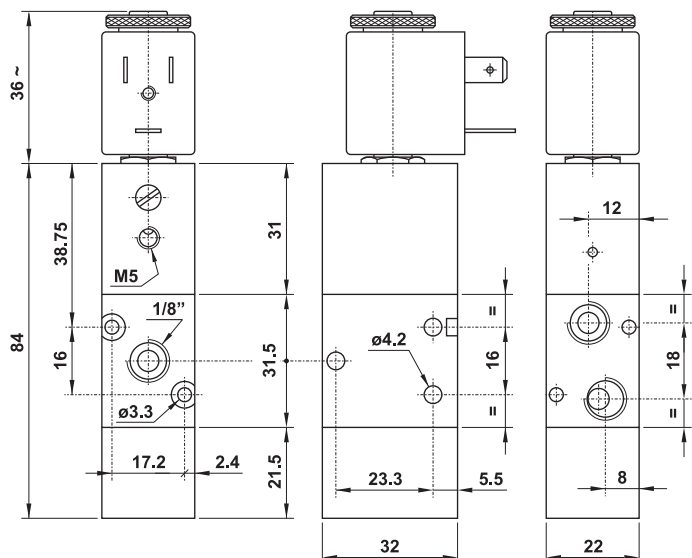
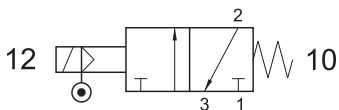
## US521 CE

5/2 1/8" NPT solenoid pilot - separate pneumatically piloted return



## US321 ME AS

3/2 1/8" NPT solenoid pilot with separate air supply - spring return

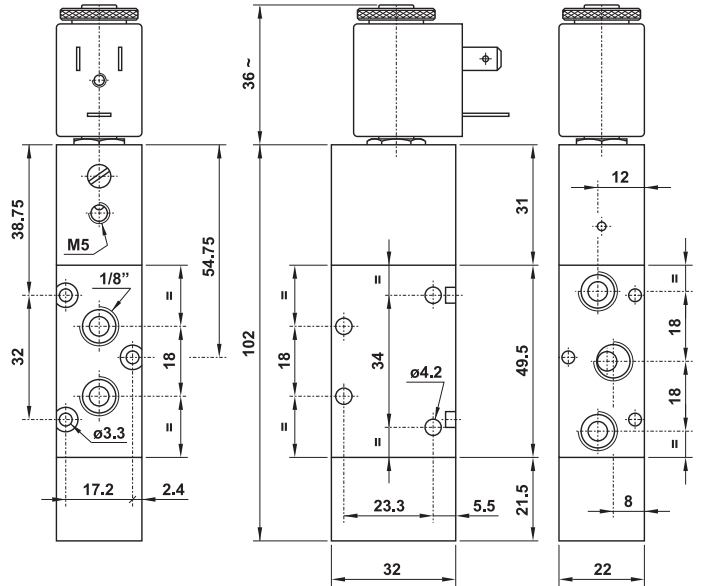
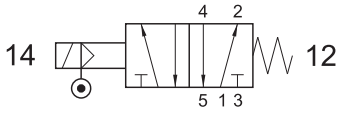


# Solenoid actuated valves



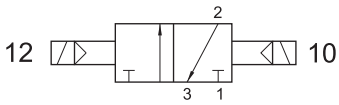
## US521 ME AS

5/2 1/8" NPT solenoid pilot with separate air supply - spring return

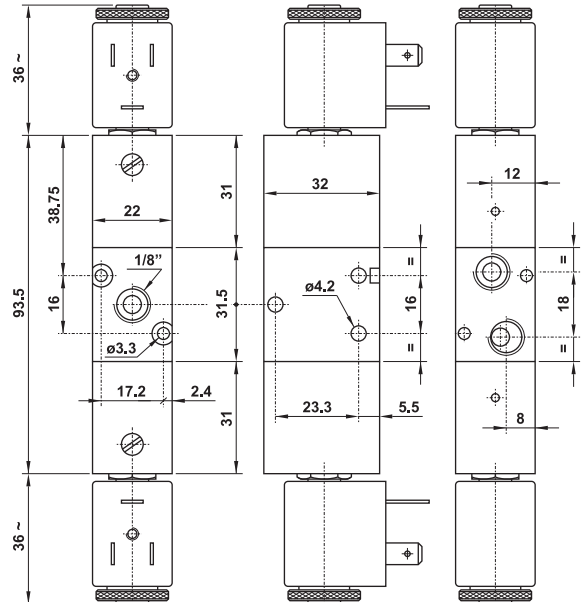


## US321 EE

3/2 1/8" NPT double solenoid pilot

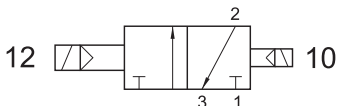


ONLY ALUMINIUM VERSION

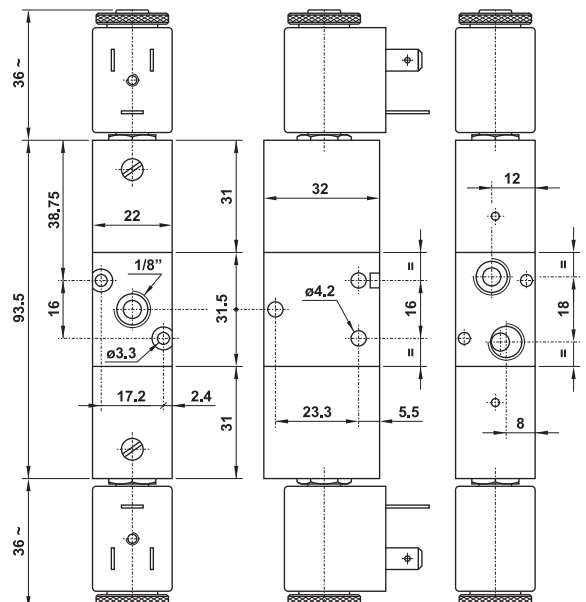


## US321 EED

3/2 1/8" NPT double solenoid pilot - with differential

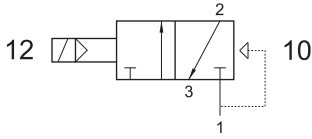


ONLY ALUMINIUM VERSION



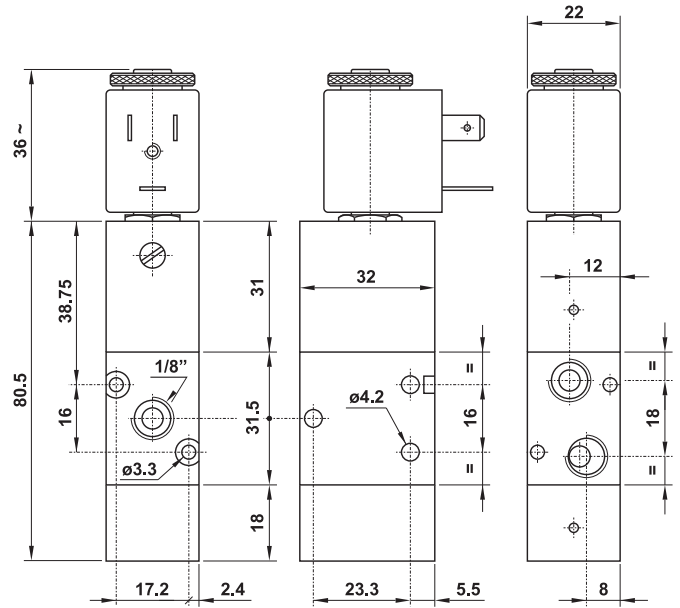
## US321 EFP

3/2 1/8" NPT N/C solenoid pilot - pneumatic spring return



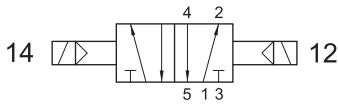
It cannot be used as normally open valve.

ONLY ALUMINIUM VERSION

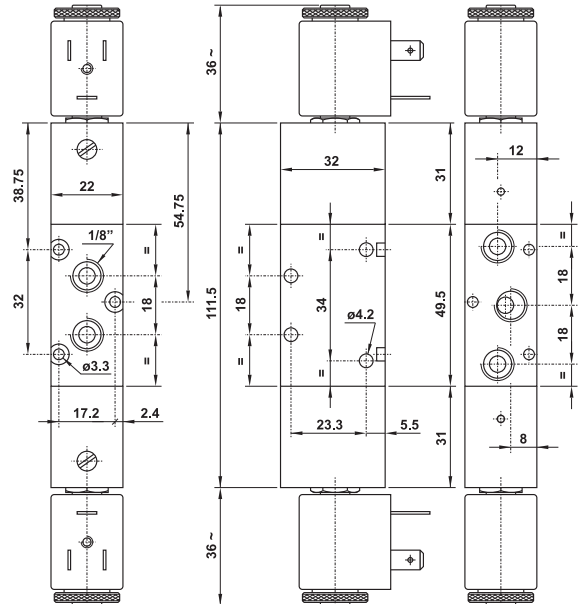


## US521 EE

5/2 1/8" NPT double solenoid pilot

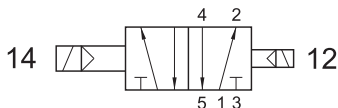


ONLY ALUMINIUM VERSION

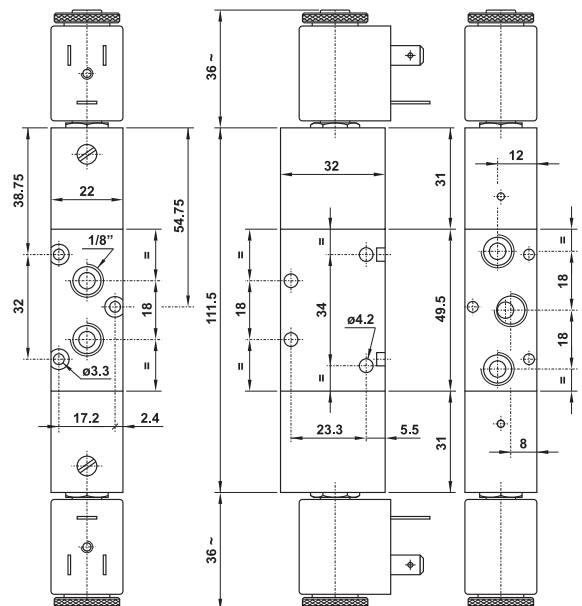


## US521 EED

5/2 1/8" NPT double solenoid pilot - with differential



ONLY ALUMINIUM VERSION

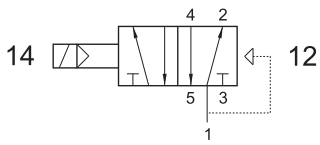


# Solenoid actuated valves

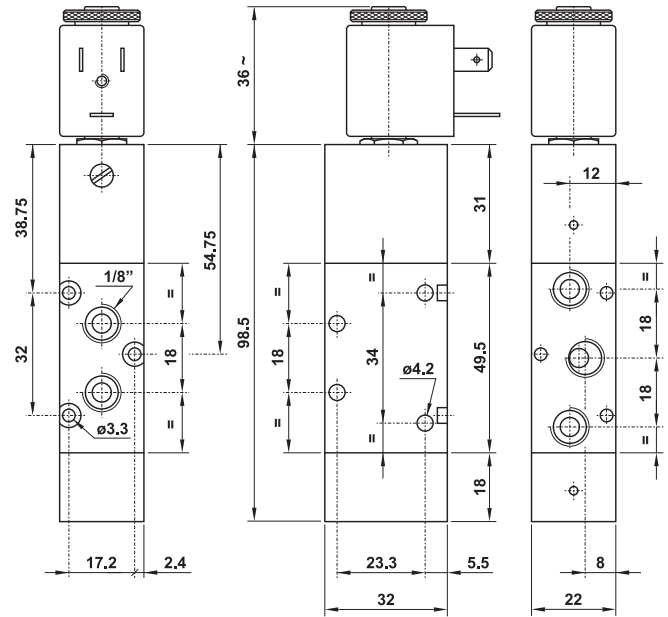


## US521 EFP

5/2 1/8" NPT solenoid pilot - pneumatic spring return

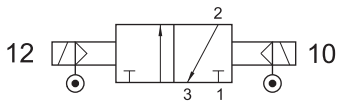


ONLY ALUMINIUM VERSION

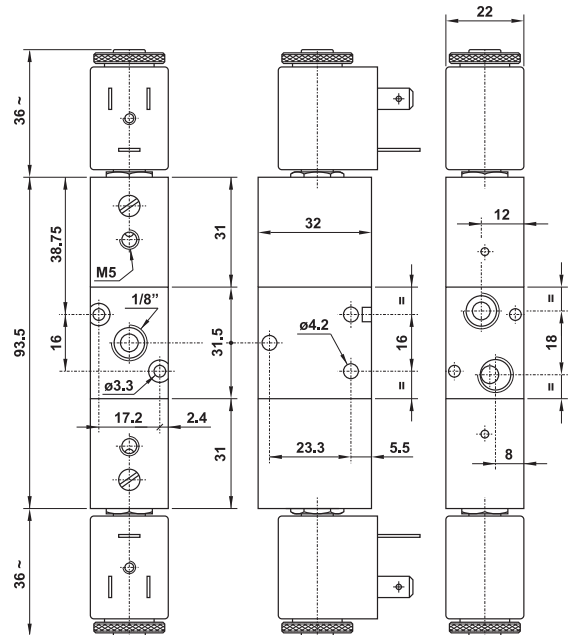


## US321 EE AS

3/2 1/8" NPT double solenoid pilot with separate air supply

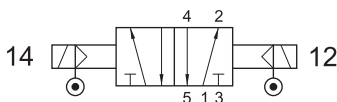


ONLY ALUMINIUM VERSION

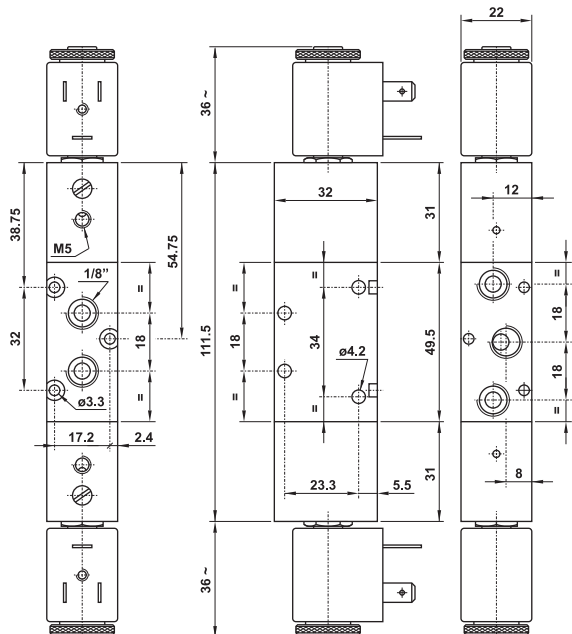
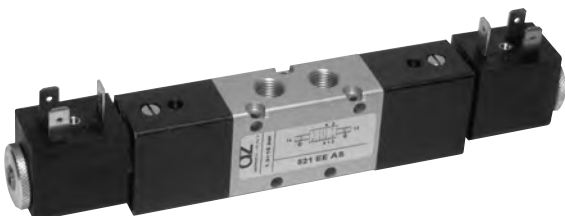


## US521 EE AS

5/2 1/8" NPT double solenoid pilot with separate air supply



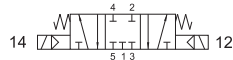
ONLY ALUMINIUM VERSION



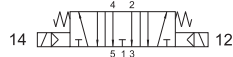
# Solenoid actuated valves



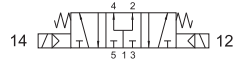
**US5213C EE** closed centers



**US5213A EE** open centers

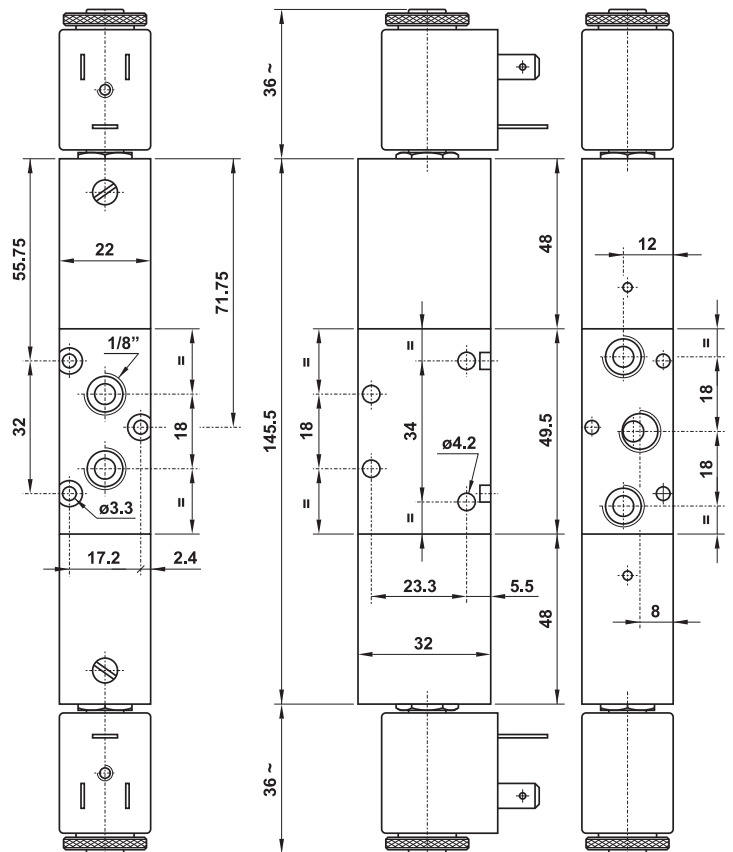
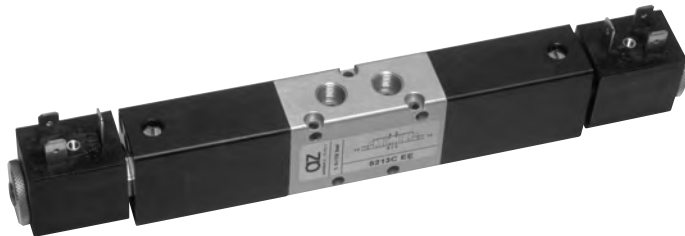


**US5213P EE** pressurized centers

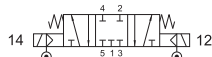


5/3 1/8" NPT double solenoid pilot

ONLY ALUMINIUM VERSION



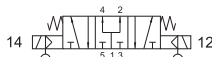
**US5213C EE AS** closed centers



**US5213A EE AS** open centers

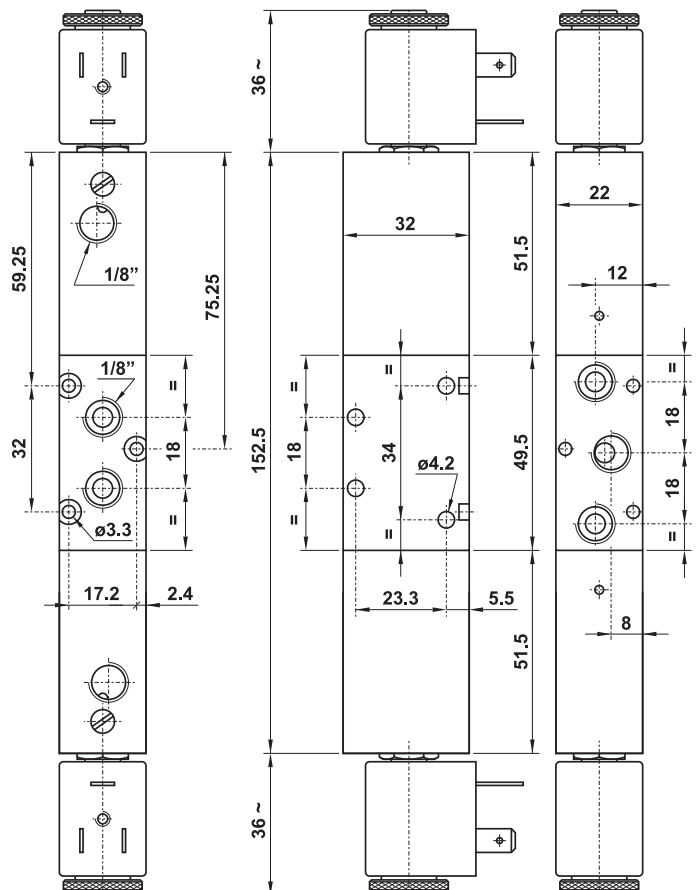
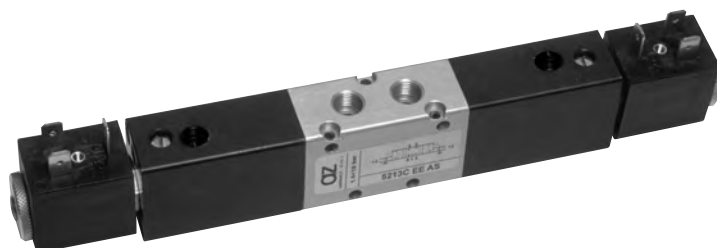


**US5213P EE AS** pressurized centers



5/3 1/8" NPT double solenoid pilot with separate air supply

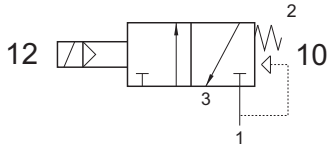
ONLY ALUMINIUM VERSION



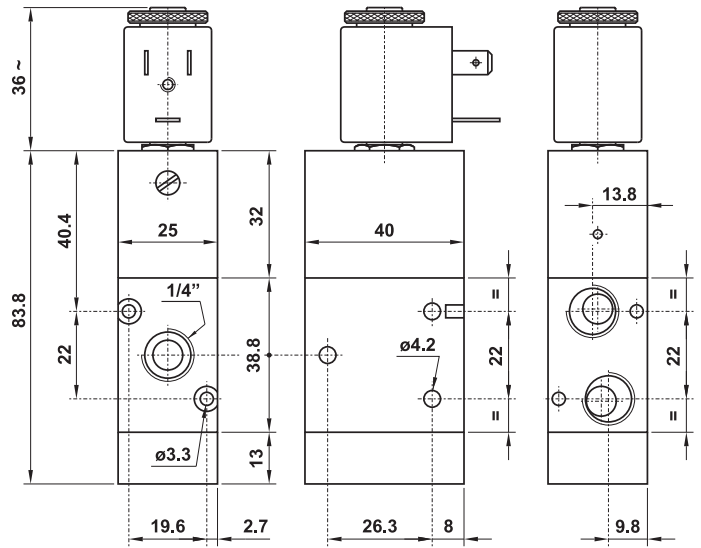


## US322 ME

3/2 1/4" NPT NC solenoid pilot - spring and air return

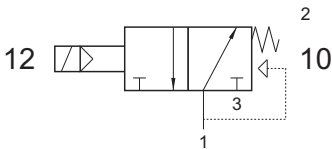


It cannot be used as normally open valve.

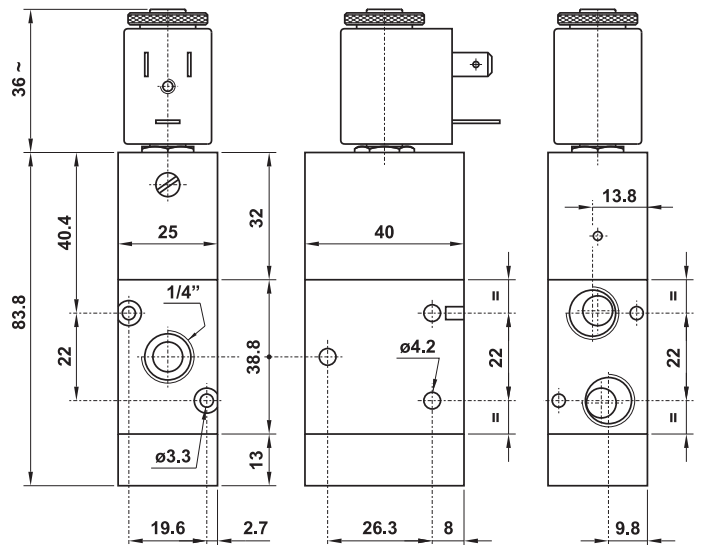


## US322 MEA

3/2 1/4" NPT NO solenoid pilot - spring and air return

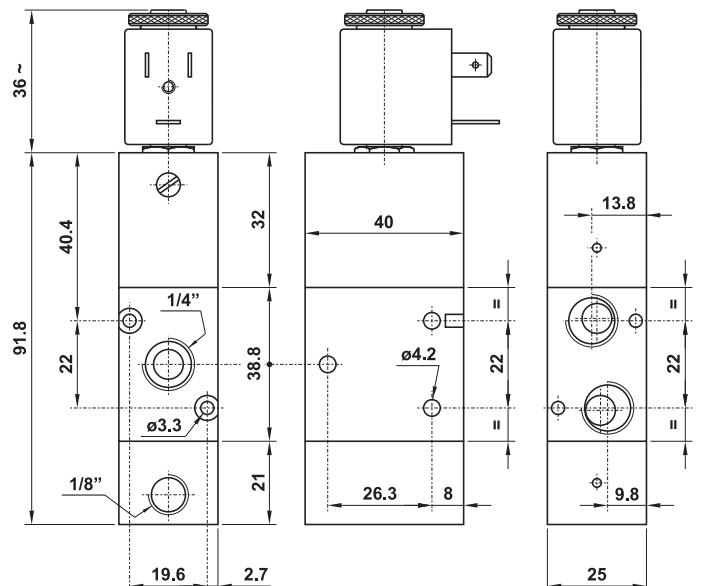
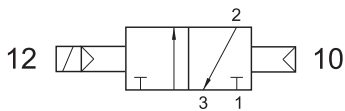


It cannot be used as normally closed valve.



## US322 CE

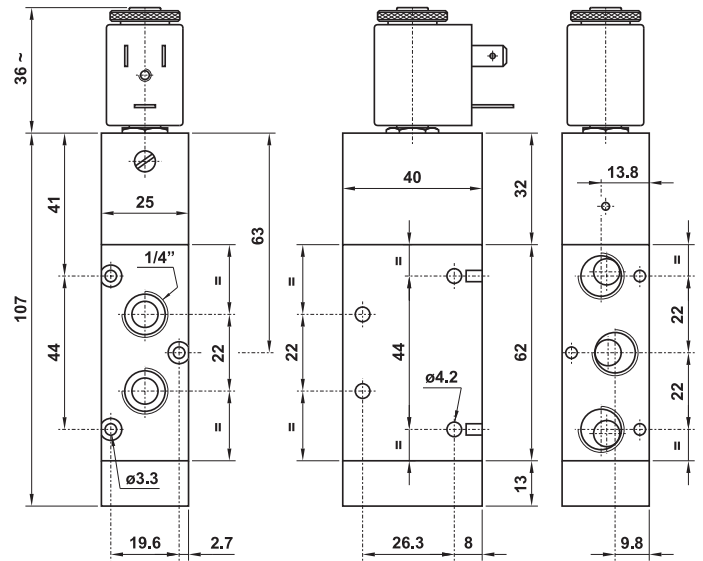
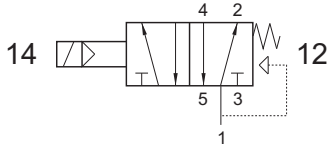
3/2 1/4" NPT solenoid pilot - separate pneumatically piloted return





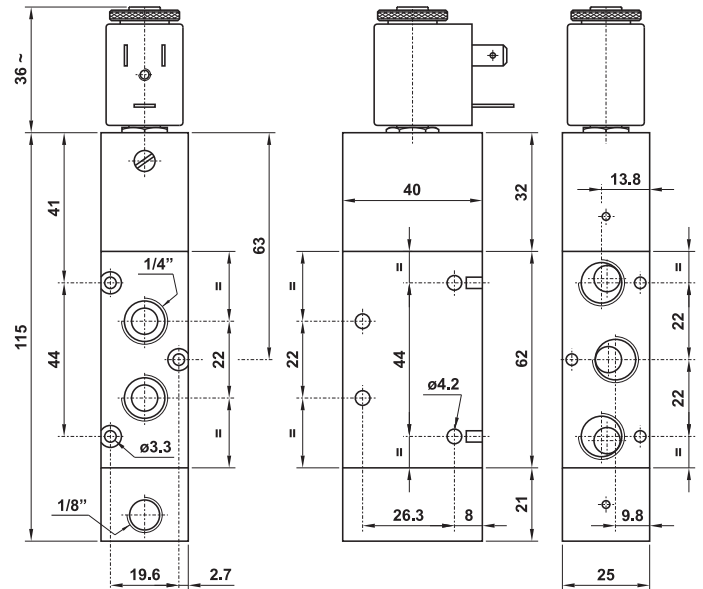
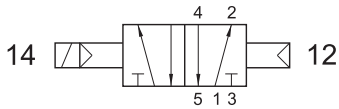
## US522 ME

5/2 1/4" NPT solenoid pilot - spring and air return



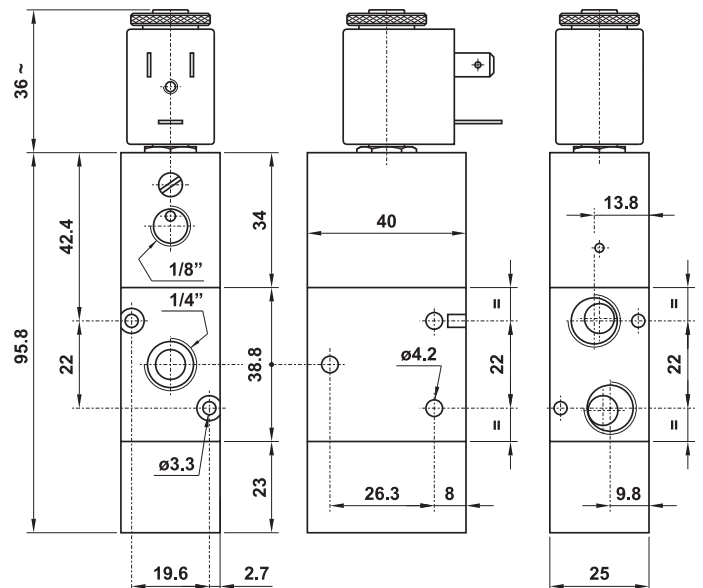
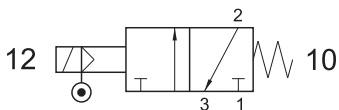
## US522 CE

5/2 1/4" NPT solenoid pilot - separate pneumatically piloted return



## US322 ME AS

3/2 1/4" NPT solenoid pilot with separate air supply - spring return

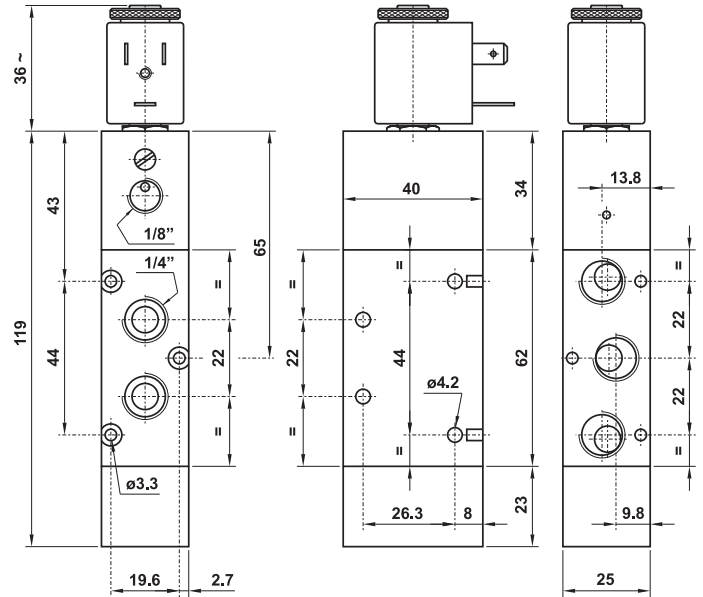
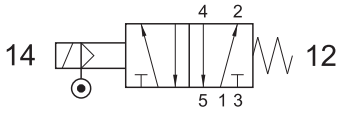


# Solenoid actuated valves



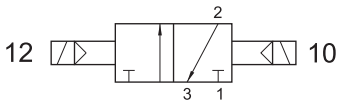
## US522 ME AS

5/2 1/4" NPT solenoid pilot with separate air supply - spring return

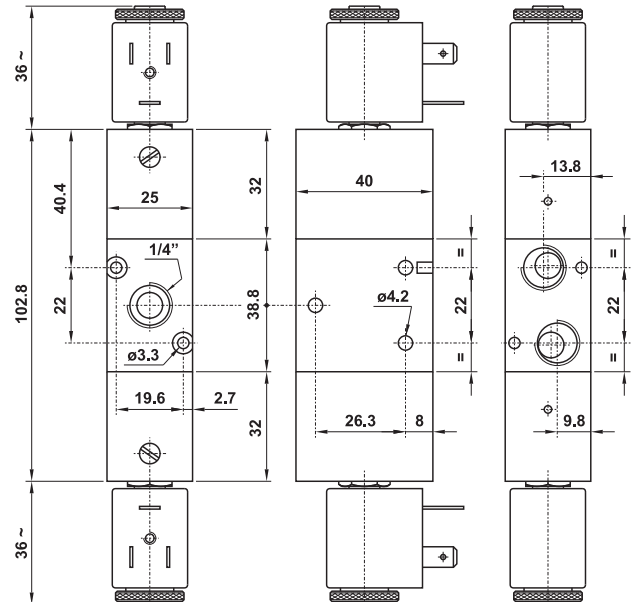


## US322 EE

3/2 1/4" NPT double solenoid pilot

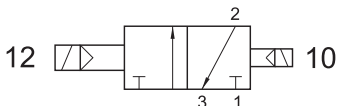


ONLY ALUMINIUM VERSION

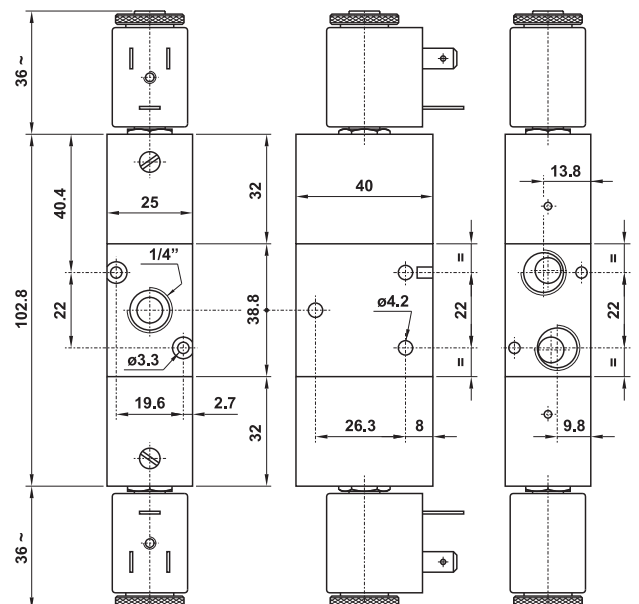


## US322 EED

3/2 1/4" NPT double solenoid pilot - with differential



ONLY ALUMINIUM VERSION



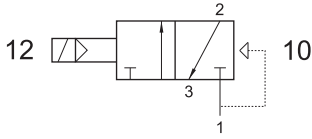


# Solenoid actuated valves



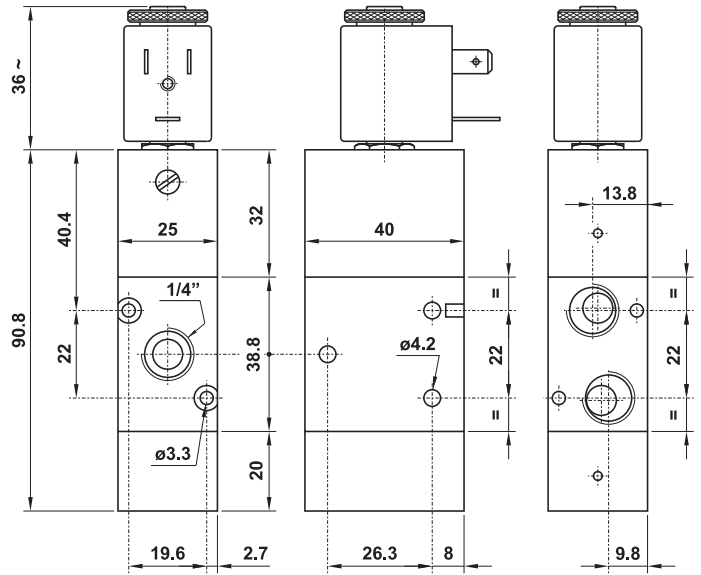
## US322 EFP

3/2 1/4" NPT N/C solenoid pilot - pneumatic spring return



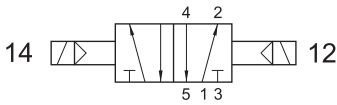
It cannot be used as normally open valve.

ONLY ALUMINIUM VERSION

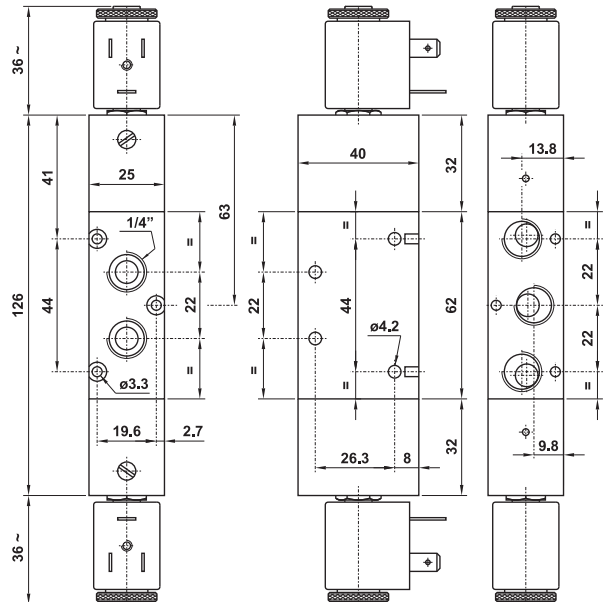


## US522 EE

5/2 1/4" NPT double solenoid pilot

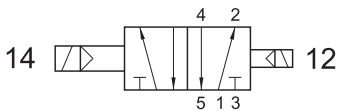


ONLY ALUMINIUM VERSION

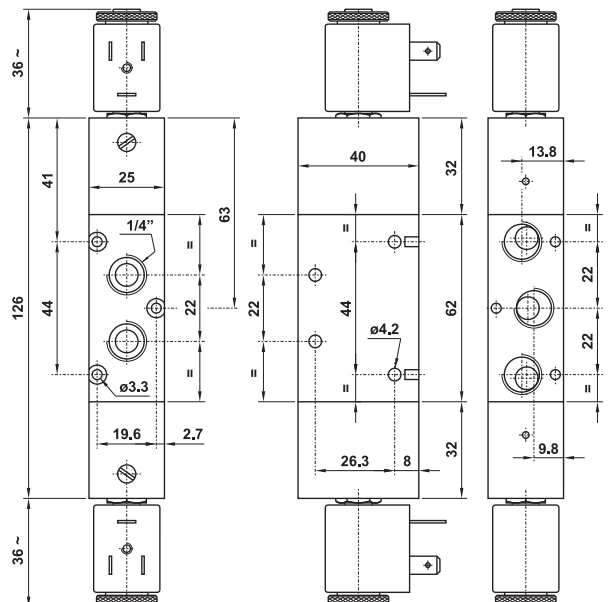


## US522 EED

5/2 1/4" NPT double solenoid pilot - with differential



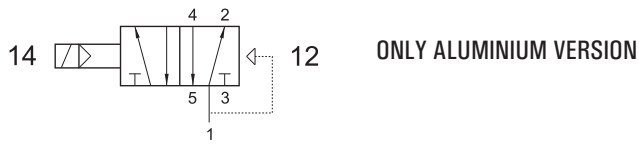
ONLY ALUMINIUM VERSION



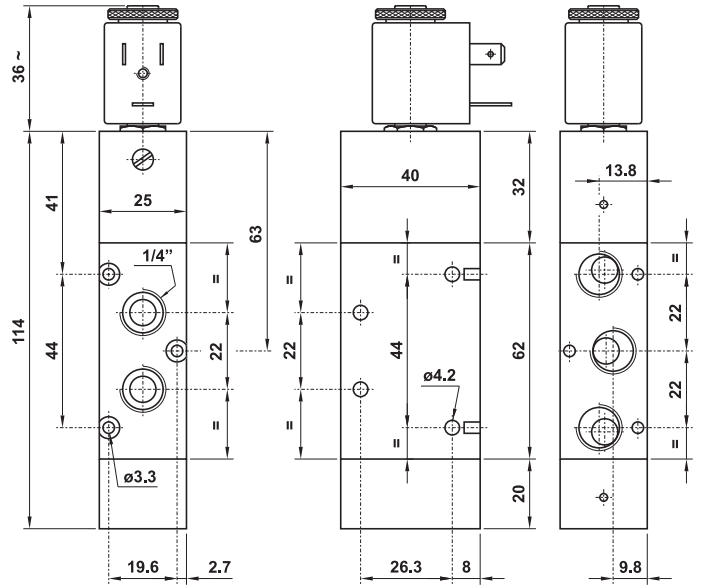


## US522 EFP

5/2 1/4" NPT solenoid pilot - pneumatic spring return

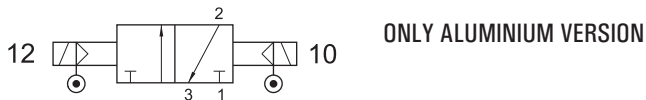


ONLY ALUMINIUM VERSION

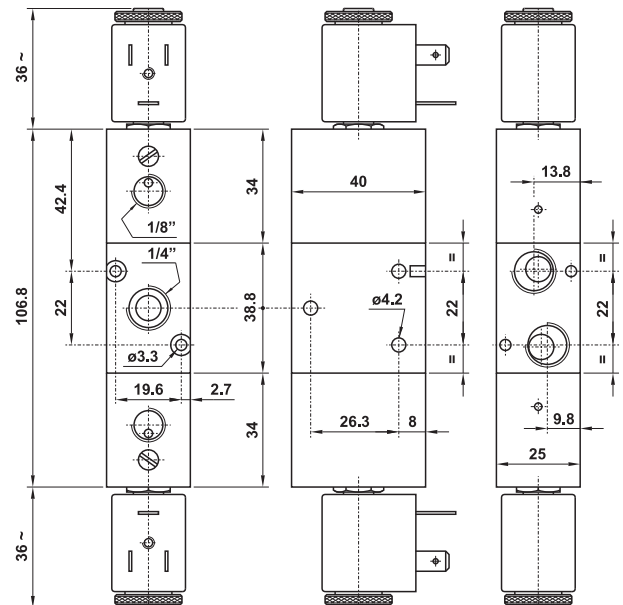


## US322 EE AS

3/2 1/4" NPT double solenoid pilot with separate air supply



ONLY ALUMINIUM VERSION

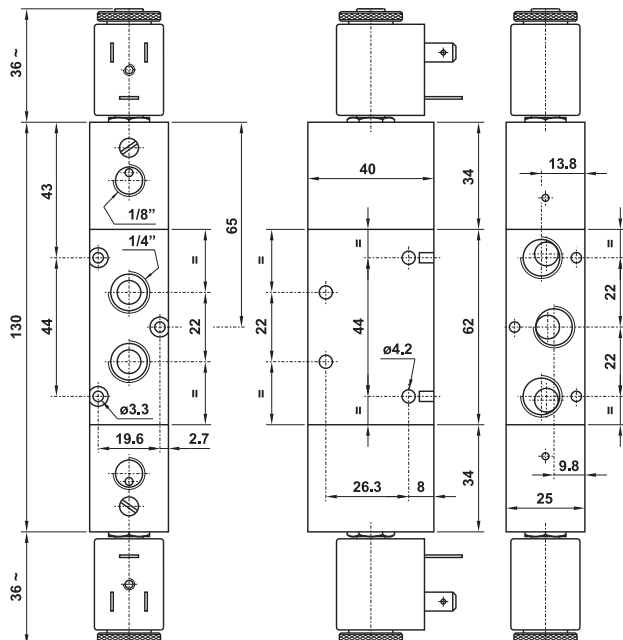


## US522 EE AS

5/2 1/4" NPT double solenoid pilot with separate air supply



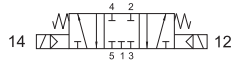
ONLY ALUMINIUM VERSION



# Solenoid actuated valves



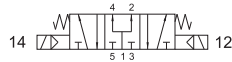
**US5223C EE** closed centers



**US5223A EE** open centers

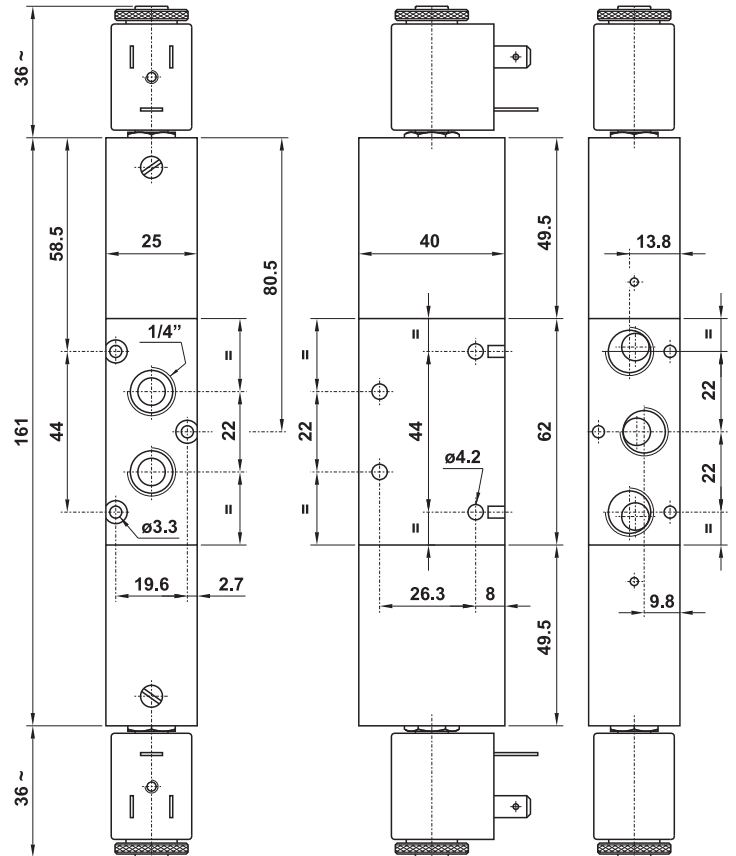


**US5223P EE** pressurized centers

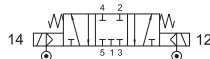


5/3 1/4" NPT double solenoid pilot

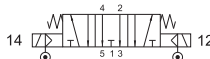
ONLY ALUMINIUM VERSION



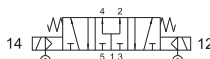
**US5223C EE AS** closed centers



**US5223A EE AS** open centers

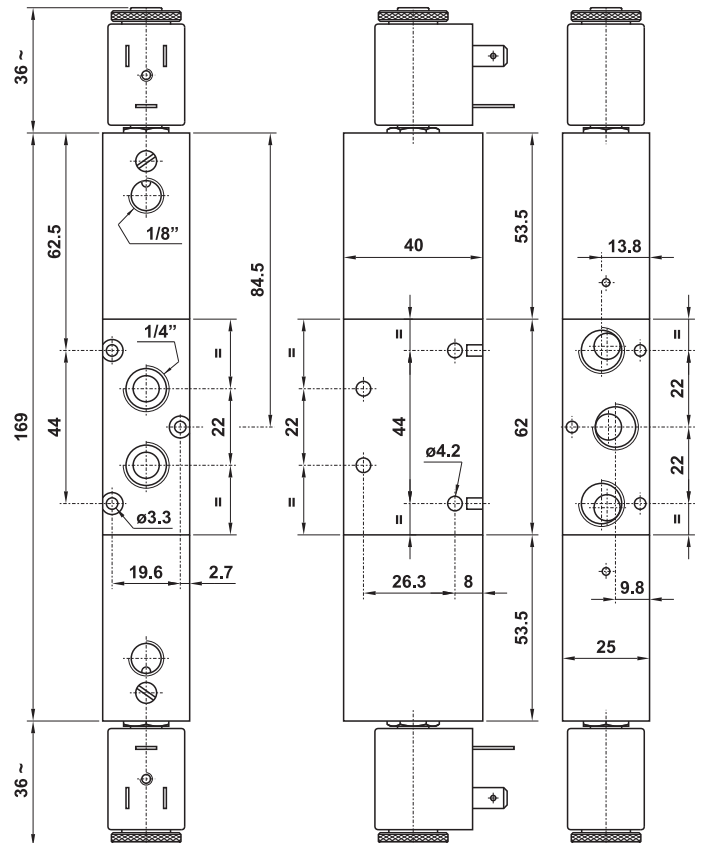


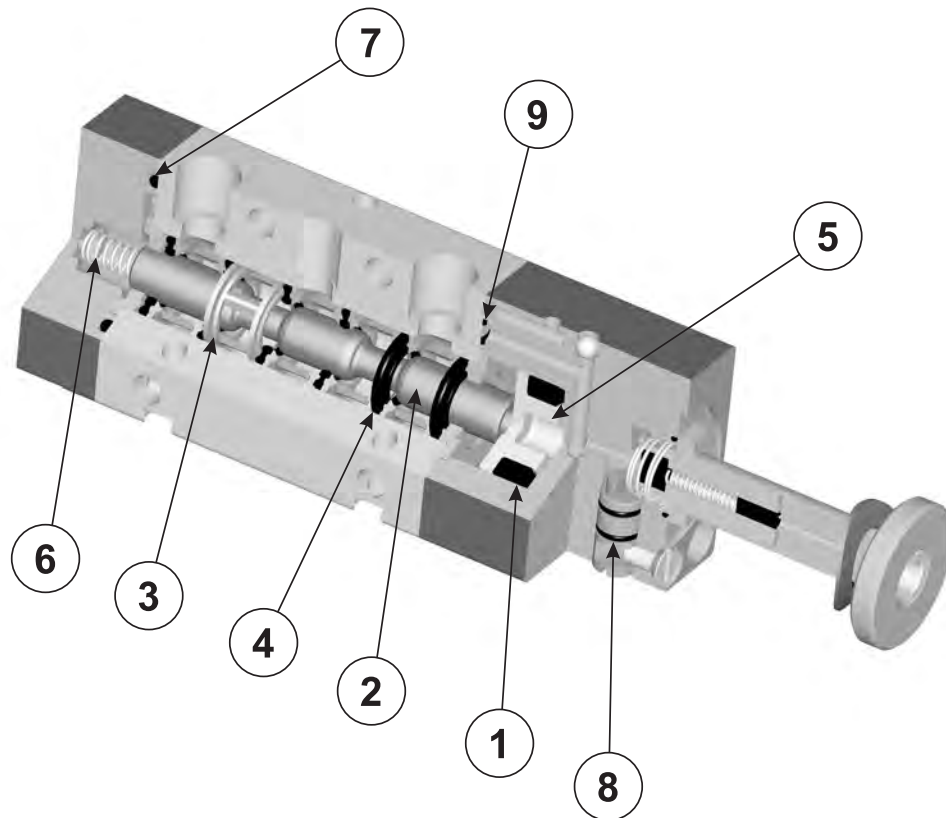
**US5223P EE AS** pressurized centers



5/3 1/4" NPT double solenoid pilot with separate air supply

ONLY ALUMINIUM VERSION





1. DE seal for piston: NBR
2. Spool: aluminium 11S, nickered
3. Spacer for spool: brass
4. Seal for spool: NBR
5. Piston to actuate the spool: delrin
6. Spring: steel
7. O-Ring seal: NBR
8. O-Ring seal 4x1: NBR
9. Shaped O-Ring: NBR

code of kit	suitable for		
00.036.2	US321 MC	US321 MCA	US321 ME
	US321 MEA		
00.039.2	US521 MC	US521 ME	
00.037.2	US321 CC	US321 EE	US321 CE
	US321 EE AS		
00.040.2	US521 CC	US521 EE	US521 CE
	US521 EE AS		
01.014.2	US322 MC	US 322 MC SUP	US 322 MCA
	US322 ME	US322 MEA	
01.020.2	US522 MC	US522 MC SUP	US522 ME
01.015.2	US322 CC	US322 CC SUP	US322 CE
	US322 EE	US322 EE AS	
01.021.2	US522 CC	US522 CC SUP	US522 CE
	US522 EE	US522 EE AS	

code of kit	suitable for		
00.038.2	US321 EED	US321 EFP	US321 CCD
	US321 CFP		
00.041.2	US521 EED	US521 EFP	US521 CCD
	US521 CFP		
01.019.2	US322 EED	US322 EFP	US322 CCD
	US322 CFP		
01.022.2	US522 EED	US522 EFP	US522 CCD
	US522 CFP		
00.050.2	US321 ME AS		
01.035.2	US322 ME AS		
00.051.2	US521 ME AS		
01.036.2	US522 ME AS		
00.108.2	US5213C CC	US5213A CC	US5213P CC
	US5213C EE	US5213A EE	US5213P EE
	US5213C EE AS	US5213A EE AS	US5213P EE AS
01.061.2	US5223C CC	US5223A CC	US5223P CC
	US5223C EE	US5223A EE	US5223P EE
	US5223C EE AS	US5223A EE AS	US5223P EE AS

# 22 mm coils and connectors



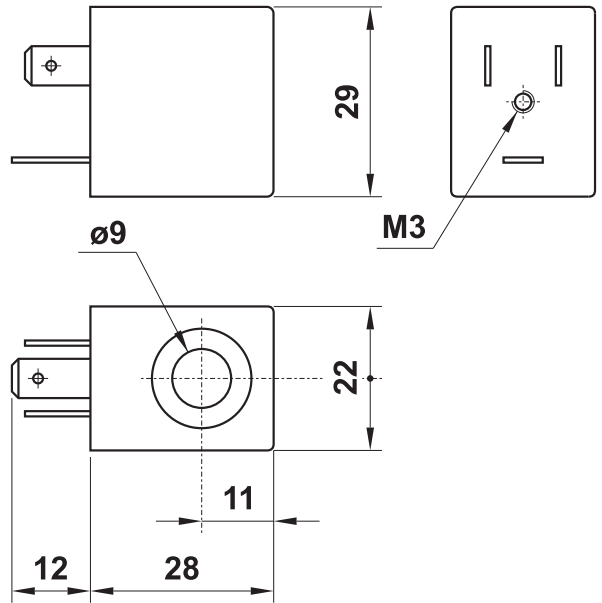
22 mm



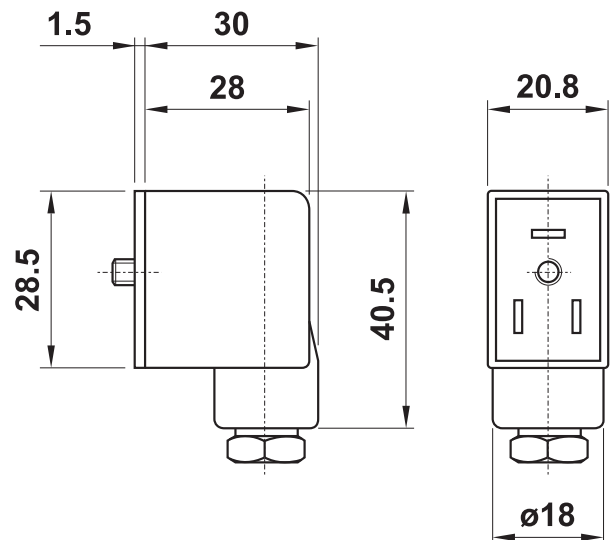
max working temperature	+50°C (122 °F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	± 10%

- low consumption (1.5W) on request

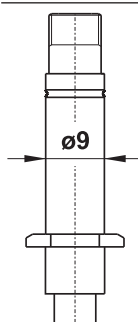
UL code	tension	power	
		rated	inrush
00.486.0	24V DC	3W	
00.487.0	24V 50/60Hz	5VA	7.5VA
00.488.0	110V 50/60Hz	5VA	7.5VA



CE code	colour	cable	type
00.197.0	black	PG09	standard
00.344.0	transparent	PG09	with LED 24V
00.345.0	transparent	PG09	with LED 24V and VDR
00.346.0	transparent	PG09	with LED 115V
00.347.0	transparent	PG09	with LED 115V and VDR
00.394.0	transparent	PG09	with LED 230V
00.395.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot  
 N/C : 00.088.0  
 N/O : 00.306.0

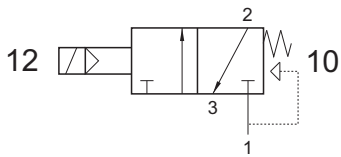


aluminium nut and elastic ring  
 00.125.2

## US321 ME MIC xx

3/2 1/8" NPT N/C with 15 mm solenoid pilot

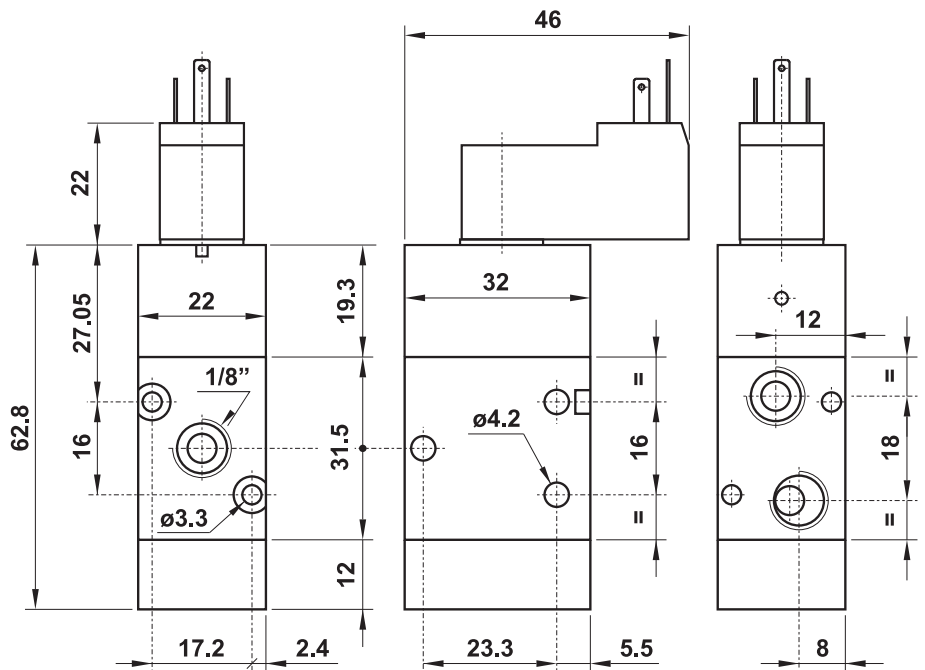
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



It cannot be used as normally open valve.

In the part number replace "xx" with the reference of the solenoid tension.

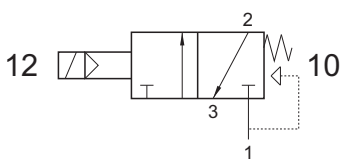
24V DC 01  
24V 50/60Hz 02



## US322 ME MIC xx

3/2 1/4" NPT N/C with 15 mm solenoid pilot

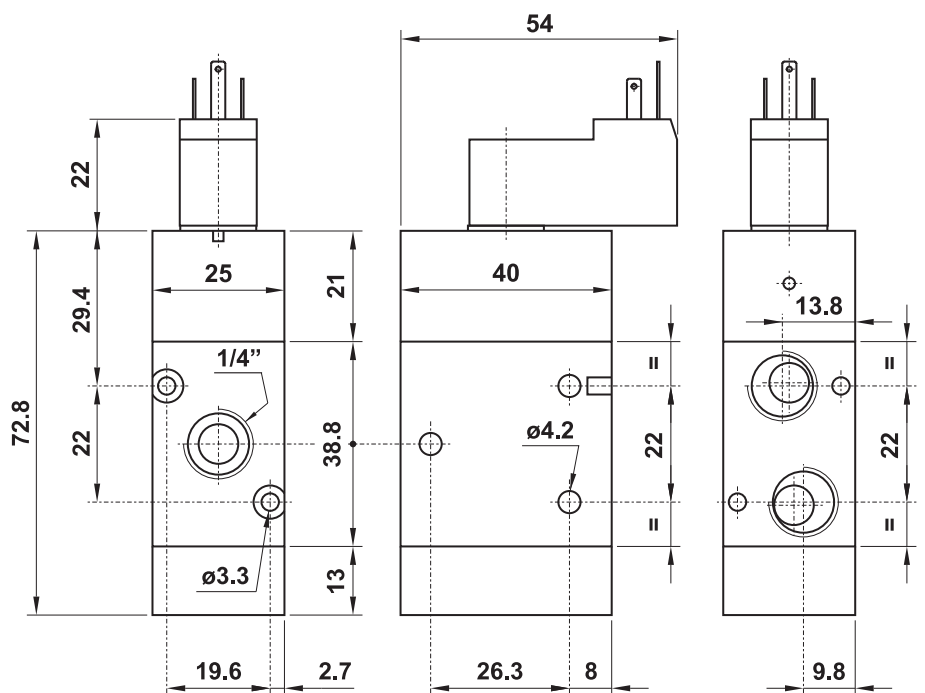
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



It cannot be used as normally open valve.

In the part number replace "xx" with the reference of the solenoid tension.

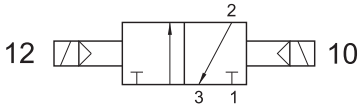
24V DC 01  
24V 50/60Hz 02



## US321 EE MIC xx

3/2 1/8" NPT with double 15 mm solenoid pilot

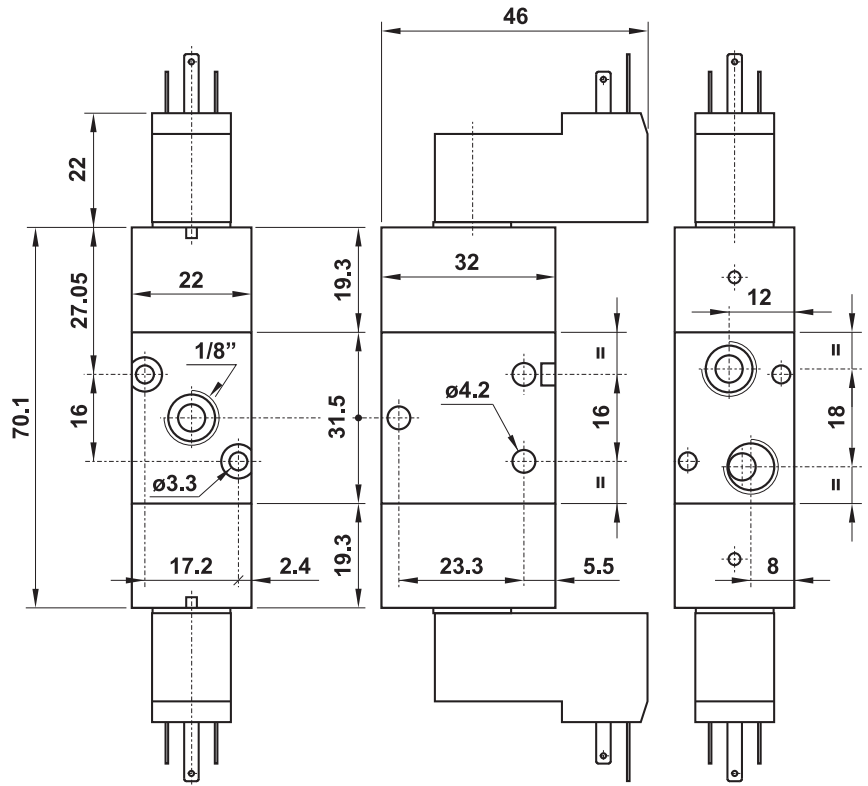
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

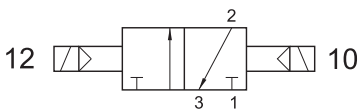
24V DC	01	CE
24V 50/60Hz	02	



## US322 EE MIC xx

3/2 1/4" NPT with double 15 mm solenoid pilot

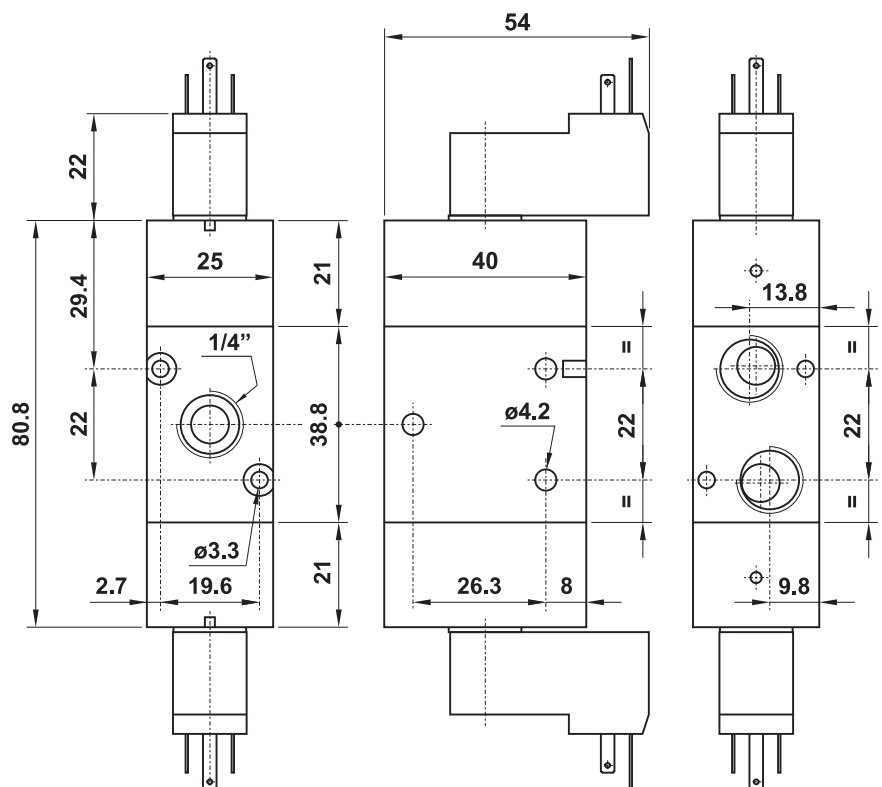
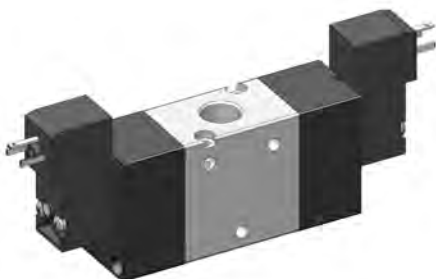
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

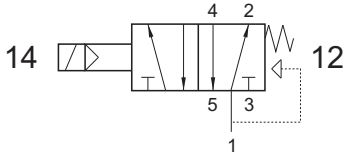
24V DC	01	CE
24V 50/60Hz	02	



## US521 ME MIC xx

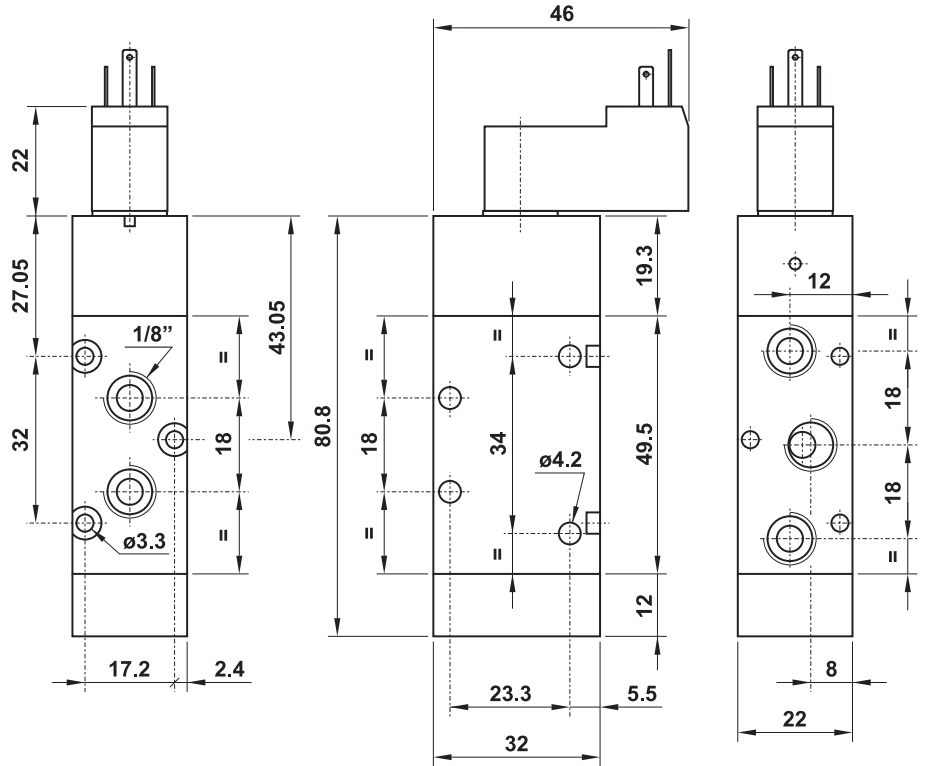
5/2 1/8" NPT with 15 mm solenoid pilot

The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



In the part number replace "xx" with the reference of the solenoid tension.

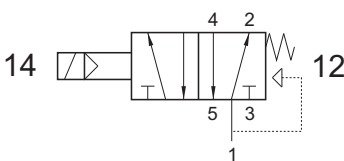
24V DC	01	
24V 50/60Hz	02	



## US522 ME MIC xx

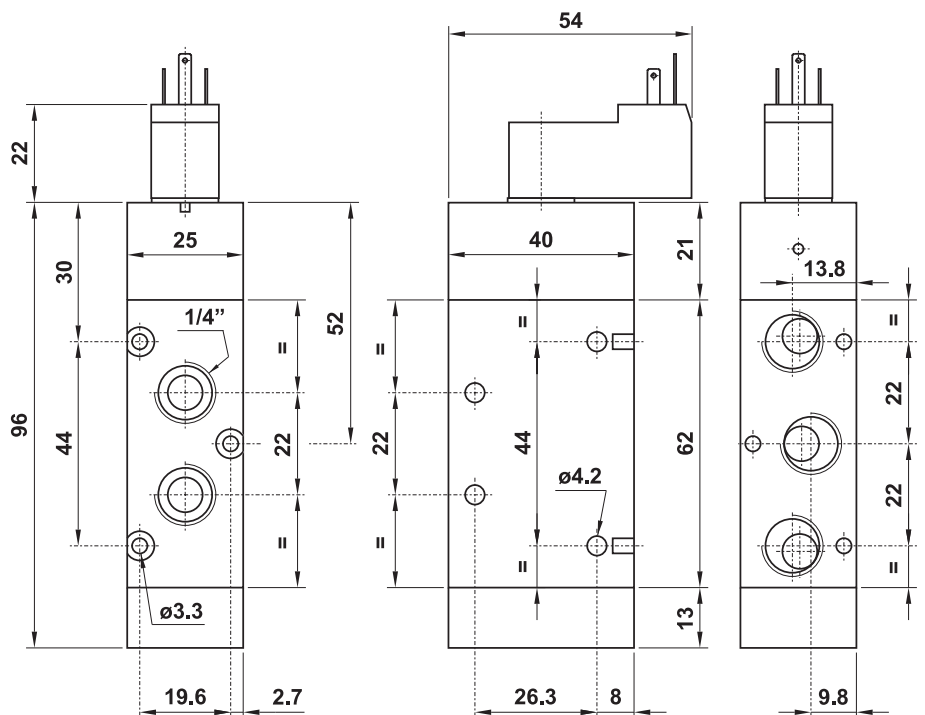
5/2 1/4" NPT with 15 mm solenoid pilot

The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



In the part number replace "xx" with the reference of the solenoid tension.

24V DC	01	
24V 50/60Hz	02	

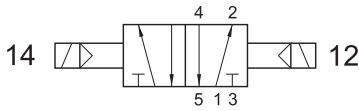




## US521 EE MIC xx

5/2 1/8" NPT with double 15 mm solenoid pilot

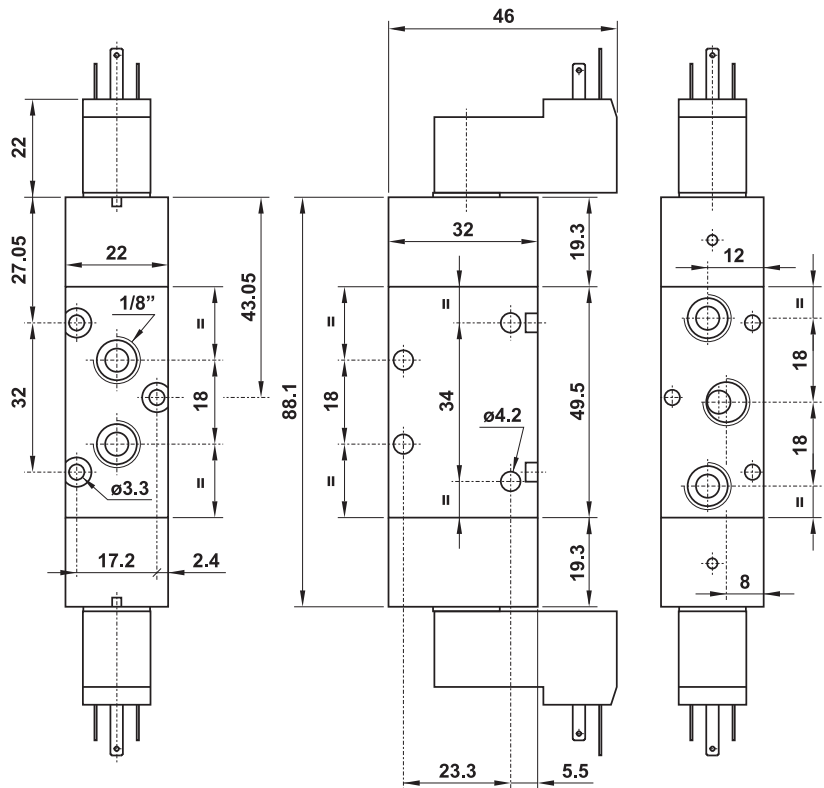
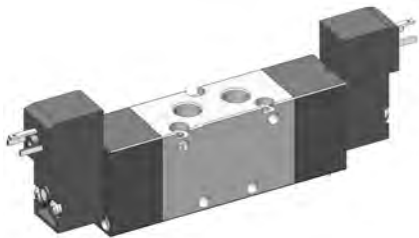
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

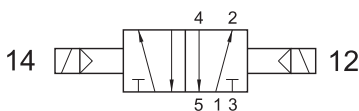
24V DC	01	
24V 50/60Hz	02	



## US522 EE MIC xx

5/2 1/4" NPT with double 15 mm solenoid pilot

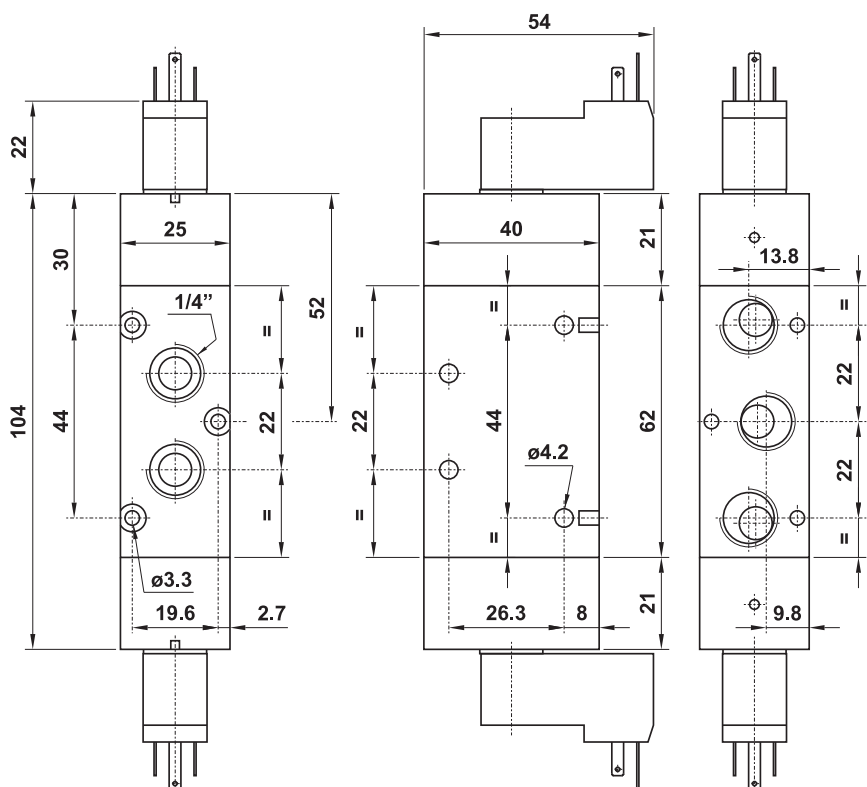
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

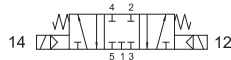
24V DC	01	
24V 50/60Hz	02	



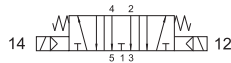
# Solenoid actuated valves



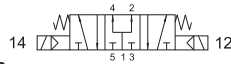
**US5213C EE MIC xx** closed centers



**US5213A EE MIC xx** open centers



**US5213P EE MIC xx** pressurized centers



5/3 1/8" NPT with double 15 mm solenoid pilot

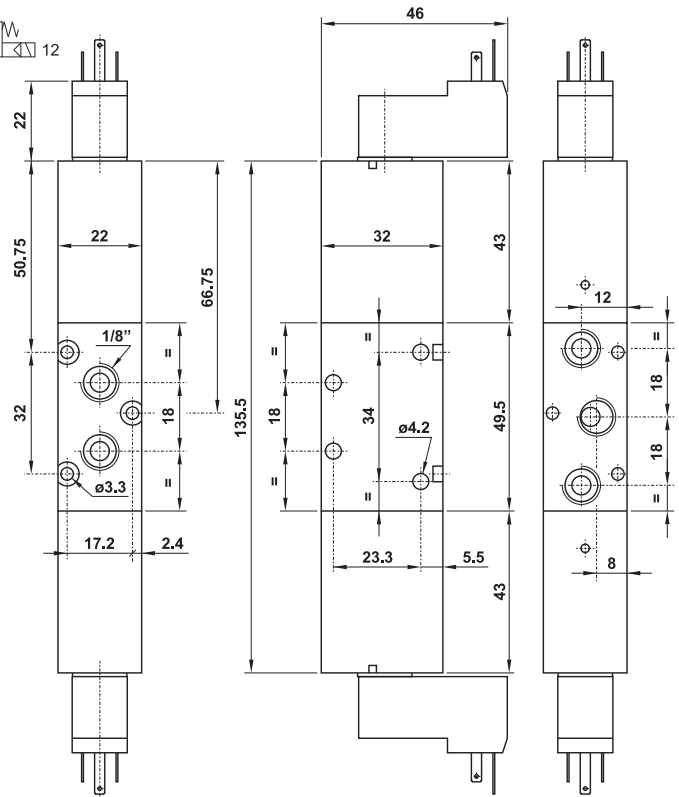
ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

24V DC 01  
24V 50/60Hz 02



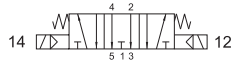
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



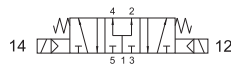
**US5223C EE MIC xx** closed centers



**US5223A EE MIC xx** open centers



**US5223P EE MIC xx** pressurized centers



5/3 1/4" NPT with double 15 mm solenoid pilot

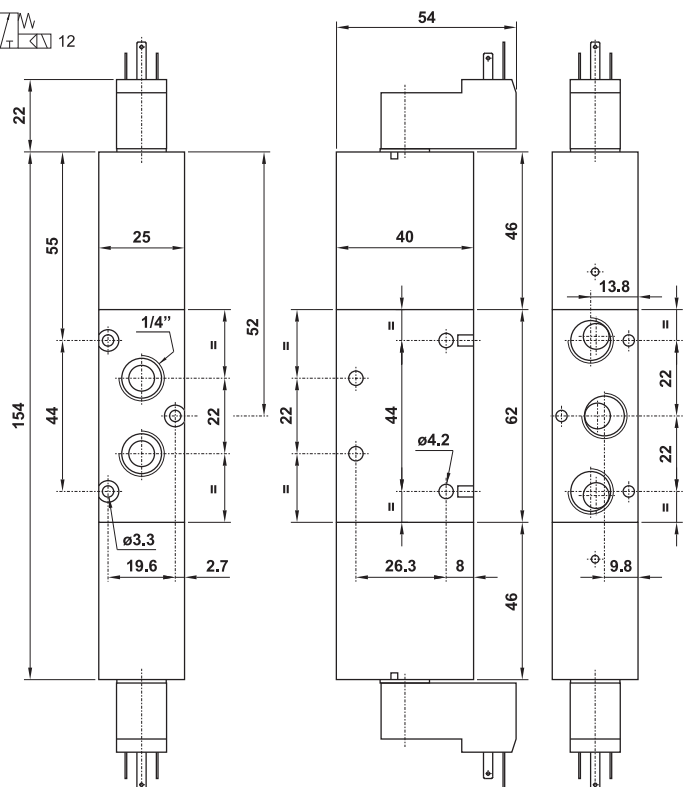
ONLY ALUMINIUM VERSION

In the part number replace "xx" with the reference of the solenoid tension.

24V DC 01  
24V 50/60Hz 02



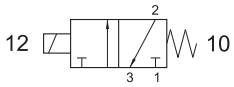
The valve is sold with mounted solenoid pilot(s); for technical data refer to page 191.



# 15 mm solenoids and connectors





15 mm



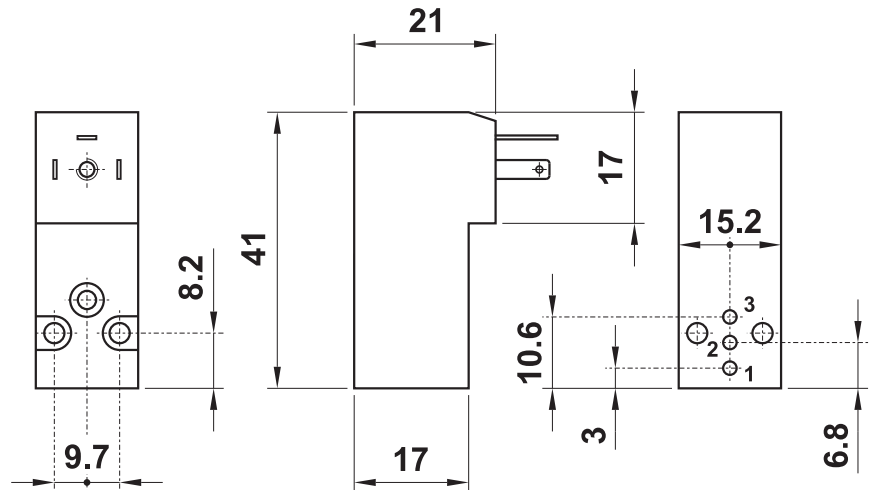
valve function	3/2 NC
nominal diameter	1.1 mm
flow rate 1-2	30 Nl/min (0.03 Cv)
flow rate 2-3	35 Nl/min (0.04 Cv)
operating pressure	max 10 bar (145 PSI)
life time (cycles)	100x10 <sup>6</sup>
response time	10 ms
max working temperature	+50°C (122°F)
duty cycle	ED 100%
rated power consumption	DC: 2W
	AC: 1.3VA
protection	IP 51
tension tolerance	-10%; +15%

- Electrical connection: DIN 43650, C form
- With non-detented manual override

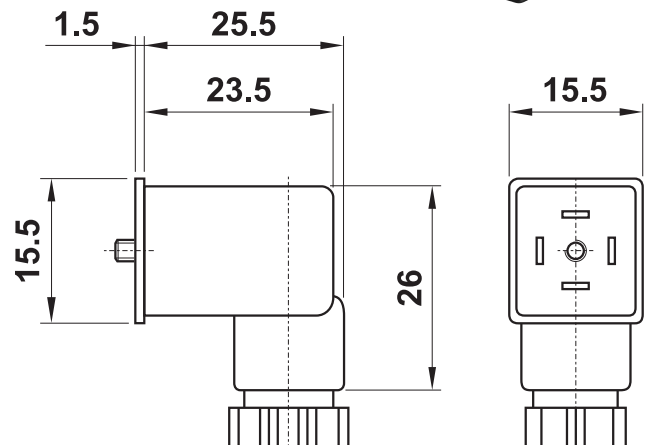
ACCESSORIES	
mounting plate with gasket	
<b>00.414.0</b>	
mounting screw (2 screws are necessary)	
<b>00.413.0</b>	

CE

code	tension
00.253.0	12V DC
00.254.0	24V DC
00.255.0	24V 50/60Hz
00.256.0	110V 50/60Hz
00.257.0	220V 50/60Hz



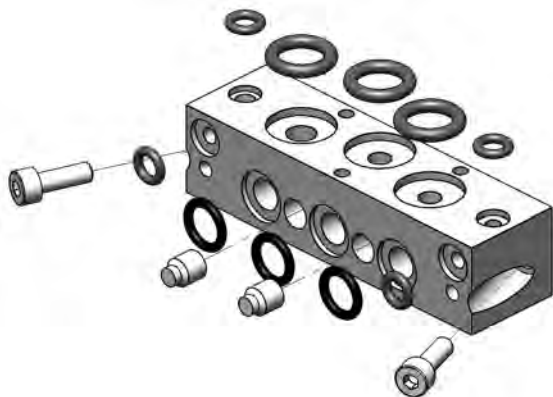
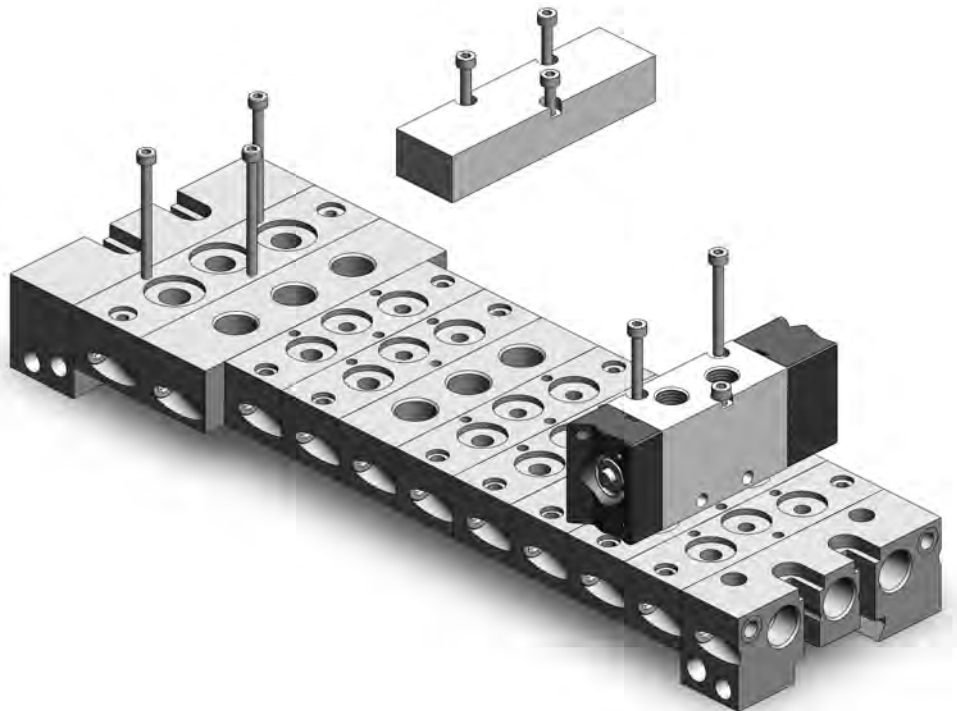
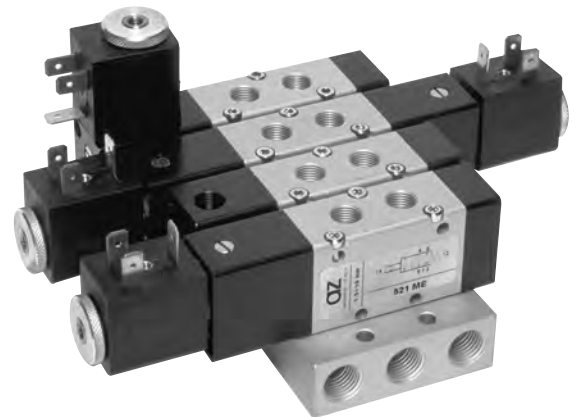
code	colour	cable	type
00.252.0	black	PG07	standard
00.340.0	transparent	PG07	with LED 24V
00.341.0	transparent	PG07	with LED 24V and VDR
00.342.0	transparent	PG07	with LED 115V
00.343.0	transparent	PG07	with LED 115V and VDR
00.398.0	transparent	PG07	with LED 230V
00.399.0	transparent	PG07	with LED 230V and VDR



# Manifolds for spool valves



- Multiple sub-bases for 1/8" NPT and 1/4" NPT spool valves
- Manifolds for 1/8" NPT and 1/4" NPT spool valves
- Special manifolds on request
- Material: aluminium (anodize treatment)



ASSEMBLY EXAMPLE

# Multiple sub-bases for spool valves



## sub-base

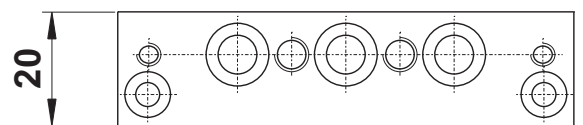
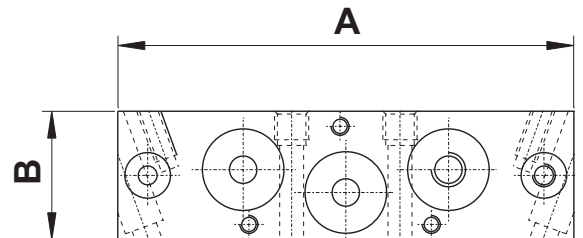


	1/8" NPT	1/8" NPT ATEX	1/4" NPT	1/4" NPT ATEX
<b>A</b>	80	80	95	95
<b>B</b>	22.5	31	26	31

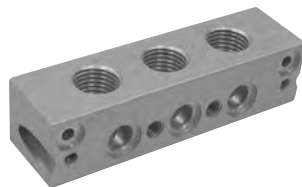
Each sub-base is sold with all necessary components to install 1/8" NPT or 1/4" NPT valves.

### ORDER CODES

- 07.039.2** for 1/8" NPT valves
- 07.008.2** for 1/8" NPT valves ATEX
- 07.052.2** for 1/4" NPT valves
- 07.060.2** for 1/4" NPT valves ATEX

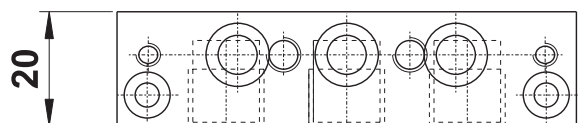
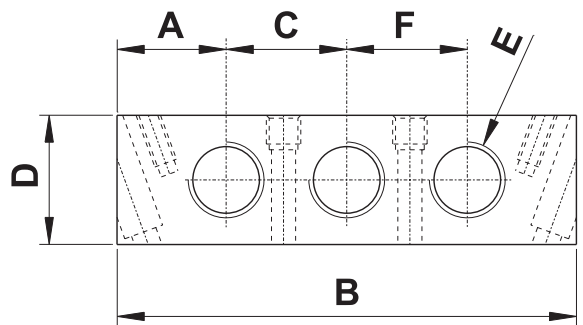


## intermediate header



An intermediate header with separate air supply is available to be installed in a manifold system which requires mixed operating pressures. It can be used also to divide the common exhausts. It is sold with all necessary components for installation.

	1/8" NPT	1/4" NPT
<b>A</b>	19	20
<b>B</b>	80	95
<b>C</b>	21	24
<b>D</b>	22.5	26
<b>E</b>	1/4" NPT	3/8" NPT
<b>F</b>	21	23

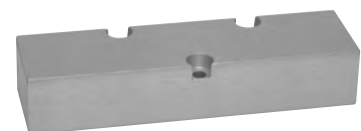


### ORDER CODES

- US07.040.2** for 1/8" NPT manifolds
- US07.053.2** for 1/4" NPT manifolds

## blanking plate

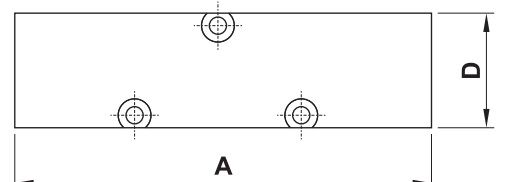
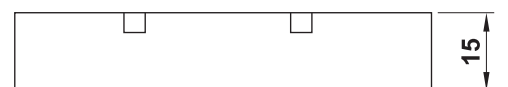
	1/8" NPT 00.011.3	1/8" NPT 00.078.2	1/4" NPT 01.007.3	1/4" NPT 01.078.2
<b>A</b>	80	60	95	70
<b>D</b>	22	22	25	25



The blanking plate with screws is available to close manifold stations not in use.

### ORDER CODES

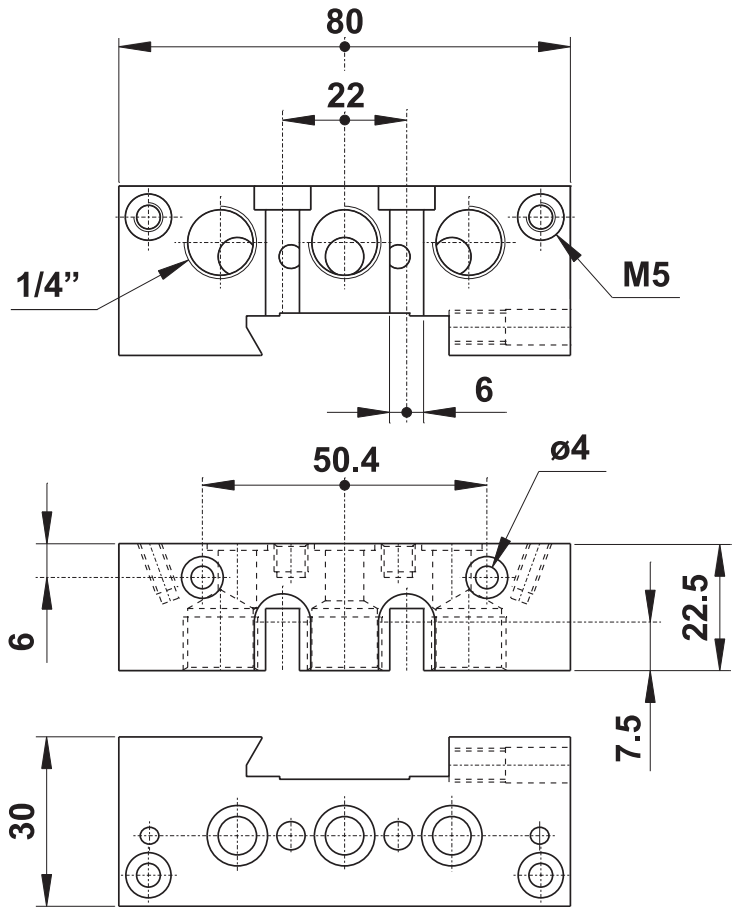
- 00.011.3** for 1/8" NPT multiple sub-bases
- 00.078.2** for 1/8" NPT manifolds
- 01.007.3** for 1/4" NPT multiple sub-bases
- 01.078.2** for 1/4" NPT manifolds



# Multiple sub-bases for spool valves



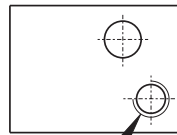
## 1/8" NPT right inlet header



Each manifold assembly requires a right and a left hand inlet header kit. Each inlet header is sold with all necessary components.

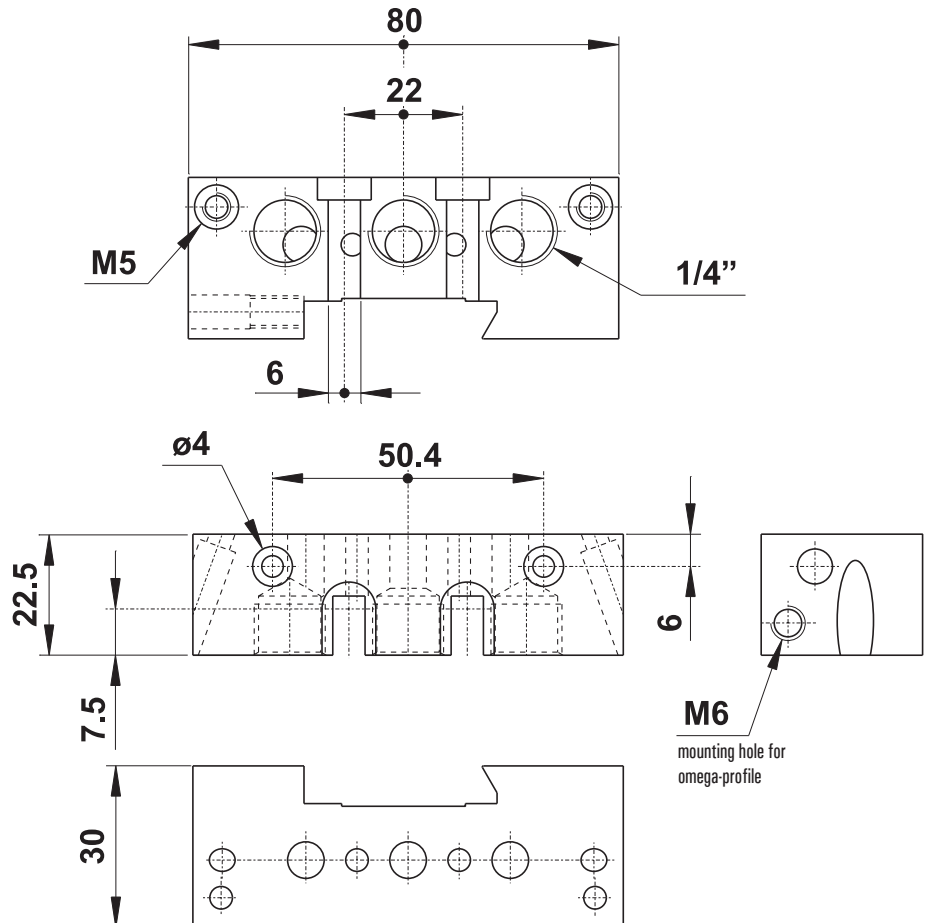
### ORDER CODE

**US07.009.2** right hand header for 1/8" NPT manifolds



**M6**  
mounting hole for omega-profile

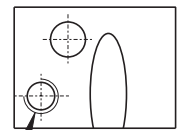
## 1/8" NPT left inlet header



Each manifold assembly requires a right and a left hand inlet header kit. Each inlet header is sold with all necessary components.

### ORDER CODE

**US07.010.2** left hand header for 1/8" NPT manifolds

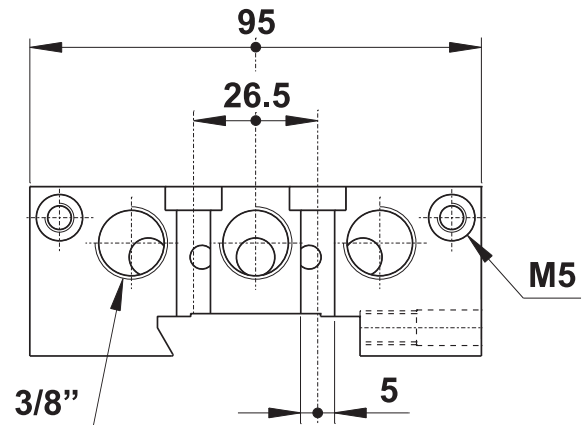
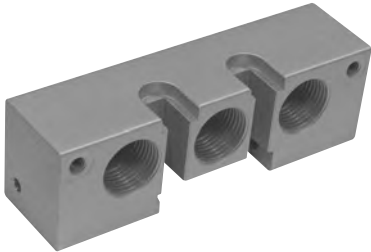


**M6**  
mounting hole for omega-profile

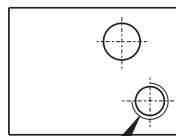
# Multiple sub-bases for spool valves



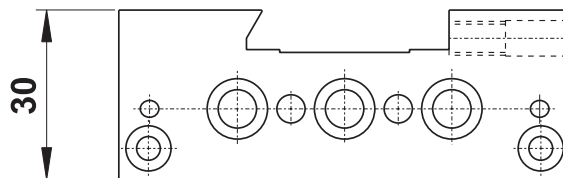
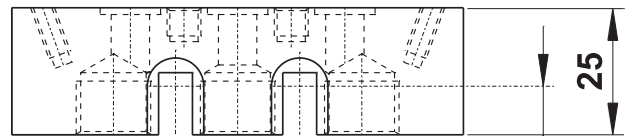
## 1/4" NPT right inlet header



Each manifold assembly requires a right and a left hand inlet header kit. Each inlet header is sold with all necessary components.



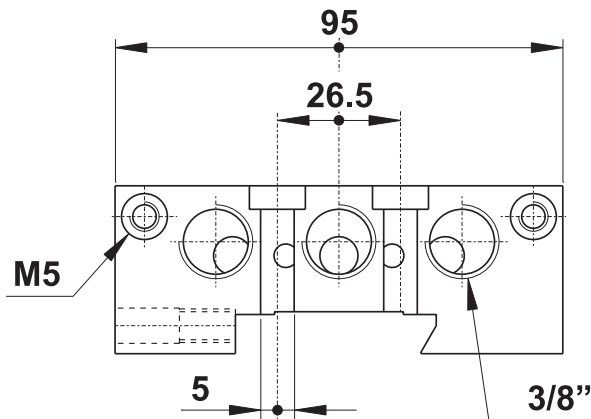
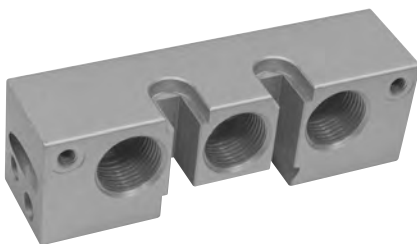
**M6**  
mounting hole for  
omega-profile



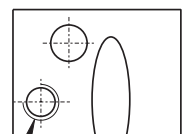
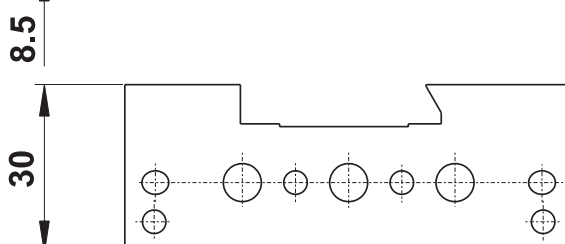
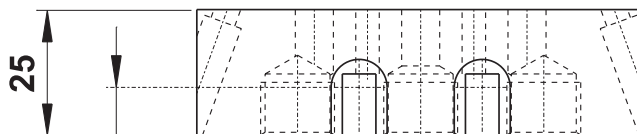
### ORDER CODE

**US07.054.2** right hand header for 1/4" NPT manifolds

## 1/4" NPT left inlet header



Each manifold assembly requires a right and a left hand inlet header kit. Each inlet header is sold with all necessary components.



**M6**  
mounting hole for  
omega-profile

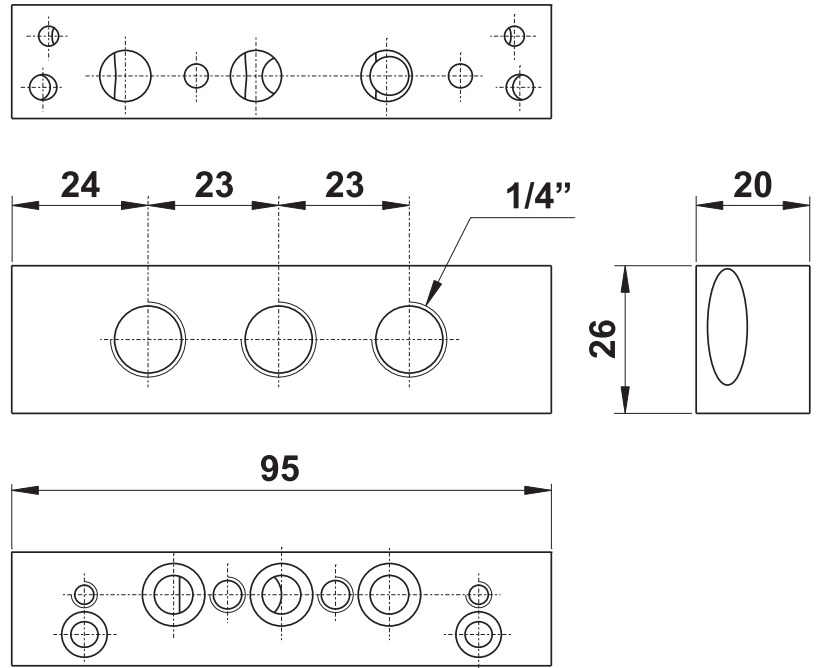
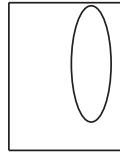
### ORDER CODE

**US07.055.2** left hand header for 1/4" NPT manifolds

# Multiple sub-bases for spool valves



## 1/4"-1/8" NPT interface



This reduction sub-base is used to assemble 1/8" NPT valves on a 1/4" NPT manifold, creating a hybrid manifold. It provides extra 1/4" NPT-connections (close them by a plug if they are not necessary). It is sold in kit with all necessary components.

**ORDER CODE**  
US07.081.2

## internal diaphragm

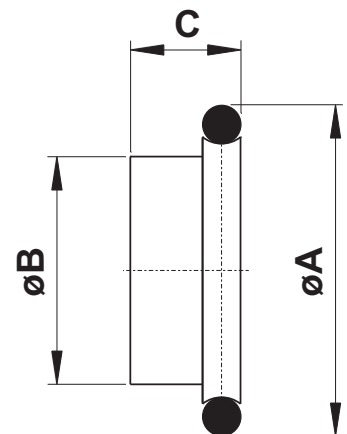
This diaphragm must be inserted between two elements of the manifold to interrupt the air flow and divide the manifold into two or more parts. It can be used to interrupt only the supply air flow, only the exhausts or both air supply and exhausts.

**ORDER CODE**

07.011.2 for 1/8" NPT manifolds  
07.057.2 for 1/4" NPT manifolds



	1/8" NPT	1/4" NPT
<b>A</b>	10	12
<b>B</b>	6.6	8.8
<b>C</b>	3.2	3.2





# Manifolds for pool valves

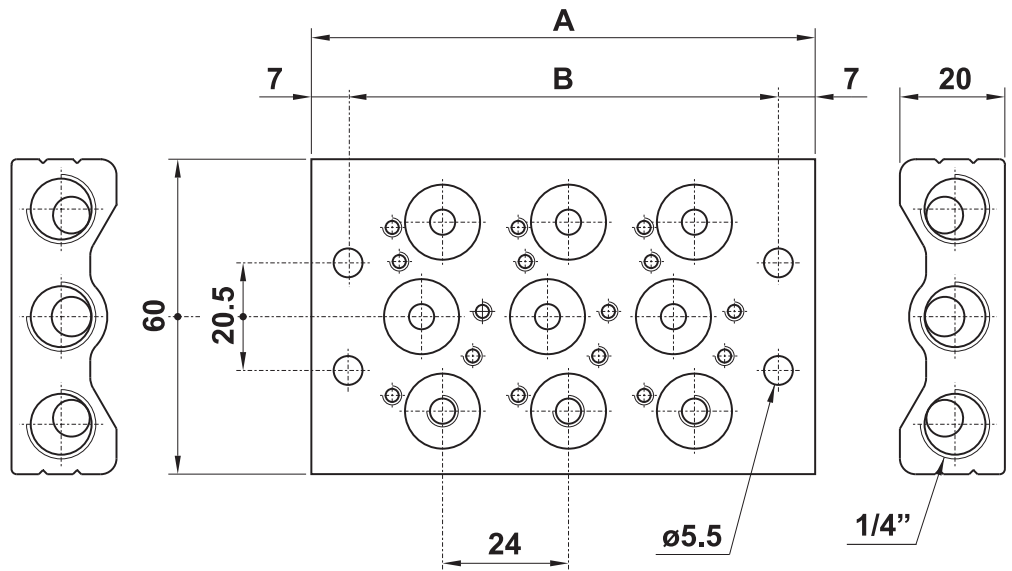


These manifolds can be used for the installation of three and five way valves, 1/8" NPT or 1/4" NPT. Each manifold is sold with all necessary pieces for installation. Unused stations can be closed with a blanking plate. Accessories (see next page) are available to obtain a separate air inlet or exhaust for certain valves.



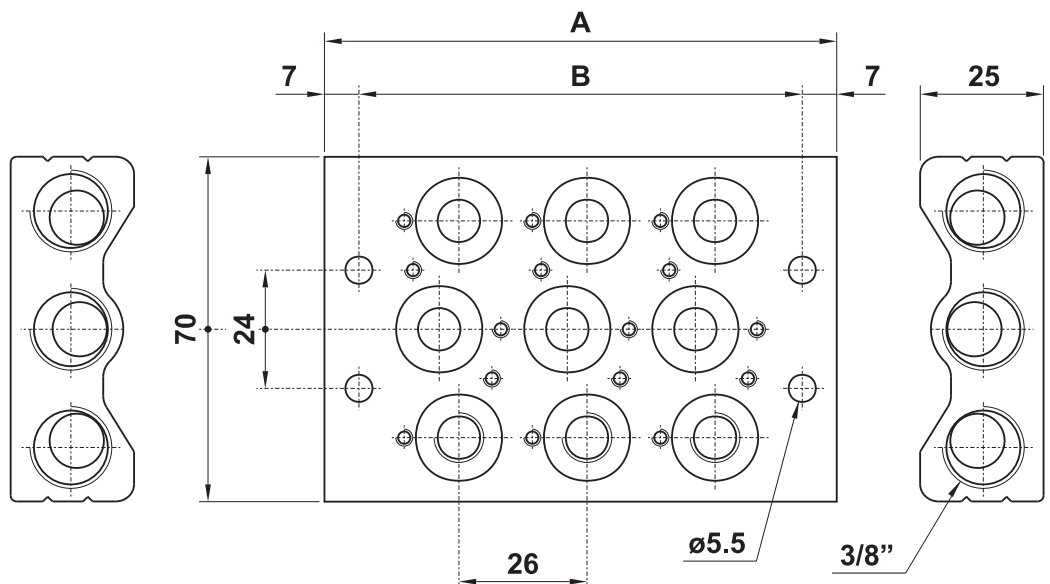
## 1/8" NPT

model	no. stations	A	B
US00.052.2	2	72	58
US00.053.2	3	96	82
US00.054.2	4	120	106
US00.055.2	5	144	130
US00.056.2	6	168	154
US00.057.2	7	192	178
US00.058.2	8	216	202
US00.059.2	9	240	226
US00.060.2	10	264	250
US00.081.2	11	288	274
US00.097.2	12	312	298



## 1/4" NPT

model	no. stations	A	B
US01.042.2	2	78	64
US01.043.2	3	104	90
US01.044.2	4	130	116
US01.045.2	5	156	142
US01.046.2	6	182	168
US01.047.2	7	208	194
US01.048.2	8	234	220
US01.051.2	9	260	246
US01.052.2	10	286	272



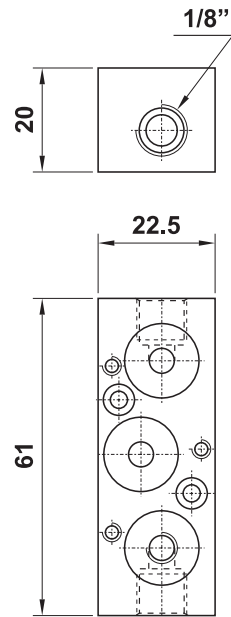
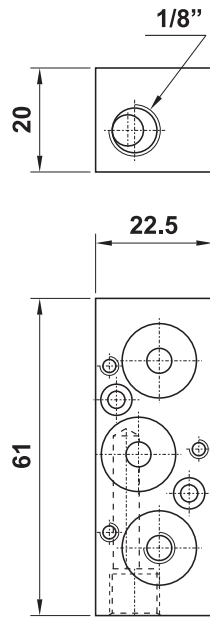
adapting plate for separate air inlet

adapting plate for separate air exhaust

1/8" NPT

US00.064.2

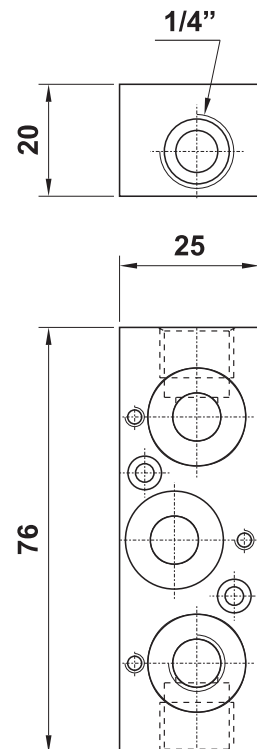
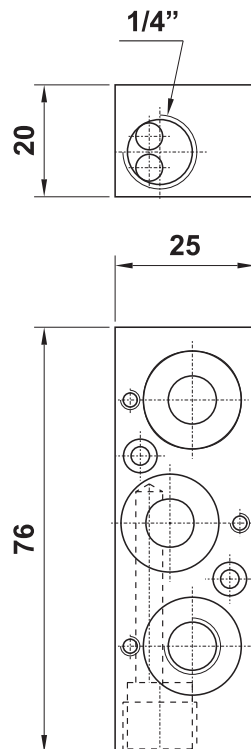
US00.080.2



1/4" NPT

US01.049.2

US01.050.2

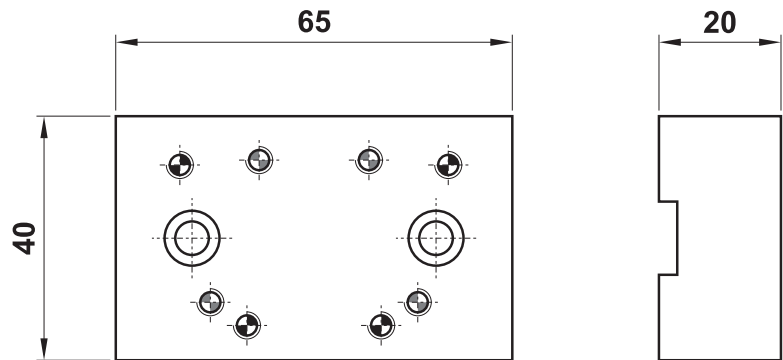


Each element is sold in kit with all necessary pieces for installation.

## interface for cylinder ISO 6431

ORDER CODE

00.095.2



Mounting holes for valves 521



Mounting holes for valves 522

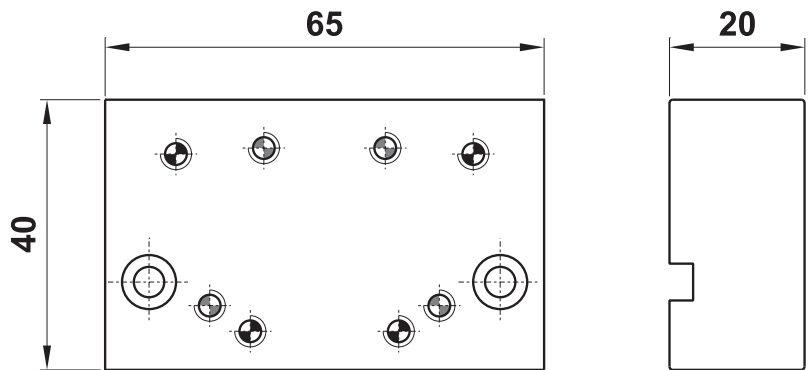
It can be used to install a valve 521 or 522 on a cylinder ISO 6431 from bore 32 to bore 100 (series N).  
It is sold with all necessary pieces for installation.

For the installation on the cylinder it is necessary to remove one end cap.

## interface for cylinder ISO 6431 profile EASY

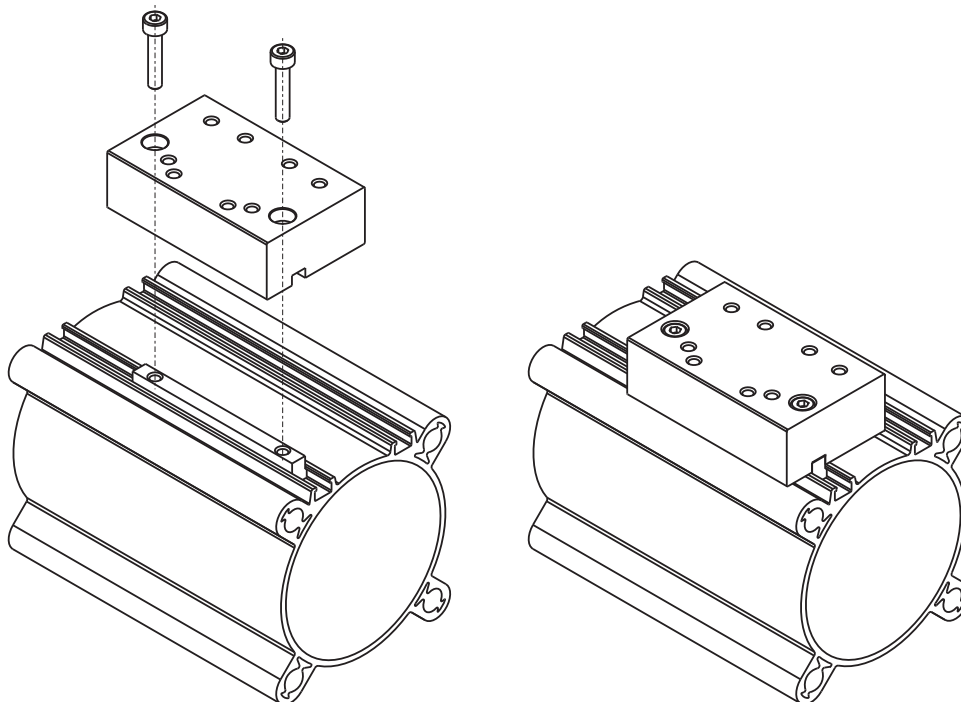
ORDER CODE

00.131.2



 Mounting holes for valves 521

 Mounting holes for valves 522



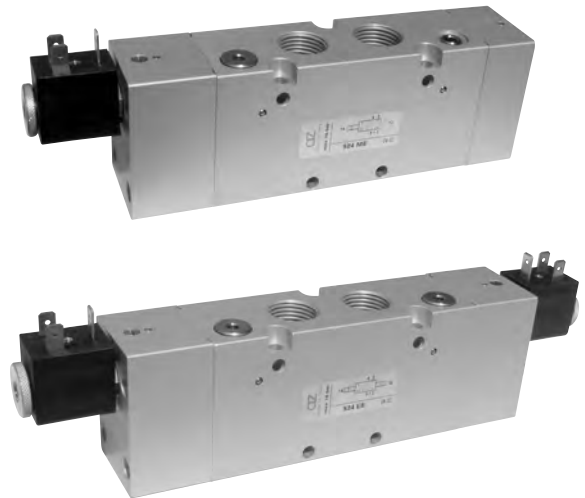
It can be used to install a valve 521 or 522 on a cylinder ISO 6431 from bore 32 to bore 125, PROFILE EASY (series E).  
It is sold with all necessary pieces for installation.

For the installation on the cylinder it is necessary to remove one end cap.

# Solenoid actuated valves - 1/2" NPT



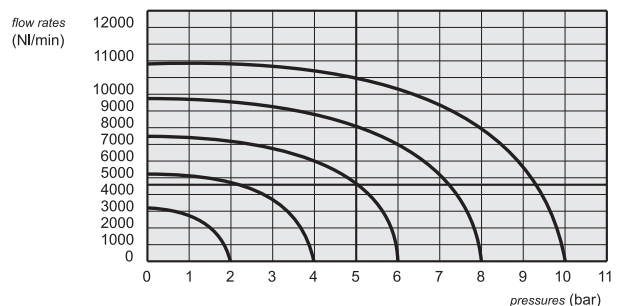
- 3/2-5/2-5/3 spool valves with 1/2" NPT threaded ports
- Very high flow rate
- Installation in-line
- Solenoid pilots with detented manual override as standard
- Multifunction feature
- Coils sold separately upon request



The following products are sold without coils. These can be bought separately (refer to page 208).

## Spare parts

- 02.030.2** : for 3/2 way valves ME - ME AS - MC
- 02.031.2** : for 5/2 way valves ME - ME AS - MC
- 02.032.2** : for 3/2 way valves EE - EE AS - CC
- 02.033.2** : for 5/2 way valves EE - EE AS - CC
- 02.034.2** : for 5/3 way valves EE - EE AS - CC



## Response times

mono-stable	TRA (14): 39 ms TRR (12): 60 ms
bi-stable	TRA (14): 90 ms TRR (12): 90 ms

## Materials

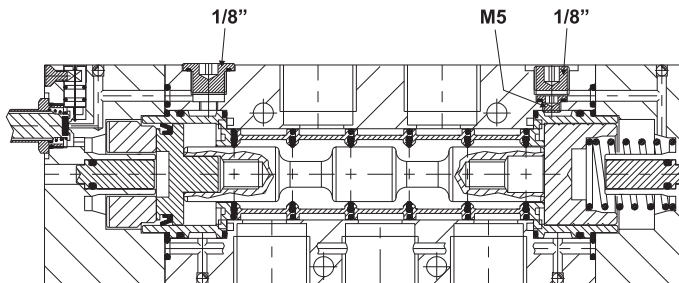
- Body:** aluminium 11S
- Springs:** stainless steel
- Seals:** NBR
- Spool:** stainless steel
- Internal parts:** brass OT58

Nominal diameter	13 mm (0.5 in)		
Nominal flow rate at 6 bar (87 PSI), $\Delta p$ 1 bar (14 PSI)	4600 NI/min (4.87 Cv)		
Temperature range	-15 +60°C (5-140°F)		
Operating pressure	mono-stable internal air supply	bi-stable internal air supply	separate air supply
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure (for separate air supply)	mono-stable	bi-stable	
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	
Fluid	50 $\mu$ filtered, lubricated or non lubricated air		

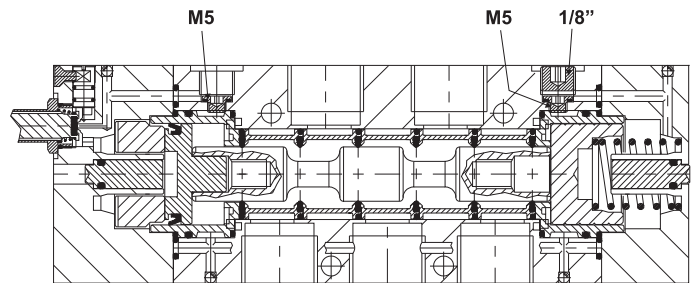
## Multifunction feature of the valve

Valve functionality can be changed at any time. To do so, please re-collocate from its position either the M5 or 1/8" NPT plugs, which are inserted into the body according to the scheme. The valve is supplied according to the clients' needs on order. Interchangeable plugs must be ordered separately.

**US324 ME**  
**US524 ME**

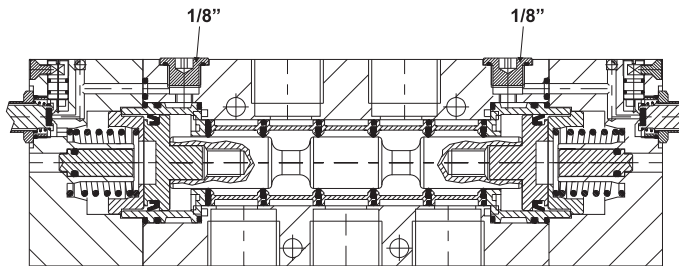


**US324 ME AS**  
**US524 ME AS**



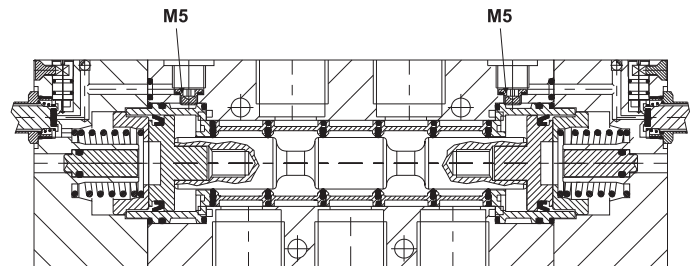
**US324 EE**  
**US524 EE**

**US5243C EE**  
**US5243A EE**  
**US5243P EE**



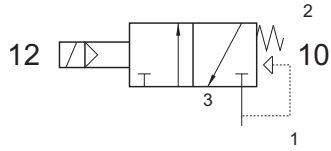
**US324 EE AS**  
**US524 EE AS**

**US5243C EE AS**  
**US5243A EE AS**  
**US5243P EE AS**



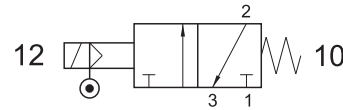
## US324 ME

3/2 1/2" NPT N/C solenoid pilot - air and spring return



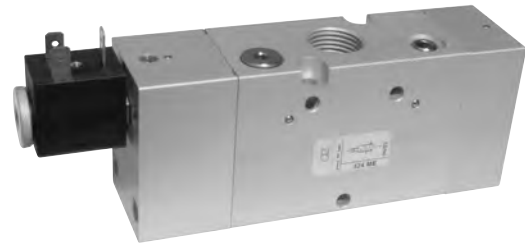
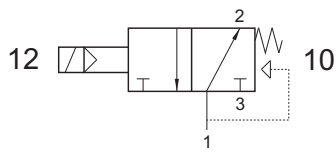
## US324 ME AS

3/2 1/2" NPT solenoid pilot with separate air supply - spring return



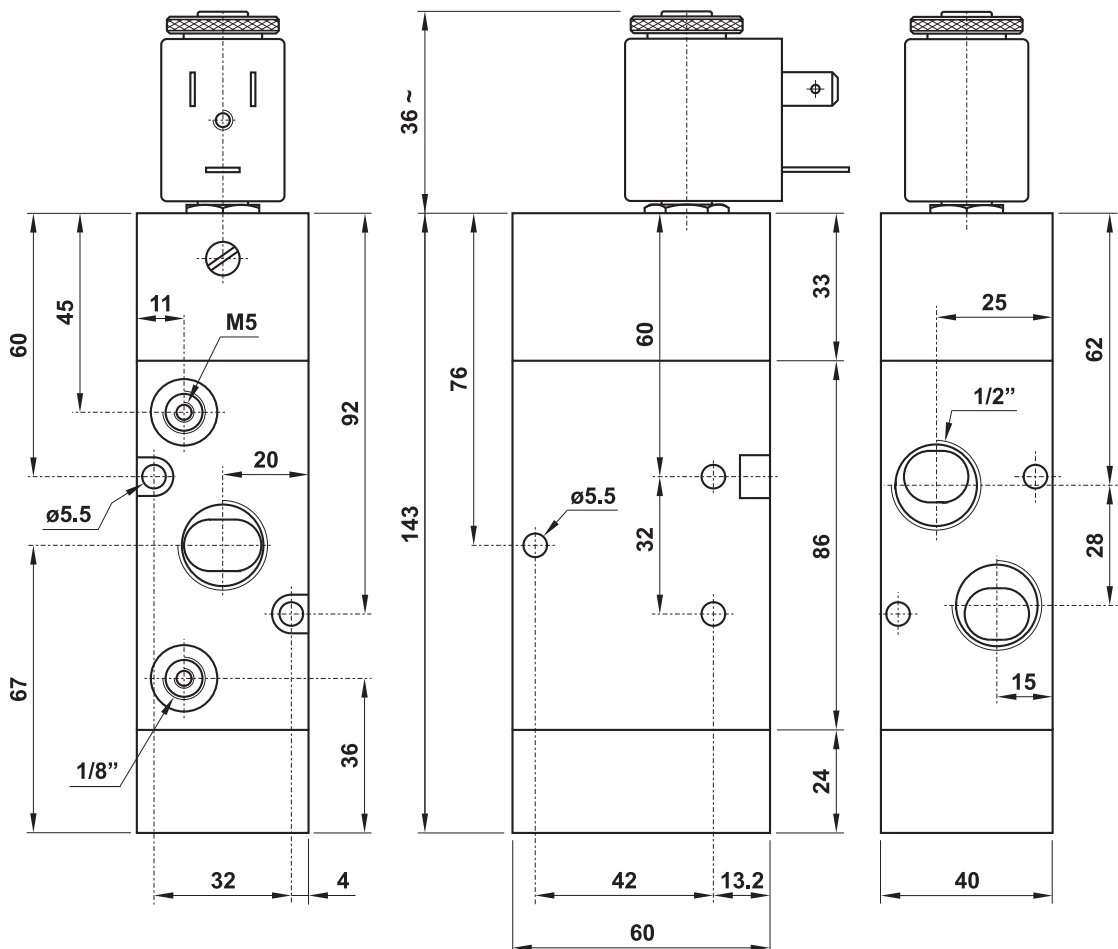
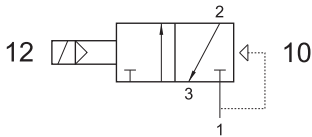
## US324 MEA

3/2 1/2" NPT N/O solenoid pilot - air and spring return



## US324 EFP

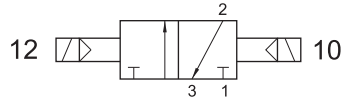
3/2 1/2" NPT N/C solenoid pilot - pneumatic spring return





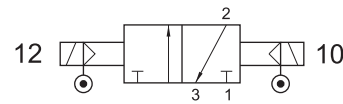
## US324 EE

3/2 1/2" NPT double solenoid pilot



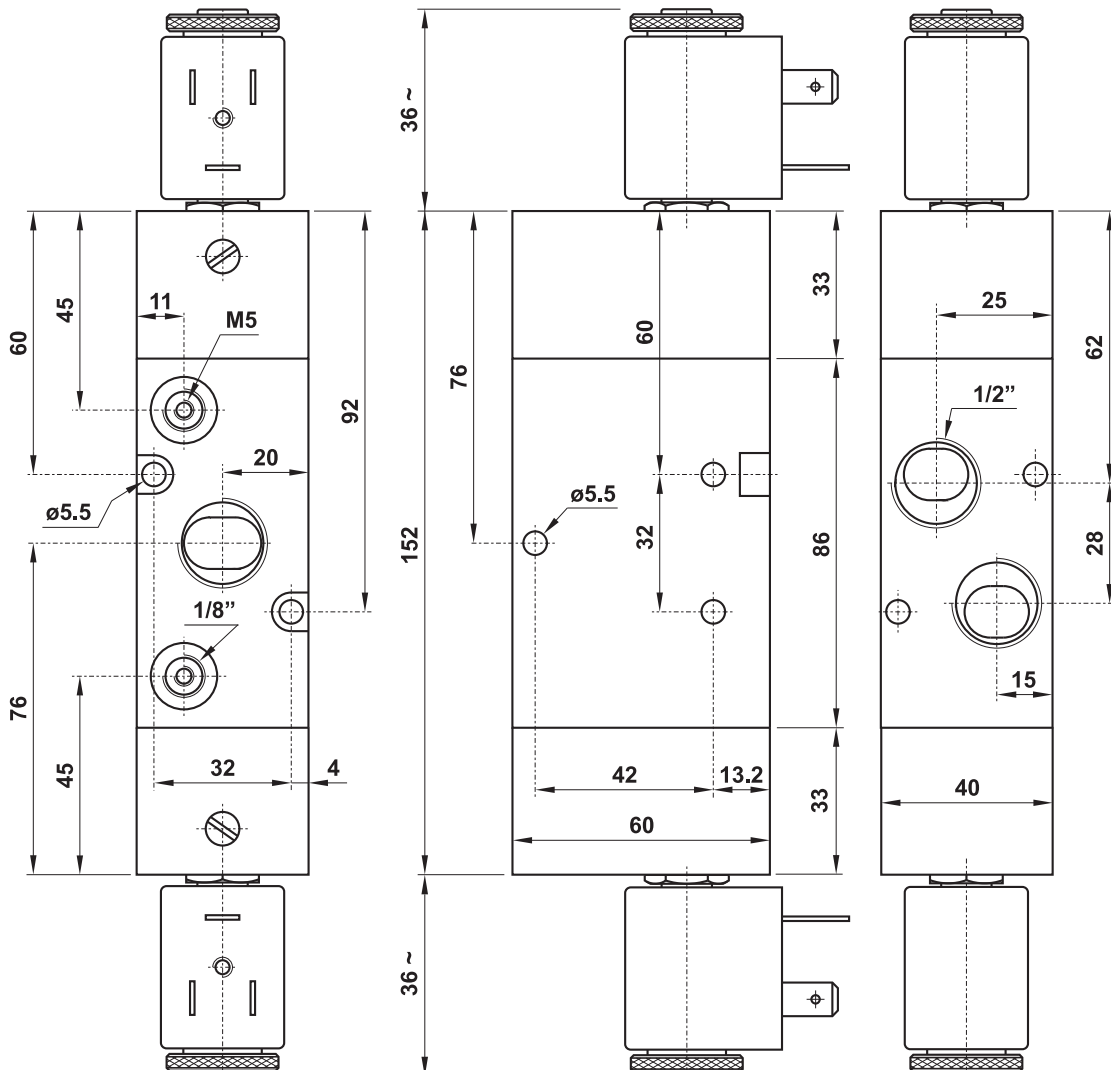
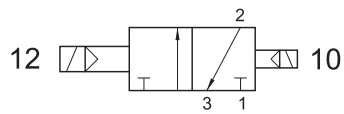
## US324 EE AS

3/2 1/2" NPT double solenoid pilot with separate air supply



## US324 EED

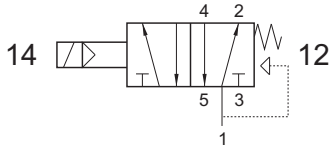
3/2 1/2" NPT double solenoid pilot - with differential





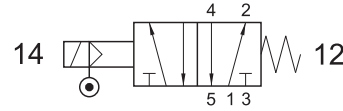
## US524 ME

5/2 1/2" NPT solenoid pilot - air and spring return



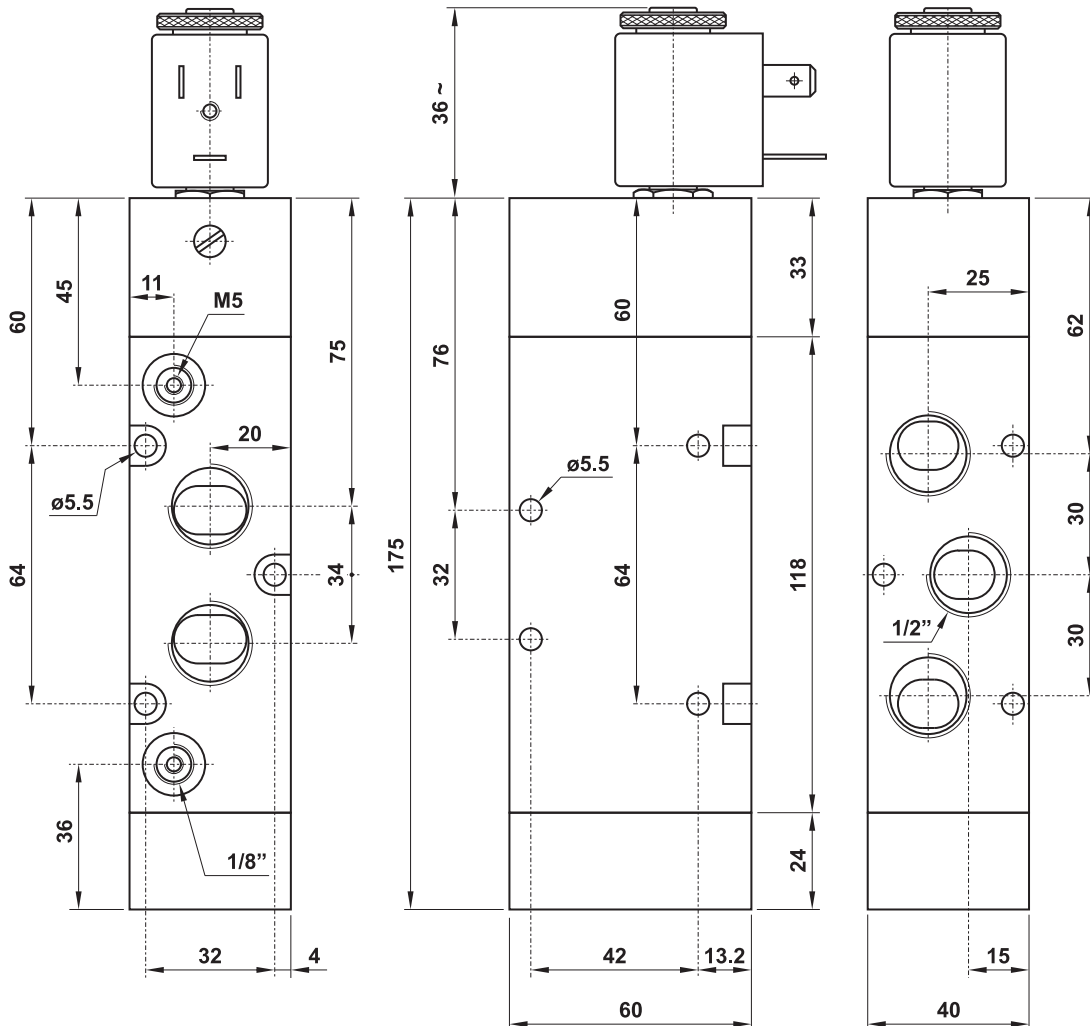
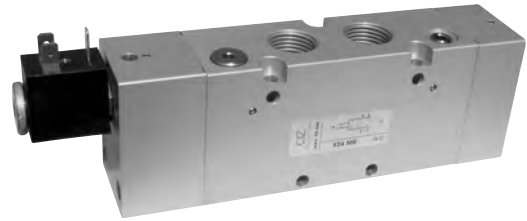
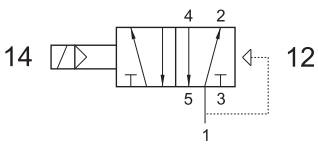
## US524 ME AS

5/2 1/2" NPT solenoid pilot with separate air supply - spring return



## US524 EFP

5/2 1/2" NPT solenoid pilot - pneumatic spring return

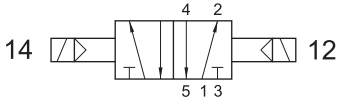


# Solenoid actuated valves - 1/2" NPT



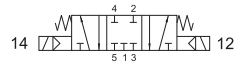
## US524 EE

5/2 1/2" NPT double solenoid pilot



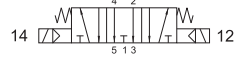
## US5243C EE

closed centers



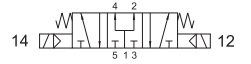
## US5243A EE

open centers



## US5243P EE

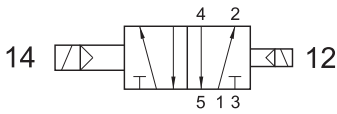
pressurized centers



5/3 1/2" NPT double solenoid pilot

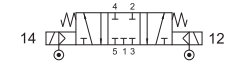
## US524 EED

5/2 1/2" NPT double solenoid pilot - with differential



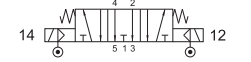
## US5243C EE AS

closed centers



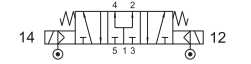
## US5243A EE AS

open centers



## US5243P EE AS

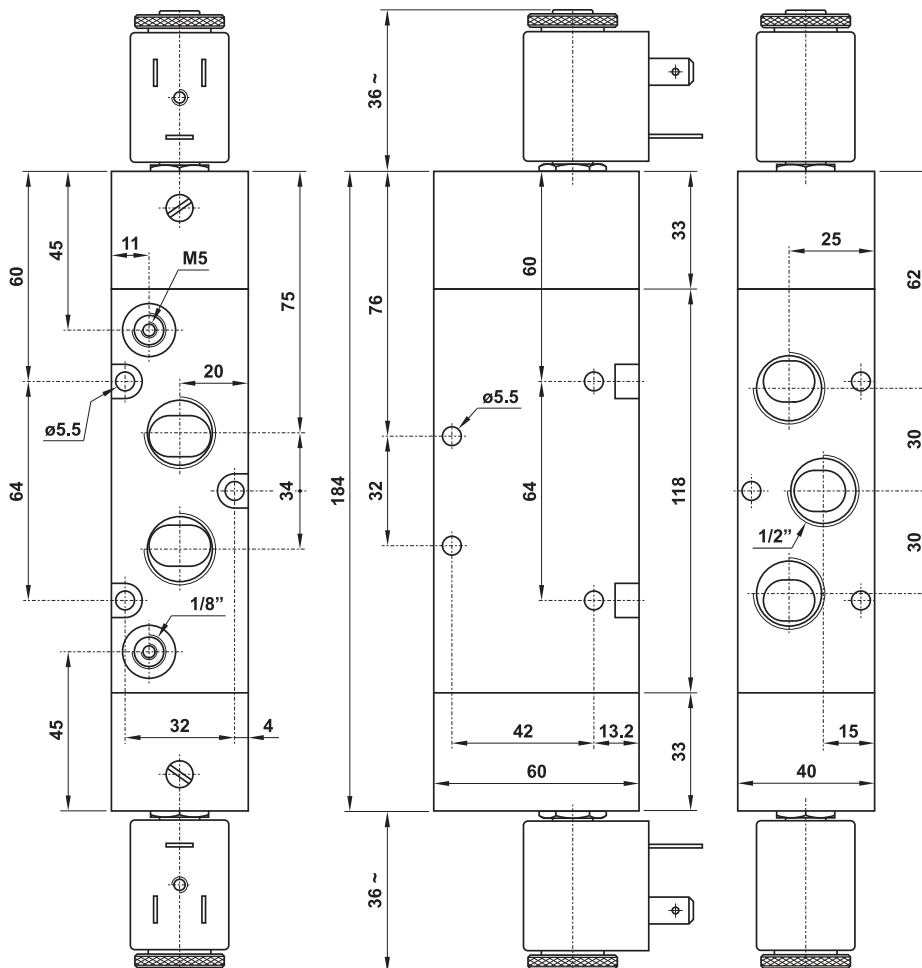
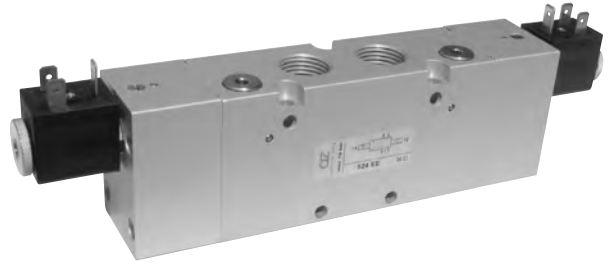
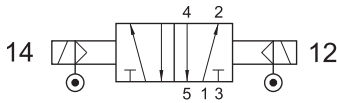
pressurized centers



5/3 1/2" NPT double solenoid pilot with separate air supply

## US524 EE AS

5/2 1/2" NPT double solenoid pilot with separate air supply



# 22 mm coils and connectors



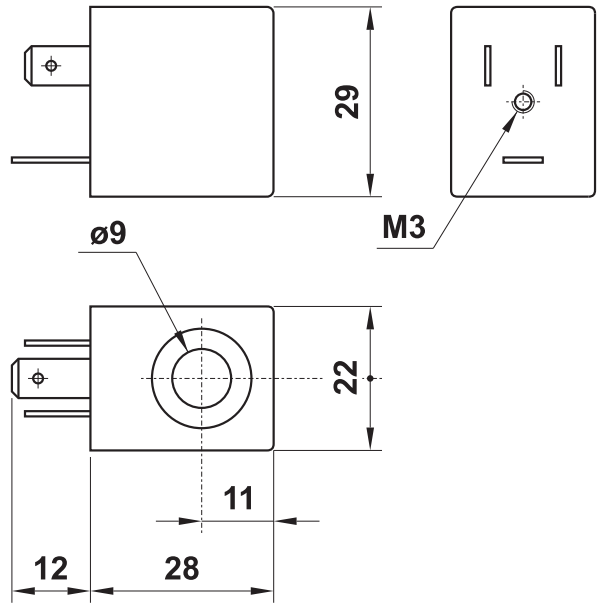
## 22 mm



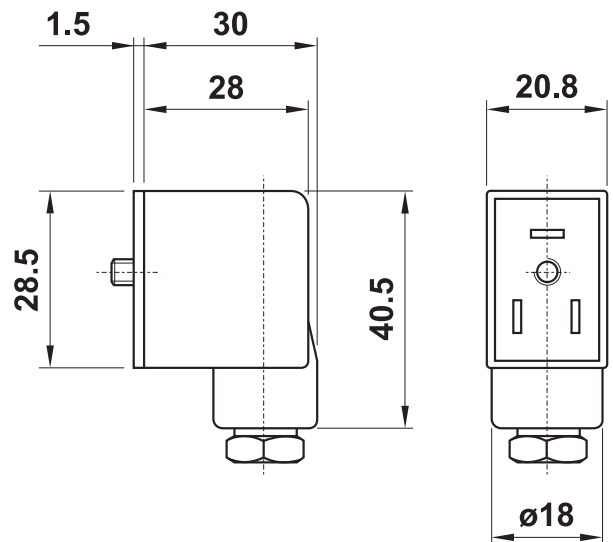
max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%

- low consumption (1.5W) on request

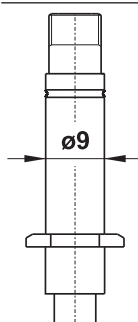
UL Code	tension	power	
		rated	inrush
00.486.0	24V DC	3W	
00.487.0	24V 50/60Hz	5VA	7.5VA
00.488.0	110V 50/60Hz	5VA	7.5VA



code	colour	cable	type
00.197.0	black	PG09	standard
00.344.0	transparent	PG09	with LED 24V
00.345.0	transparent	PG09	with LED 24V and VDR
00.346.0	transparent	PG09	with LED 115V
00.347.0	transparent	PG09	with LED 115V and VDR
00.394.0	transparent	PG09	with LED 230V
00.395.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



aluminium nut and elastic ring

00.125.2



	page
• Namur valves .....	244
• Pneumatically piloted valves - VDMA 18 mm .....	250
• Manifolds for 18 mm VDMA valves .....	254
• Pneumatically piloted valves - VDMA 25 mm .....	260
• Manifolds for 25 mm VDMA valves .....	265
• ISO 5599/1 valves - size 1 .....	268
• Sub-bases and manifolds for ISO 1 valves .....	272
• ISO 5599/1 valves - size 2 .....	275
• Sub-bases and manifolds for ISO 2 valves .....	282
• ISO 5599/1 valves - size 3 .....	289
• Sub-bases and manifolds for ISO 3 valves .....	293

# Namur valves

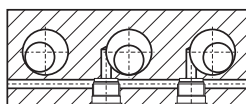
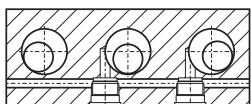
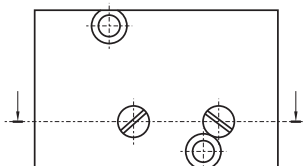
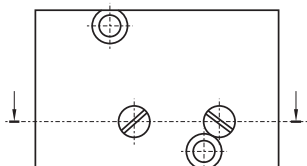
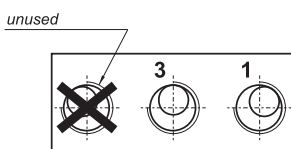
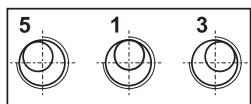
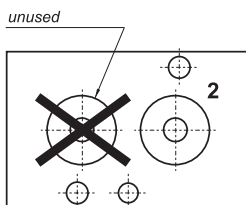
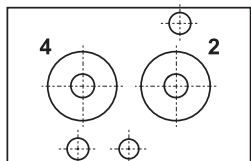


The function of the valve can be changed by repositioning the seal situated under one of the two plugs.  
**Coils sold separately**



5 WAYS

- 3 WAYS



plug without seal      plug with seal

plug with seal      plug without seal

## Materials

**Body:** aluminium 11S

**End cups:** aluminium 11s

**Springs:** stainless steel

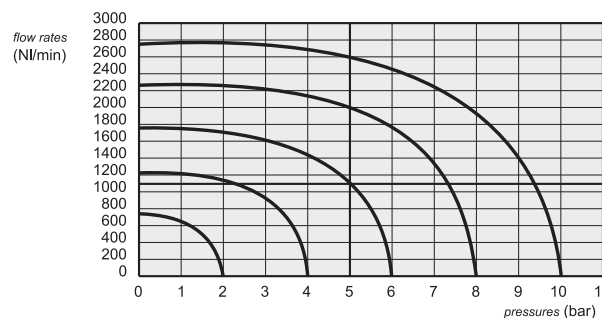
**Seals:** NBR

**Spool:** nickel plated aluminium

**Internal parts:** brass OT58

On request and upon extra charge, the valves are available also with body and end caps entirely in aluminium. Some valves, as specified in the next pages, are available only in the aluminium version. ATEX valves are only in aluminium.

The following listed products are sold without coils, which are bought separately (refer to pages 248-249).



## Spare parts

**01.065.2** : for valves US382 MC, US382 ME, US582 MC, US582 ME

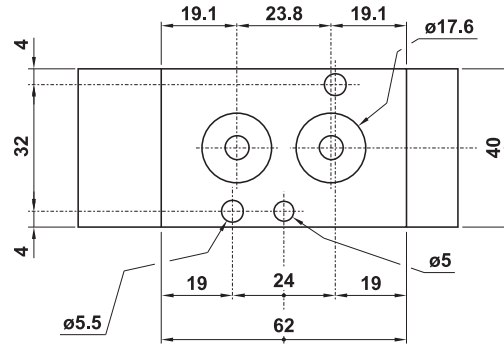
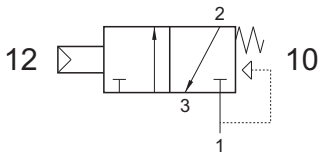
**01.066.2** : for valves US382 CC, US382 EE, US582 CC, US582 EE

Nominal diameter	7.5 mm (0.3 in)			
Ports	1/4" NPT			
Temperature range	-15 + 60°C (5-140°F)			
Operating pressure	electr. mono-stable	electr. bi-stable	pneum. mono-stable	pneum. bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	0 ... 10 bar (0 ... 145 PSI) 0 ... 1 MPa	0 ... 10 bar (0 ... 145 PSI) 0.1 ... 1 MPa
Actuating pressure			pneum. mono-stable	pneum. bi-stable
			2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50µ filtered, lubricated or non lubricated air			



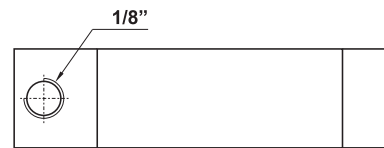
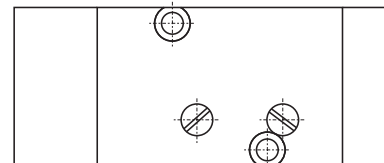
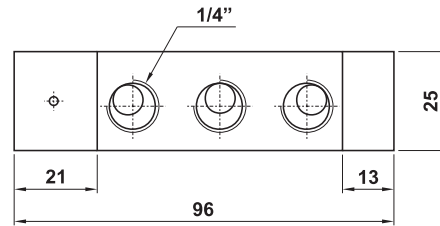
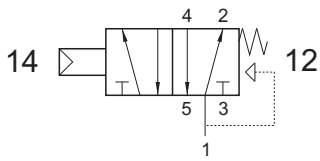
## US382 MC

3/2 NC pneumatic pilot - air and spring return



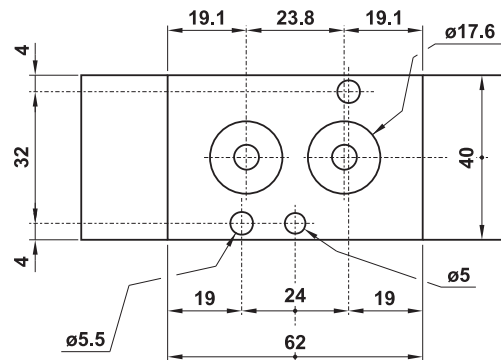
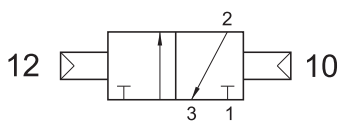
## US582 MC

5/2 pneumatic pilot - air and spring return



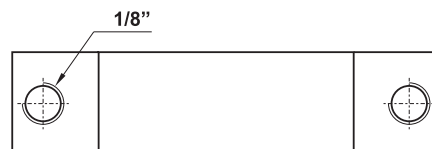
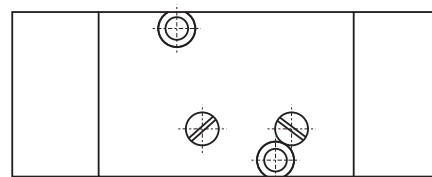
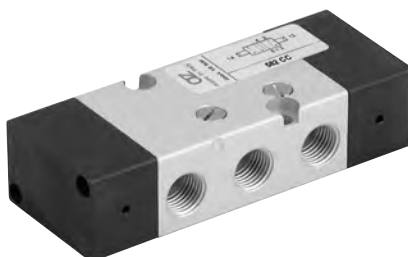
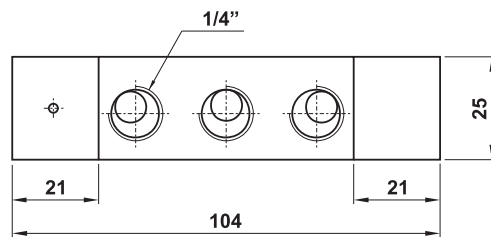
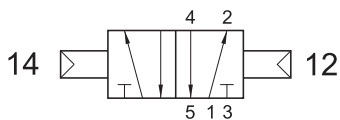
## US382 CC

3/2 double pneumatic pilot



## US582 CC

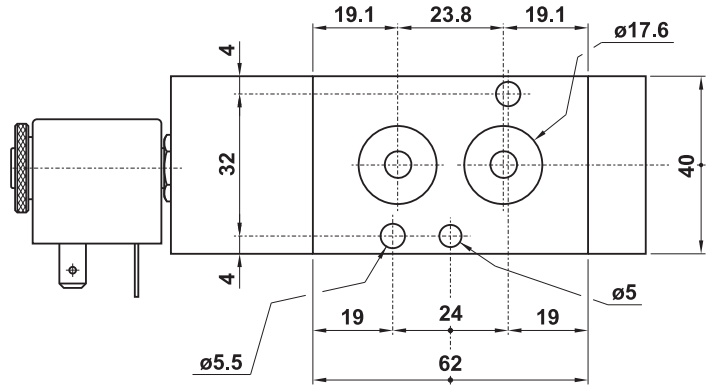
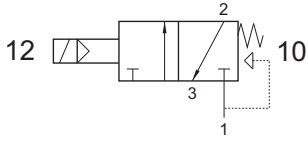
5/2 double pneumatic pilot





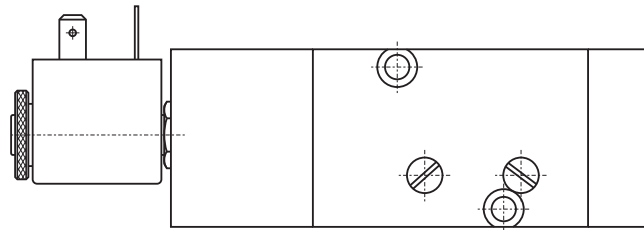
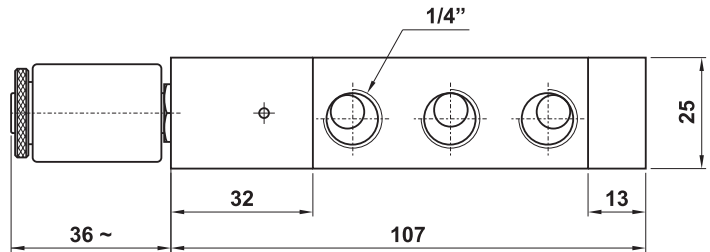
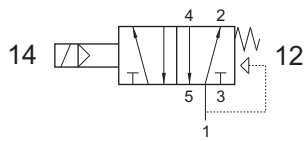
## US382 ME

3/2 NC solenoid pilot - air and spring return



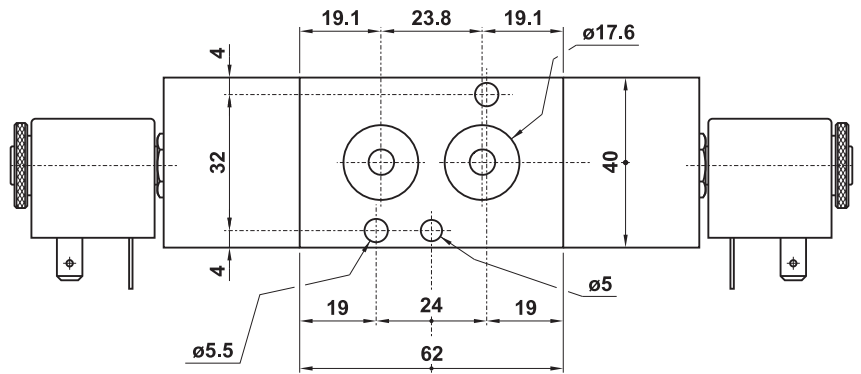
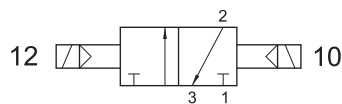
## US582 ME

5/2 solenoid pilot - air and spring return



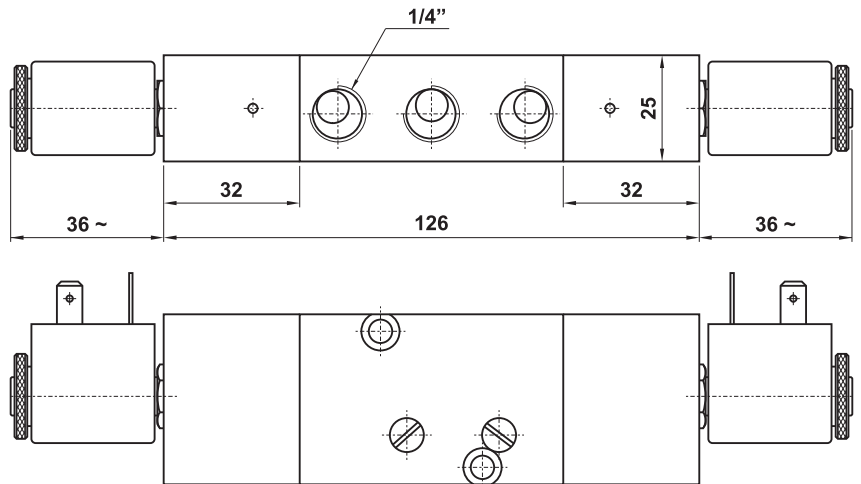
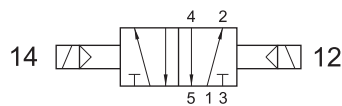
## US382 EE

3/2 double solenoid pilot



## US582 EE

5/2 double solenoid pilot

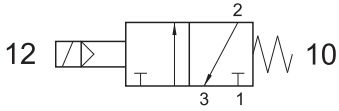


ONLY ALUMINIUM VERSION



## US382 MRE

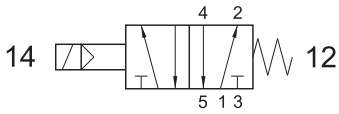
3/2 NC solenoid pilot - REINFORCED spring return



It cannot be used as normally open valve.

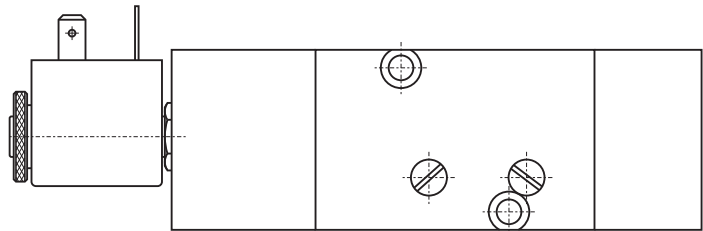
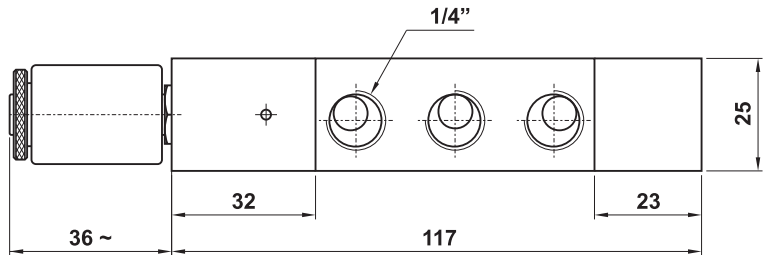
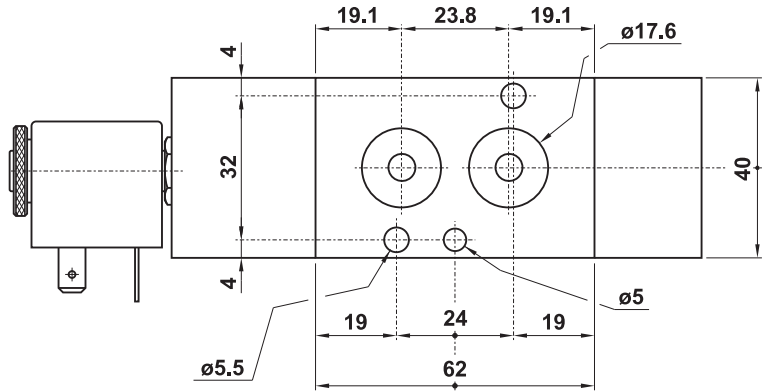
## US582 MRE

5/2 solenoid pilot - REINFORCED spring return



Working pressure: 2.5 ... 10 bar (36 ... 145 PSI)

The reinforced spring allows a prompt return of the spool also in lack of air.



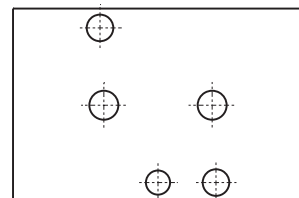
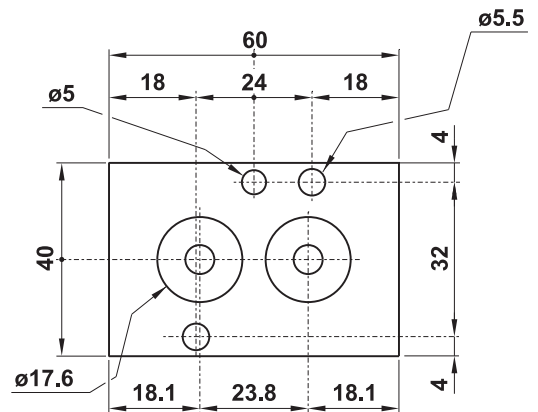
adapter for 30 mm coil  
and ATEX coil

ORDER CODE

01.055.2



This adaptor must be mounted under a Namur valve to create the installation space for a 30 mm coil.





# 22 mm coils and connectors



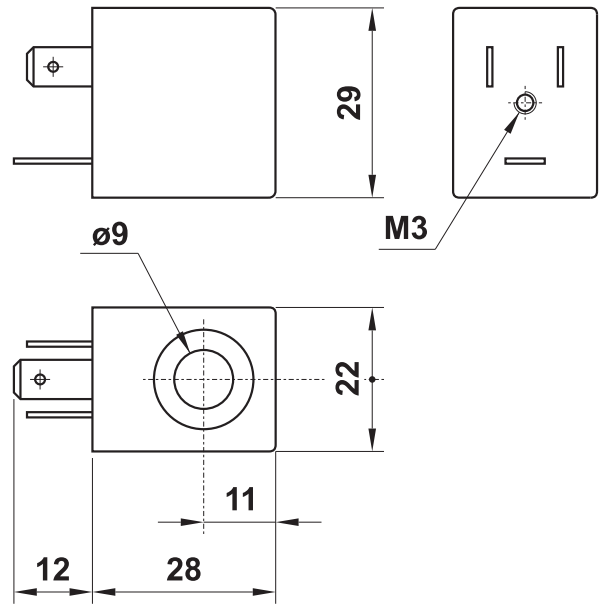
22 mm



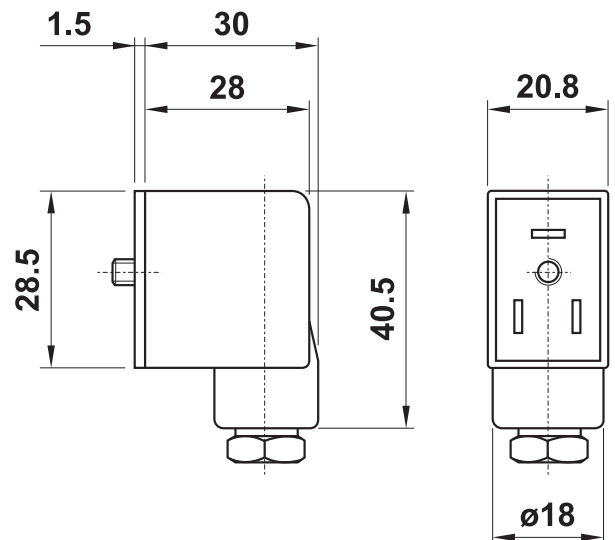
max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%

- low consumption (1.5W) on request

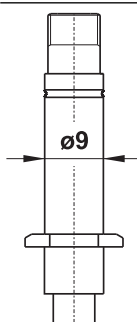
UL code	tension	power	
		rated	inrush
00.486.0	24V DC	3W	
00.487.0	24V 50/60Hz	5VA	7.5VA
00.488.0	110V 50/60Hz	5VA	7.5VA



code	colour	cable	type
00.197.0	black	PG09	standard
00.344.0	transparent	PG09	with LED 24V
00.345.0	transparent	PG09	with LED 24V and VDR
00.346.0	transparent	PG09	with LED 115V
00.347.0	transparent	PG09	with LED 115V and VDR
00.394.0	transparent	PG09	with LED 230V
00.395.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



aluminium nut and elastic ring

00.125.2

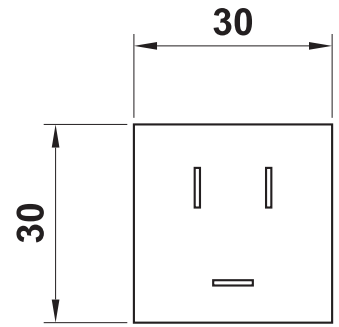
# 30 mm coils and connectors



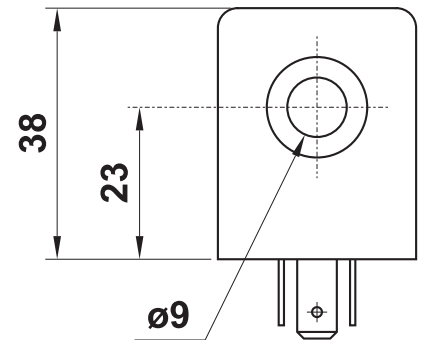
30 mm

max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%

CE



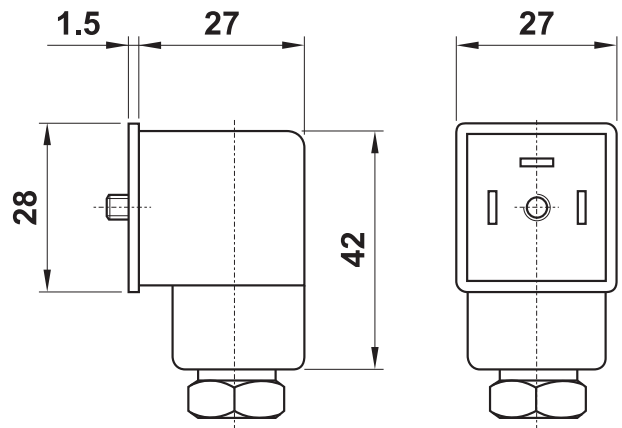
code	tension	power	
		rated	inrush
00.258.0	24V DC	2W	
00.259.0	24V 50/60Hz	5VA	9VA
00.260.0	110V 50/60Hz	5VA	9VA
00.261.0	220V 50/60Hz	5VA	9VA



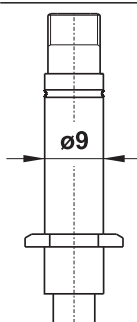
The adaptor kit 01.055.2 (page 247) is necessary to assemble this coil on Namur valves.

code	colour	cable	type
00.251.0	black	PG09	standard
00.348.0	transparent	PG09	with LED 24V
00.349.0	transparent	PG09	with LED 24V and VDR
00.350.0	transparent	PG09	with LED 115V
00.351.0	transparent	PG09	with LED 115V and VDR
00.396.0	transparent	PG09	with LED 230V
00.397.0	transparent	PG09	with LED 230V and VDR

CE



## SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



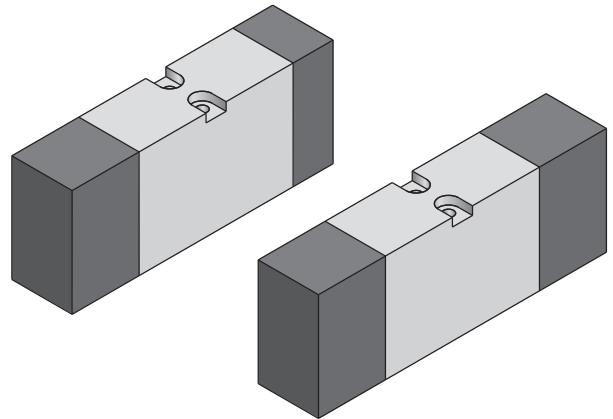
aluminium nut and elastic ring

00.125.2

# Pneumatically piloted valves - VDMA 18 mm



- 5/2-5/3 spool valves
- Compliant to norm VDMA 24563 - size O2 (18 mm)
- Installation on multiple sub-bases or manifolds
- Mono-stable or bi-stable pneumatic pilot



2

## Response times

mono-stable	TRA (14): 12 ms TRR (12): 24 ms
bi-stable	TRA (14): 21 ms TRR (12): 21 ms

## Materials

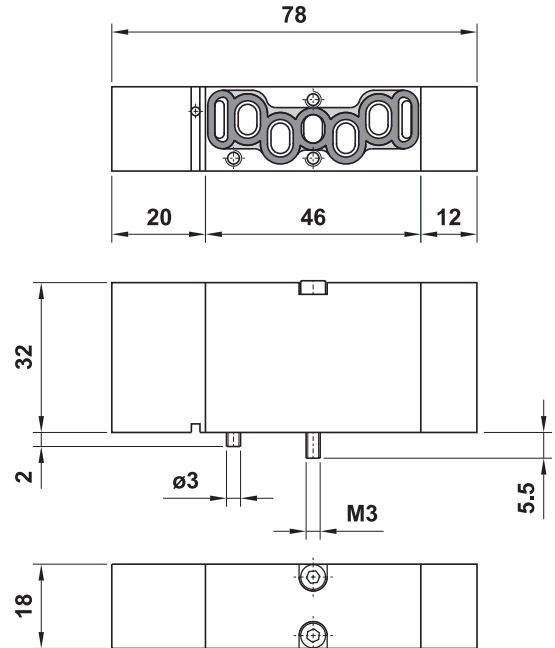
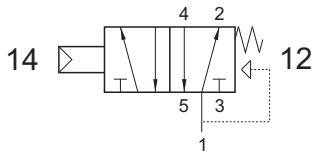
Body: aluminium 11S  
Springs: stainless steel  
Seals: NBR  
Spool: nickel plated aluminium  
Internal parts: brass OT58

Nominal diameter	5 mm (0.2 in)	
Nominal flow rate at 6 bar (87 PSI), $\Delta p$ 1 bar (14 PSI)	550 Nl/min (0.58 Cv)	
Temperature range	-15 +60°C (5 - 140°F)	
Operating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50 $\mu$ filtered, lubricated or non lubricated air	



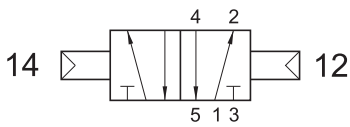
## 851 MC

5/2 pneumatic pilot - air and spring return

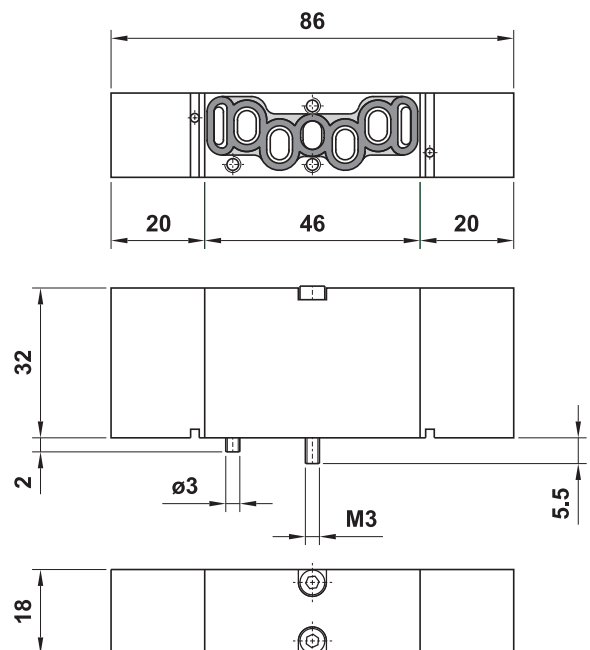
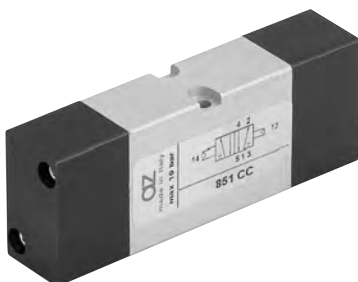


## 851 CC

5/2 double pneumatic pilot



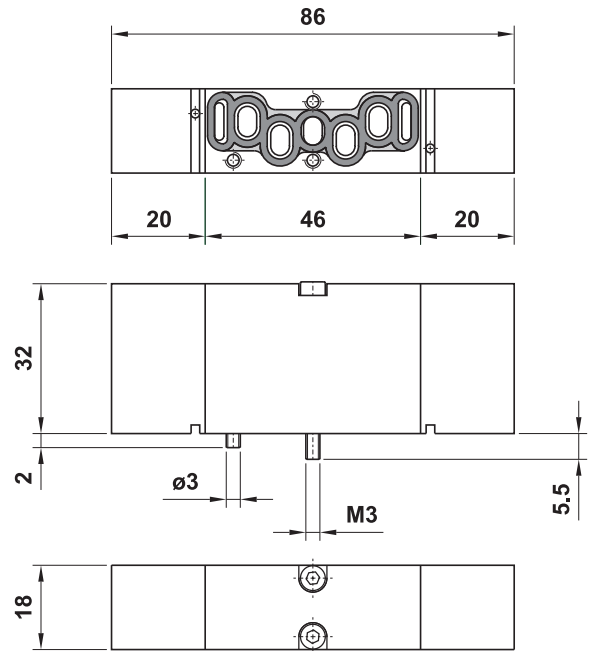
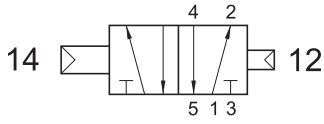
It can be used with vacuum.





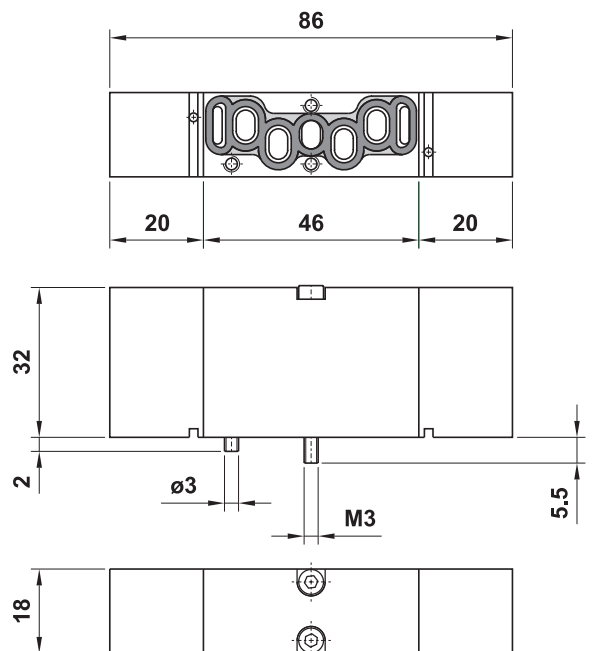
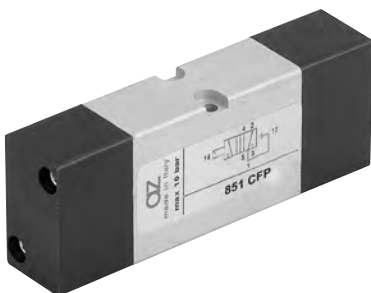
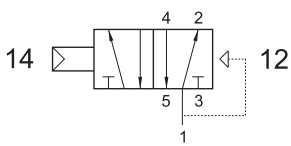
## 851 CCD

5/2 double pneumatic pilot - with differential



## 851 CFP

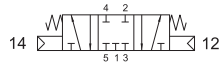
5/2 pneumatic pilot - pneumatic spring return



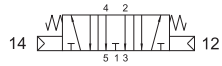
# Pneumatically piloted valves - VDMA 18 mm



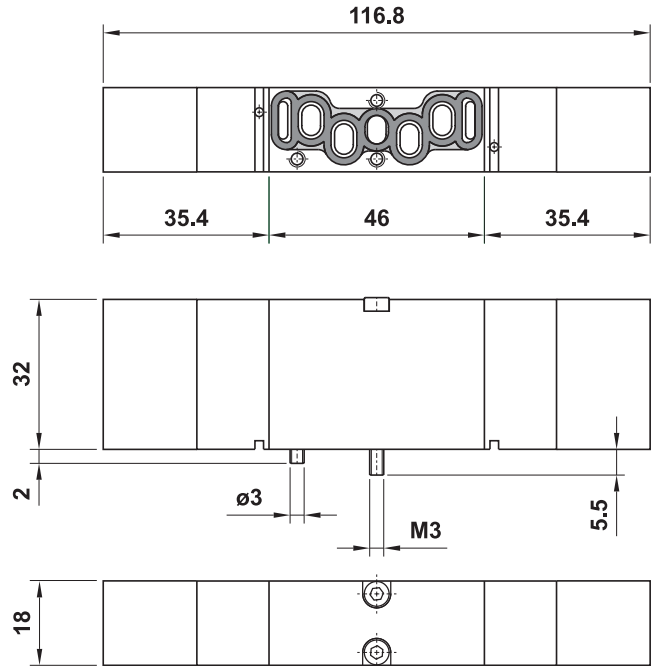
**8513C CC** closed centers



**8513A CC** open centers



5/3 double pneumatic pilot



2

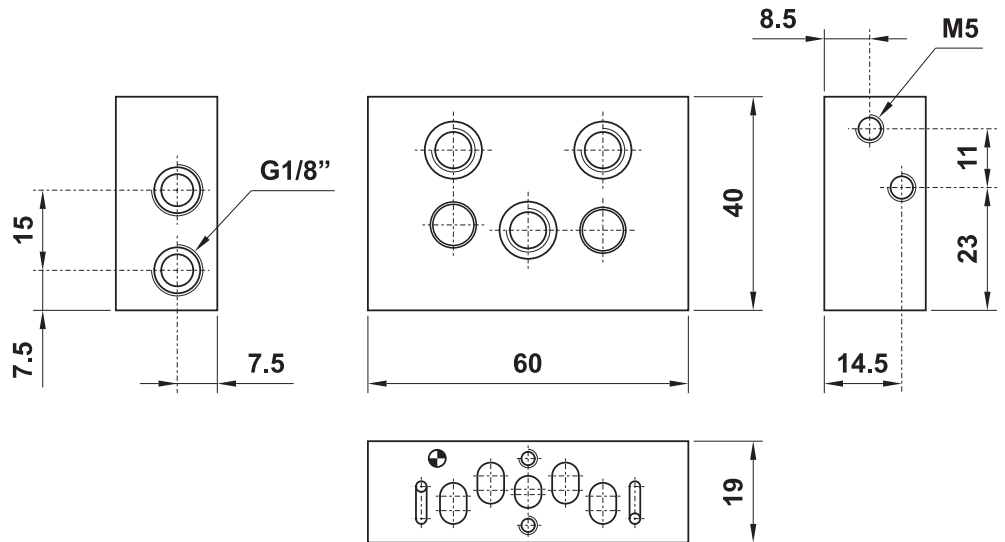
# Multiple sub-bases for 18 mm VDMA valves



## modular sub-base

ORDER CODE

**BM851**

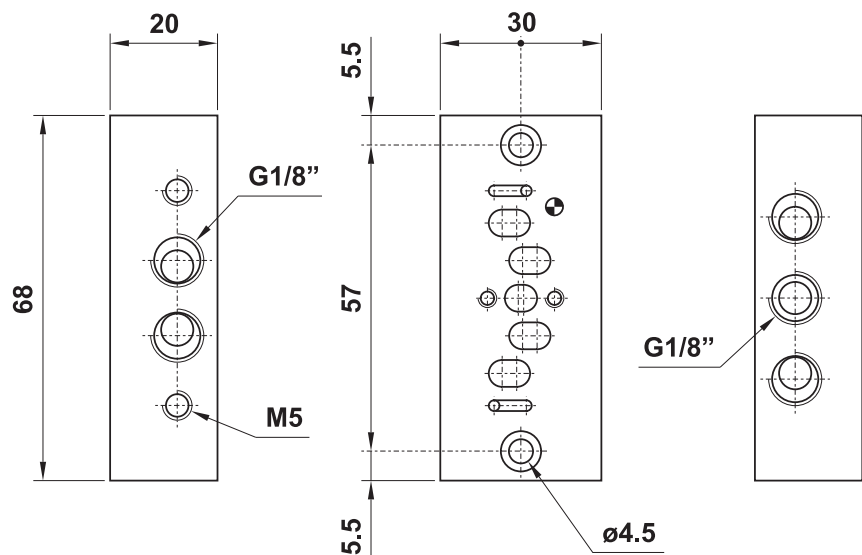


It is sold in kit with all necessary pieces for installation.

## individual sub-base

ORDER CODE

**BS851**



# Multiple sub-bases for 18 mm VDMA valves



## left hand header (with sub-base)

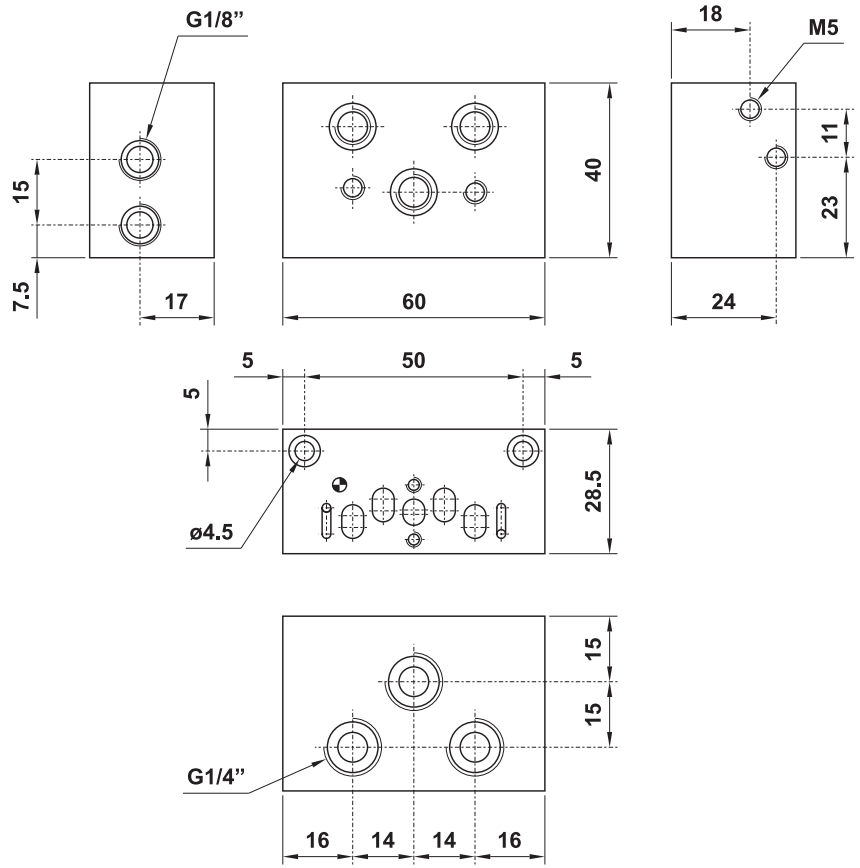
ORDER CODE

**TS851**

This header includes one sub-base for valve installation.



It is sold in kit with all necessary pieces for installation.



## right hand header (with sub-base)

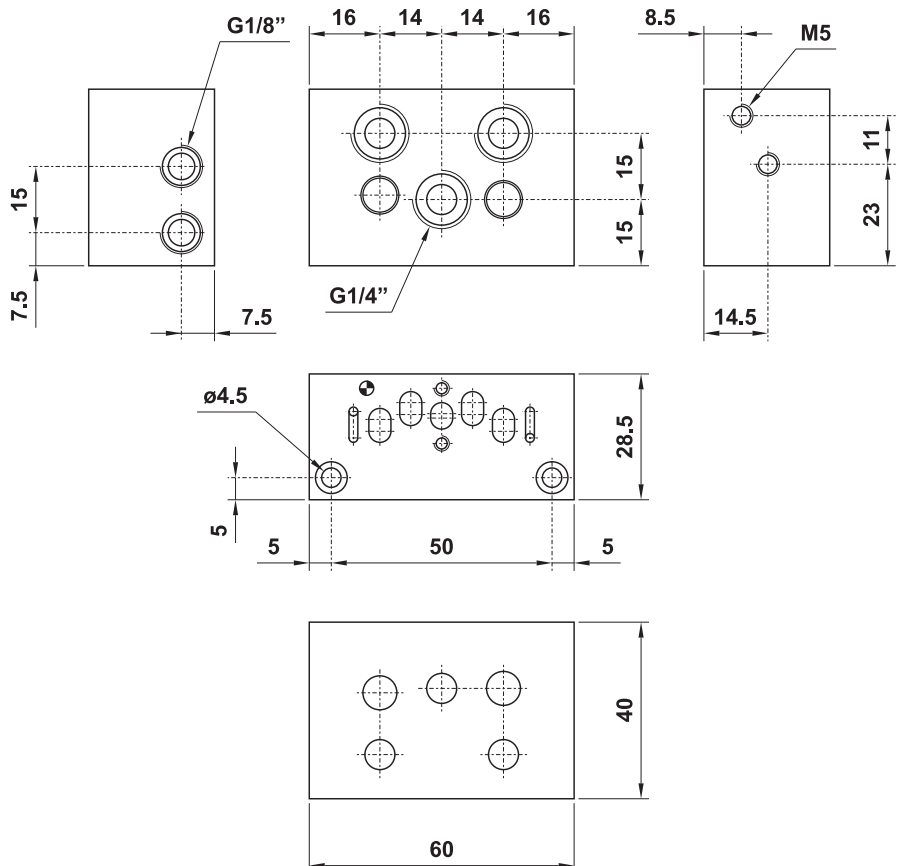
ORDER CODE

**TD851**

This header includes one sub-base for valve installation.



It is sold in kit with all necessary pieces for installation.





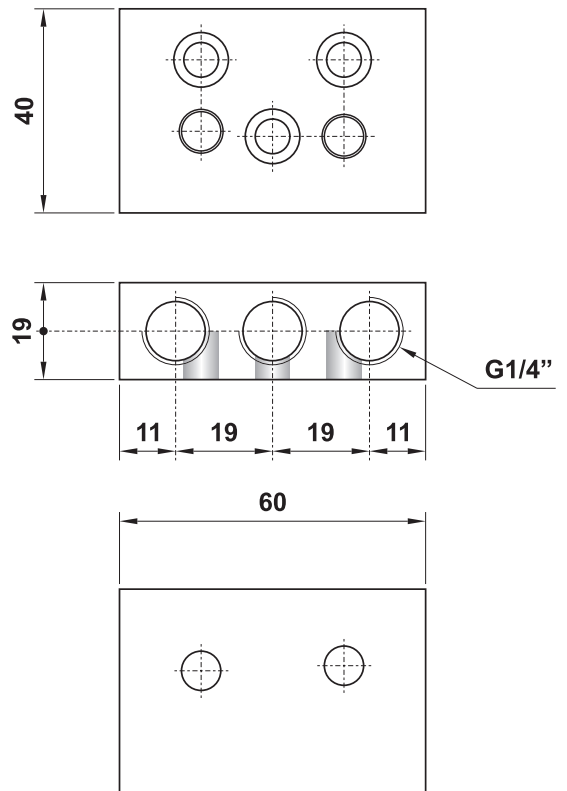
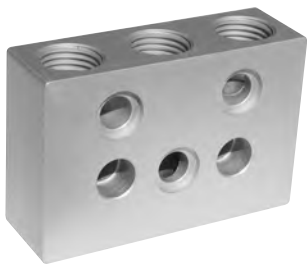
# Multiple sub-bases for 18 mm VDMA valves



## intermediate header

ORDER CODE

**DR851**

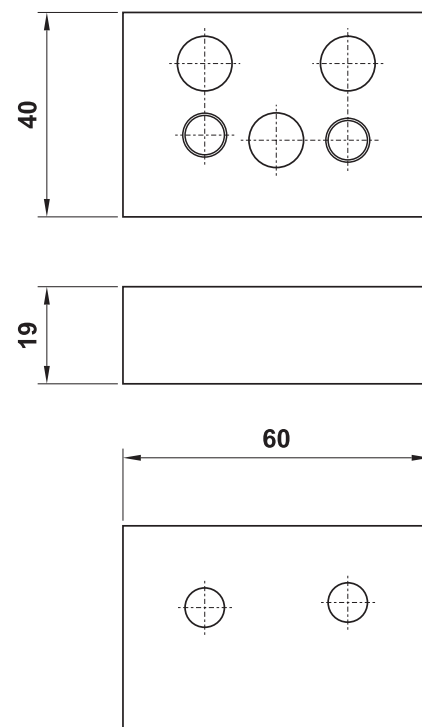
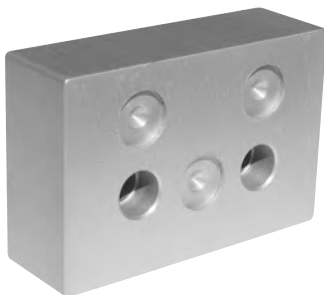


It is sold in kit with all necessary pieces for installation.

## blanking piece

ORDER CODE

**DC851**



It is sold in kit with all necessary pieces for installation.

2

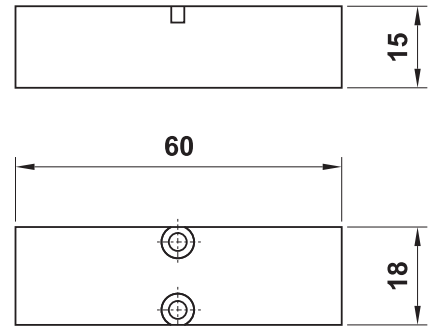
# Multiple sub-bases for 18 mm VDMA valves



## blanking plate

ORDER CODE

**CS851**

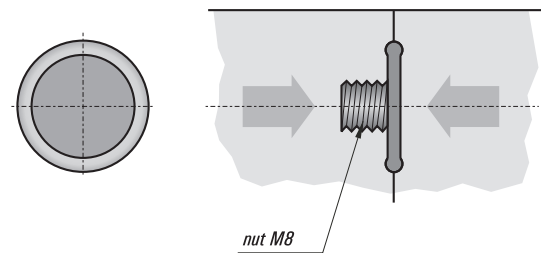


It is sold in kit with all necessary pieces for installation.

## diaphragm gasket

ORDER CODE

**DF851**

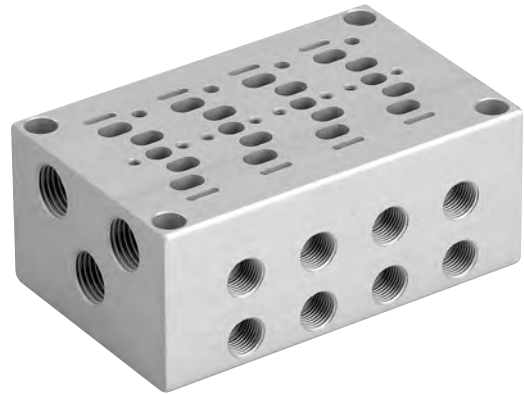


To be inserted between two sub-bases to stop the air flow and divide the manifold into separate zones.

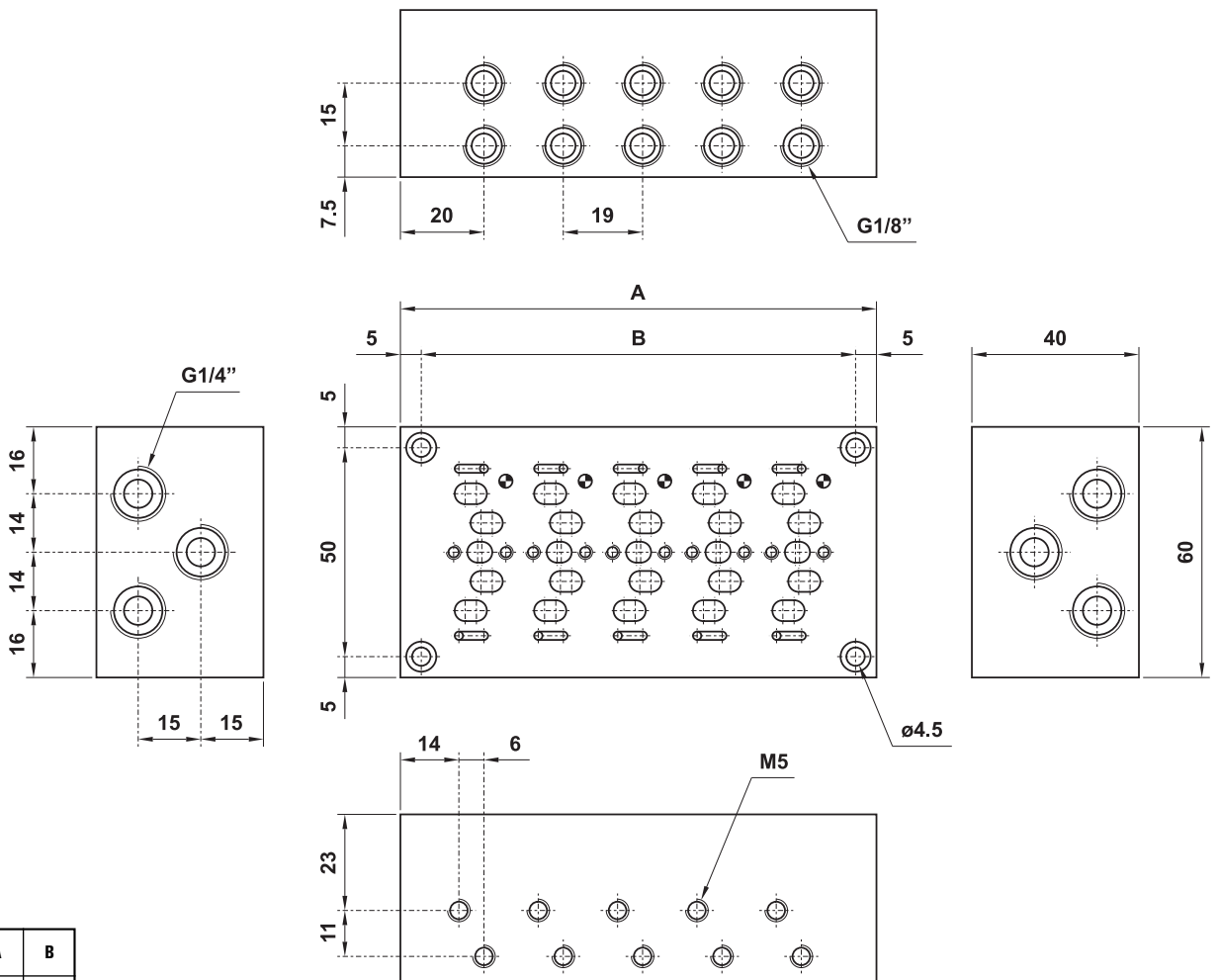
# Manifolds for 18 mm VDMA valves



- Common exhaust
- Individual pilot for each valve
- Material: aluminium (anodize treatment)
- Special manifolds on request



2



model	no. stations	A	B
05.052.1	2	57	47
05.053.1	3	76	66
05.054.1	4	95	85
05.055.1	5	114	104
05.056.1	6	133	123
05.057.1	7	152	142
05.058.1	8	171	161
05.059.1	9	190	180
05.060.1	10	209	199
05.113.1	11	228	218
05.114.1	12	247	237



- 5/2-5/3 spool valves
- Compliant to norm VDMA 24563 - size O1 (25 mm)
- Installation on individual sub-bases or manifolds
- Mono-stable or bi-stable pneumatic pilot



### Response times

mono-stable	TRA (14): 30 ms TRR (12): 45 ms
bi-stable	TRA (14): 28 ms TRR (12): 28 ms

### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

Spool: nickel plated aluminium

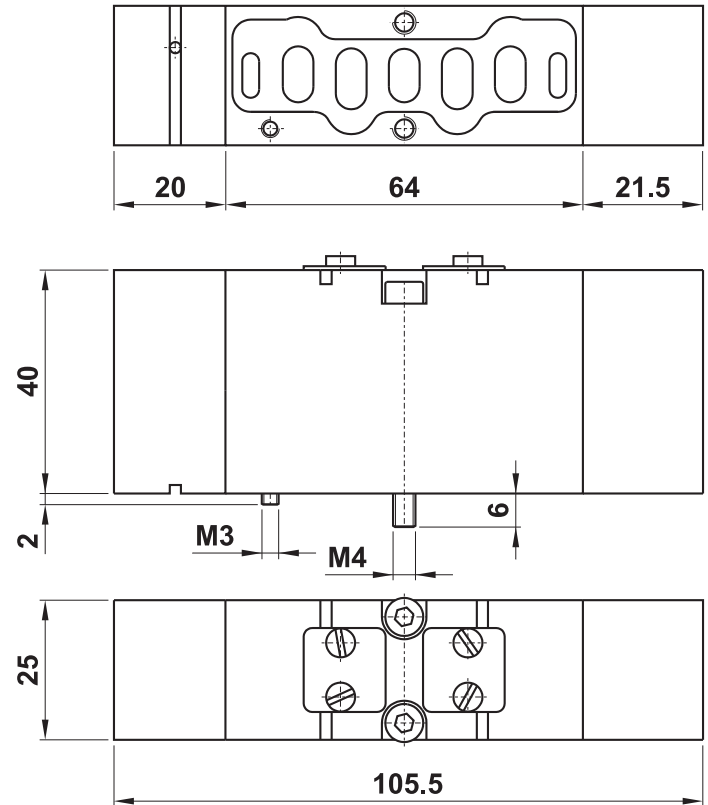
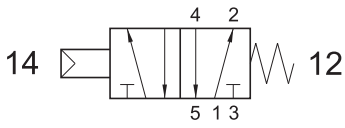
Internal parts: brass OT58 and technopolymer

Nominal diameter	7.5 mm (0.3 in)	
Nominal flow rate at 6 bar (87 PSI), $\Delta p$ 1 bar (14 PSI)	1100 NI/min (1.16 Cv)	
Temperature range	-15 + 60°C (5-140°F)	
Operating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure	mono-stable	bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50 $\mu$ filtered, lubricated or non lubricated air	



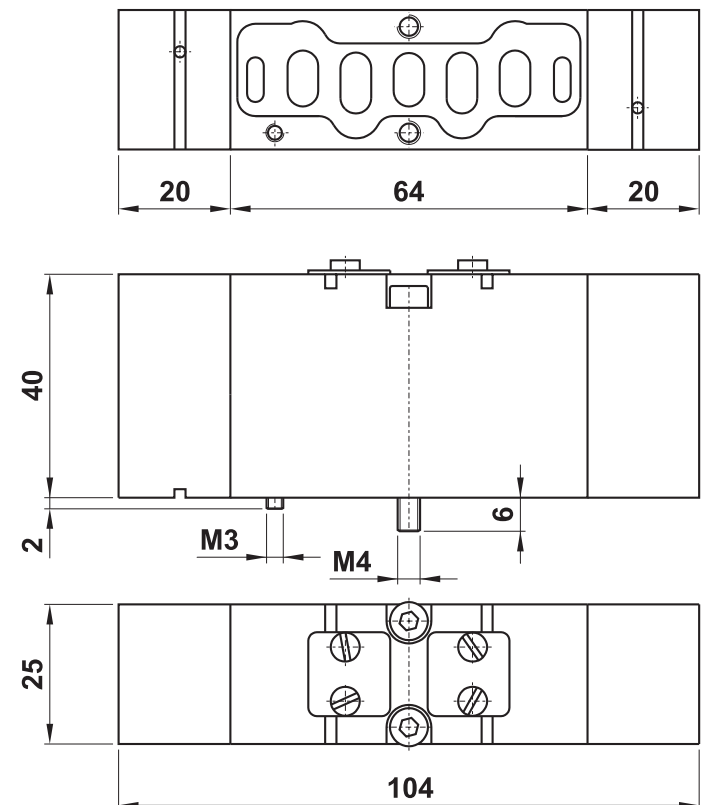
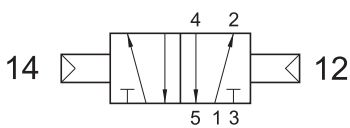
## 951 MC

5/2 pneumatic pilot - spring return



## 951 CC

5/2 double pneumatic pilot

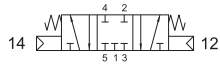


2

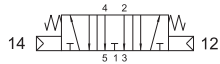
# Pneumatically piloted valves - VDMA 25 mm



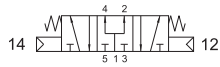
**9513C CC** closed centers



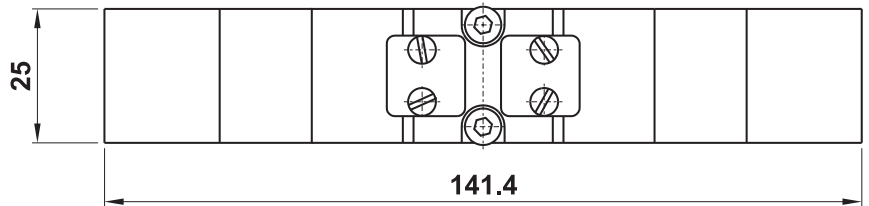
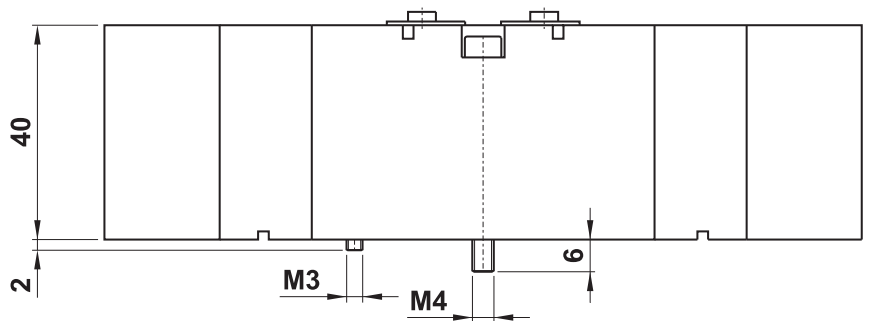
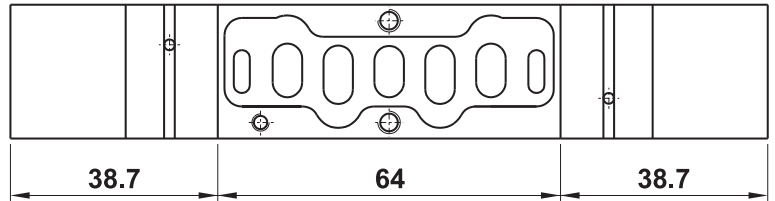
**9513A CC** open centers



**9513P CC** pressurized centers



5/3 double pneumatic pilot

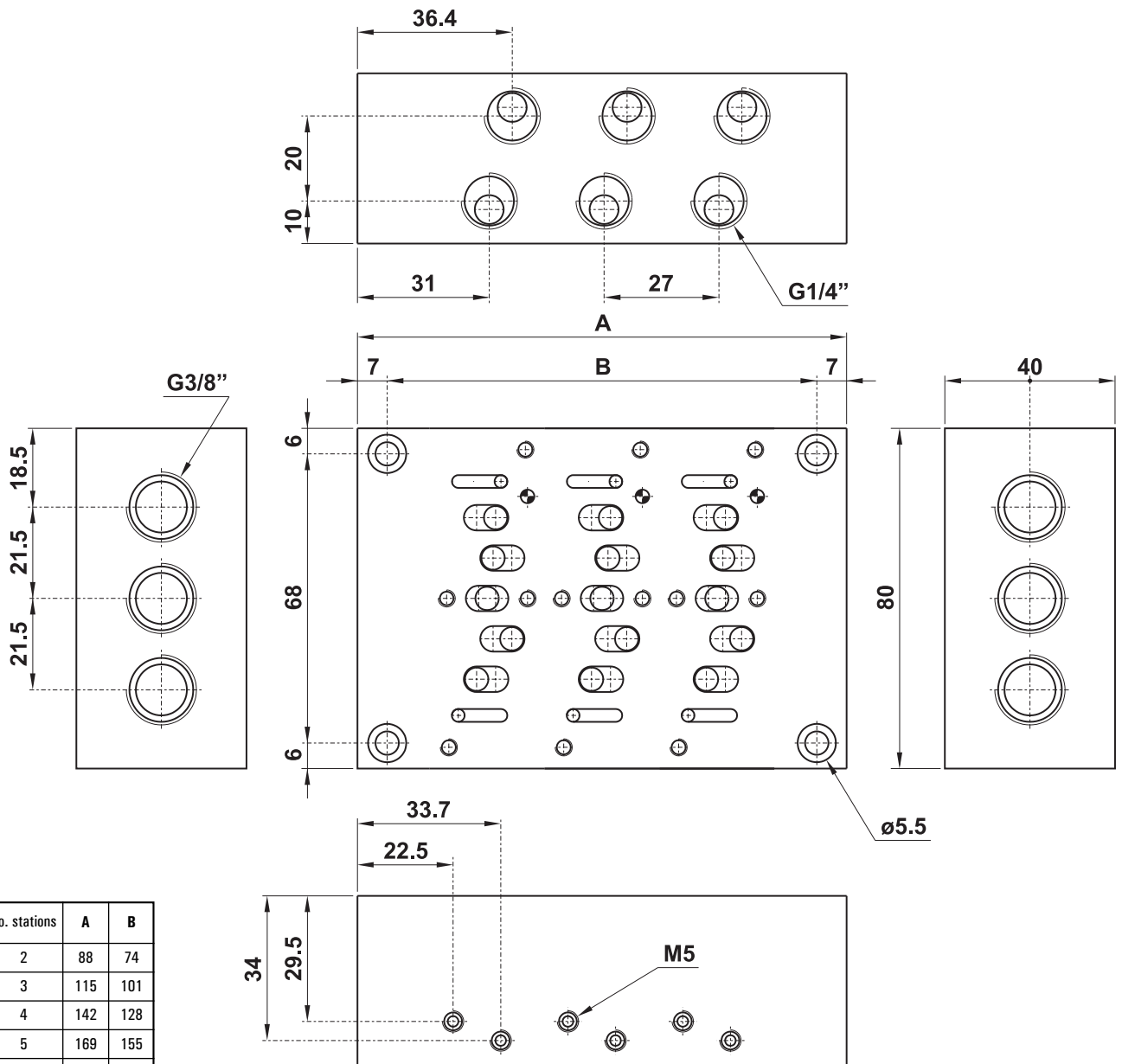


2

# Manifolds for 25 mm VDMA valves



- Common exhaust
- Individual pilot for each valve
- Material: aluminium (anodize treatment)
- Special manifolds on request



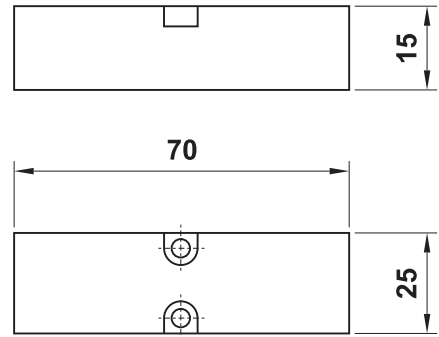
model	no. stations	A	B
05.062.1	2	88	74
05.063.1	3	115	101
05.064.1	4	142	128
05.065.1	5	169	155
05.066.1	6	196	182
05.067.1	7	223	209
05.068.1	8	250	236
05.069.1	9	277	263
05.070.1	10	304	290



## blanking plate

ORDER CODE

**CS951**

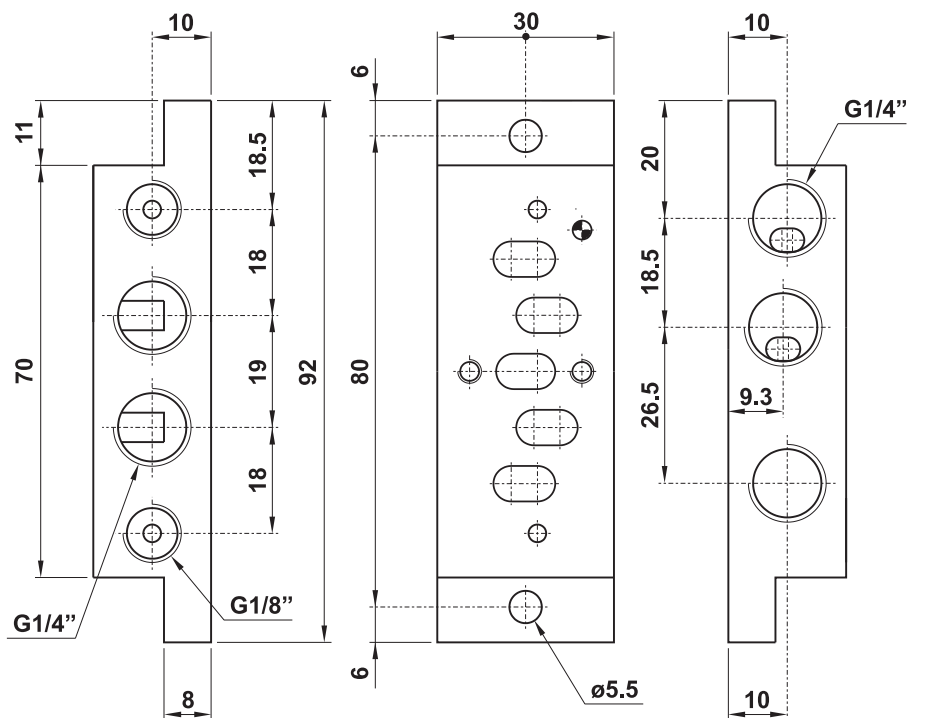


It is sold in kit with all necessary pieces for installation.

## individual sub-base

ORDER CODE

**BS951**





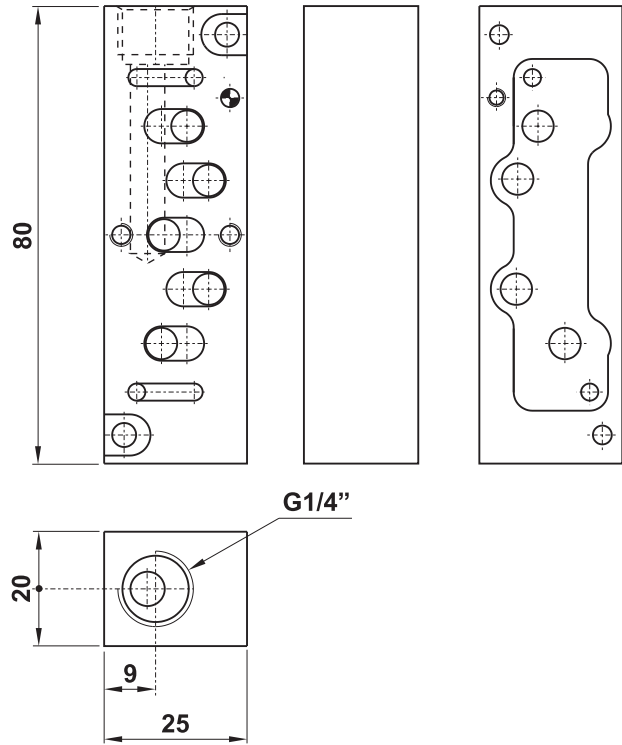
# Manifolds for 25 mm VDMA valves



## adapting plate for separate air inlet

ORDER CODE

**05.065.2**

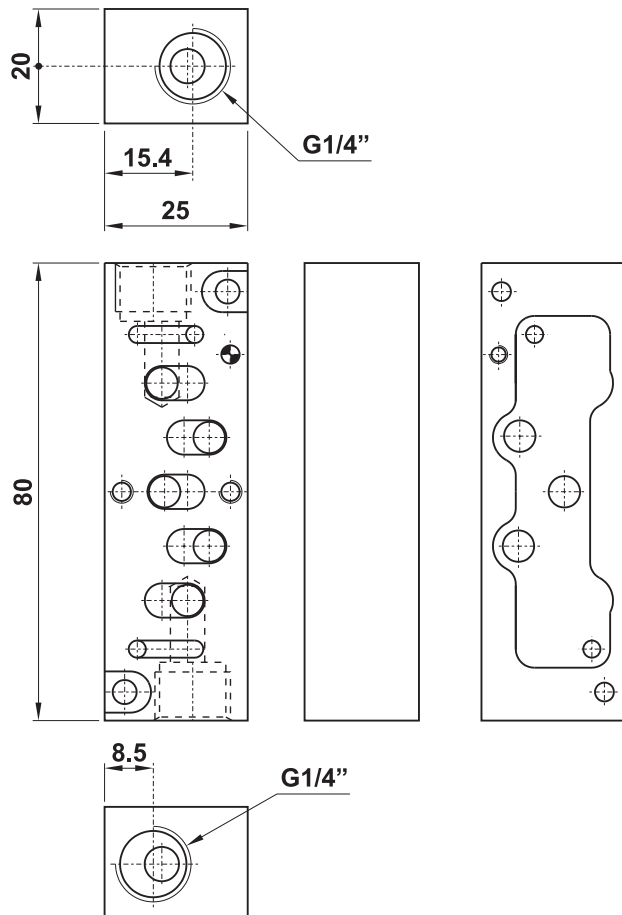


It is sold in kit with all necessary pieces for installation.

## adapting plate for separate air exhaust

ORDER CODE

**05.066.2**

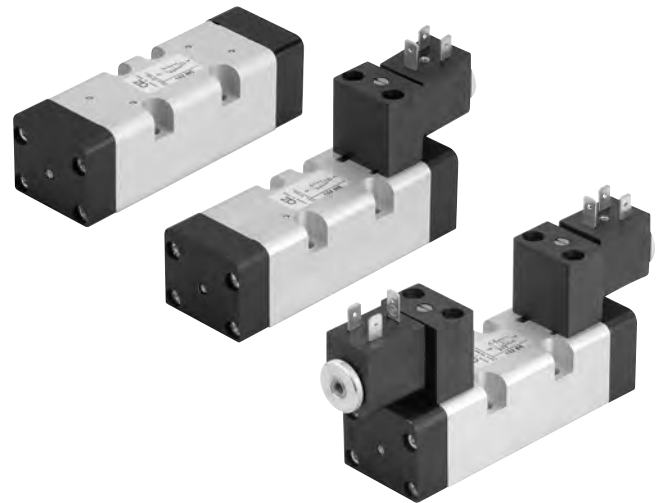


It is sold in kit with all necessary pieces for installation.

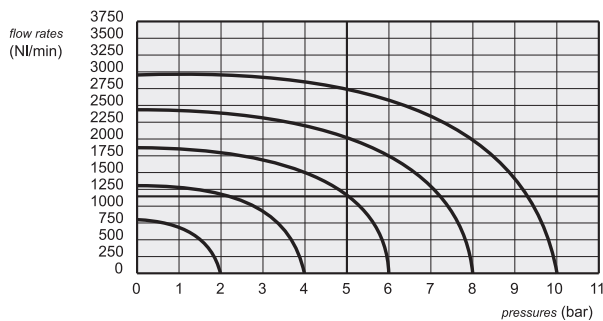
# ISO 5599/1 valves - size 1



- 5/2-5/3 spool valves
- Installation on manifolds or multiple sub-bases
- Detented manual override on the solenoid pilot
- Manual reset



2



The following products are sold without coils. These can be bought separately

## Response times

	pneumatic pilot	solenoid pilot
mono-stable	TRA (14): 12 ms TRR (12): 30 ms	TRA (14): 24 ms TRR (12): 50 ms
bi-stable	TRA (14): 20 ms TRR (12): 20 ms	TRA (14): 80 ms TRR (12): 80 ms

## Materials

**Body:** aluminium 11S  
**End caps:** technopolymer  
**Springs:** stainless steel  
**Seals:** NBR  
**Spool:** nickel plated aluminium  
**Internal parts:** brass OT58

Nominal diameter	7.5 mm (0.3 in)		
Temperature range	-15 +60°C (5-140°F)		
Operating pressure	mono-stable internal air supply	bi-stable internal air supply	separate air supply
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure (for separate air supply)	mono-stable		bi-stable
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa		1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa
Fluid	50µ filtered, lubricated or non lubricated air		

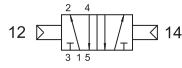
## 152 MC

5/2 pneumatic pilot - spring return



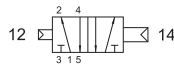
## 152 CC

5/2 double pneumatic pilot



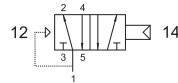
## 152 CCD

5/2 double pneumatic pilot - with differential

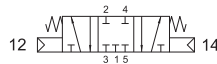


## 152 CFP

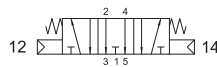
5/2 pneumatic pilot - pneumatic spring return



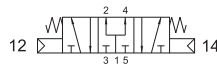
## 153C CC closed centers



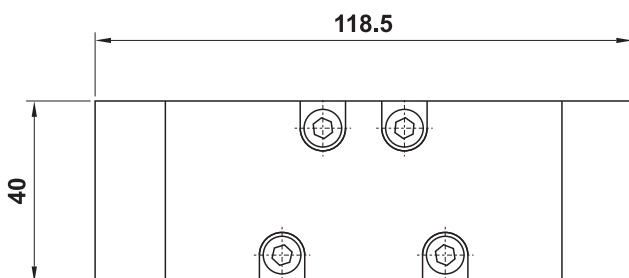
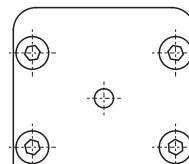
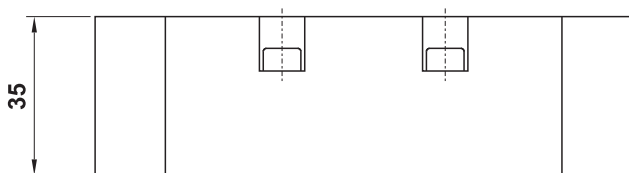
## 153A CC open centers



## 153P CC pressurized centers



5/3 double pneumatic pilot





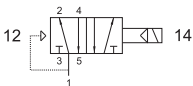
## 152 ME

5/2 solenoid pilot - spring return



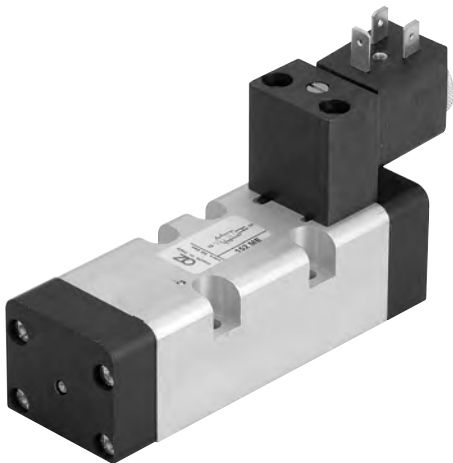
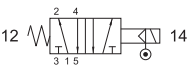
## 152 EFP

5/2 solenoid pilot - pneumatic spring return

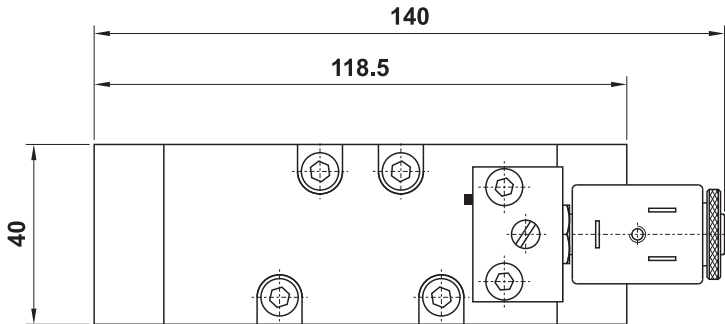
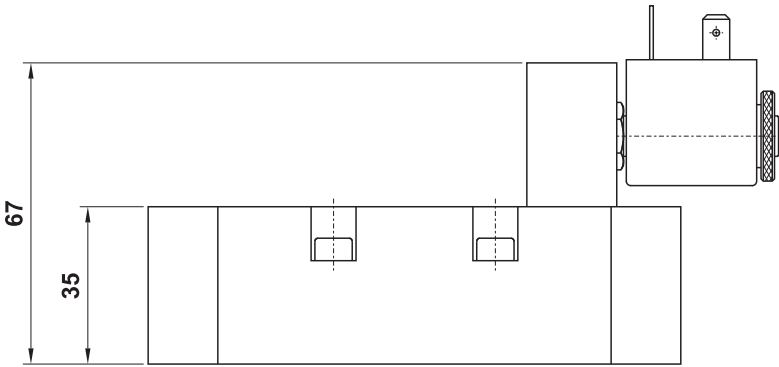
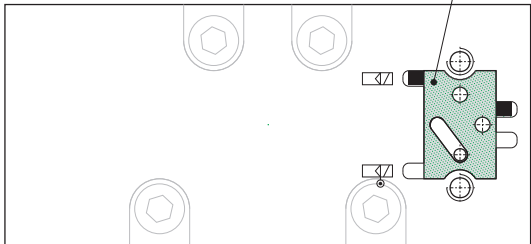


## 152 ME AS

5/2 solenoid pilot with separate air supply - spring return



To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.

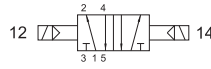


# ISO 5599/1 valves - size 1



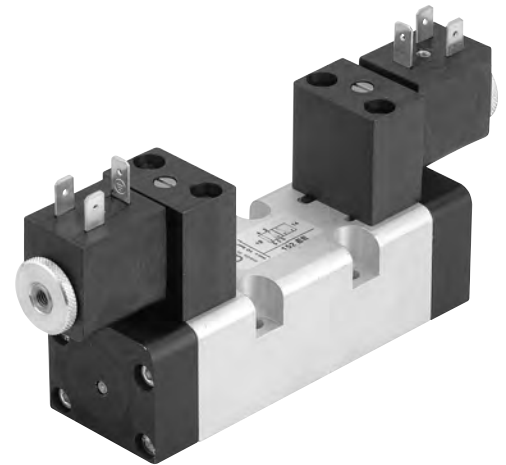
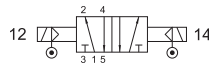
## 152 EE

5/2 double solenoid pilot

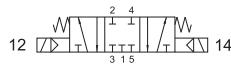


## 152 EE AS

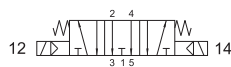
5/2 double solenoid pilot with separate air supply



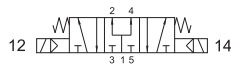
## 153C EE closed centers



## 153A EE open centers

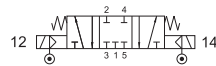


## 153P EE pressurized centers

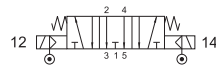


5/3 double solenoid pilot

## 153C EE AS closed centers



## 153A EE AS open centers

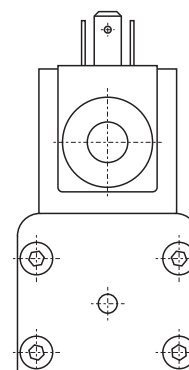
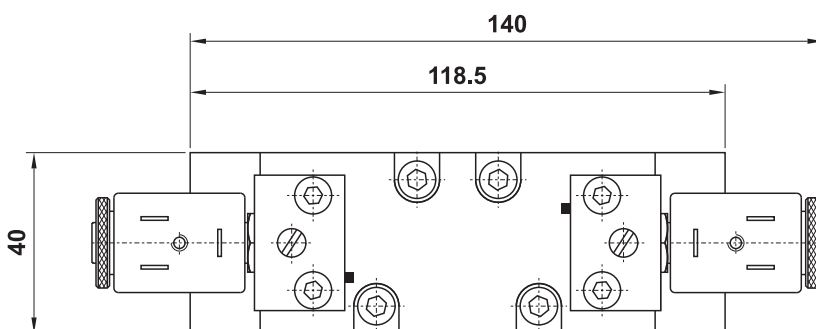
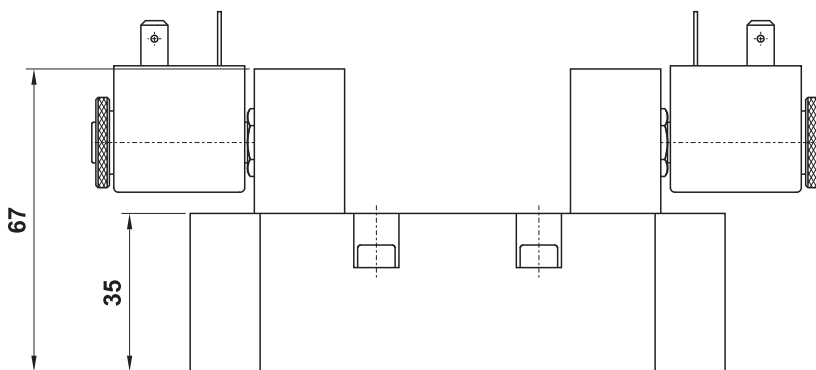
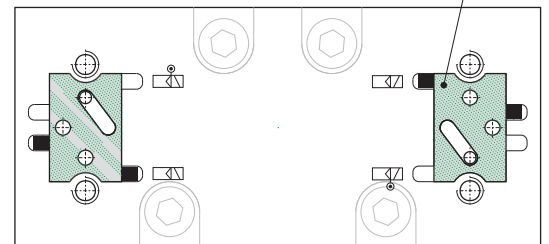


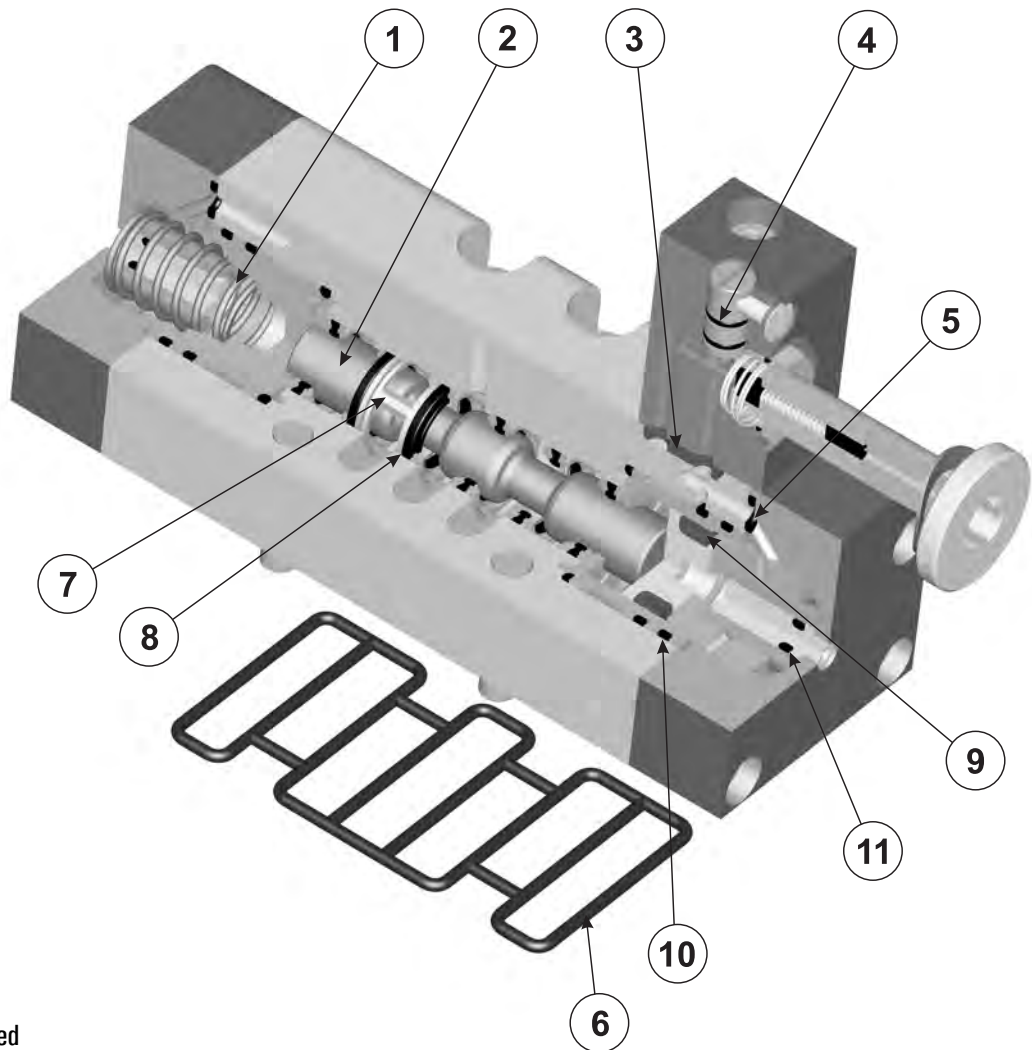
## 153P EE AS pressurized centers



5/3 double solenoid pilot with separate air supply

To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.





- 1. Spring: steel
- 2. Spool: aluminium 11S, nickered
- 3. Multifunction seal: NBR
- 4. O-Ring seal 4x1: NBR
- 5. O-Ring seal: NBR
- 6. Seal for valve body ISO 1: NBR
- 7. Spacer for spool: brass
- 8. Seal for spool: NBR
- 9. DE seal for piston: NBR
- 10. O-Ring seal: NBR
- 11. O-Ring seal: NBR

code of kit	suitable for		
00.048.2	152 CC	152 EE	152 EE AS
	153C CC	153A CC	153P CC
	153C EE	153A EE	153P EE
	153C EE AS	153A EE AS	153P EE AS
00.047.2	152 MC	152 ME	152 ME AS
00.049.2	152 CCD	152 CFP	152 EFP

# 22 mm coils and connectors



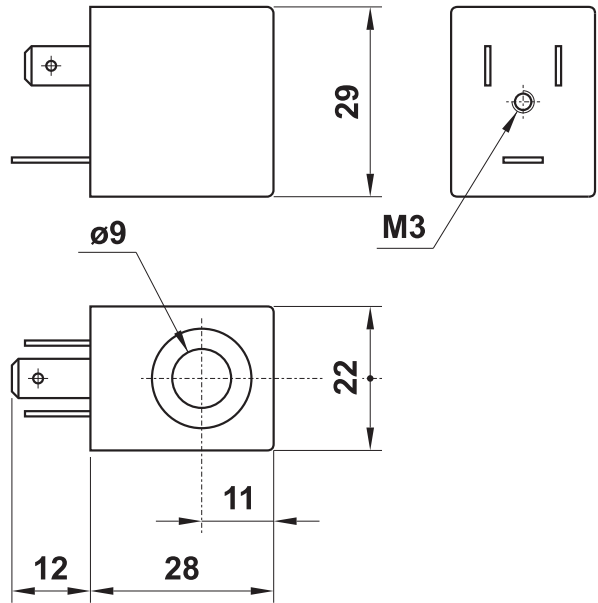
## 22 mm



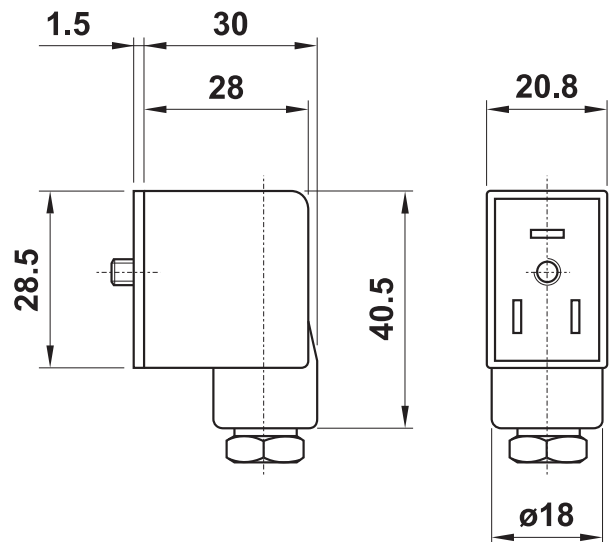
max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%

- low consumption (1.5W) on request

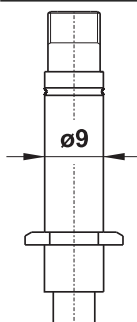
UL Code	tension	power	
		rated	inrush
00.486.0	24V DC	3W	
00.487.0	24V 50/60Hz	5VA	7.5VA
00.488.0	110V 50/60Hz	5VA	7.5VA



code	colour	cable	type
00.197.0	black	PG09	standard
00.344.0	transparent	PG09	with LED 24V
00.345.0	transparent	PG09	with LED 24V and VDR
00.346.0	transparent	PG09	with LED 115V
00.347.0	transparent	PG09	with LED 115V and VDR
00.394.0	transparent	PG09	with LED 230V
00.395.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



aluminium nut and elastic ring

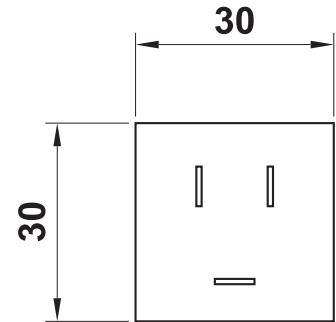
00.125.2

# 30 mm coils and connectors

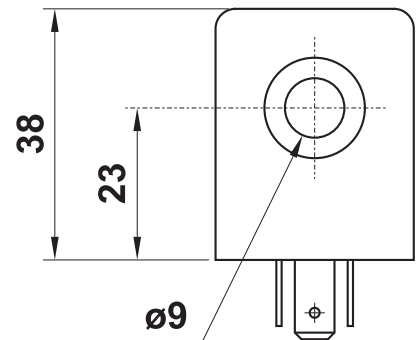


## 30 mm

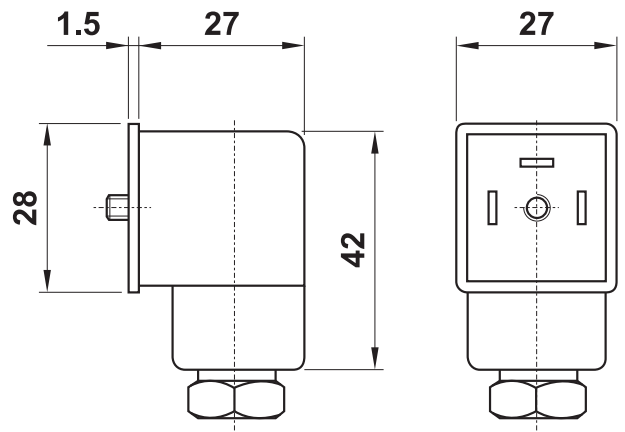
max working temperature	+50°C (122°F)
duty cycle	ED 100%
protection with connector correctly mounted	IP 65
tension tolerance	±10%



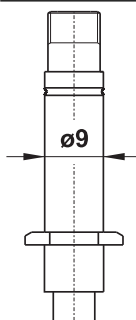
code	tension	power	
		rated	inrush
00.258.0	24V DC	2W	
00.259.0	24V 50/60Hz	5VA	9VA
00.260.0	110V 50/60Hz	5VA	9VA
00.261.0	220V 50/60Hz	5VA	9VA



code	colour	cable	type
00.251.0	black	PG09	standard
00.348.0	transparent	PG09	with LED 24V
00.349.0	transparent	PG09	with LED 24V and VDR
00.350.0	transparent	PG09	with LED 115V
00.351.0	transparent	PG09	with LED 115V and VDR
00.396.0	transparent	PG09	with LED 230V
00.397.0	transparent	PG09	with LED 230V and VDR



### SPARE PARTS



armature for solenoid pilot

N/C : 00.088.0  
N/O : 00.306.0



aluminium nut and elastic ring

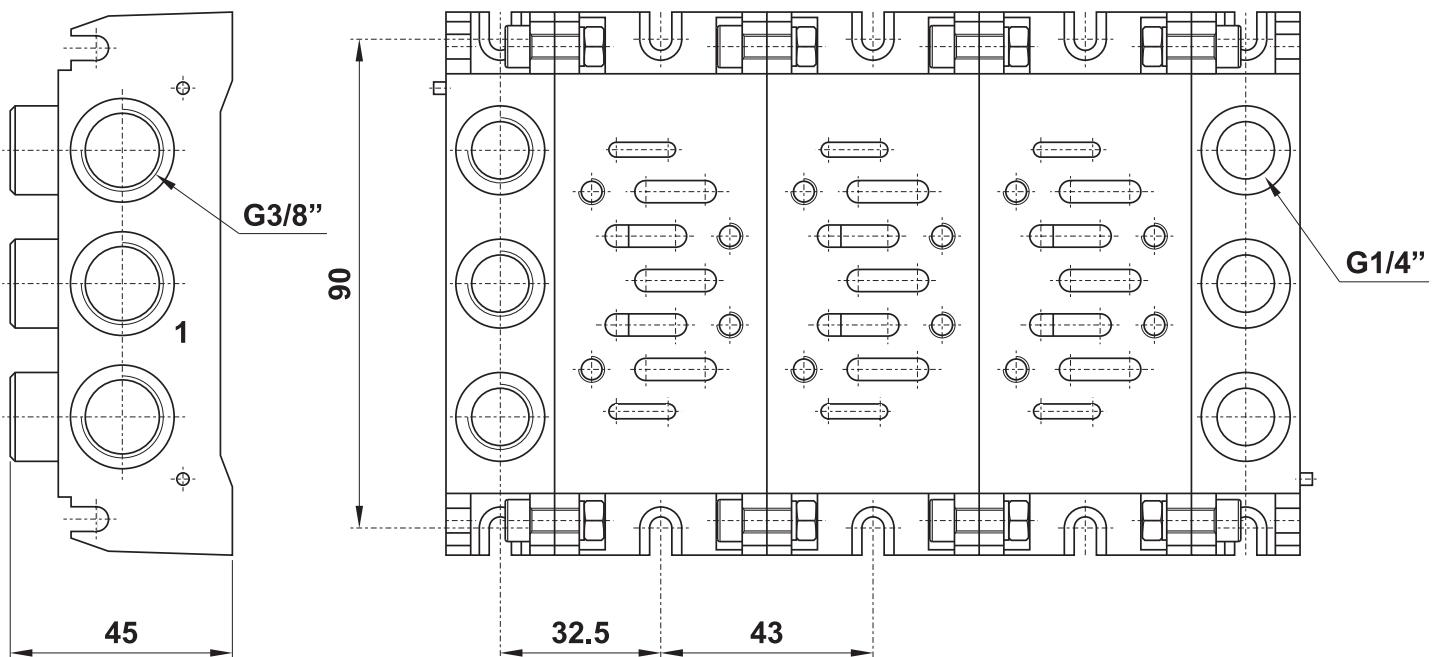
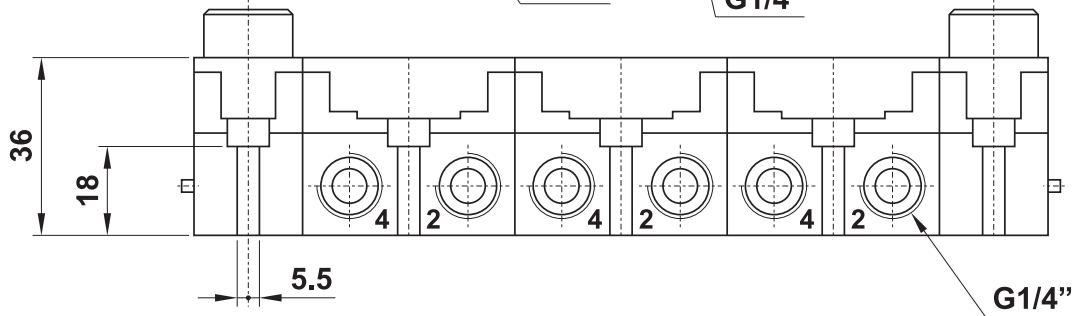
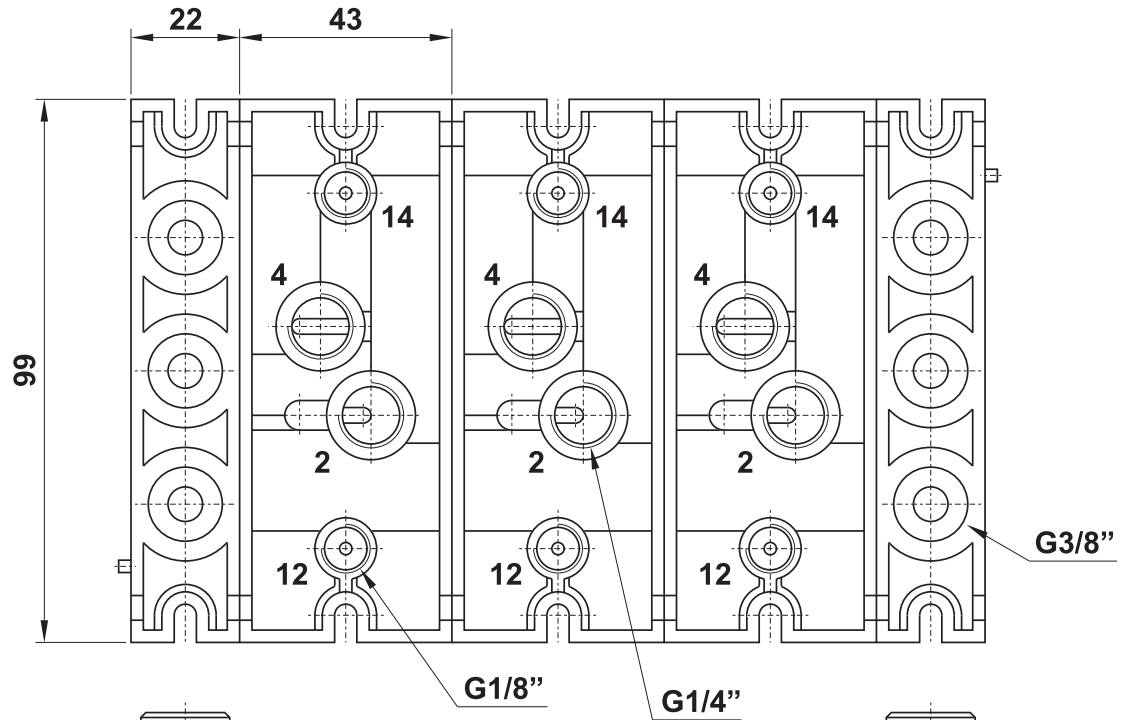
00.125.2



# Multiple sub-bases for ISO 1 valves



2



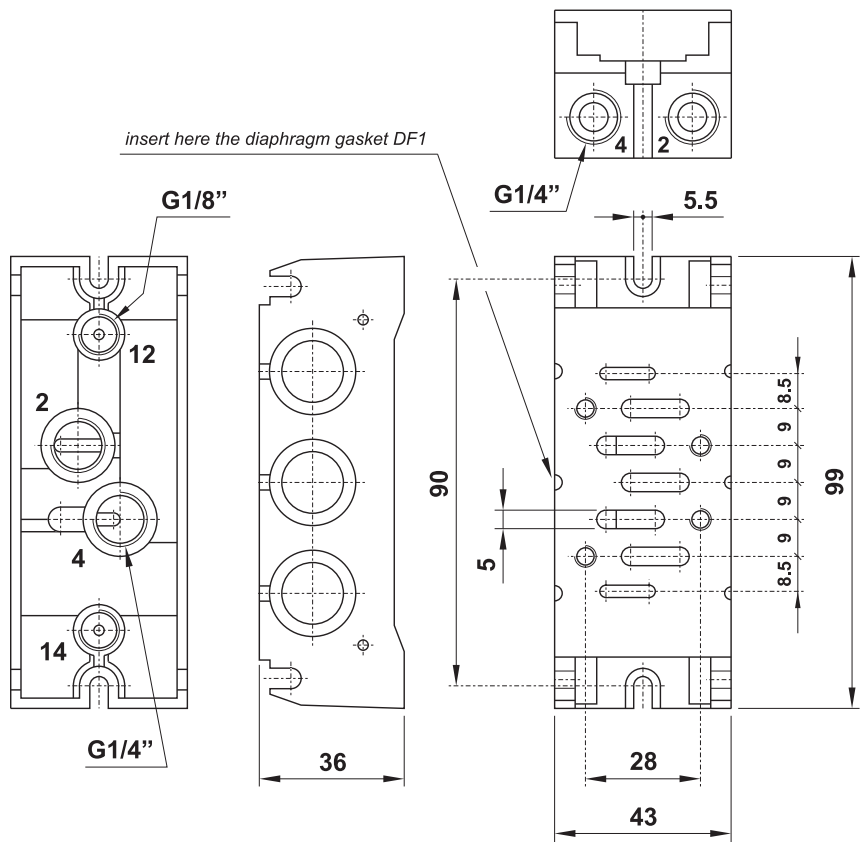
# Multiple sub-bases for ISO 1 valves



## modular sub-base

ORDER CODE

**MLD1**

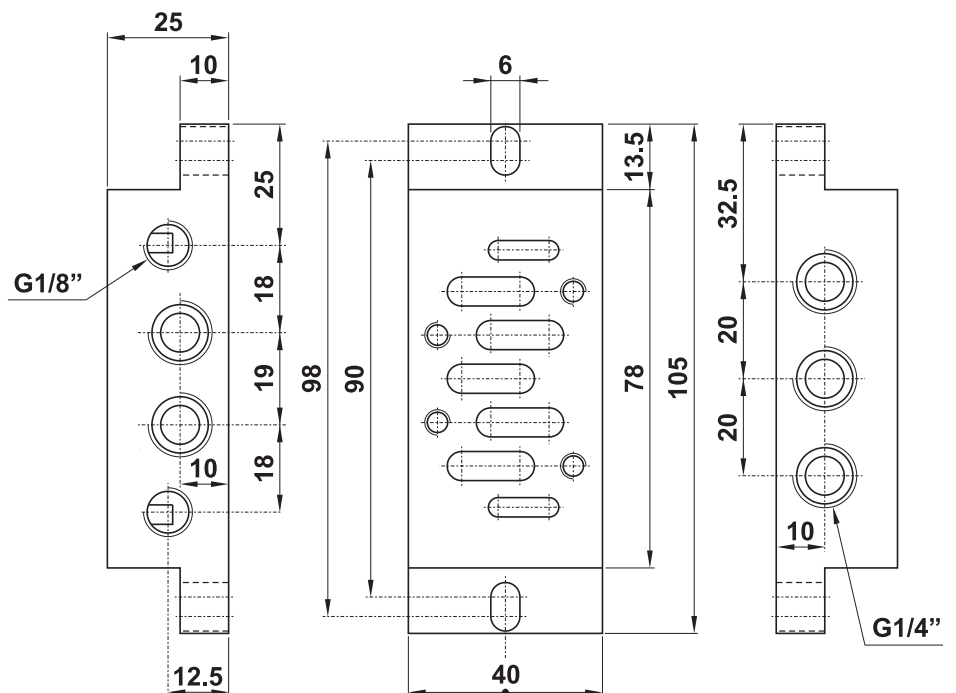


It is sold in kit with all necessary pieces for installation.

## individual sub-base with side entry

ORDER CODE

**SL1**

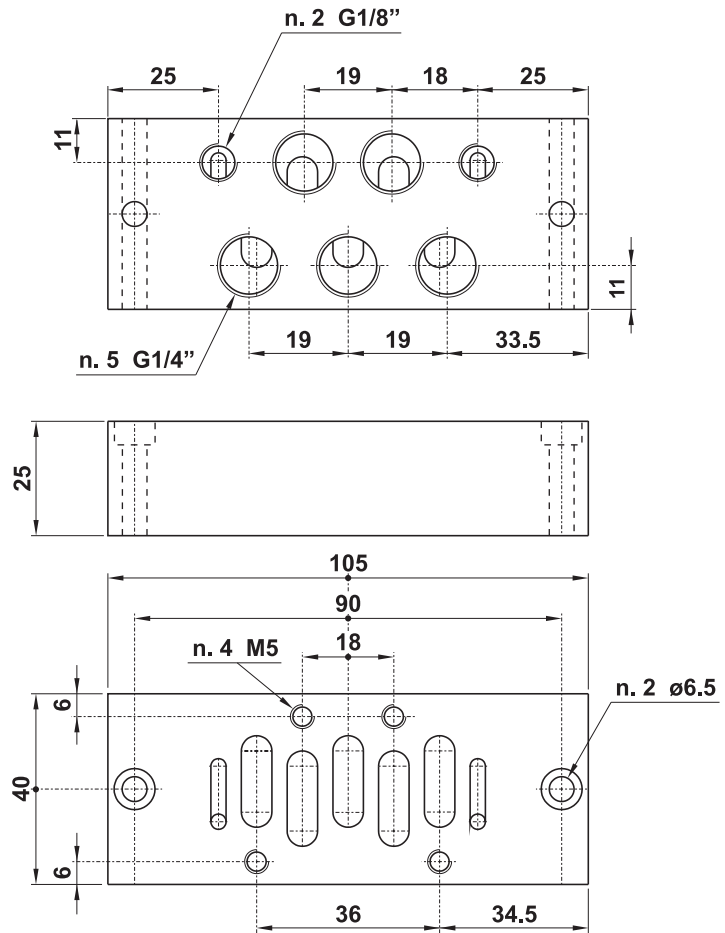


# Multiple sub-bases for ISO 1 valves



## individual sub-base with bottom entry

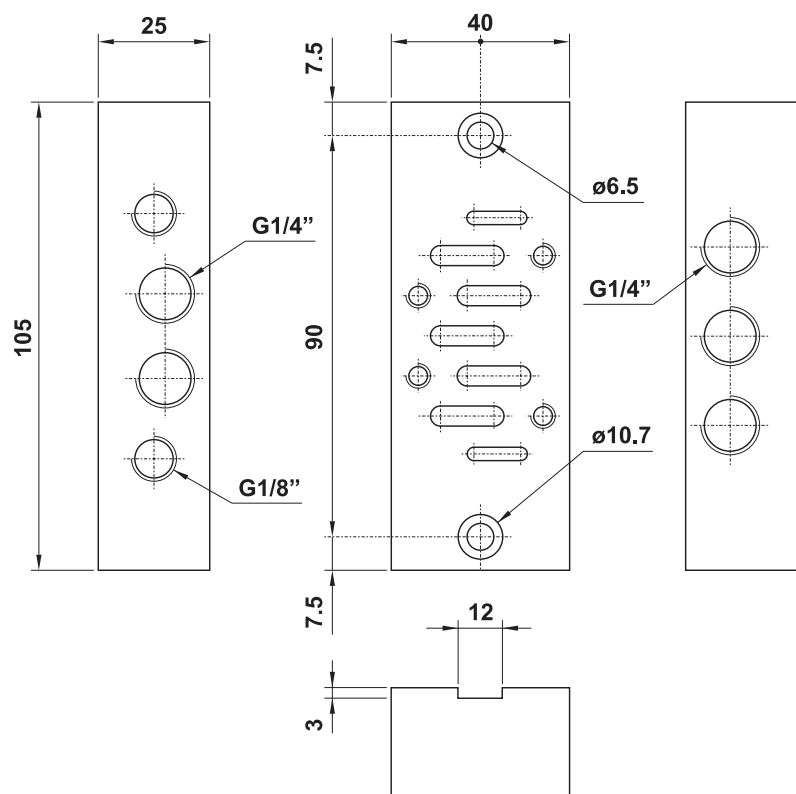
ORDER CODE  
**SLB1**



## individual sub-base with side entry, for assembling on cylinder

ORDER CODE  
**06.001.2**

Version for installation on cylinder ISO 6431. It is sold in kit with all necessary pieces for installation.



# Multiple sub-bases for ISO 1 valves



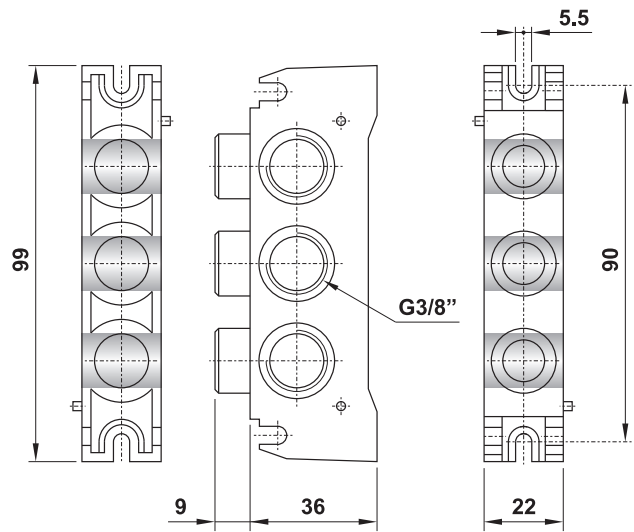
## side entry header

ORDER CODE

TL1



It is sold in kit with all necessary pieces for installation.



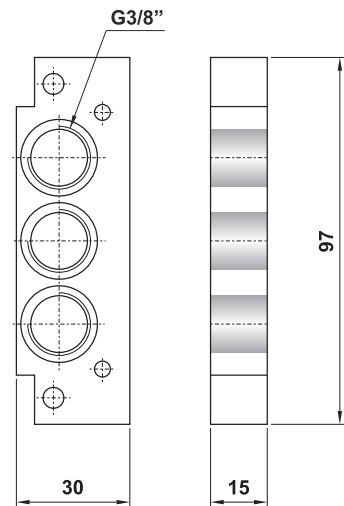
## side entry header

ORDER CODE

TP1



It is sold in kit with all necessary pieces for installation.



## top entry header

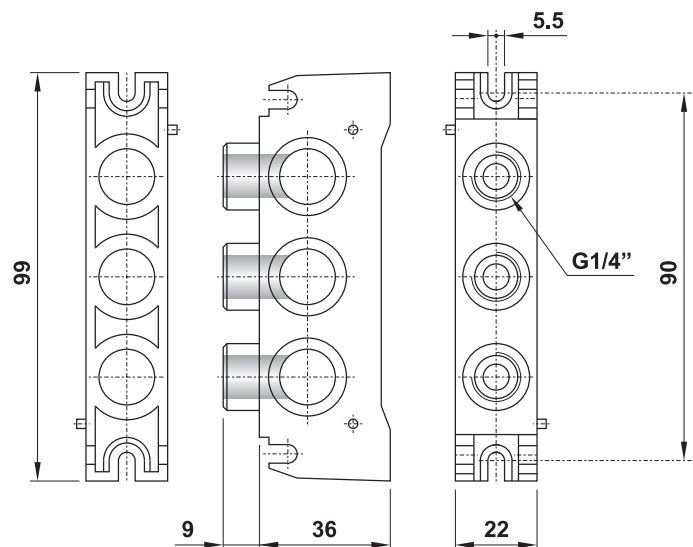
ORDER CODE

TA1

it can be used also as intermediate header



It is sold in kit with all necessary pieces for installation.



# Multiple sub-bases for ISO 1 valves

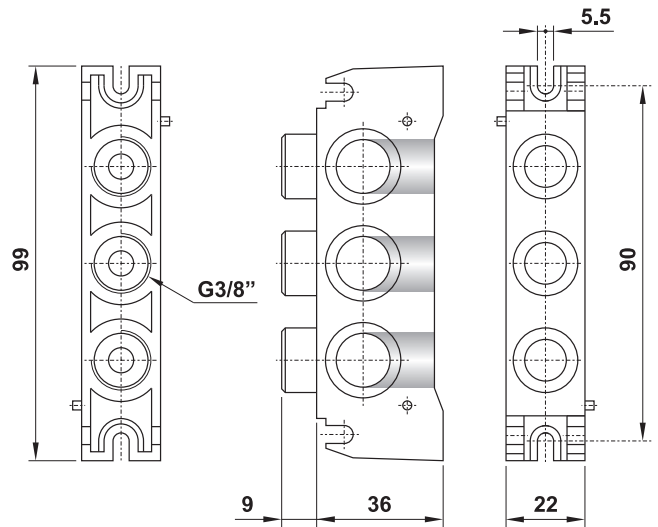


## bottom entry header

ORDER CODE

**TB1**

it can be used also as intermediate header



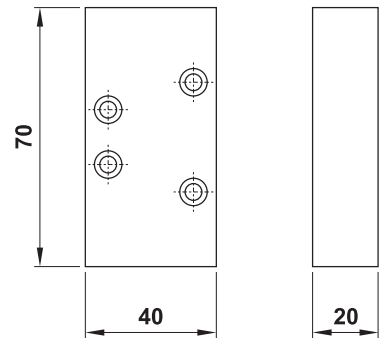
It is sold in kit with all necessary pieces for installation.

## blanking plate

ORDER CODE

**TC1**

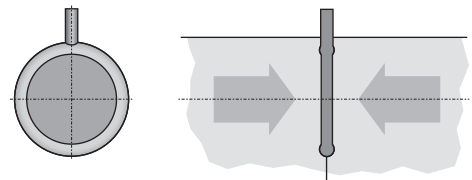
It is sold in kit with all necessary pieces for installation.



## diaphragm gasket

ORDER CODE

**DF1**



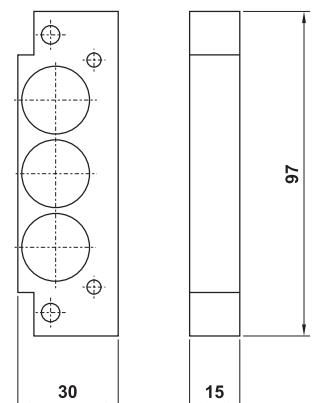
To be inserted between two sub-bases to stop the air flow and divide the manifold into separate zones.

## blind header

ORDER CODE

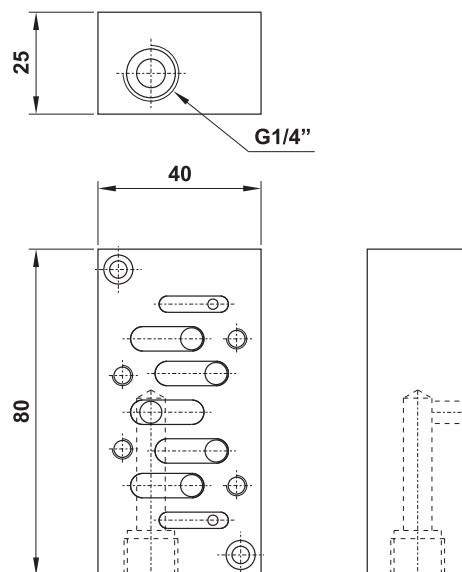
**TPC1**

It is sold in kit with all necessary pieces for installation.



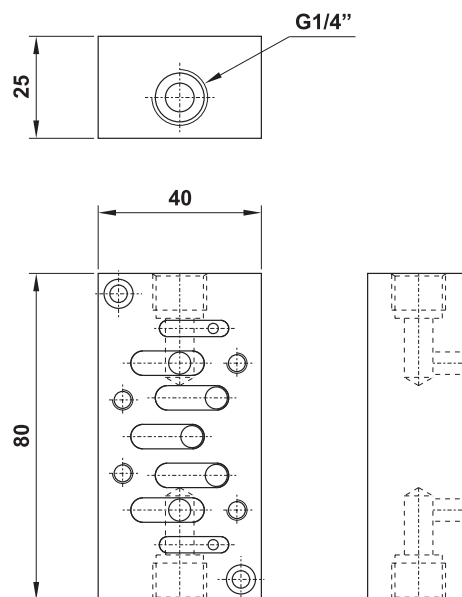
## adapting plate for separate air inlet

00.085.2



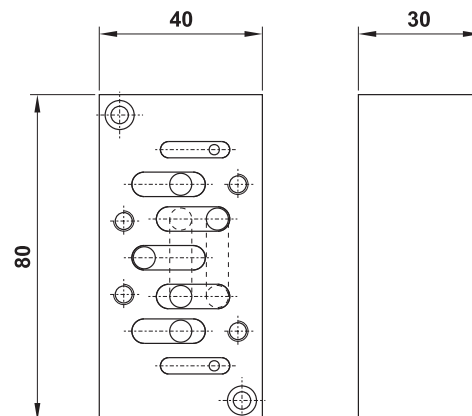
## adapting plate for separate air exhaust

00.086.2



## adapting plate for swapped air outlets

00.087.2

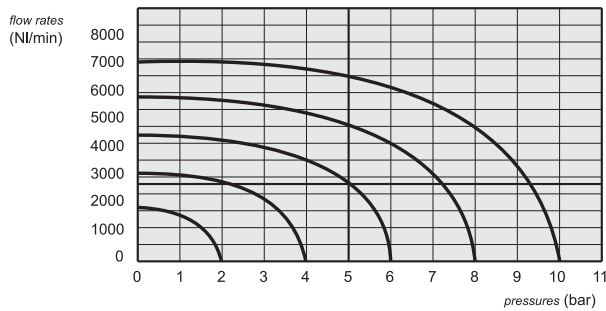
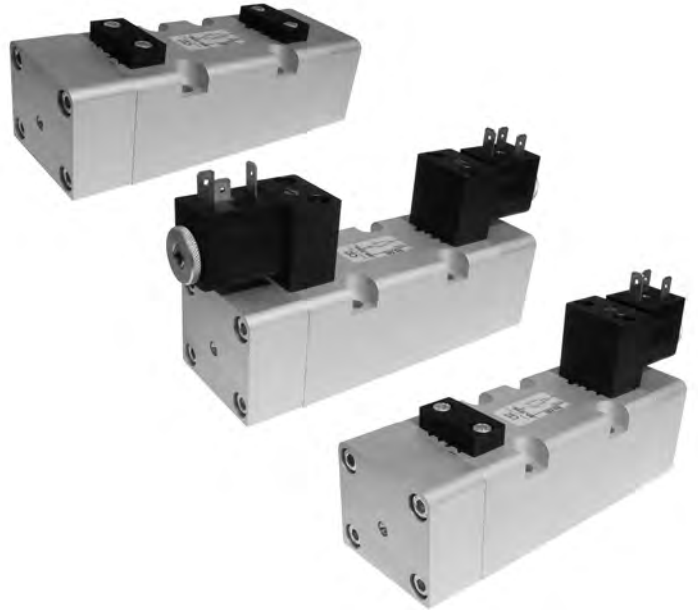


Each element is sold in kit with all necessary pieces for installation.

# ISO 5599/1 valves - size 2



- 5/2-5/3 spool valves
- Installation on multiple sub-bases
- Detented manual override on the solenoid pilot
- Manual reset
- Coils sold separately upon request



The following products are sold without coils. These can be bought separately

## Response times

	pneumatic pilot	solenoid pilot
mono-stable	TRA (14): 24 ms TRR (12): 43 ms	TRA (14): 39 ms TRR (12): 60 ms
bi-stable	TRA (14): 30 ms TRR (12): 30 ms	TRA (14): 90 ms TRR (12): 90 ms

## Materials

**Body:** aluminium 11S  
**Springs:** stainless steel  
**Seals:** NBR  
**Spool:** nickel plated aluminium  
**Internal parts:** brass OT58

Nominal diameter	9 mm (0.4 in)		
Temperature range	-15 +60°C (5-140°F)		
Operating pressure	mono-stable internal air supply	bi-stable internal air supply	separate air supply
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure (for separate air supply)	mono-stable	bi-stable	
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	
Fluid	50µ filtered, lubricated or non lubricated air		

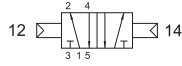
## 252 MC

5/2 pneumatic pilot - spring return



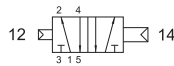
## 252 CC

5/2 double pneumatic pilot



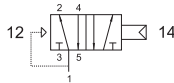
## 252 CCD

5/2 double pneumatic pilot - with differential

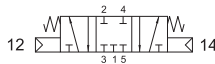


## 252 CFP

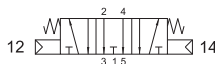
5/2 pneumatic pilot - pneumatic spring return



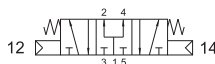
## 253C CC closed centers



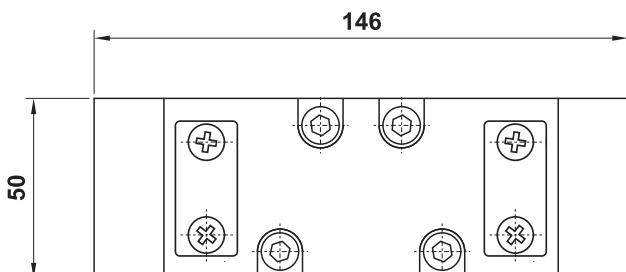
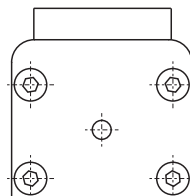
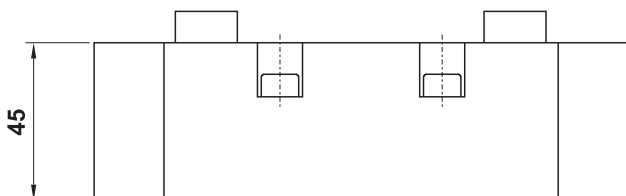
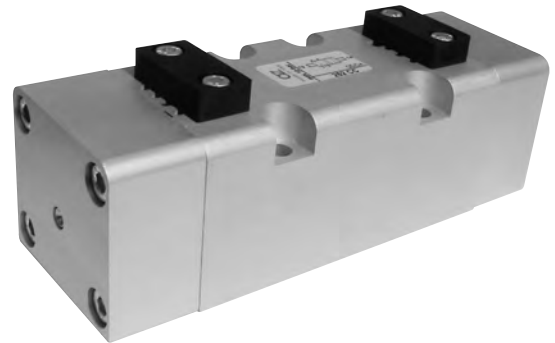
## 253A CC open centers



## 253P CC pressurized centers



5/3 double pneumatic pilot

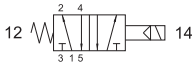






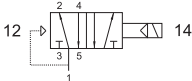
## 252 ME

5/2 solenoid pilot - spring return



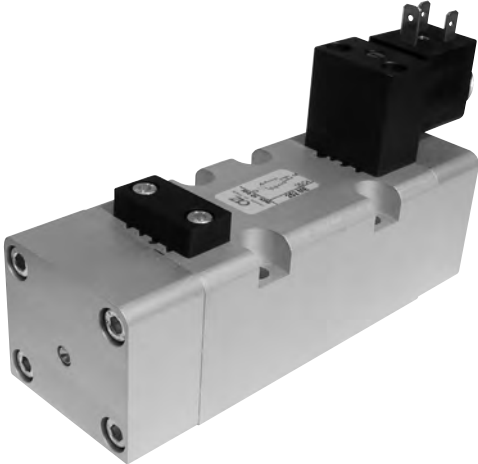
## 252 EFP

5/2 solenoid pilot - pneumatic spring return

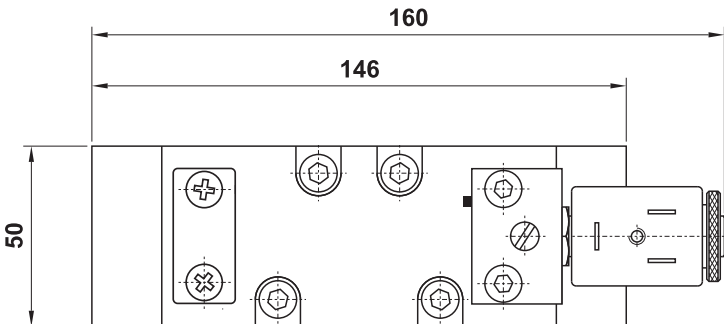
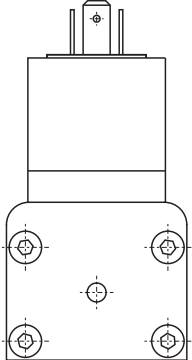
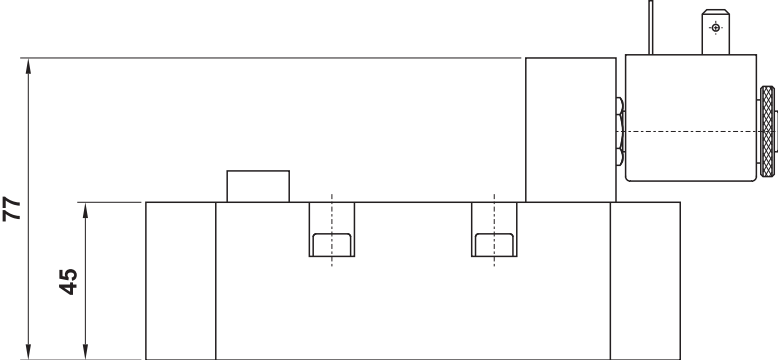
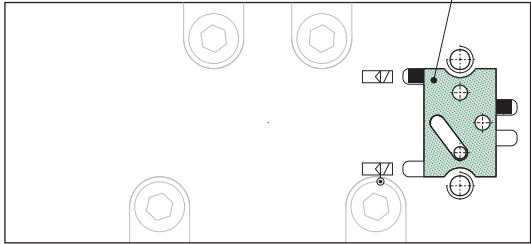


## 252 ME AS

5/2 solenoid pilot with separate air supply - spring return

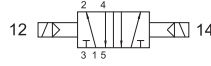


To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.



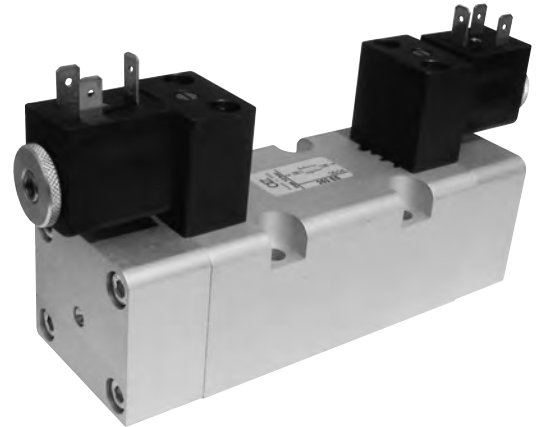
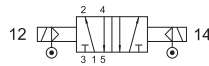
## 252 EE

5/2 double solenoid pilot

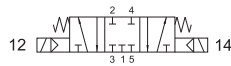


## 252 EE AS

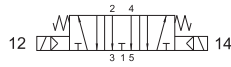
5/2 double solenoid pilot with separate air supply



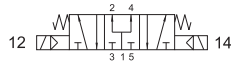
## 253C EE closed centers



## 253A EE open centers

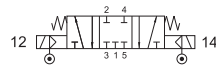


## 253P EE pressurized centers

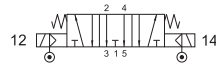


5/3 double solenoid pilot

## 253C EE AS closed centers



## 253A EE AS open centers

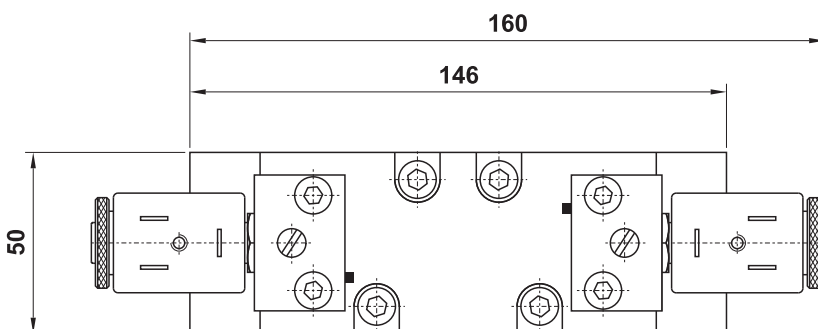
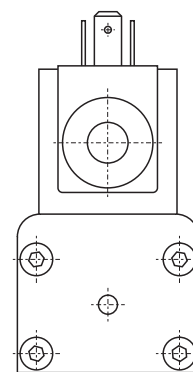
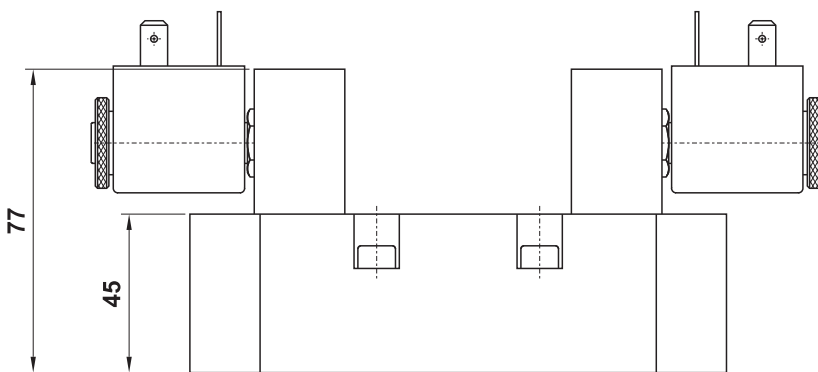
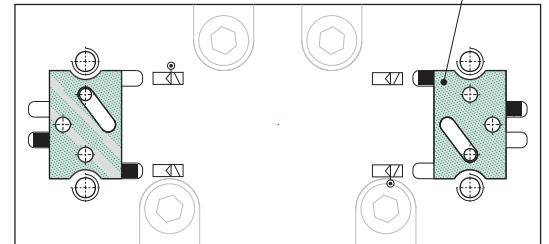


## 253P EE AS pressurized centers



5/3 double solenoid pilot with separate air supply

To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.



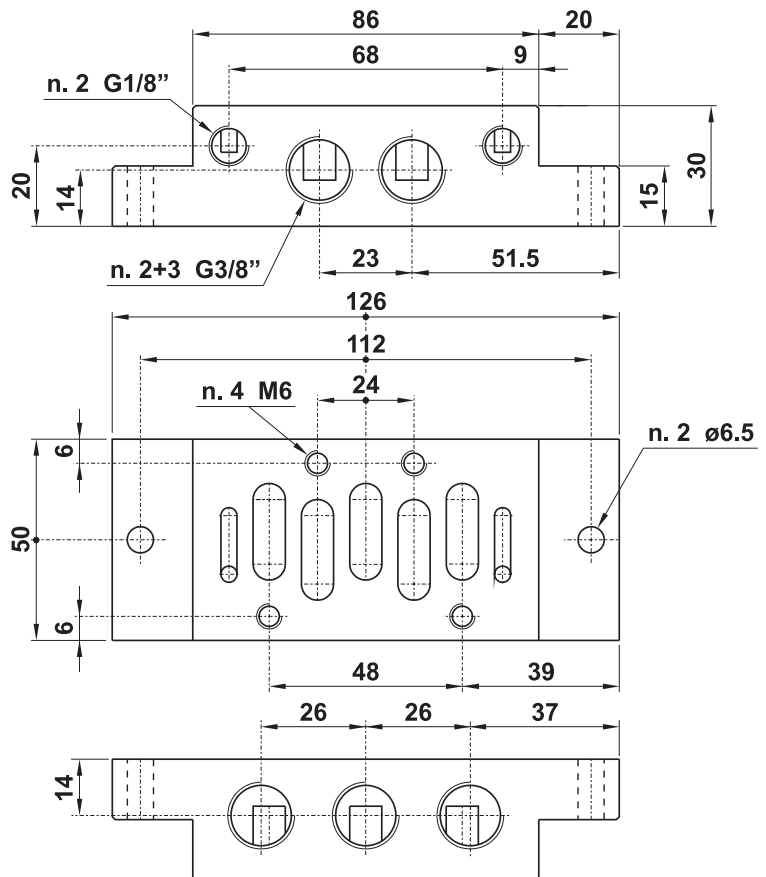
# Sub-bases for ISO 2 valves



## individual sub-base with side entry

ORDER CODE

**SL2**

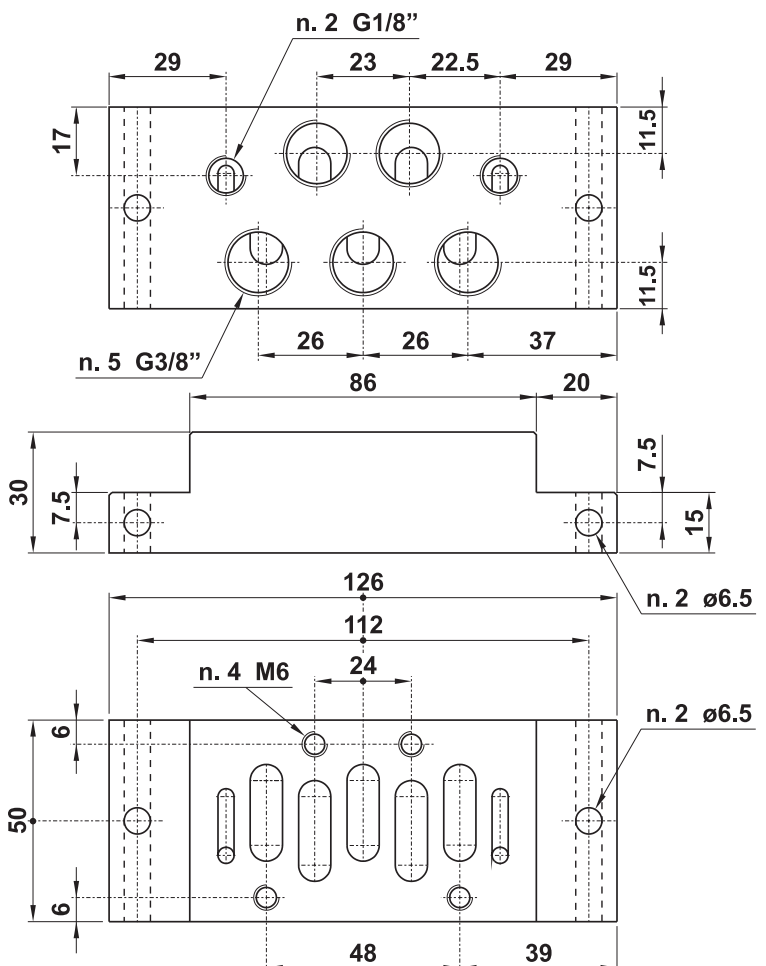


It is sold in kit with all necessary pieces for installation.

## individual sub-base with bottom entry

ORDER CODE

**SLB2**



It is sold in kit with all necessary pieces for installation.

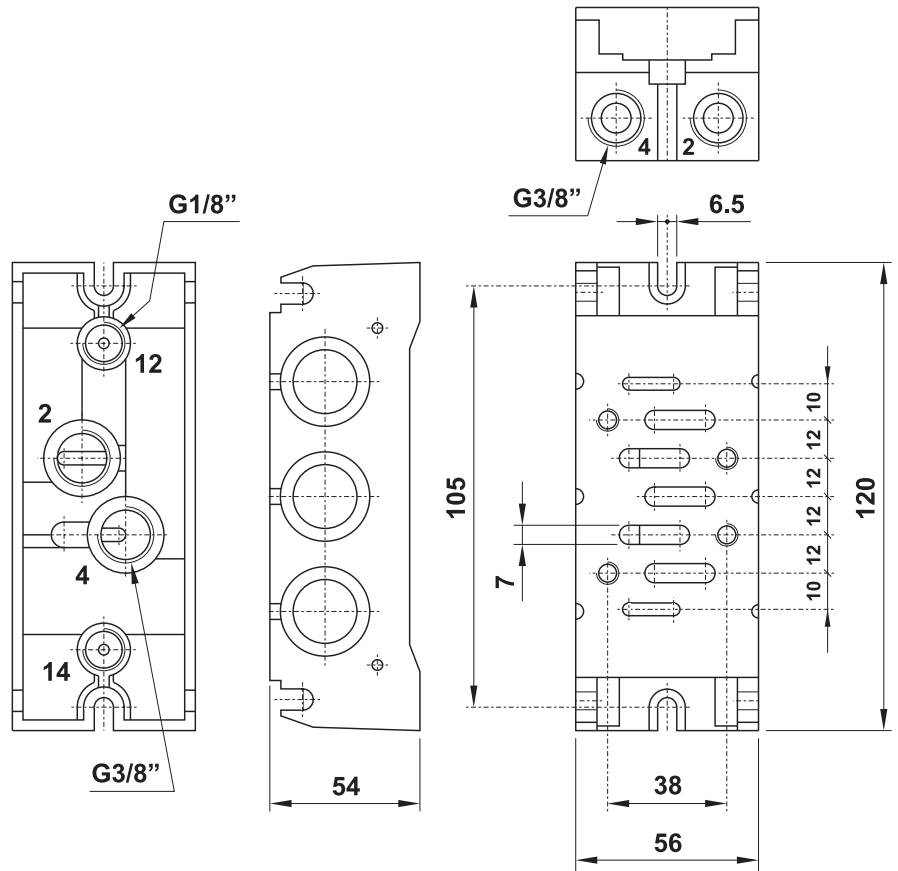
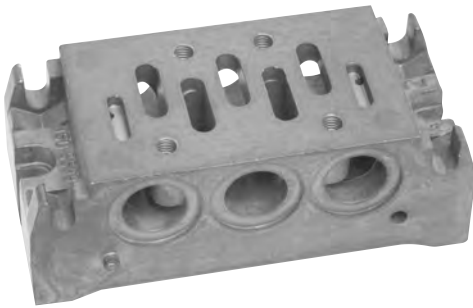
# Multiple sub-bases for ISO 2 valves



## modular sub-base

ORDER CODE

**MLD2**

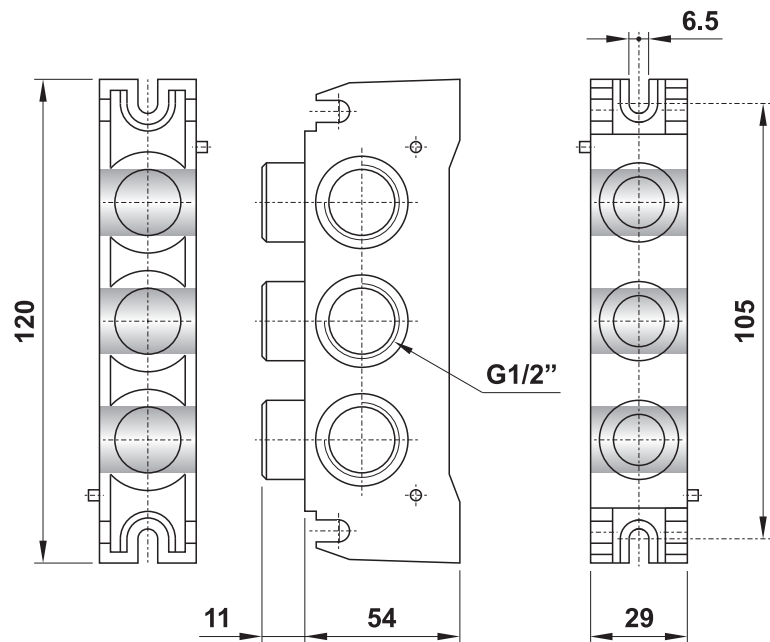
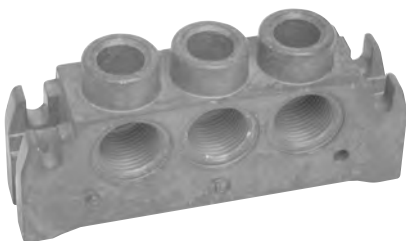


It is sold in kit with all necessary pieces for installation.

## side entry header

ORDER CODE

**TL2**



It is sold in kit with all necessary pieces for installation.

# Multiple sub-bases for ISO 2 valves

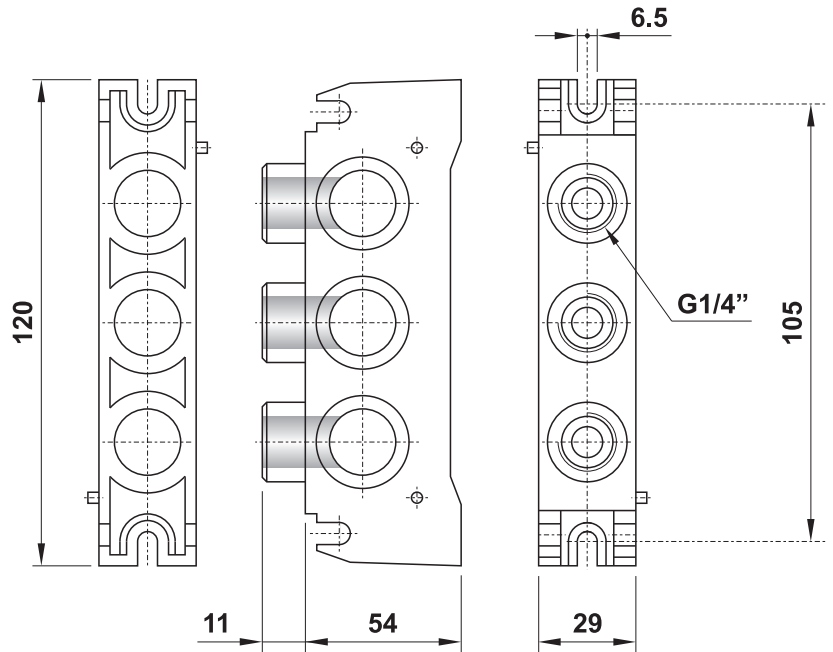


## top entry header

ORDER CODE

TA2

it can be used also as intermediate header



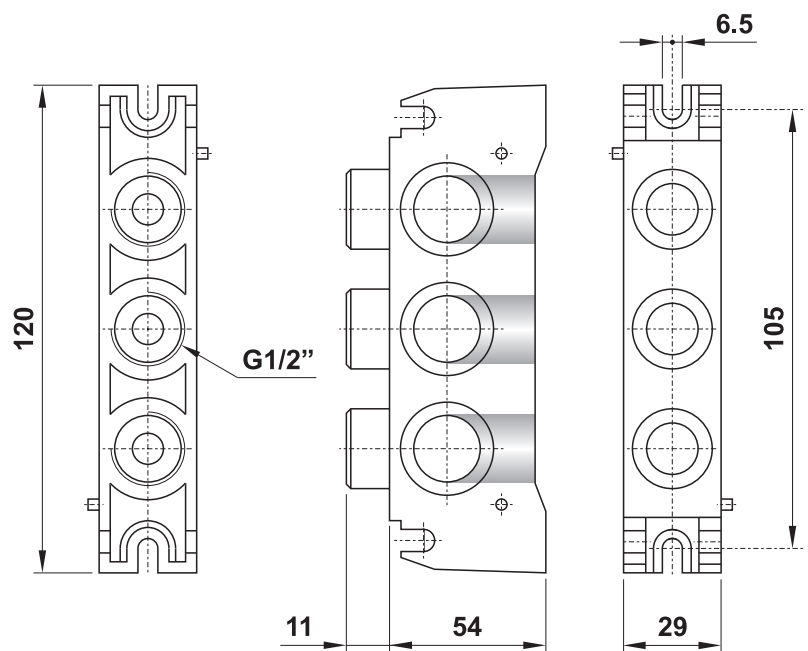
It is sold in kit with all necessary pieces for installation.

## bottom entry header

ORDER CODE

TB2

it can be used also as intermediate header

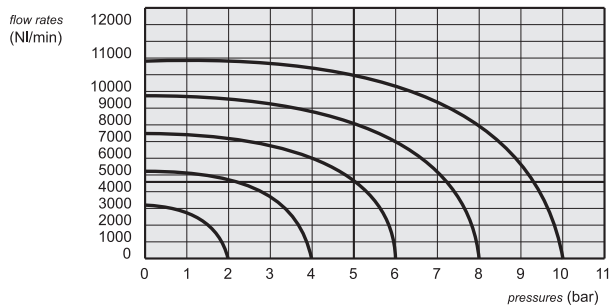
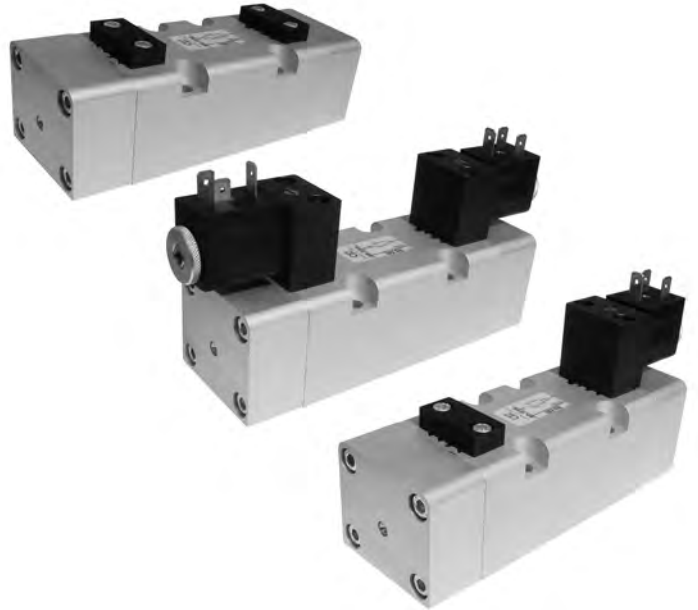


It is sold in kit with all necessary pieces for installation.

# ISO 5599/1 valves - size 3



- 5/2-5/3 spool valves
- Installation on multiple sub-bases
- Detented manual override on the solenoid pilot
- Manual reset
- Coils sold separately upon request



The following products are sold without coils. These can be bought separately

## Response times

	pneumatic pilot	solenoid pilot
mono-stable	TRA (14): 24 ms TRR (12): 43 ms	TRA (14): 39 ms TRR (12): 60 ms
bi-stable	TRA (14): 30 ms TRR (12): 30 ms	TRA (14): 90 ms TRR (12): 90 ms

## Materials

**Body:** aluminium 11S  
**Springs:** stainless steel  
**Seals:** NBR  
**Spool:** nickel plated aluminium  
**Internal parts:** brass OT58

Nominal diameter	13 mm (0.5 in)		
Nominal flow rate at 6 bar (87 PSI), $\Delta p$ 1 bar (14 PSI)	4600 NI/min (4.87 Cv)		
Temperature range	-15 +60°C (5-140°F)		
Operating pressure	mono-stable internal air supply	bi-stable internal air supply	separate air supply
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	-0.9 ... 10 bar (Vacuum ... 145 PSI) -0.09 ... 1 MPa
Actuating pressure (for separate air supply)	mono-stable	bi-stable	
	2.5 ... 10 bar (36 ... 145 PSI) 0.25 ... 1 MPa	1 ... 10 bar (14 ... 145 PSI) 0.1 ... 1 MPa	
Fluid	50 $\mu$ filtered, lubricated or non lubricated air		

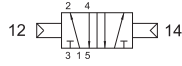
## 352 MC

5/2 pneumatic pilot - spring return



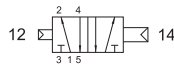
## 352 CC

5/2 double pneumatic pilot



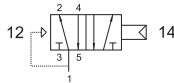
## 352 CCD

5/2 double pneumatic pilot - with differential

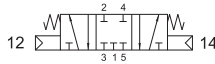


## 352 CFP

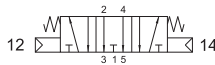
5/2 pneumatic pilot - pneumatic spring return



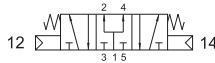
## 353C CC closed centers



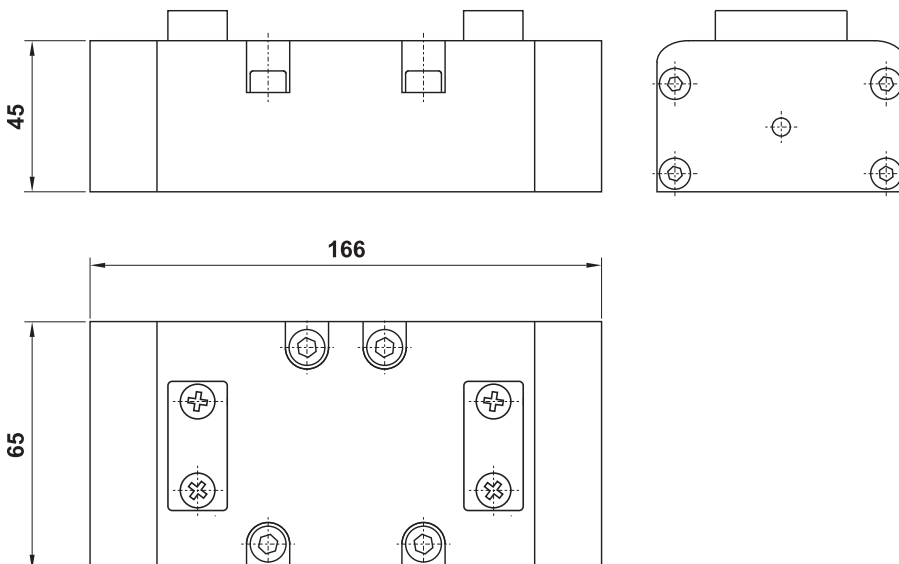
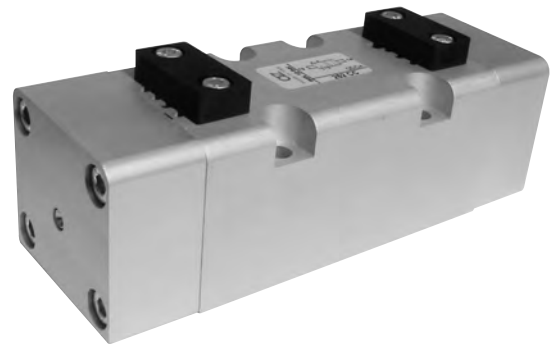
## 353A CC open centers



## 353P CC pressurized centers

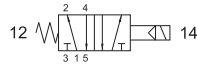


5/3 double pneumatic pilot



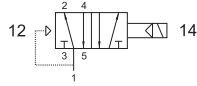
## 352 ME

5/2 solenoid pilot - spring return



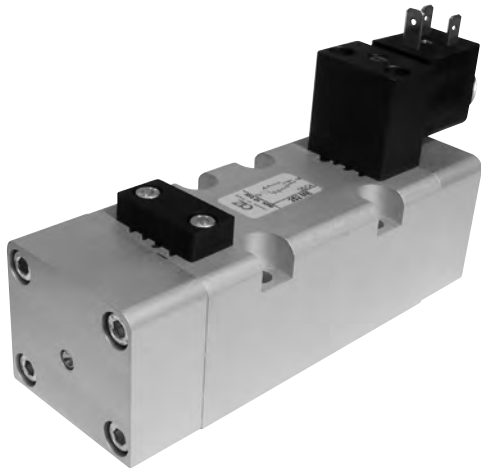
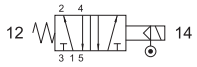
## 352 EFP

5/2 solenoid pilot - pneumatic spring return

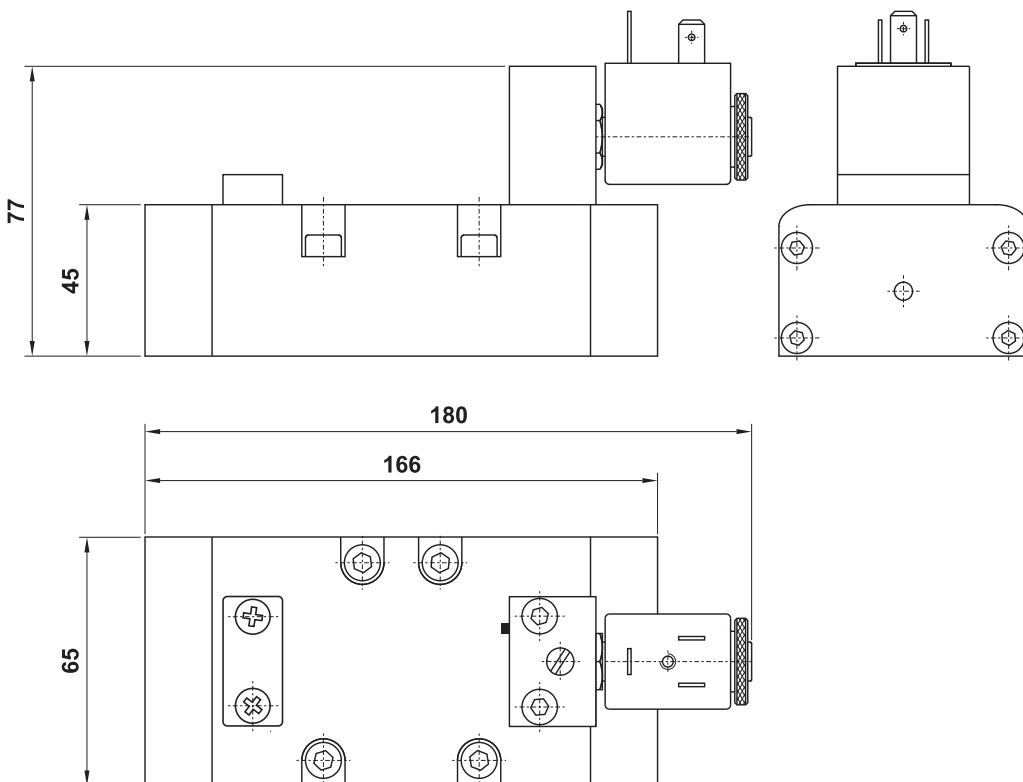
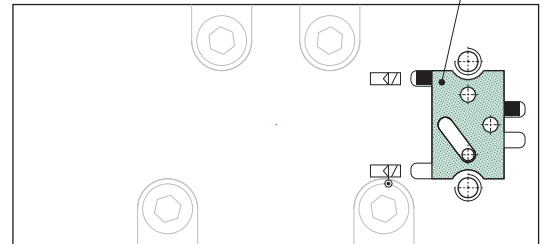


## 352 ME AS

5/2 solenoid pilot with separate air supply - spring return



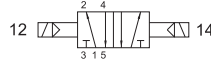
To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.





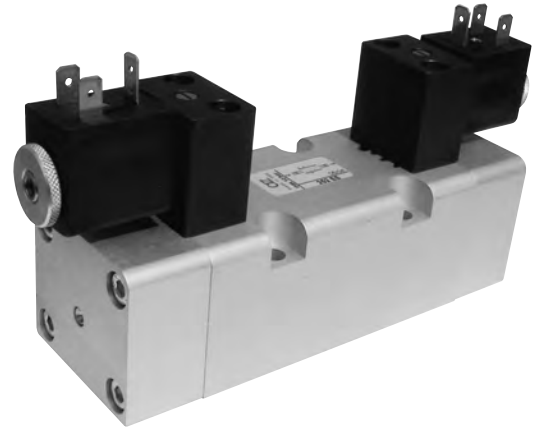
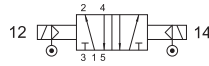
## 352 EE

5/2 double solenoid pilot

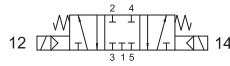


## 352 EE AS

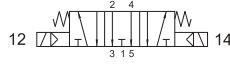
5/2 double solenoid pilot with separate air supply



## 353C EE closed centers



## 353A EE open centers

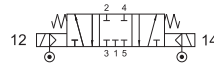


## 353P EE pressurized centers

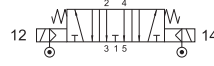


5/3 double solenoid pilot

## 353C EE AS closed centers



## 353A EE AS open centers

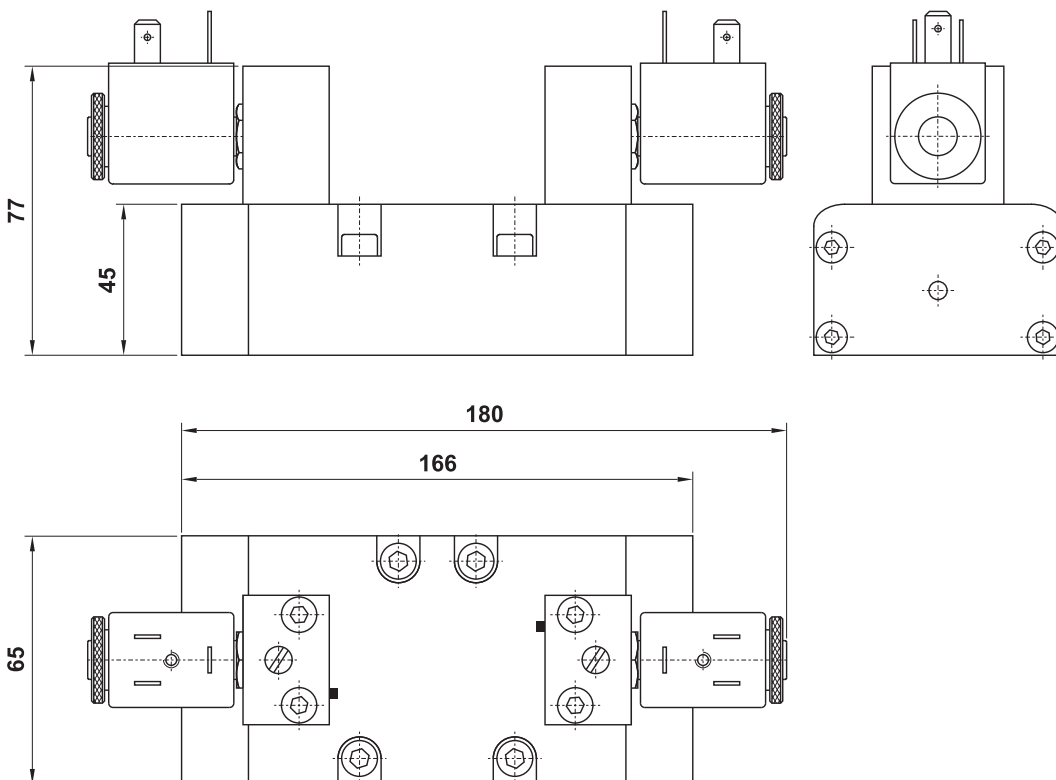
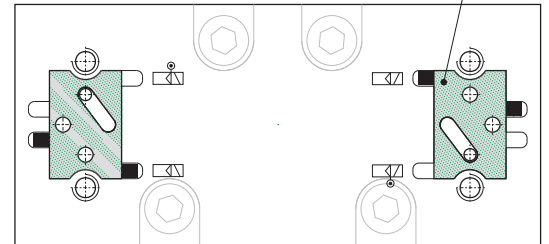


## 353P EE AS pressurized centers



5/3 double solenoid pilot with separate air supply

To change between internal and external air supply it is necessary to align the seal end marked in black with the correct symbol.



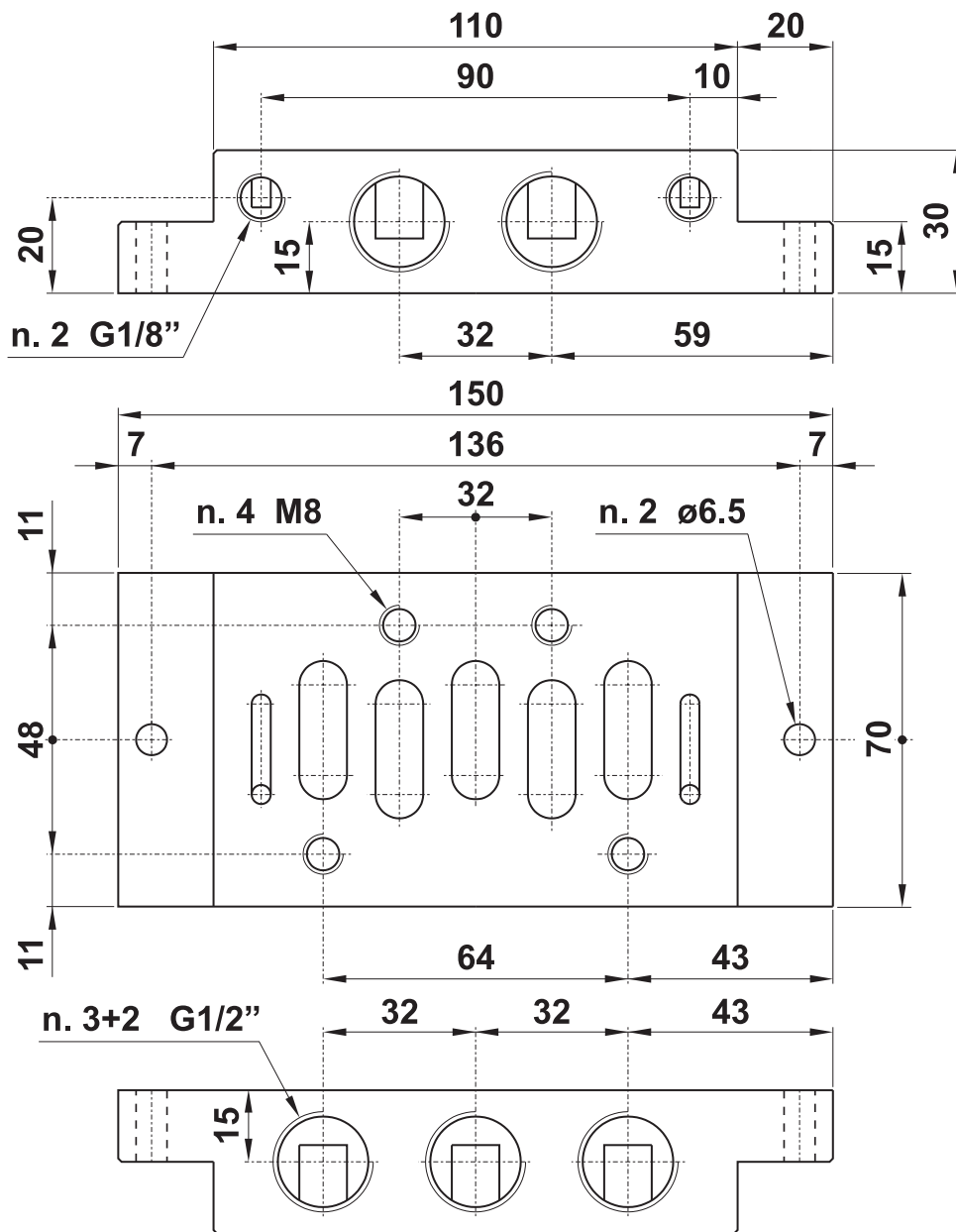
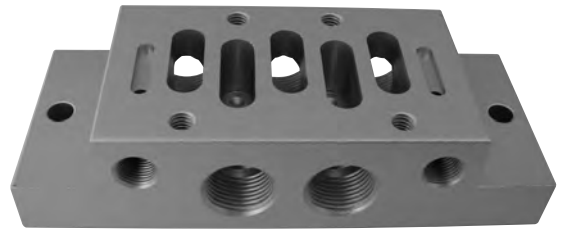
# Sub-bases for ISO 3 valves



## individual sub-base with side entry

ORDER CODE

SL3



It is sold in kit with all necessary pieces for installation.

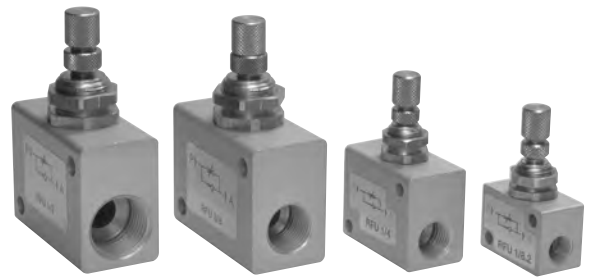


	page
• Flow regulators .....	302
• Pneumatically piloted stop valves .....	306
• Quick exhaust valves .....	309
• Non-return valves .....	310
• Air presence spy .....	313
• Logic elements .....	316
• Logic elements for interface .....	317
• Signal amplifier .....	322
• Distribution manifolds .....	327
• Shut-off slide valves .....	330

# Flow regulators



- Uni-directional and bi-directional flow regulators
- Threaded ports from M5 to 1/2" NPT
- In-line or panel mounting
- Version for precision regulation



## Materials

Body: aluminium 11S

Spring: stainless steel

Seals: NBR

Internal parts: brass OT58

## Uni-directional flow regulators

Model		RFU M5	USRFU 1/8.1	USRFU 1/8.2 USRFUM 1/8	USRFU 1/8.3	USRFU 1/4 USRFUM 1/4	USRFU 3/8	USRFU 1/2	USRFP 1/8.2	
Ports		M5	1/8" NPT	1/8" NPT	1/8" NPT	1/4" NPT	3/8" NPT	1/2" NPT	1/8" NPT	
Nominal diameter	1-2	1.2 mm	1.2 mm	2 mm	3.2 mm	3.5 mm	7 mm	7 mm	2 mm	
	2-1	2.2 mm	4.2 mm	4.2 mm	4.2 mm	6.5 mm	10 mm	11 mm	4.2 mm	
Nominal flow rate at 6 bar (87 PSI)	1-2	60 NI/min (0.06 Cv) 130 NI/min (0.14 Cv)	60 NI/min (0.06 Cv) 450 NI/min (0.48 Cv)	120 NI/min (0.13 Cv) 450 NI/min (0.48 Cv)	210 NI/min (0.22 Cv) 450 NI/min (0.48 Cv)	300 NI/min (0.32 Cv) 600 NI/min (0.63 Cv)	600 NI/min (0.63 Cv) 1100 NI/min (1.16 Cv)	600 NI/min (0.63 Cv) 1400 NI/min (1.48 Cv)	120 NI/min (0.13 Cv) 450 NI/min (0.48 Cv)	
	2-1									
Temperature range		-15 + 60°C (5-140°F)								
Working pressure		2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa							0.5 ... 10 bar (7 ... 145 PSI) 0.05 ... 1 MPa	
Fluid		50µ filtered, lubricated or non lubricated air								

## Bi-directional flow regulators

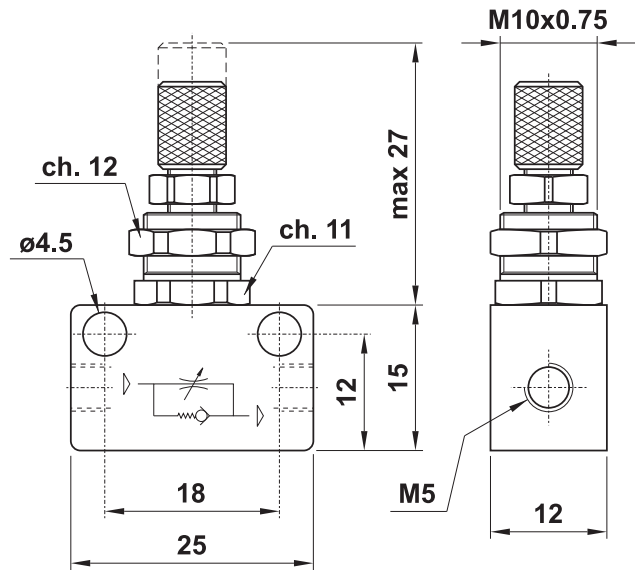
Model	RFB M5	USRFB 1/8	USRFB 1/4	USRFB 3/8	USRFB 1/2
Ports	M5	1/8" NPT	1/4" NPT	3/8" NPT	1/2" NPT
Nominal diameter	1.2 mm	3.2 mm	3.5 mm	7 mm	7 mm
Nominal flow rate at 6 bar (87 PSI)	60 NI/min (0.06 Cv)	210 NI/min (0.22 Cv)	300 NI/min (0.32 Cv)	500 NI/min (0.53 Cv)	500 NI/min (0.53 Cv)
Temperature range		-15 + 60°C (5-140°F)			
Operating pressure		max 10 bar (145 PSI) max 1 MPa			
Fluid		50µ filtered, lubricated or non lubricated air			

# Uni-directional flow regulators

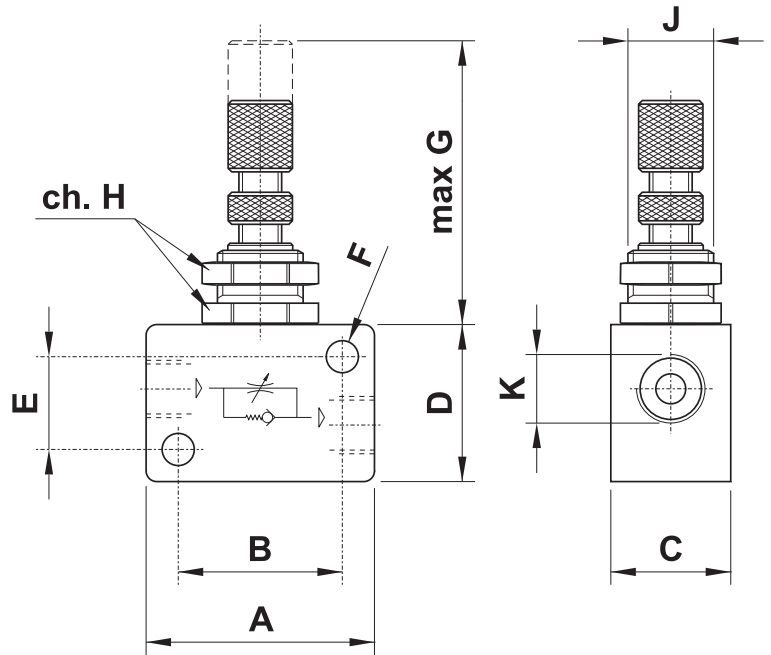


M5

RFU M5



1/8" NPT  
1/4" NPT  
3/8" NPT  
1/2" NPT



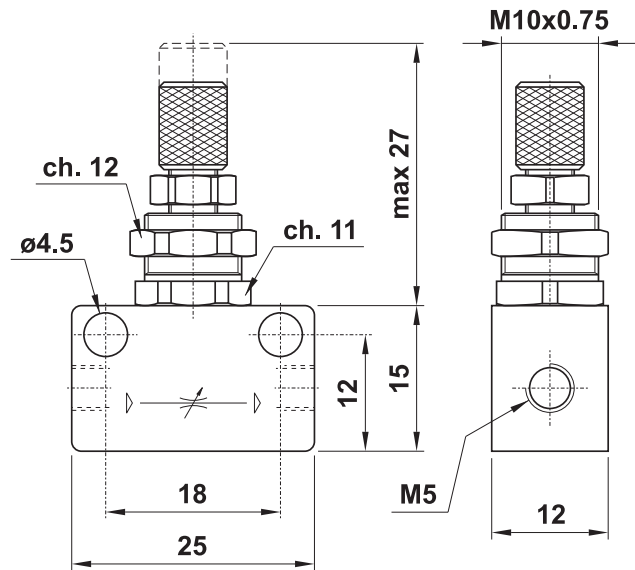
Model	A	B	C	D	E	F	G	H	J	K
USRFU 1/8.1 USRFU 1/8.2 USRFU 1/8.3	32	23	16.8	22	13	$\phi 4.5$	35	15	M12x0.75	1/8" NPT
USRFU 1/4	40	30	22	32	22	$\phi 4.5$	35	15	M12x0.75	1/4" NPT
USRFU 3/8	56	43	27	42	27	$\phi 6.5$	43	24	M18x1	3/8" NPT
USRFU 1/2	56	43	27	42	27	$\phi 6.5$	43	24	M18x1	1/2" NPT

# Bi-directional flow regulators

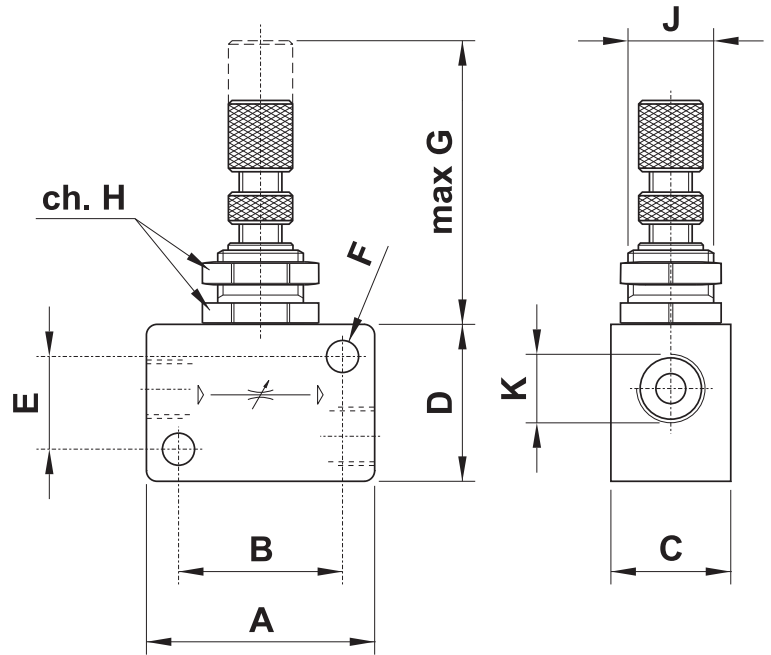


M5

USRFB M5



1/8" NPT  
1/4" NPT  
3/8" NPT  
1/2" NPT

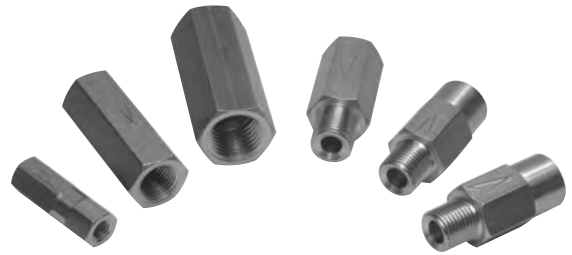


Model	A	B	C	D	E	F	G	H	J	K
USRFB 1/8	32	23	16.8	22	13	$\phi 4.5$	35	15	M12x0.75	1/8" NPT
USRFB 1/4	40	30	22	32	22	$\phi 4.5$	35	15	M12x0.75	1/4" NPT
USRFB 3/8	56	43	27	42	27	$\phi 6.5$	43	24	M18x1	3/8" NPT
USRFB 1/2	56	43	27	42	27	$\phi 6.5$	43	24	M18x1	1/2" NPT

# Check Valves



- Threaded ports female-female and male-female
- From M5 to 1/4" NPT
- Nickel plated valve body on request
- Viton seals for higher temperatures



3

## Materials

Body: brass OT58

Spring: stainless steel

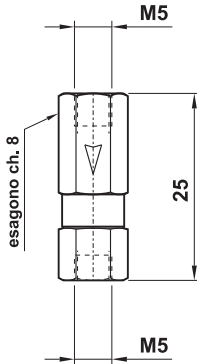
Seals: NBR

Internal parts: brass OT58

Model	USVNR 1/8 FF	USVNR 1/4 FF	VNR M5 FF	
Ports	1/8" NPT	1/4" NPT	M5	
Nominal orifice	5.2 mm	7 mm	2.2 mm	
Nominal flow rate at 6 bar (87 PSI)	500 NI/min (0.53 Cv)	900 NI/min (0.95 Cv)	100 NI/min (0.10 Cv)	
Temperature range	-15+60°C (5-140°F) VITON: max +110°C (230°F)			
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa			
Fluid	50µ filtered, lubricated or non lubricated air			

## VNR M5 FF

check valve female-female M5



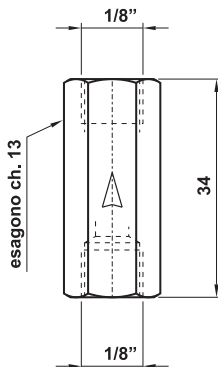
### Available versions

code	description
<b>11.010.4</b>	<b>standard:</b> valve body in brass, seals in NBR
<b>11.011.4</b>	valve body in brass, seals in NBR, without spring
<b>11.024.4</b>	valve body in nickel plated brass, seals in NBR
<b>11.046.4</b>	valve body in brass, seals in VITON
<b>11.050.4</b>	valve body in nickel plated brass, seals in VITON

3

## USVNR 1/8 FF

check valve female-female 1/8" NPT



### Available versions

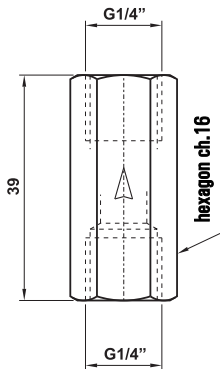
code	description
<b>US11.000.4</b>	<b>standard:</b> valve body in brass, seals in NBR
<b>US11.002.4</b>	valve body in brass, seals in VITON
<b>US11.004.4</b>	valve body in nickel plated brass, seals in NBR
<b>US11.009.4</b>	valve body in brass, seals in SILICON
<b>US11.027.4</b>	valve body in brass, seals in NBR, without spring
<b>US11.031.4</b>	valve body in nickel plated brass, seals in VITON
<b>US11.035.4</b>	valve body in brass, seals in NBR, light duty spring
<b>US11.034.4</b>	valve body in brass, seals in VITON, light duty spring



## USVNR 1/4 FF

non-return valve female-female 1/4" NPT

### Available versions



code	description
<b>US11.001.4</b>	<b>standard:</b> valve body in brass, seals in NBR
<b>US11.003.4</b>	valve body in brass, seals in VITON
<b>US11.005.4</b>	valve body in nickel plated brass, seals in NBR
<b>US11.030.4</b>	valve body in nickel plated brass, seals in VITON
<b>US11.028.4</b>	valve body in brass, seals in NBR, without spring
<b>US11.037.4</b>	valve body in brass, seals in VITON, without spring
<b>US11.036.4</b>	valve body in brass, seals in NBR, light duty spring
<b>US11.033.4</b>	valve body in brass, seals in VITON, light duty spring
<b>US11.040.4</b>	valve body in brass, seals in VITON, heavy duty spring

- Wide range
- Small dimensions
- Mountable on bracket
- M5 threaded ports or push-in fittings for 5/32" or  $\phi 4$  tube



## Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

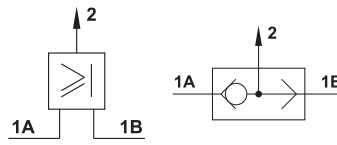
Internal parts: brass OT58

Nominal diameter	2.5 mm (0.1 in)
Nominal flow rate at 6 bar (87 PSI)	100 NI/min (0.10 Cv)
Temperature range	-15 + 60°C (5-140°F)
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Fluid	50 $\mu$ filtered, lubricated or non lubricated air



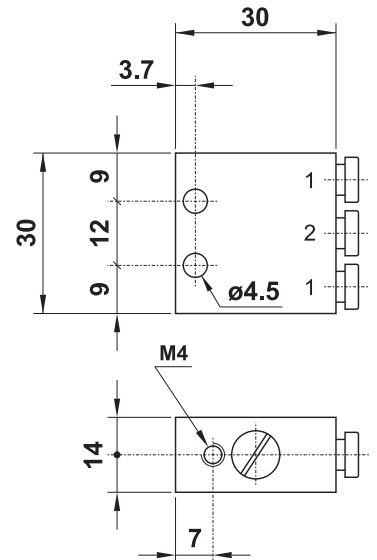
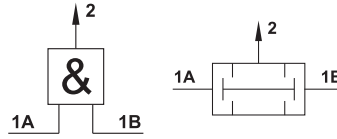
## 08.021.4 - OR FOR LOGIC

OR element, push-in fittings for 5/32" or ø4 tube, mountable on bracket



## 08.025.4 - AND FOR LOGIC

AND element, push-in fittings for 5/32" or ø4 tube, mountable on bracket

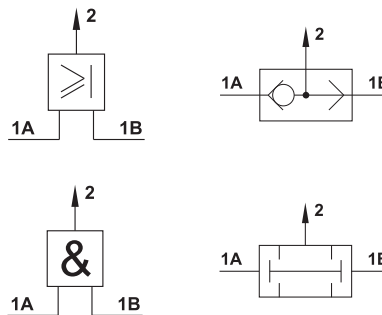


## 08.022.4 - OR SINGLE M5

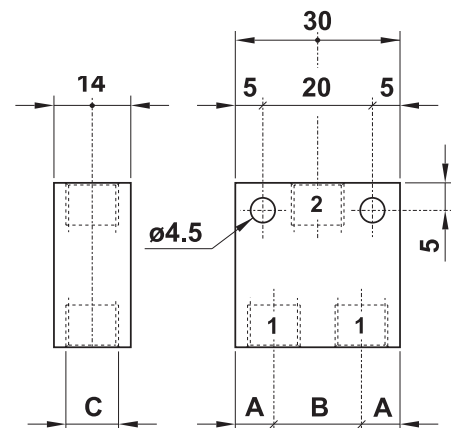
OR element, M5 threaded ports

## 08.026.4 - AND SINGLE M5

AND element, M5 threaded ports



Model	A	B	C
08.022.4	5.2	19.6	M5
08.026.4	5.2	19.6	M5



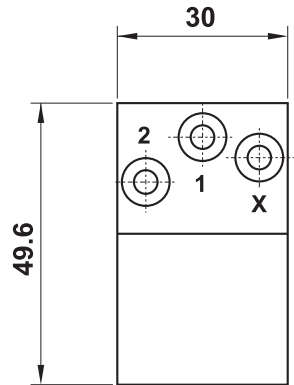
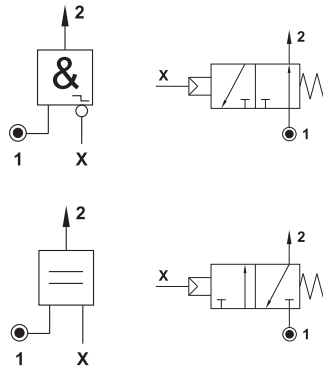


## 08.039.4 - NOT FOR LOGIC

NOT element, push-in fittings for 5/32" or ø4 tube, mountable on bracket

## 08.049.4 - YES FOR LOGIC

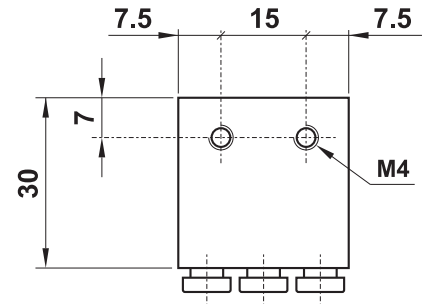
YES element, push-in fittings for 5/32" or ø4 tube, mountable on bracket



Actuating pressure at 6 bar (87 PSI)

**08.039.4** : 1.2 bar (17 PSI)

**08.049.4** : 1 bar (14 PSI)

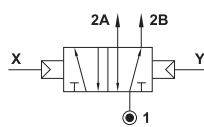
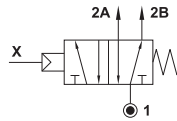


## 04.003.4 - MEMORY C/M

mono-stable MEMORY element, push-in fittings for 5/32" ø4 tube

## 04.002.4 - MEMORY C/C

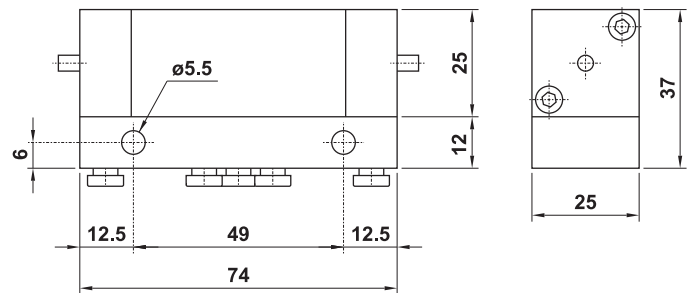
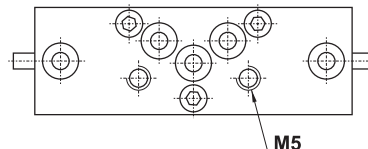
bi-stable MEMORY element, push-in fittings for 5/32" or ø4 tube



Actuating pressure at 6 bar (87 PSI)

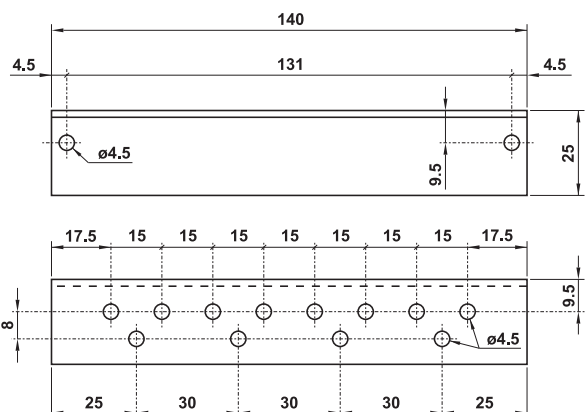
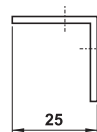
**04.002.4** : 1.5 bar (21 PSI)

**04.003.4** : 2 bar (30 PSI)

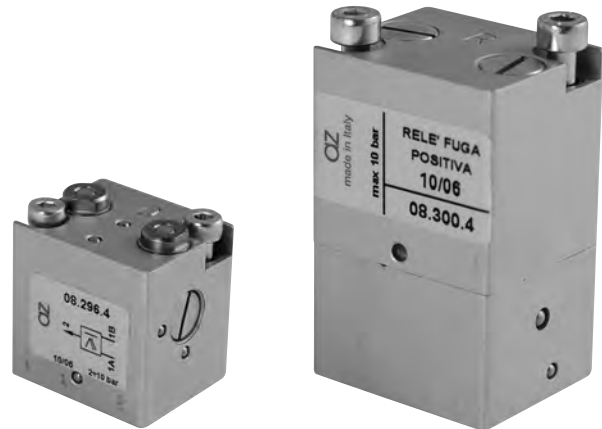


## 08.092.1 - MOUNTING BRACKET

mounting bracket for logic elements



- Wide range
- Small dimensions
- Mountable on sub-base (single or multiple)



3

## Materials

Body: aluminium 11S

Springs: stainless steel

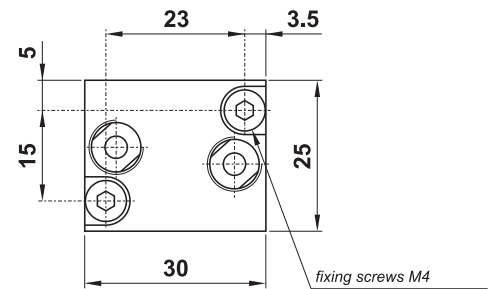
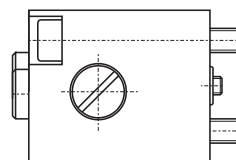
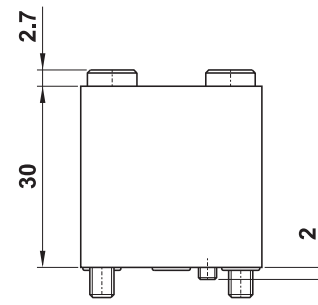
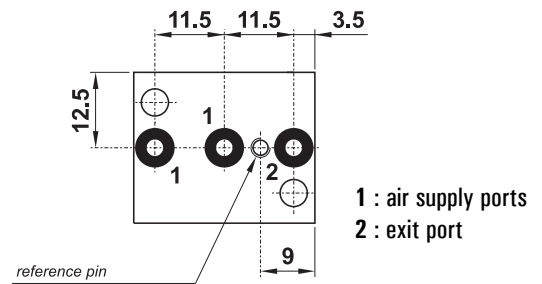
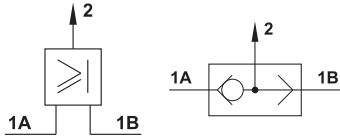
Seals: NBR

Internal parts: brass OT58

Nominal diameter	2.5 mm (0.1 in)
Nominal flow rate at 6 bar (87 PSI)	100 NI/min (0.1 Cv)
Temperature range	-15 +60°C (5-140°F)
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Actuating pressure at 6 bar (87 PSI) (NOT and YES)	1.5 bar (22 PSI) 0.15 MPa
Fluid	50µ filtered, lubricated or non lubricated air

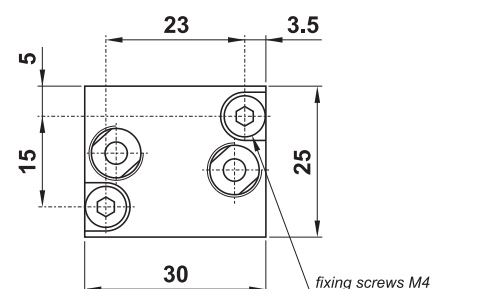
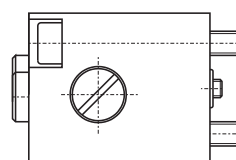
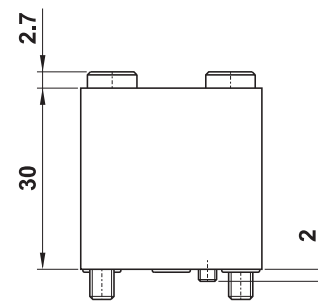
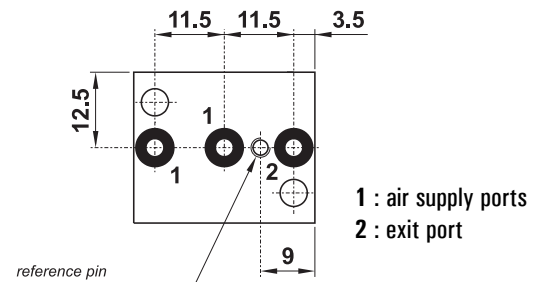
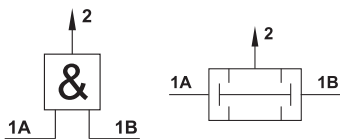
## 08.296.4 - OR FOR LOGIC CR

OR element, for assembling on sub-base



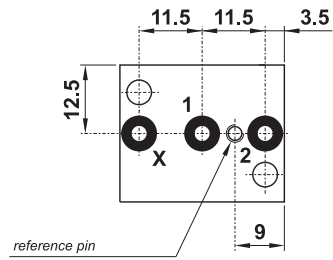
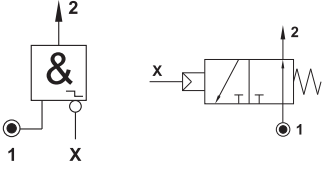
## 08.297.4 - AND FOR LOGIC CR

AND element, for assembling on sub-base

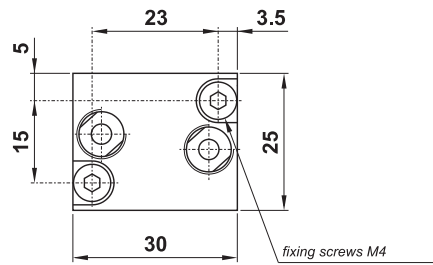
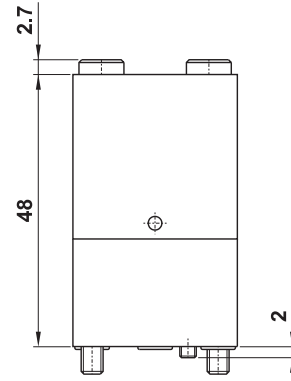


## 08.298.4 - NOT FOR LOGIC CR

NOT element, for assembling on sub-base

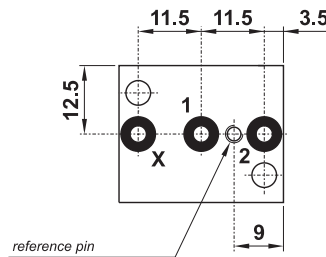
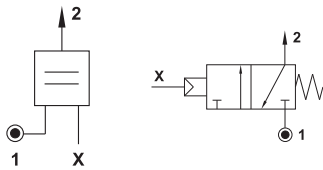


1 : air supply port  
2 : exit port  
X : signal port

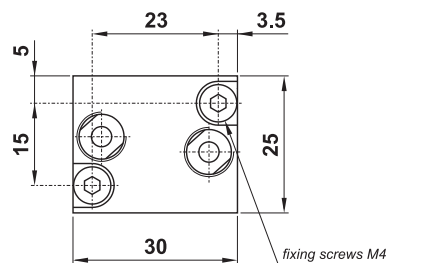
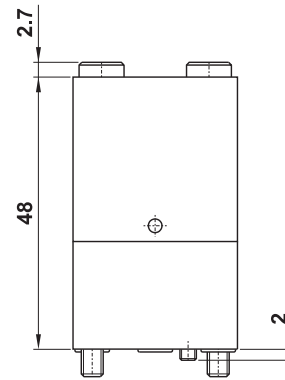


## 08.299.4 - YES FOR LOGIC CR

YES element, for assembling on sub-base

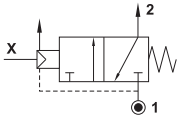


1 : air supply port  
2 : exit port  
X : signal port

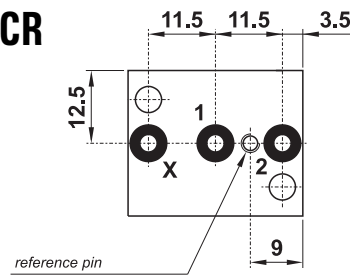


## 08.300.4 - SWITCH WITH INHIBITION EXHAUST CR

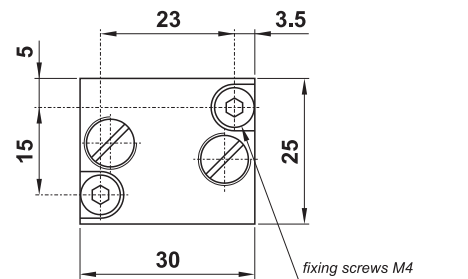
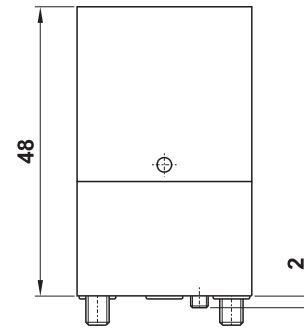
SWITCH WITH INHIBITION EXHAUST, for assembling on sub-base



When exhaust is inhibited, the valve switches and air goes out from exit port 2.



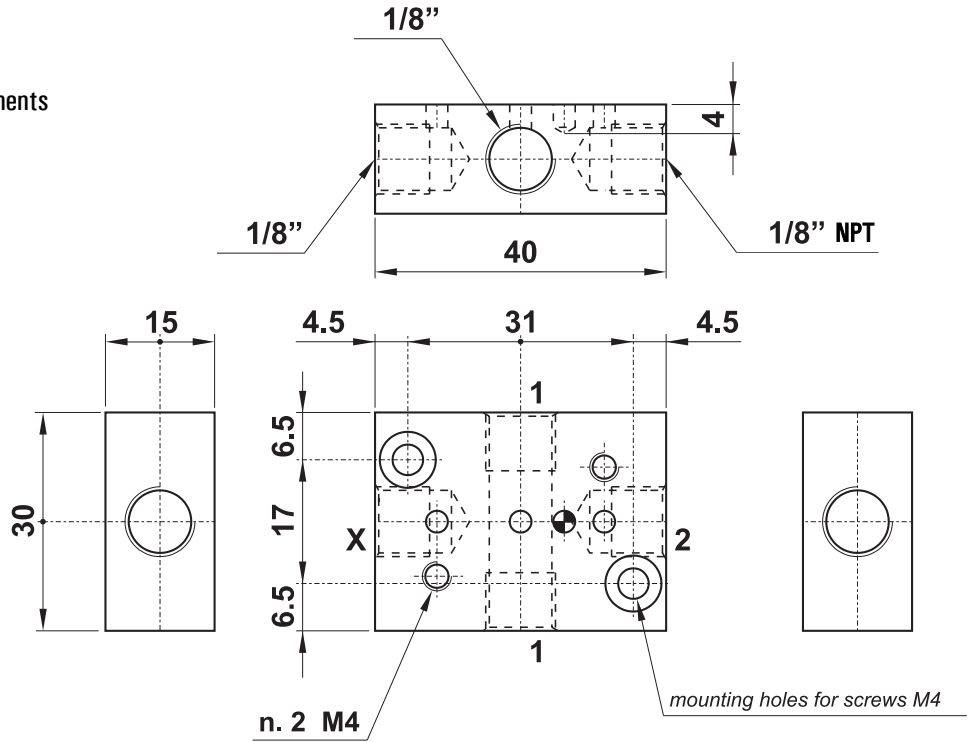
1 : air supply port  
2 : exit port  
X : exhaust port





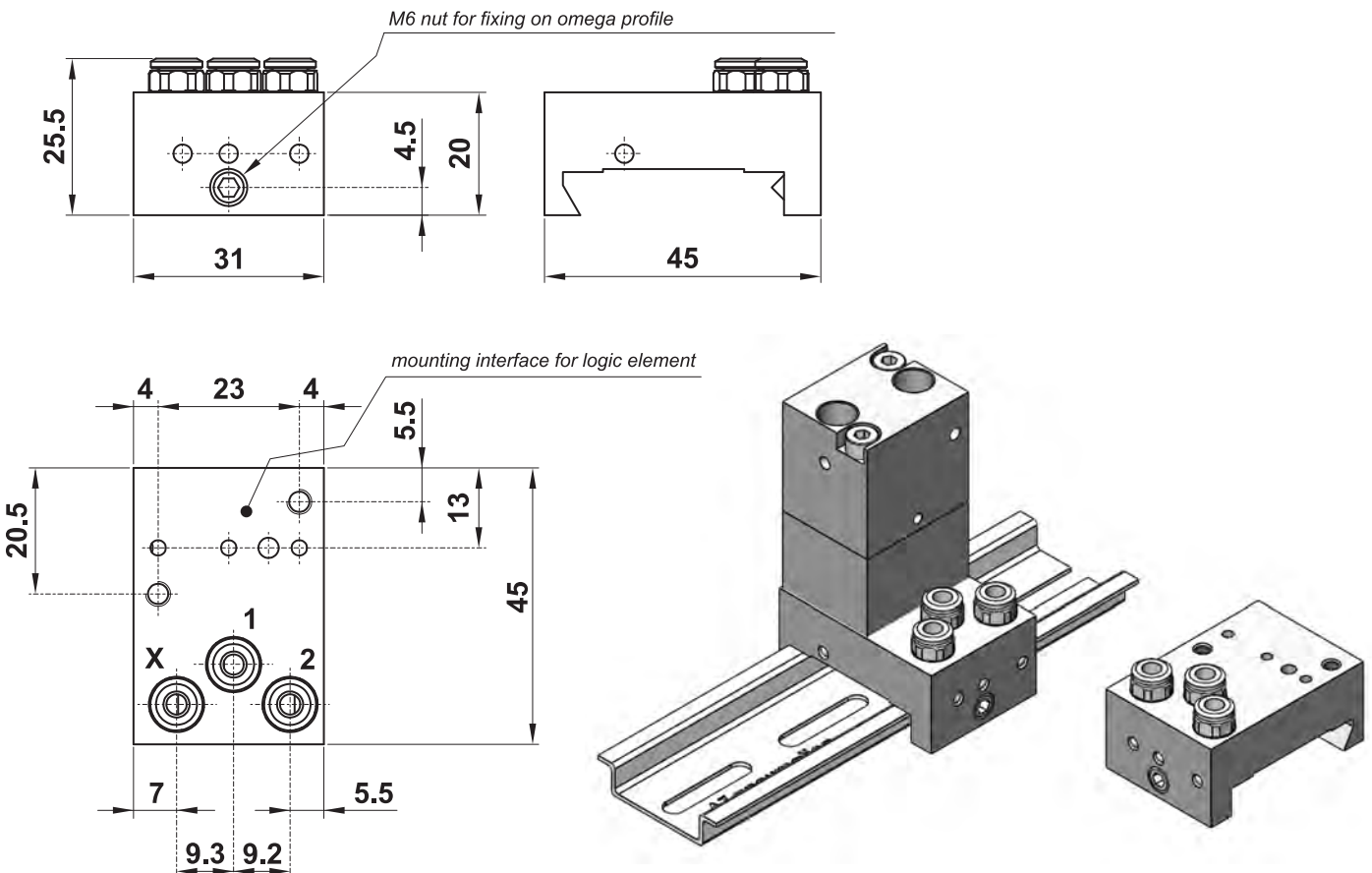
## USAQ.015.1

Single sub-base for assembling of CR logic elements



## 08.039.3

Single sub-base for assembling of CR logic elements on omega profile  
push-in fittings for 5/32" or ø4 tube



# Distribution manifolds

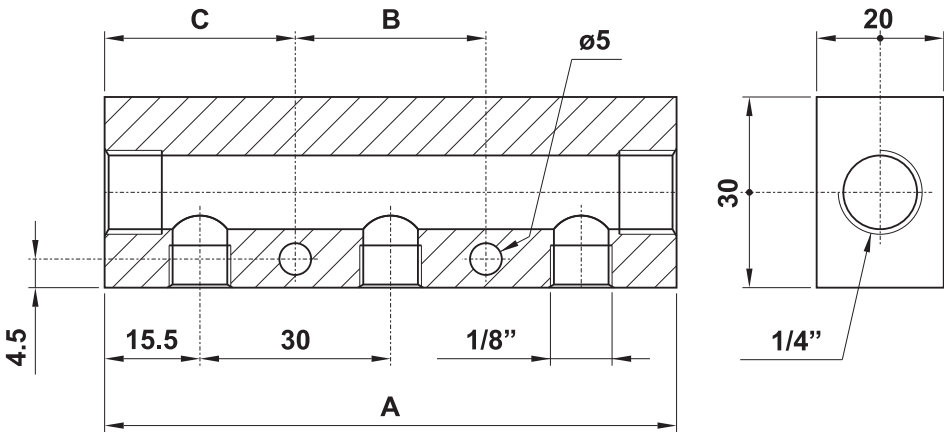


- In-line manifolds with 1/8" NPT or 1/4" NPT user ports
- Four port manifolds
- Special manifolds on request
- Material: aluminium (anodize treatment)



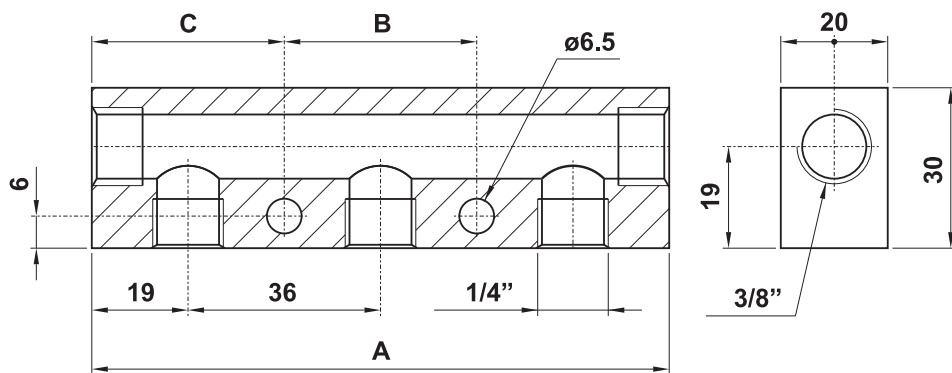
3

## In-line manifolds with 1/8" NPT user ports and 1/4" NPT feed ports



model	no. ports	A	B	C
USAU.002.1	2	61	50	5.5
USAU.003.1	3	91	30	30.5
USAU.004.1	4	121	60	30.5
USAU.005.1	5	151	90	30.5
USAU.006.1	6	181	120	30.5

## In-line manifolds with 1/4" NPT user ports and 3/8" NPT feed ports

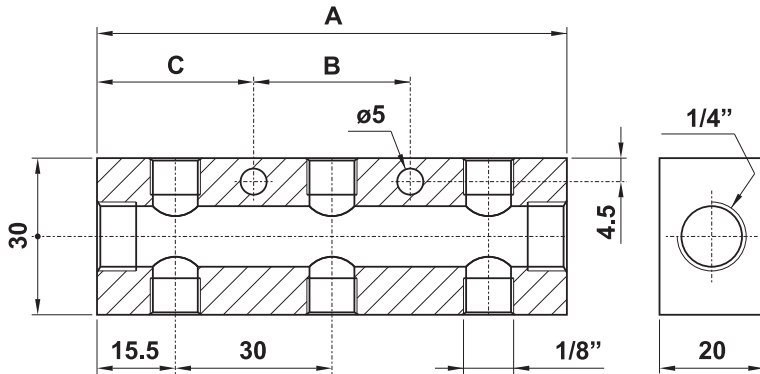


model	no. ports	A	B	C
USAU.011.1	2	74	61	6.5
USAU.013.1	3	110	36	37
USAU.014.1	4	146	72	37
USAU.015.1	5	182	108	37
USAU.016.1	6	218	144	37

# Distribution Manifolds

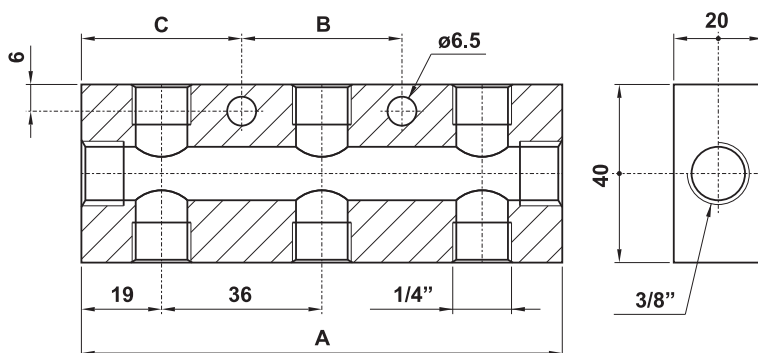


## In-line double manifolds with 1/8" NPT user ports and 1/4" NPT feed ports



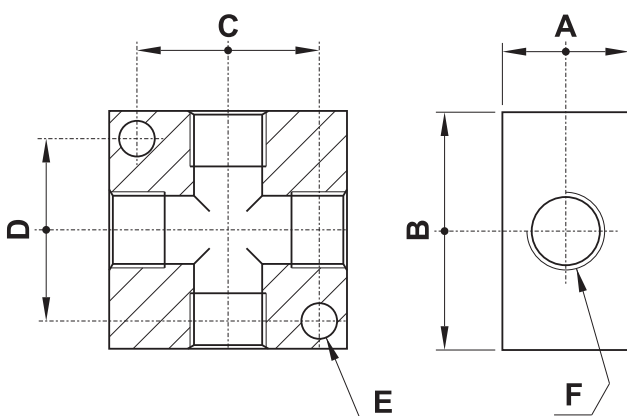
model	no. ports	A	B	C
USAU.000.1	2	61	50	5.5
USAU.001.1	3	91	30	30.5
USAU.008.1	4	121	60	30.5
USAU.009.1	5	151	90	30.5

## In-line double manifolds with 1/4" NPT user ports and 3/8" NPT feed ports



model	no. ports	A	B	C
USAU.022.1	2	74	61	6.5
USAU.023.1	3	110	36	37
USAU.024.1	4	146	72	37
USAU.025.1	5	182	108	37
USAU.027.1	6	218	144	37

## Four Port Manifolds



model	A	B	C	D	E	F
AU.017.1	10	20	12	12	4.5	M5
USAU.018.1	16	30	23	22	4.5	1/8" NPT
USAU.019.1	20	40	30	27	5.5	1/4" NPT
USAU.021.1	25	50	38	39	6.5	3/8" NPT
USAU.020.1	25	50	38	39	6.5	1/2" NPT





	page
• Signal elaborator .....	342
• Flip-flop .....	344
• Oscillating valve .....	346
• Oscillating valves with NOT logic elements .....	349
• Normally open impulse generator .....	353
• Normally closed impulse generator .....	358
• Non adjustable impulse generator .....	359
• Mini oscillating valve 3/2 G1/8" .....	360
• High-flow pneumatic timer for automatic return .....	361
• High-flow pneumatic timer for delayed actuation .....	362
• Dual-pressure valve .....	364
• Slow-start valve with exhaust feature .....	366
• Pressure limiter .....	368



## Modalità di funzionamento

Costituisce l'elemento centrale del dispositivo di comando a due mani che genera un segnale in uscita come conseguenza di due segnali in ingresso. È utilizzabile per il comando di valvole di potenza connesse a macchine che presentano un elevato rischio di infortunio alle mani. Impone all'operatore di utilizzare entrambe le mani per inviare l'impulso alla valvola di potenza, evitando in questo modo che esse vengano accidentalmente a trovarsi nell'area dei meccanismi in movimento. Deve essere inserito in un dispositivo di comando a due mani che rispetti i requisiti di sicurezza della norma EN574:1996 + A1:2008.

L'impulso di comando viene generato dall'elaboratore di segnale solo in presenza di due segnali di azionamento contemporanei provenienti da microvalvole a tre vie NC da collegare ai due attacchi indicati con 1. L'intervallo  $\Delta t$  tra questi due segnali, comunque inferiore a 0.5 secondi, varia a seconda della pressione di alimentazione e può essere determinato facendo riferimento al grafico "risposta tempo-pressione" riportato in questa pagina.

L'elaboratore di segnale è dotato di un dispositivo antiripetitivo che garantisce la generazione di un solo impulso in presenza dei due segnali contemporanei. Affinché l'elaboratore possa generare un successivo impulso è necessario far cessare entrambi i segnali e procedere a un nuovo azionamento.

L'elaboratore di segnale garantisce un'alta affidabilità ed è venduto con il certificato CE (conformità alla Direttiva Macchine 2006/42/CE e alla norma UNI EN 574-1:2008 e EN 574:1996 + A1:2008 tipo 3A).

## Valve operation

*This valve is used to pilot high-flow directional control valves connected to machines which have a high risk of injuries to the hands.*

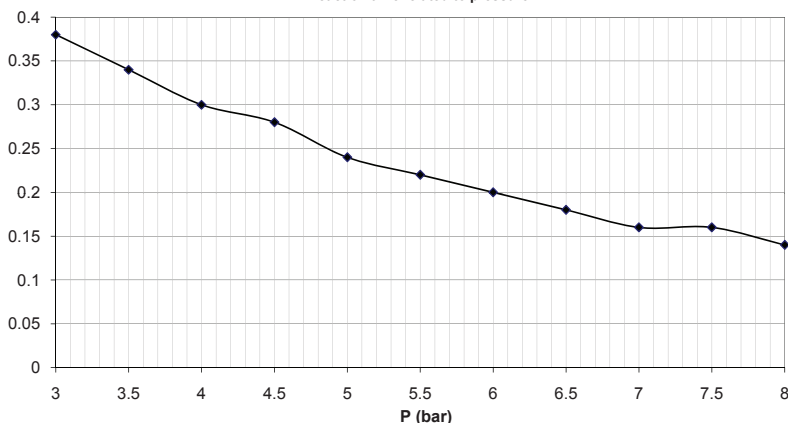
*The machine operator must simultaneously operate, in a safe area, two three-way manual valves for correct operation. The safety valve will ignore a single depression of one of the manual valves. To repeat the cycle both pilot signals must be exhausted and the manual valves simultaneously actuated again.*

*The signal elaborator is sold with CE-certification (compliant to Machinery Directive 2006/42/EC and to Norm UNI EN 574-1:2008 and EN 574:1996 + A1:2008 type 3A).*

**CODICE DI ORDINAZIONE**  
**ORDER CODE**

**08.156.4**

**RISPOSTA TEMPO-PRESSIONE**  
reaction time related to pressure



Portata massima <i>Maximum flow rate</i>	100 NI/min
Attacchi <i>Ports</i>	G1/8"
Pressione di esercizio <i>Working pressure</i>	3 ... 8 bar 0.3 ... 0.8 MPa
Intervallo di tempo tra i due segnali di comando <i>Delay between two actuating signals</i>	$\Delta t < 0.5$ s
Temperatura di esercizio <i>Temperature range</i>	-10°C ... +60°C
Fluido <i>Fluid</i>	Aria filtrata 50 $\mu$ con o senza lubrificazione 50 $\mu$ filtered, lubricated or non lubricated air

### Materiali

Corpo: alluminio 11S

Molle: INOX

Guarnizioni: NBR

Parti interne: ottone OT58

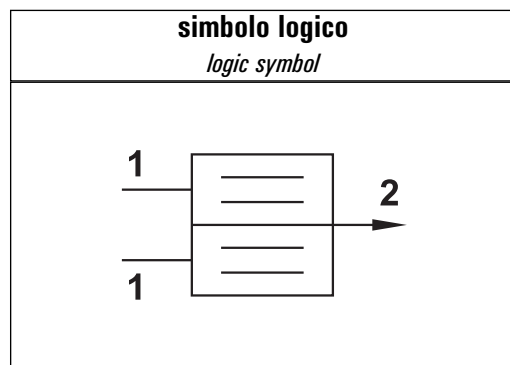
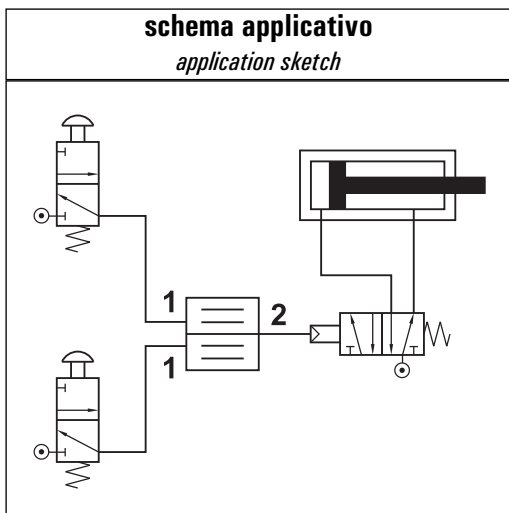
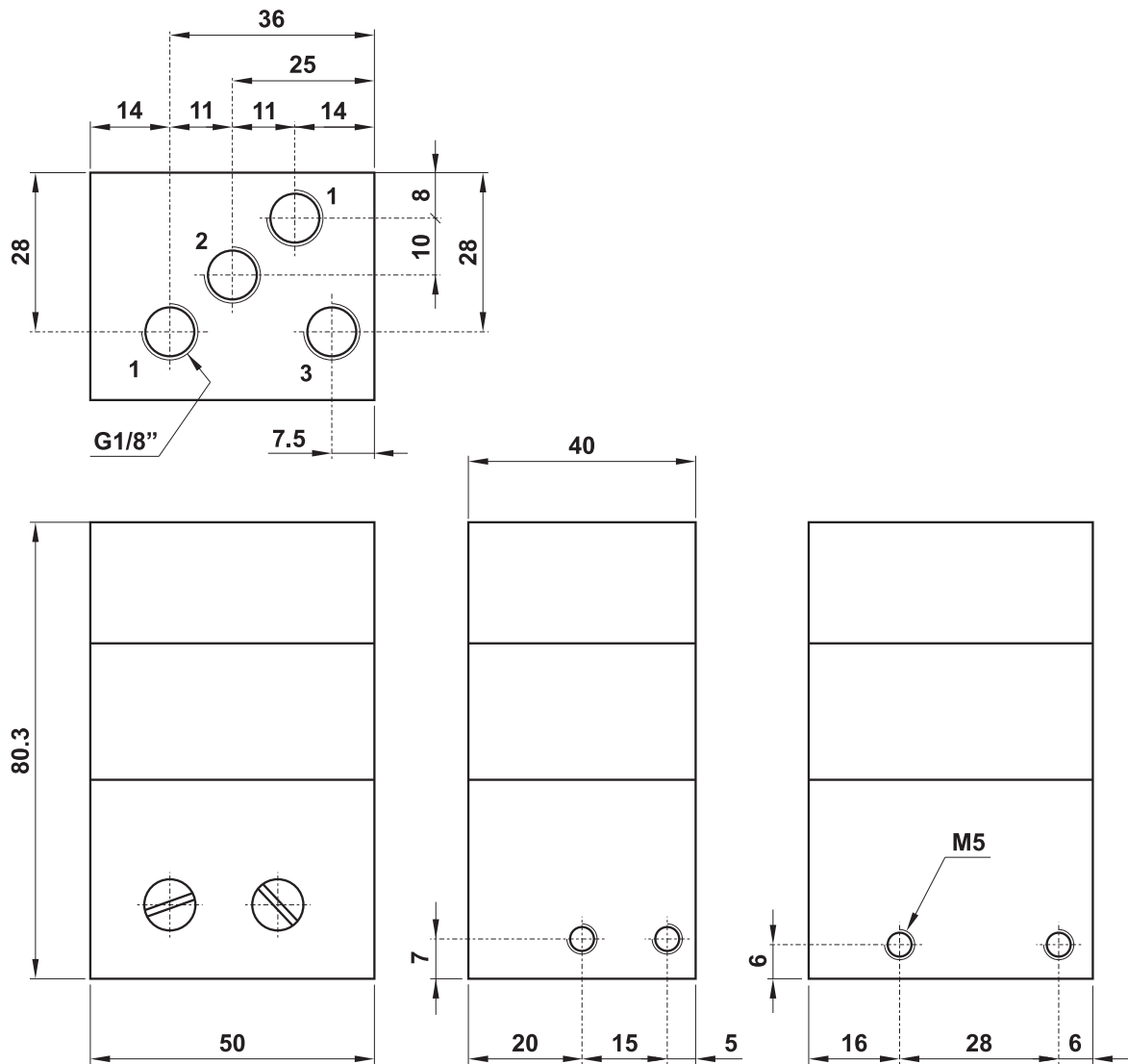
### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

Internal parts: brass OT58





## Valve operation

This is a high-flow device which, by applying a pilot pressure either pneumatic or electrical to point **X**, will, for example, extend and retract a double acting cylinder. The “flip-flop” valve requires two pilot signals for a complete cycle: one momentary signal to extend the cylinder stroke and one momentary signal to retract. A maintained pilot signal will generate one half of the cycle. The valve will stay in this position until the signal is exhausted and then applied again. In the event of pilot pressure failure or system maintenance a manual override facility is provided.

Two types of flip-flop valves are available:

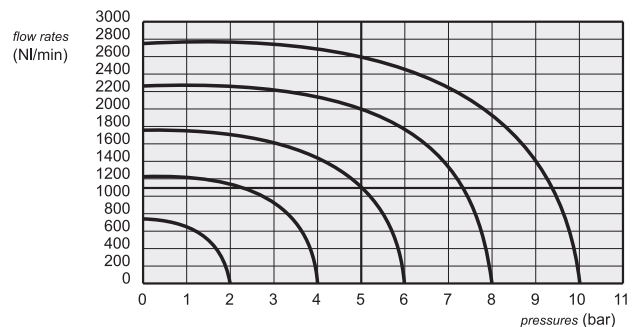
- code **US10.035.4** The valve is actuated by applying a pneumatic signal to point **X**.  
The signal pressure can be different to the pressure at port **1**.
- code **US10.018.3** The valve is actuated by an electrical signal.

### Materials

- Body: aluminium 11S
- Springs: stainless steel
- Seals: NBR
- Spools: nickel plated aluminium
- Internal parts: brass OT58

The following listed products are sold without coils, which are bought separately.

Ports	1/4" NPT
C	45 PSI
Pneumatic actuating pressure (A)	0.2 ... 1 MPa (30 ... 145 PSI)
Temperature range	-15 + 60°C (5-140°F)
Fluid	50µ filtered, lubricated or non lubricated air





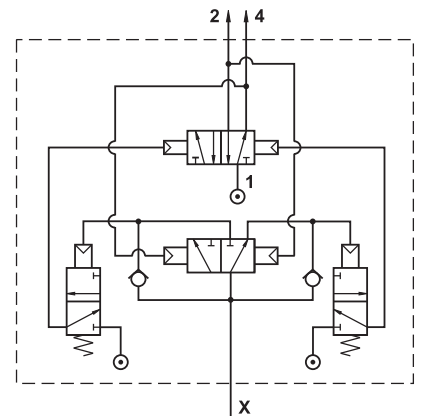
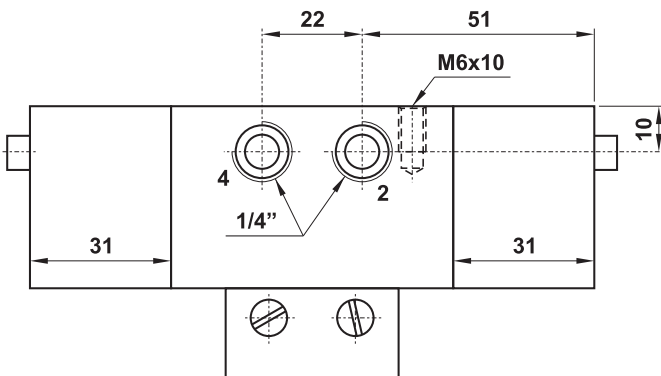
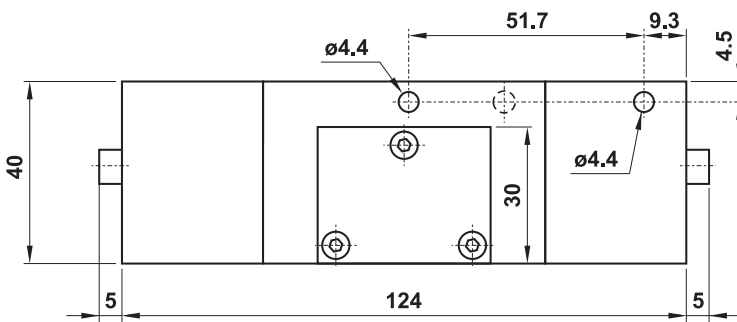
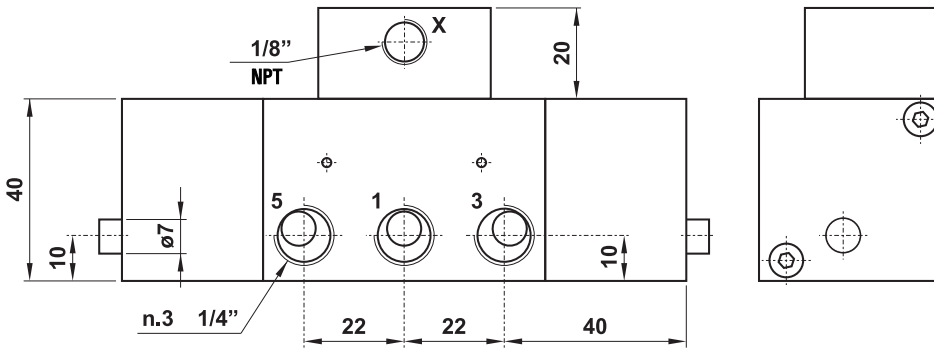
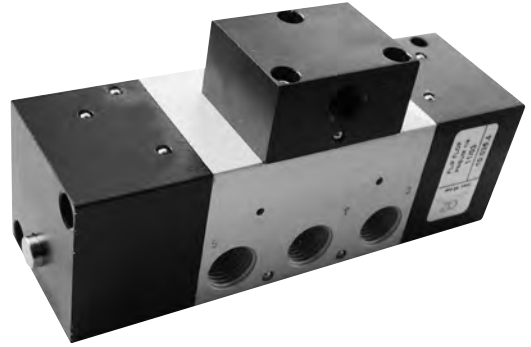
# Flip-flop



## Pneumatically Piloted

ORDER CODE

US10.035.4



4

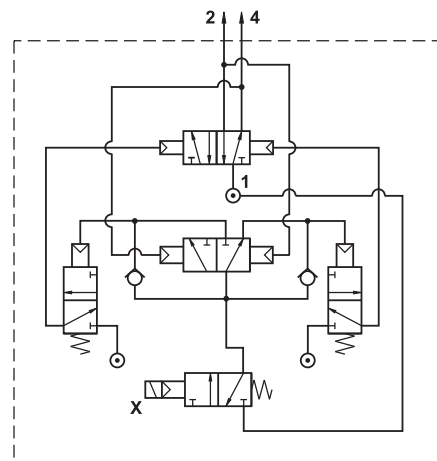
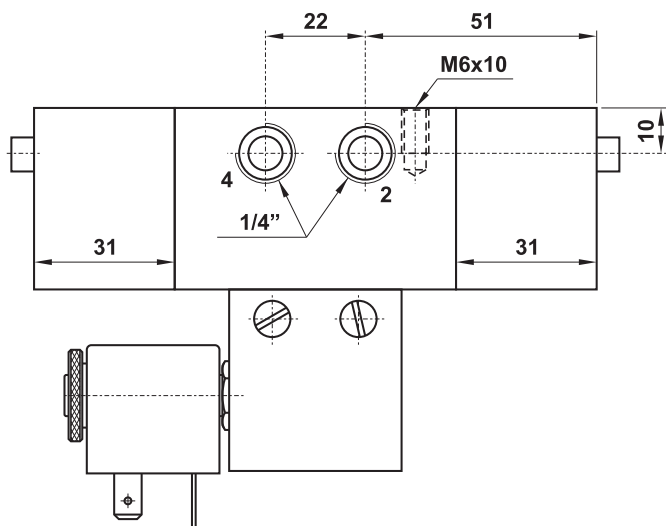
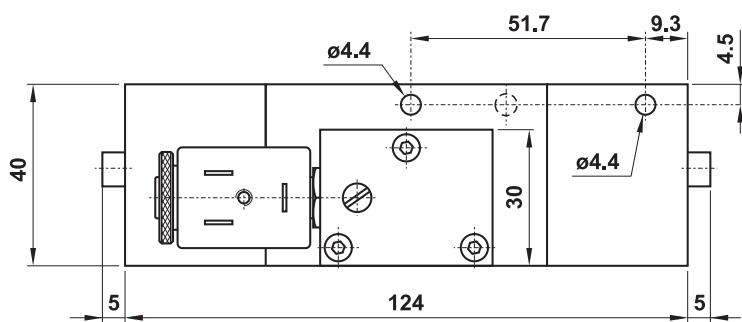
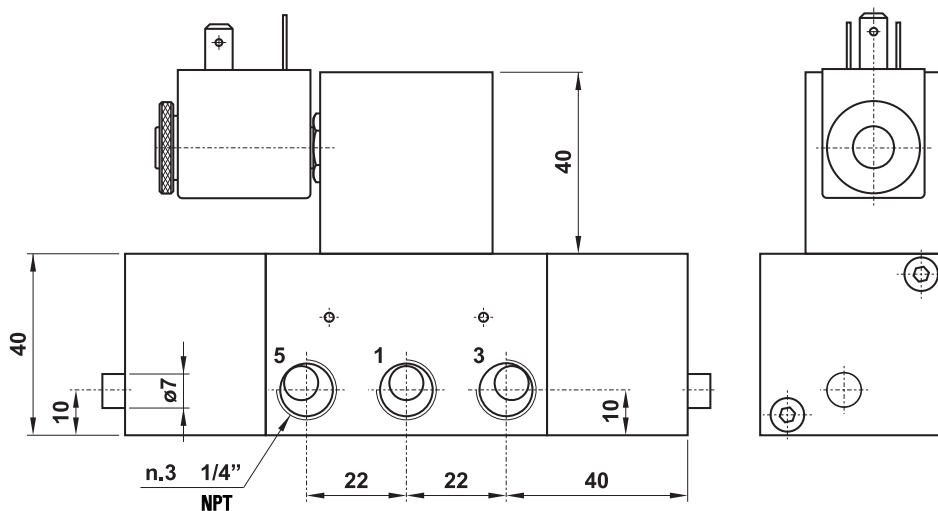
# Flip-Flop



## Solenoid Piloted

ORDER CODE

US10.018.3



4

## Valve operation

It is a high-flow device which allows a double acting cylinder or analogue pneumatic equipment to automatically extend and retract without the need for limit switches. The frequency of the phases is set through the two adjusting screws which are placed at the end of the oscillating valve and protected by a cover. One screw is to set the retract dwell time and the other is to set the extend dwell time. On request the adjusting screws can be mounted on a panel in remote position.

### Standard version:

- code **01.044.4** Oscillations are activated by system pressure only.
- code **01.046.4** Oscillations are activated by a constant pilot signal at point X.  
This pressure can be independent to the pressure at port 1.
- code **01.008.3** Oscillations are activated by an electrical signal with separate air supply.  
It is therefore necessary to apply to point X a pilot pressure (that can be of a different value to port 1) and an electrical signal at the solenoid pilot.

### Version with re-start feature:

When system pressure is applied or removed, the valve automatically moves to the start position ensuring no device is left in a semi-actuated position.

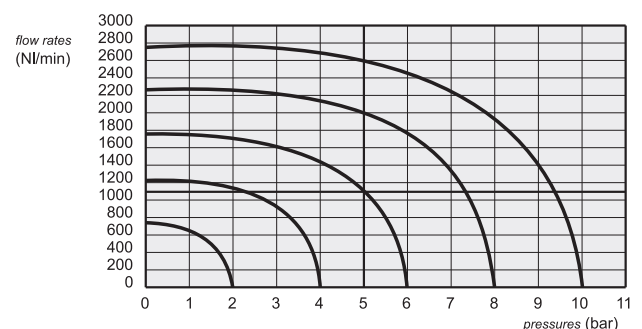
- code **01.089.4** Oscillations are activated by a constant pilot signal at point X.
- code **01.070.3** Oscillations are activated by an electrical signal with separate air supply.

## Materials

- Body:** aluminium 11S
- Springs:** stainless steel
- Seals:** NBR
- Spools:** nickel plated aluminium
- Internal parts:** brass OT58

The following listed products are sold without coils, which are bought separately (refer to page 372).

Ports	1/4" NPT
Working pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Actuating pressure (X)	3 ... 10 bar (43 ... 145 PSI) 0.3 ... 1 MPa
Temperature range	-15+60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air



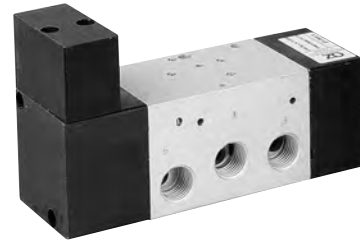
# Oscillating valve



continuous cycle

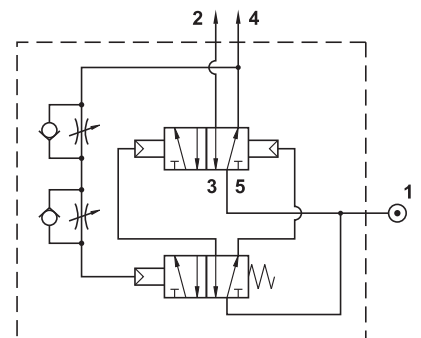
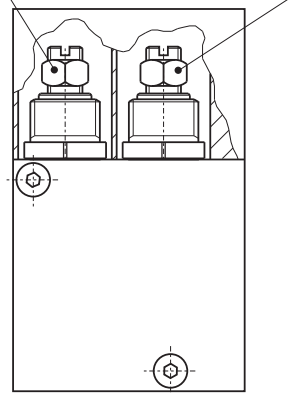
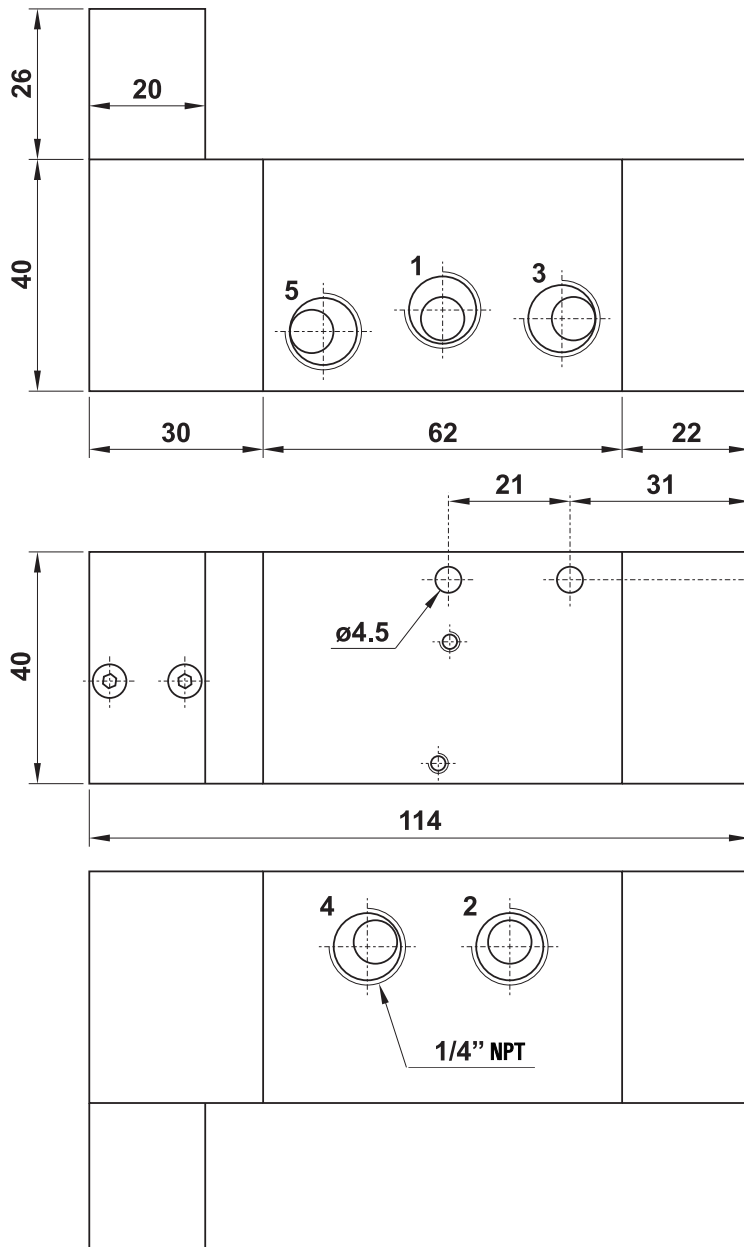
ORDER CODE

US01.044.4



regulator for exit n. 2

regulator for exit n. 4



4

# Oscillating Valve



## Pneumatically piloted

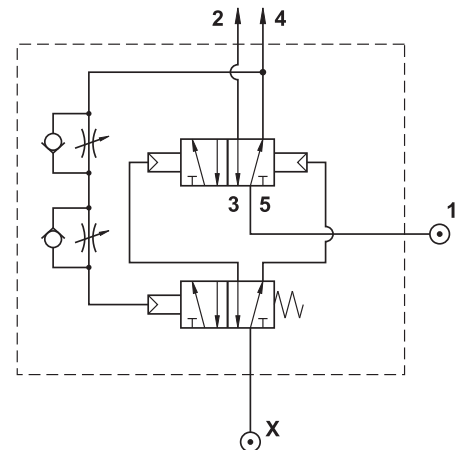
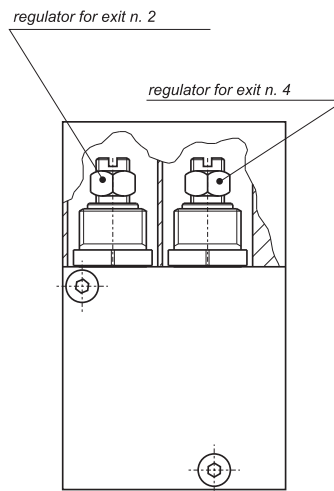
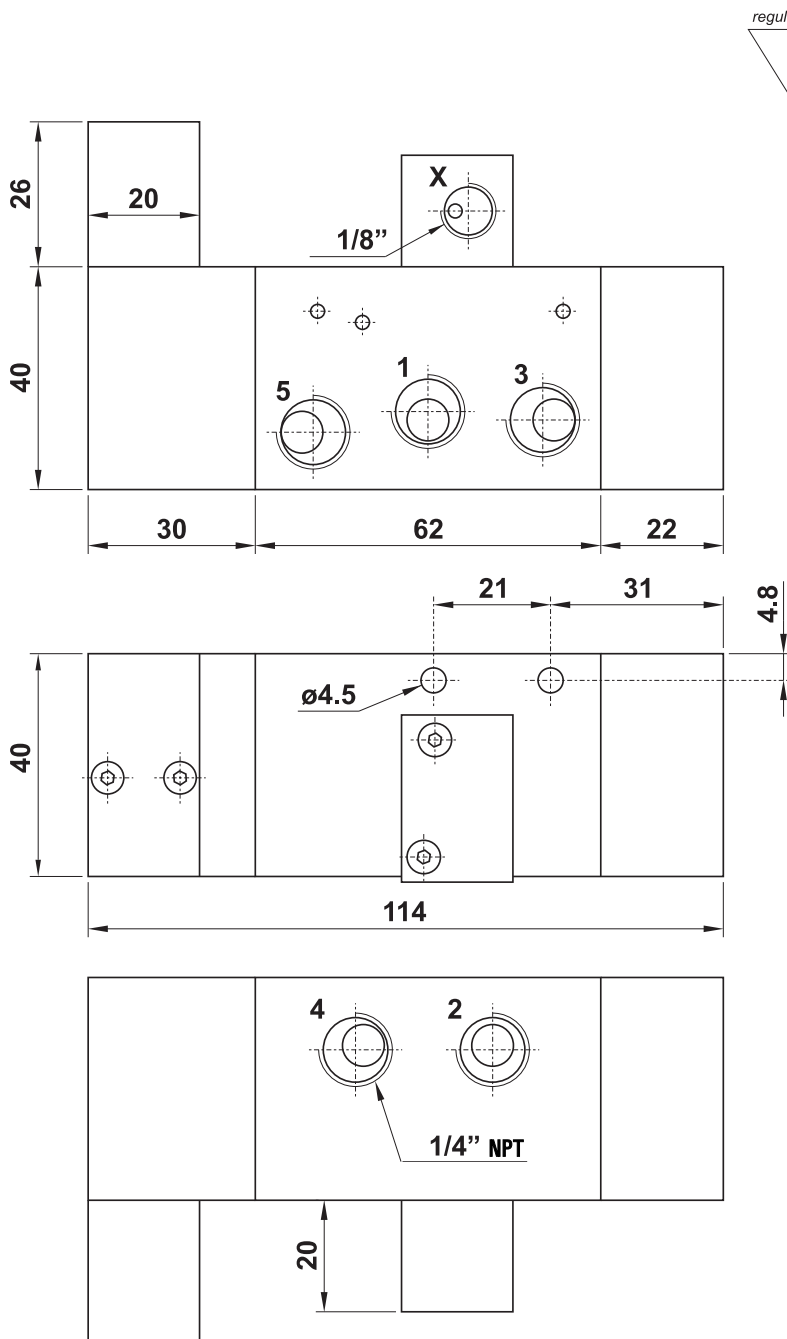
### ORDER CODE

**US01.046.4**

standard version

**US01.089.4**

with re-start function



# Oscillating valve



**solenoid pilot - separate air supply**

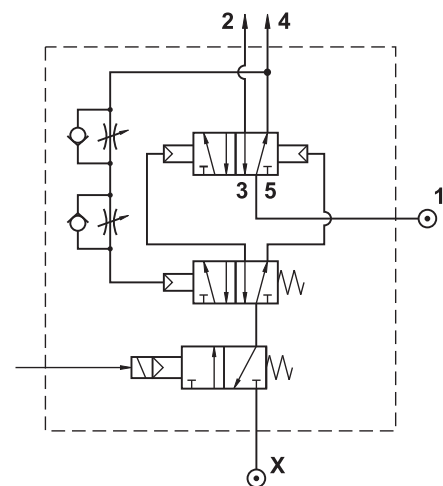
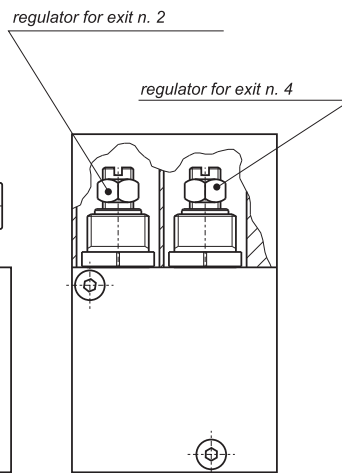
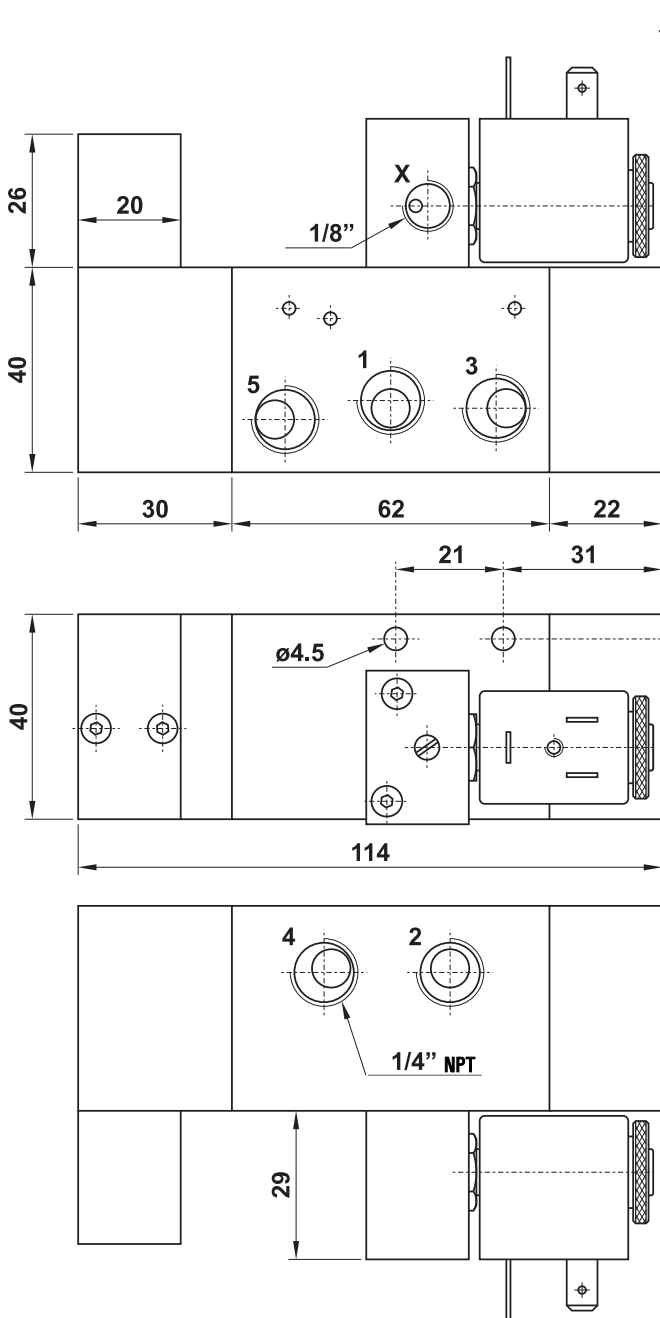
**ORDER CODE**

**US01.008.3**

standard version

**US01.070.3**

with re-start function



4



## Valve operation

It is a high-flow device which allows a double acting cylinder or analogue pneumatic equipment to automatically extend and retract without the need for limit switches. The frequency of the phases is set by regulation of the exhausts 3 and 5 using RSW 1/8" NPT and RSW 1/4" NPT, which are bought separately. When actuating signal is applied or removed the valve automatically moves to the start position ensuring no device is left in a semi-actuated position. A manual override is integrated to re-activate the oscillator if it gets accidentally blocked.

Four types of oscillating valve are available:

- code US10.017.3** 1/8" NPT with NOT, solenoid actuated.  
It requires a solenoid signal to activate the oscillations.
- code US10.019.3** 1/4" NPT with NOT, solenoid actuated.  
It requires a solenoid signal to activate the oscillations.
- code US10.029.4** 1/8" NPT with NOT, pneumatically piloted.  
It requires a pneumatic signal at point X to activate the oscillations.
- code US10.027.4** 1/4" NPT with NOT, pneumatically piloted.  
It requires a pneumatic signal at point X to activate the oscillations.

## Materials

Body: aluminium 11S

Springs: stainless steel

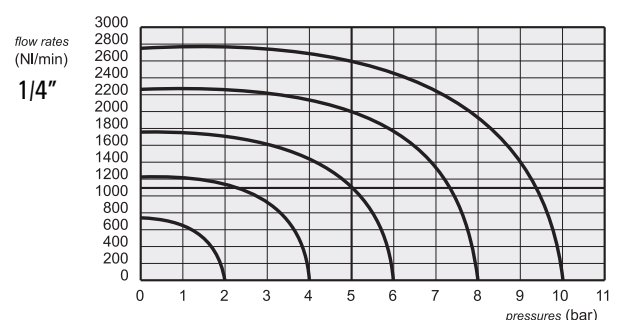
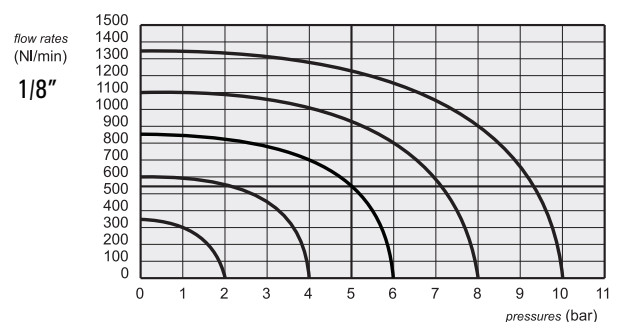
Seals: NBR

Spools: nickel plated aluminium

Internal parts: brass OT58

The following listed products are sold without coils, which are bought separately.

Ports	1/8" NPT - 1/4" NPT
Operating pressure	2 ... 7 bar (30 ... 101 PSI) 0.2 ... 0.7 MPa
Actuating pressure (X)	3 ... 7 bar (43 ... 101 PSI) 0.3 ... 0.7 MPa
Temperature range	-15+60°C (5-140°F)
Fluid	50µ filtered, lubricated or non lubricated air

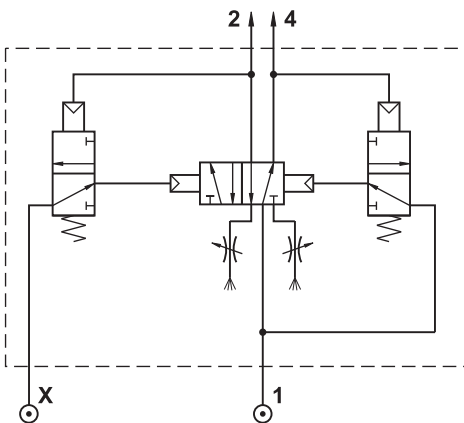
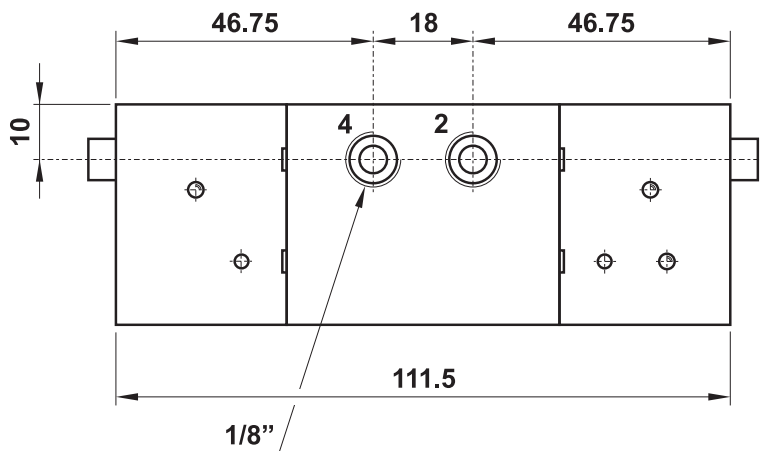
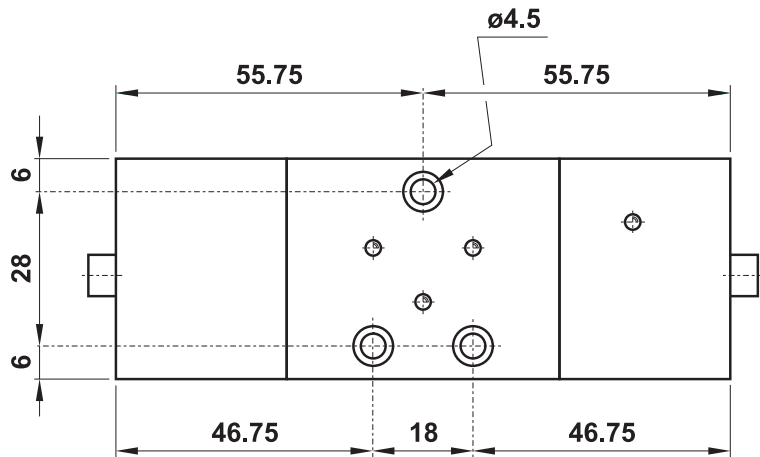
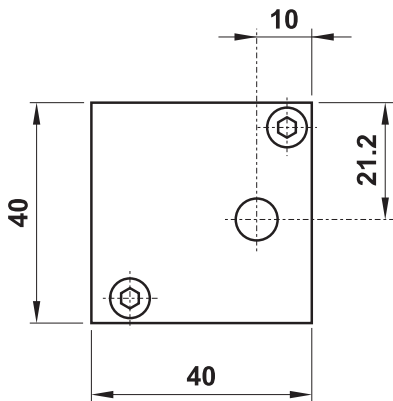
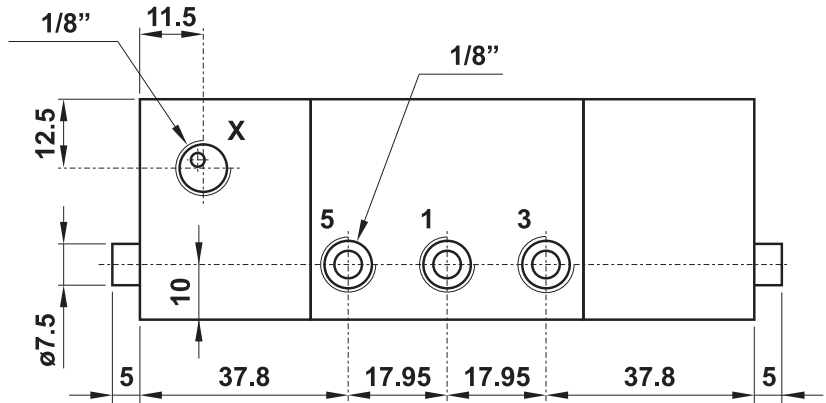


# Oscillating valves with NOT logic elements



1/8" NPT pneumatically piloted

ORDER CODE  
**US10.029.4**



4



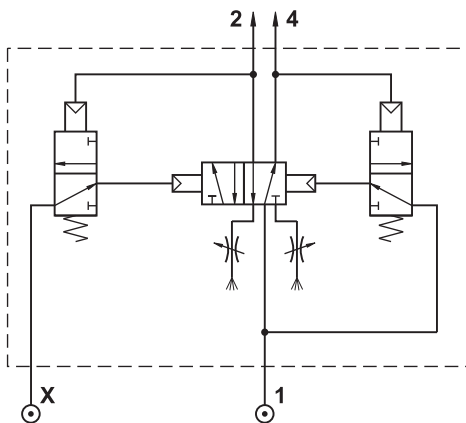
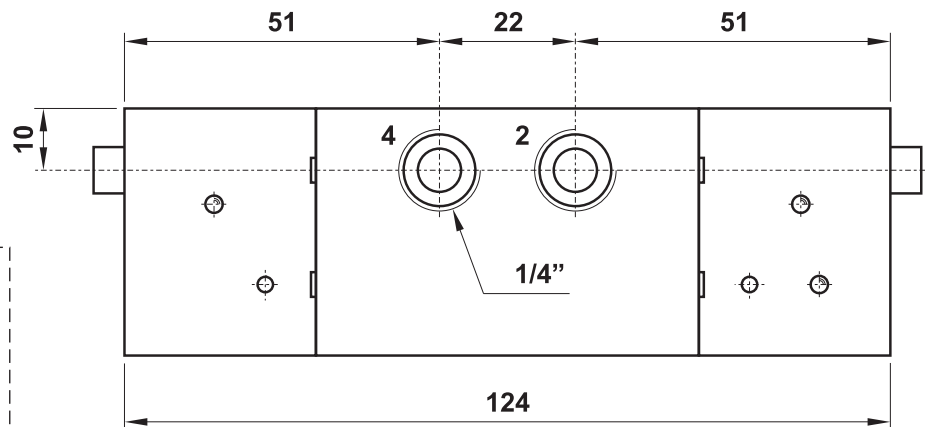
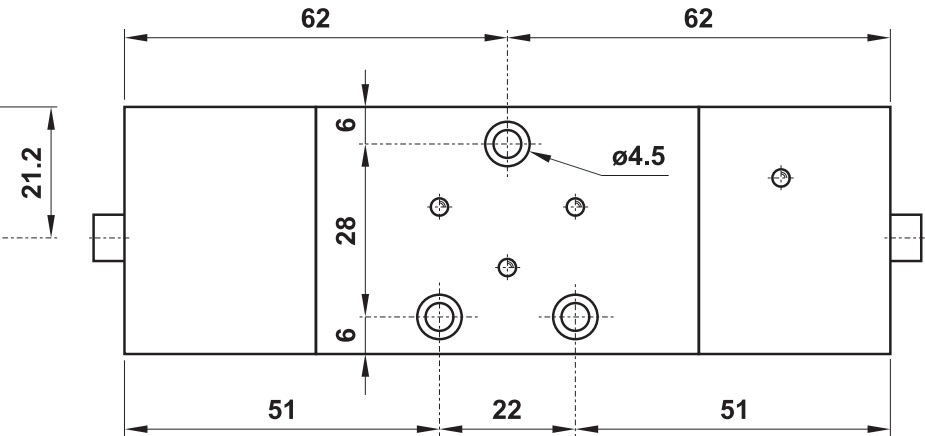
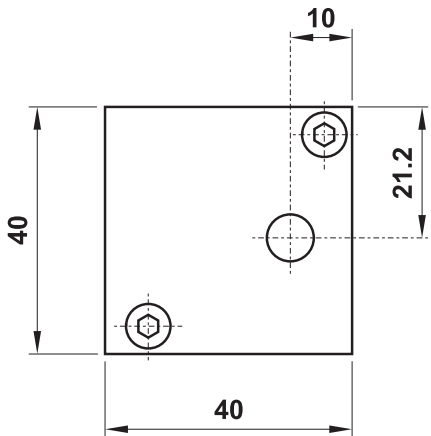
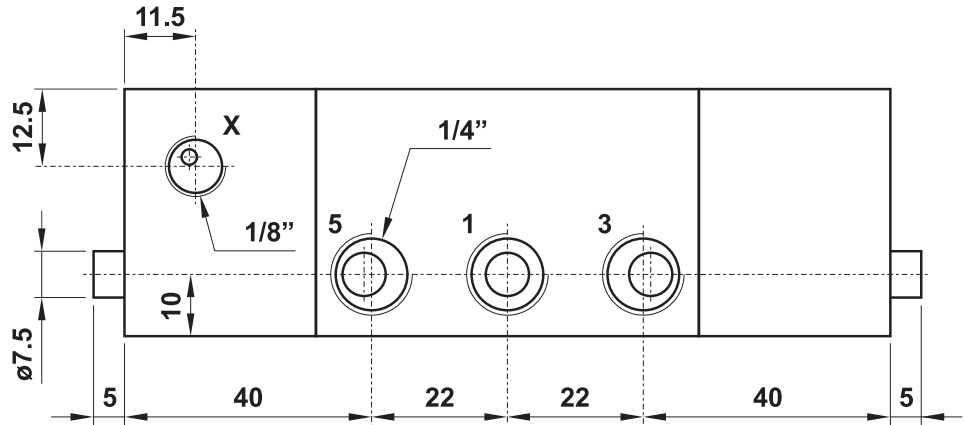
# Oscillating valves with NOT logic elements



1/4" NPT pneumatically piloted

ORDER CODE

US10.027.4



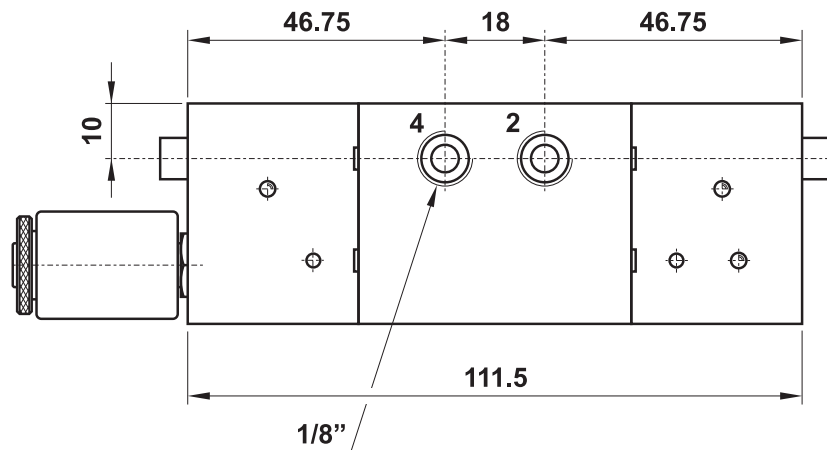
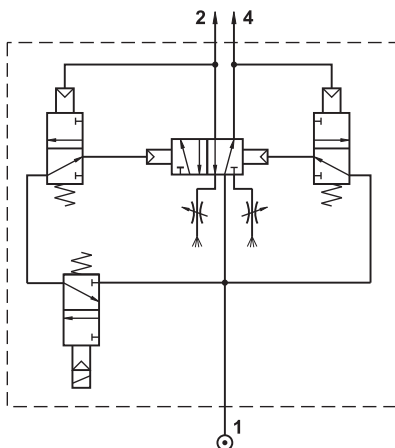
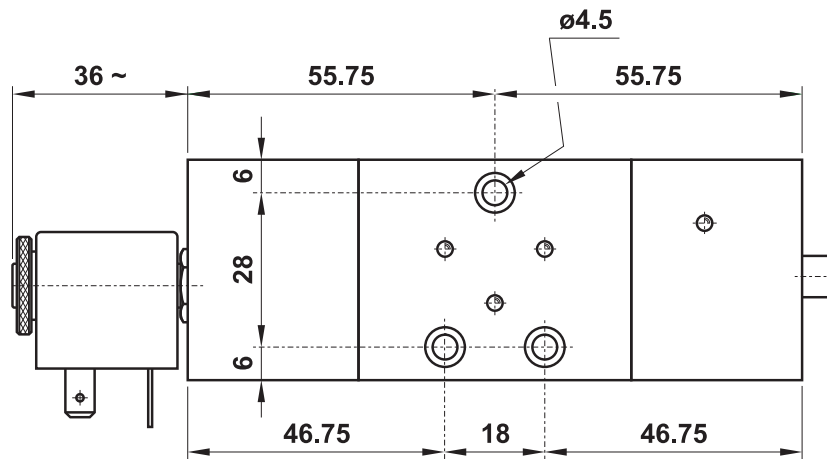
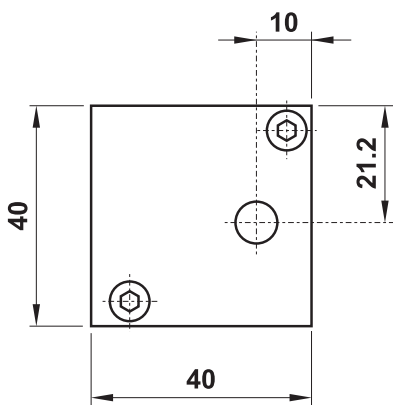
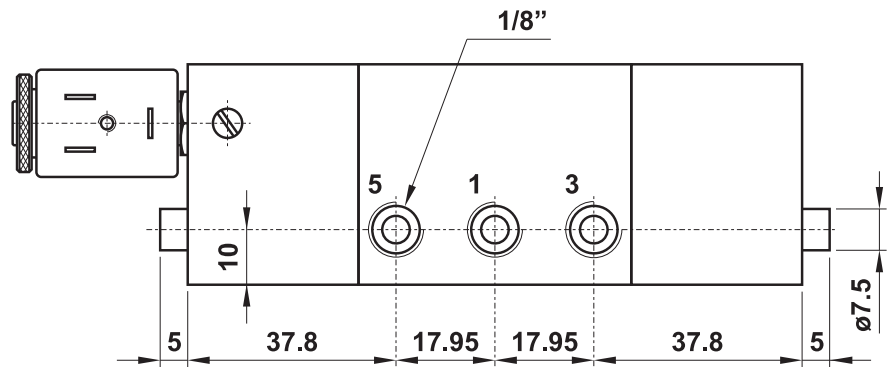
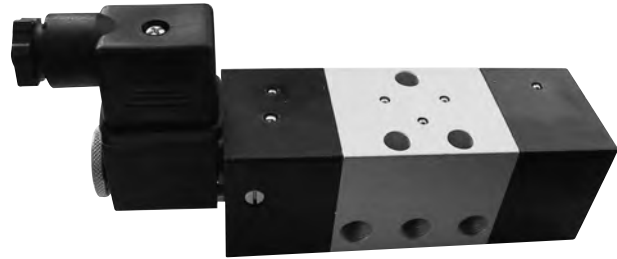
4

# Oscillating valves with NOT logic elements



1/8" NPT solenoid actuated

ORDER CODE  
**US10.017.3**



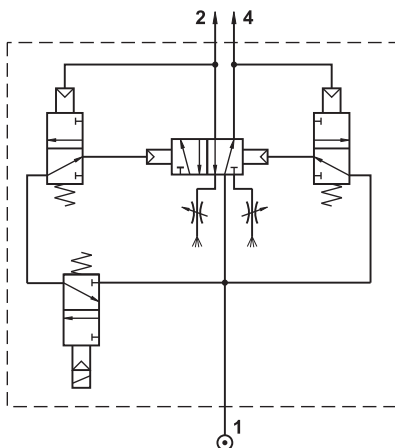
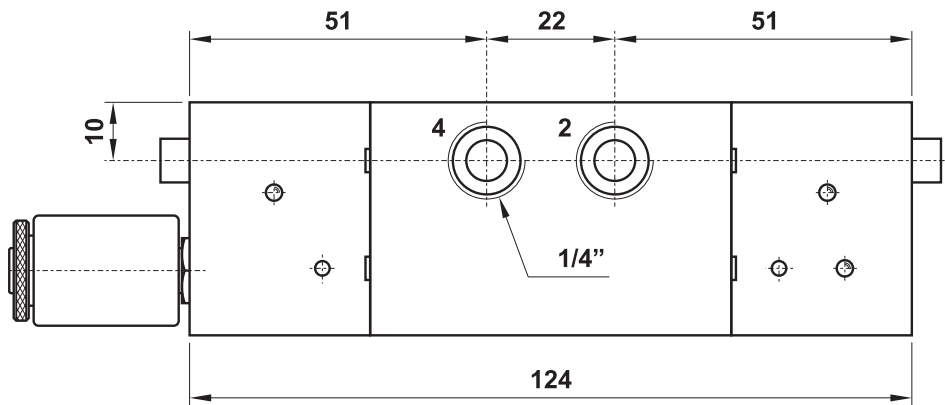
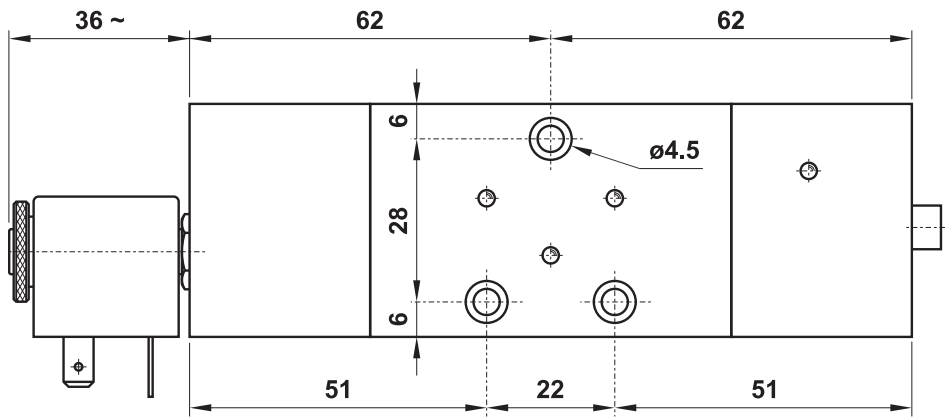
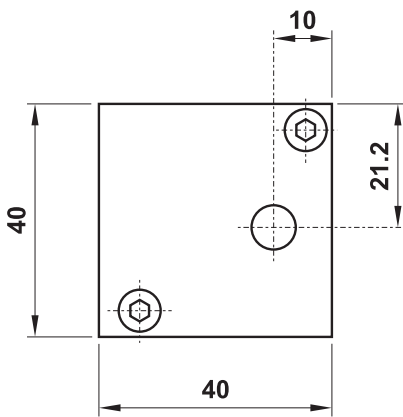
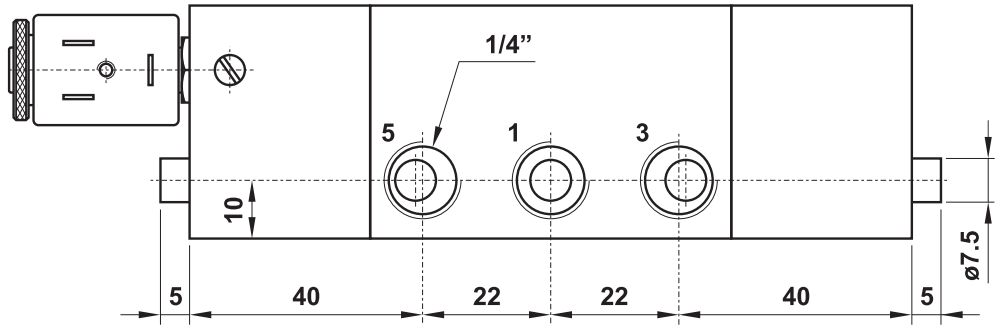
4

# Oscillating valves with NOT logic elements



1/4" NPT solenoid actuated

ORDER CODE  
**US10.019.3**



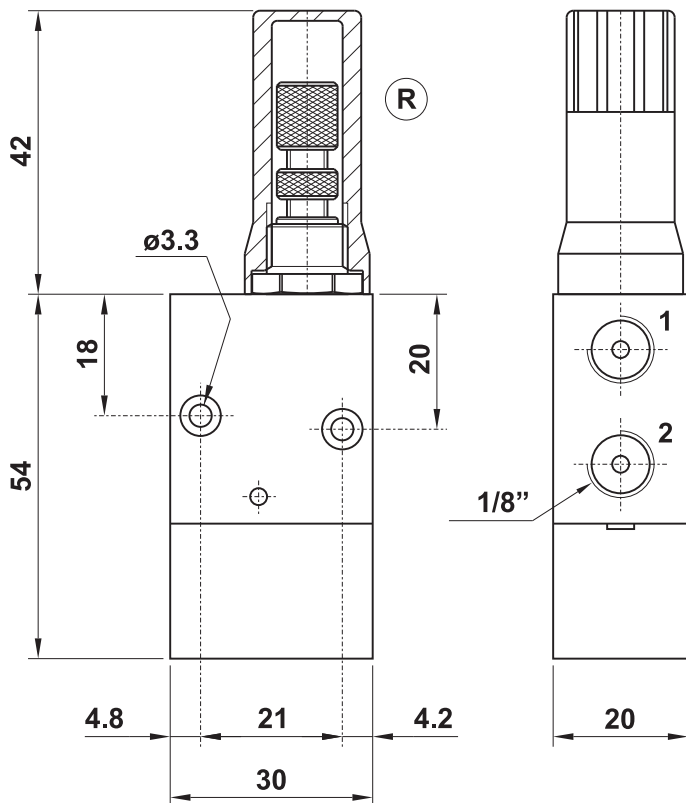
4

# Normally open impulse generator



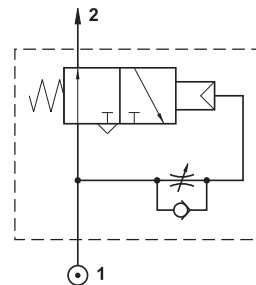
## Valve operation

It is a device which produces an adjustable impulse of fixed duration by adjusting screw (R). When a signal is applied from a three way valve and maintained at port 1 the impulse generator is activated and will generate an impulse period which was pre-set by screw R. If the signal is interrupted the duration of the impulse is terminated. To repeat the cycle the pilot signal must be exhausted and applied again.



ORDER CODE

US10.001.4



Ports	1/8" NPT
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Temperature range	-15+60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air

### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

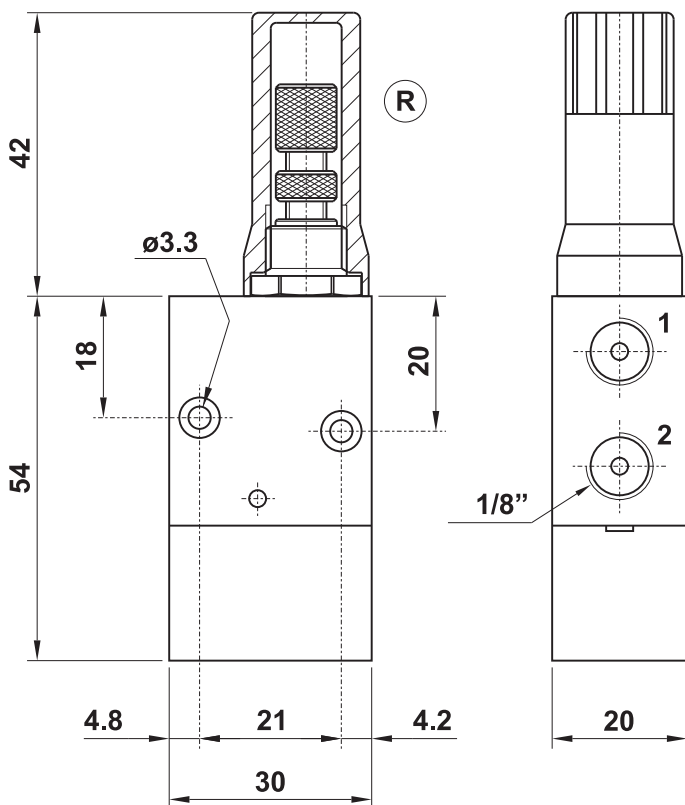
Internal parts: brass OT58

# Normally closed impulse generator



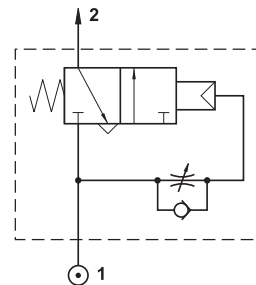
## Valve operation

This device, if air is supplied at port 1, lets the air go out from port 2 when the adjustable dwell time (pre-set by screw **R**) has elapsed. The air flow can then be interrupted by removing the air supply from port 1. The difference from the normally open version (10.001.4) is that the screw **R** adjusts the dwell time and not the duration of the air impulse.



ORDER CODE

US10.009.4



Ports	1/8" NPT
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Temperature range	-15+60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air

### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

Internal parts: brass OT58

# Non adjustable impulse generator

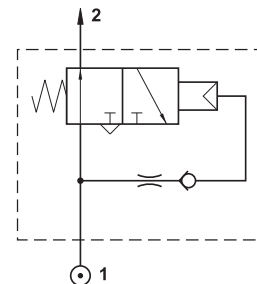
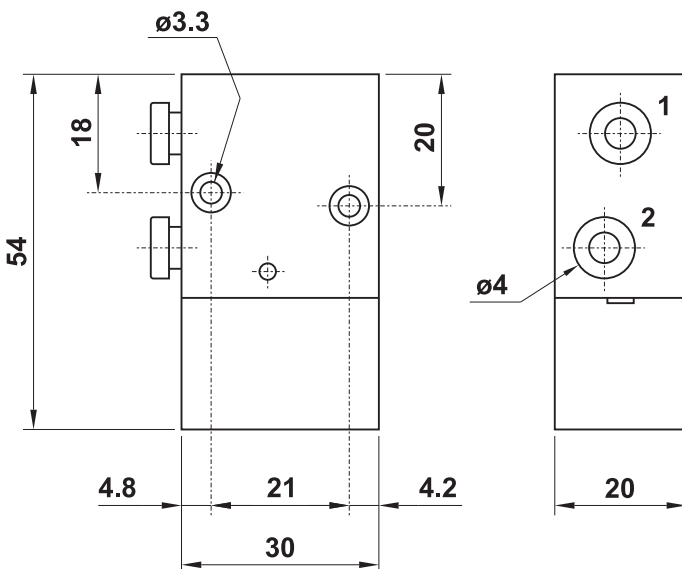


## Valve operation

It is a device which produces an impulse of fixed and not adjustable duration (very short, about 0.2 s).  
 When a signal is applied from a three way valve and maintained at port 1 the impulse generator is activated.  
 To repeat the cycle the pilot signal must be exhausted and applied again.

ORDER CODE

10.003.4



Ports	5/32 " or $\varnothing 4$ push-in fittings
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Temperature range	-15 + 60°C (5-140°F)
Fluid	50 $\mu$ filtered, lubricated or non lubricated air

### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

Internal parts: brass OT58

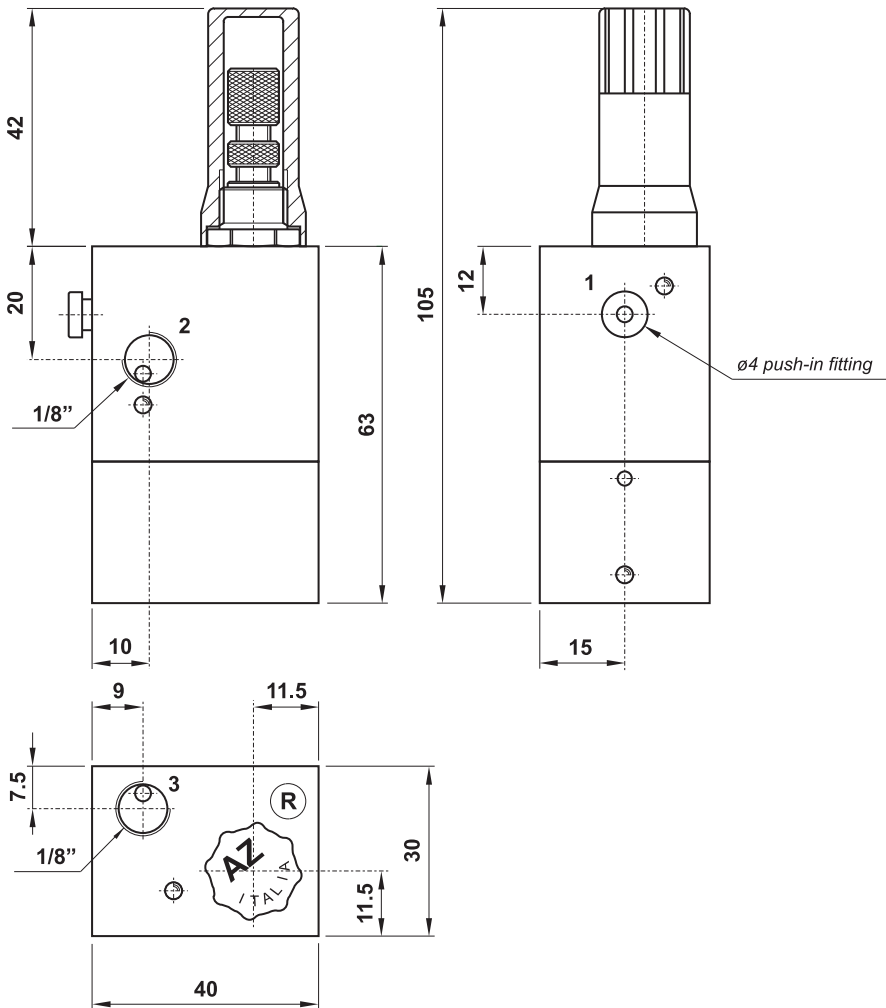
# Mini oscillating valve 3/2 1/8" NPT



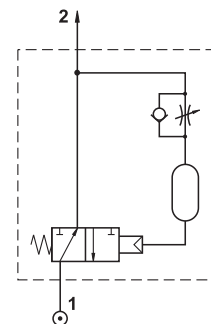
## Valve operation

It is a device which, when air is present at port 1, gives as output impulses with variable frequency. The frequency can be regulated by the screw R.

For a correct operation the minimum main pressure must be 3 bar (43.5 PSI), otherwise the valve can get blocked.



**ORDER CODE**  
**USAX.007.4**



Ports	5/32" or ø4 push-in fittings
Working pressure	3 ... 10 bar (43.5 ... 145 PSI) 0.3 ... 1 MPa
Temperature range	-15 + 60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air

### Materials

Body: aluminium 11S

Springs: stainless steel

Seals: NBR

Internal parts: brass OT58

# High-flow pneumatic timer for automatic return



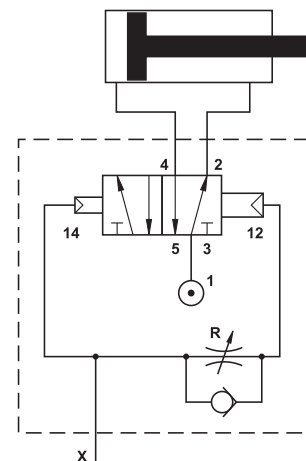
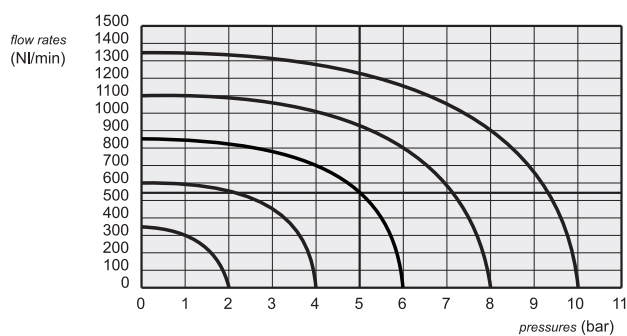
## Valve operation

This is a high-flow 5 way valve with a pneumatic timer which allows the automatic return of the valve after a preset time. The time is adjusted by screw (R).

When a signal is applied to X the valve will stay operated until the time which was set at R has elapsed, and then the valve will automatically re-set. To repeat the cycle the signal must be exhausted and then applied again. If a momentary signal is applied the valve will operate as a conventional 5 way mono-stable valve without the time delay function. The valve will only operate when pressure signal is applied to X.

4

**ORDER CODE**  
**US00.074.4**



Ports	1/8" NPT
Working pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Actuating pressure	3 ... 10 bar (43.5 ... 145 PSI) 0.3 ... 1 MPa
Temperature range	-15+60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air

### Materials

**Body:** aluminium 11S

**Springs:** stainless steel

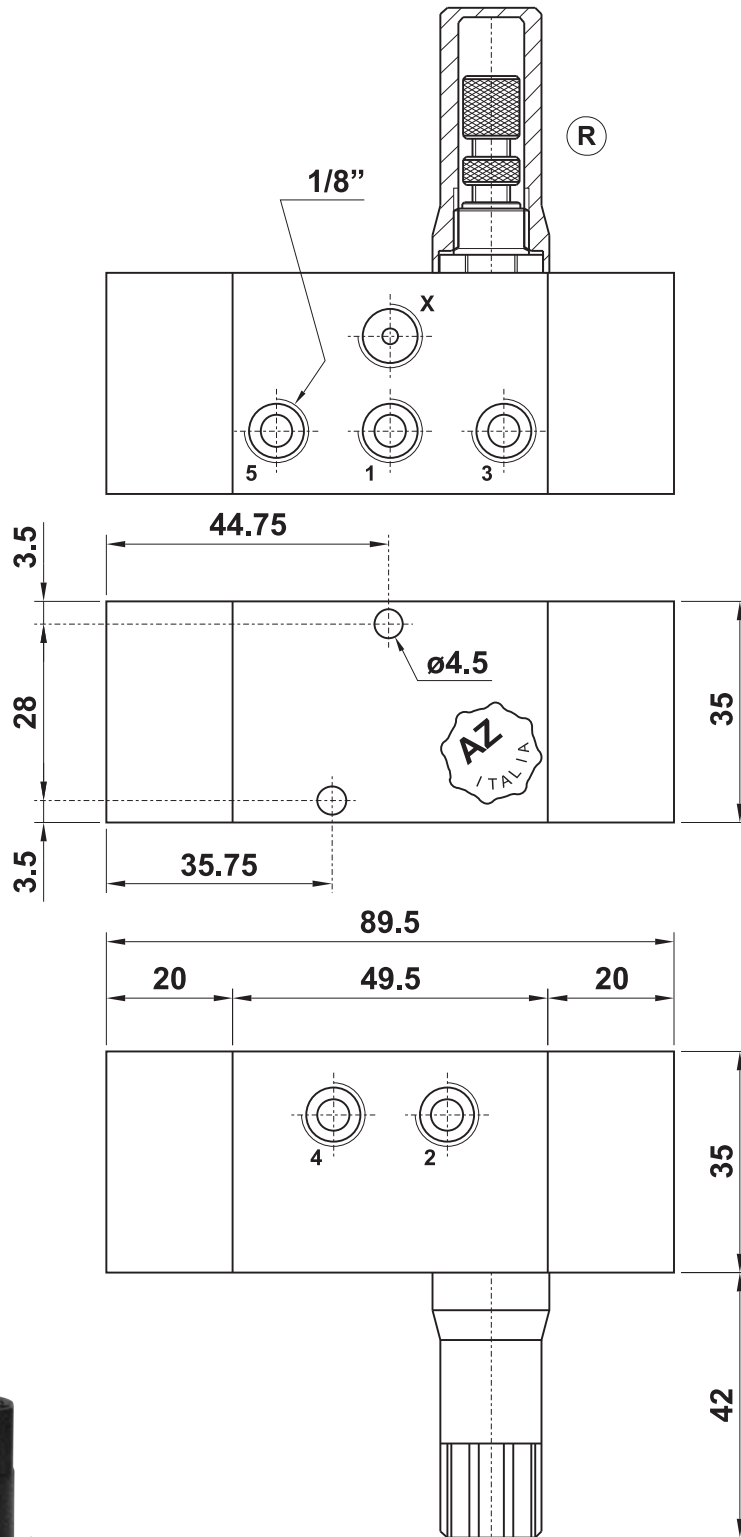
**Seals:** NBR

**Spool:** nickel plated aluminium

**Internal parts:** brass OT58



# High-flow pneumatic timer for automatic return



# High-flow pneumatic timer for delayed actuation



## Valve operation

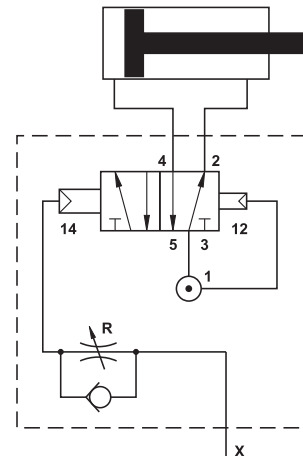
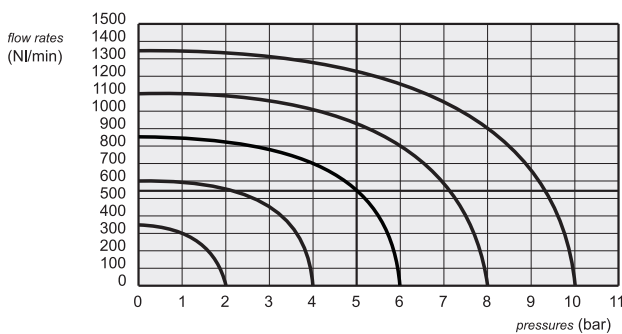
This is a high-flow 5 way valve with a pneumatic timer which delays the effect of the pneumatic pilot after a preset time. The time is adjusted by screw (R).

When a signal is applied to X the valve will stay in the quiet position until the time which was set at R has elapsed, and then the valve will automatically switch to the actuated position. Then the valve will remain in the actuated position. When the pilot signal stops, the valve returns to the quiet position.

The valve will only operate when pressure signal is applied to X.

4

**ORDER CODE**  
**US00.177.4**



Ports	1/8" NPT
Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Actuating pressure	3 ... 10 bar (43.5 ... 145 PSI) 0.3 ... 1 MPa
Temperature range	-15 + 60°C (5-140°F)
Time regulation range	0 ... 10 s
Fluid	50µ filtered, lubricated or non lubricated air

### Materials

**Body:** aluminium 11S

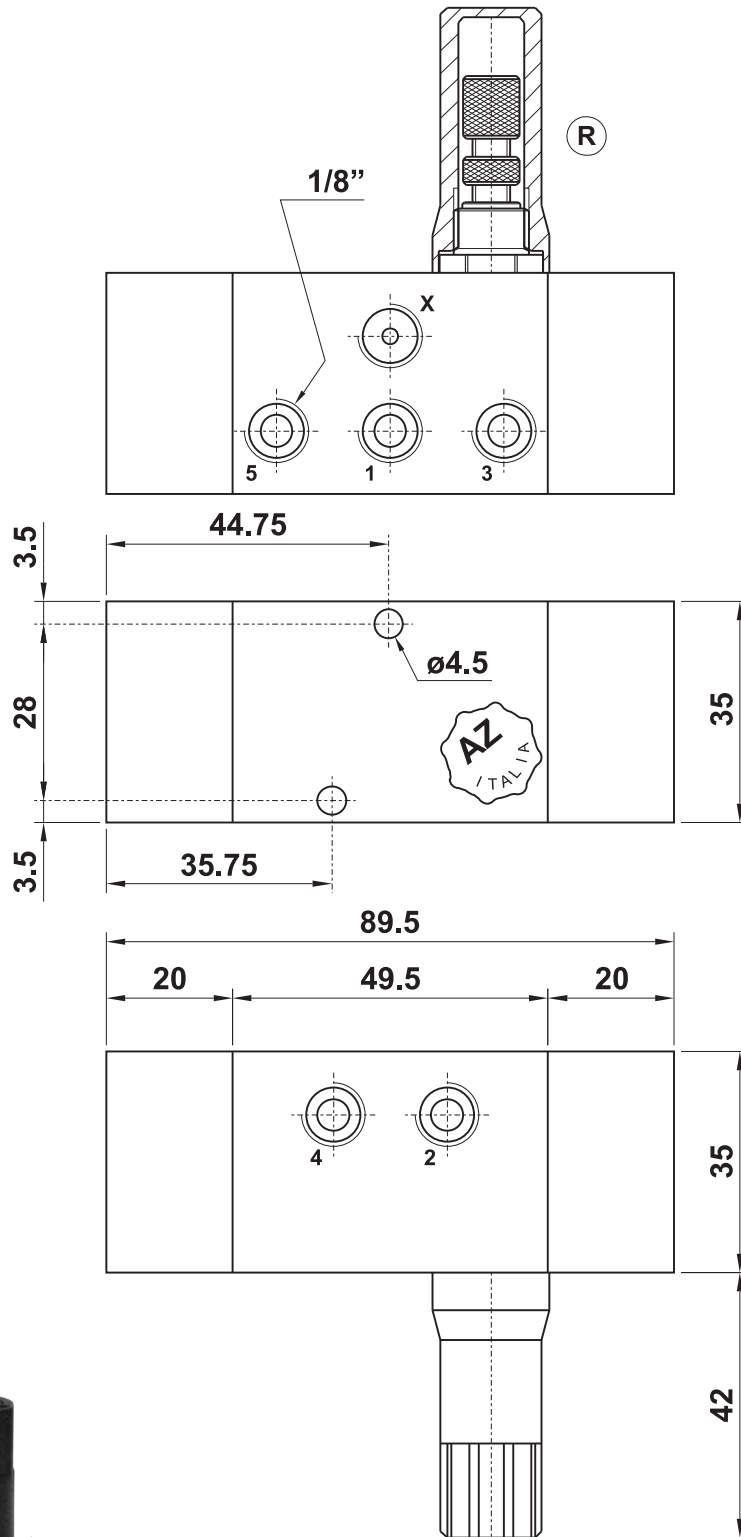
**Springs:** stainless steel

**Seals:** NBR

**Spool:** nickel plated aluminium

**Internal parts:** brass OT58

# High-flow pneumatic timer for delayed actuation





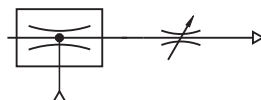
- Vacuum driven liquid sprayer ..... 379
- Fluid dispenser ..... 381

# Vacuum driven liquid sprayer

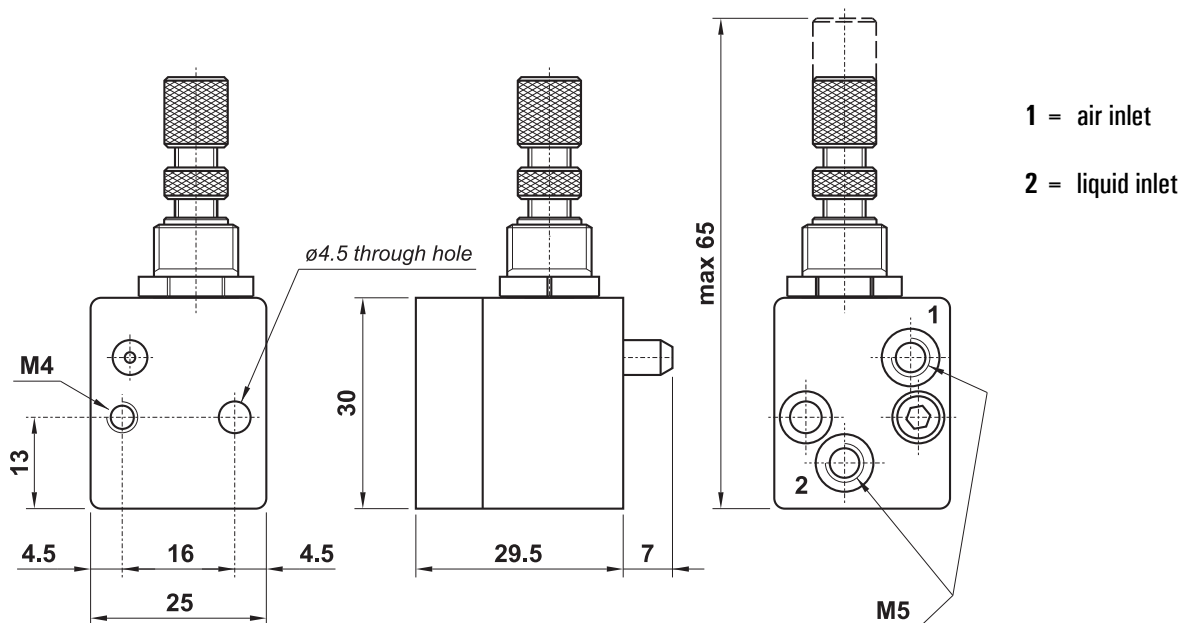


## DP 2005 - 03.009.4

vacuum driven liquid sprayer



This valve works on the venturi principle and is primarily used for air driven liquid spraying applications such as conveyor lubrication and sawing machines.



Air consumption with completely open regulator:

4 bar (58 PSI): 20 NI/min (0.02 Cv)

5 bar (72 PSI): 27 NI/min (0.03 Cv)

6 bar (87 PSI): 37 NI/min (0.04 Cv)

### Materials

Body: aluminium 11S

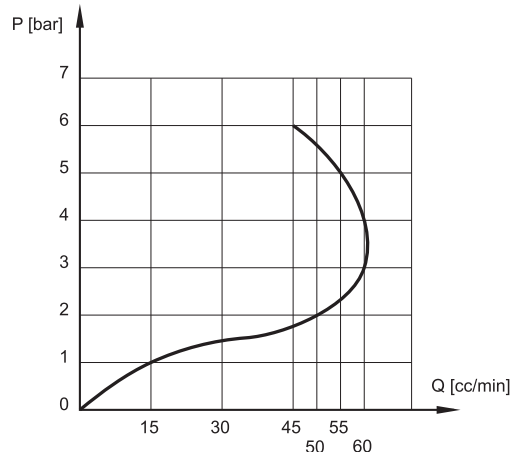
Springs: stainless steel

Seals: NBR

Internal parts: brass OT58

Viscosity of liquid	3°E ... 5°E
Ports	M5
Temperature range	-15+60°C (5-140°F)
Operating pressure	3 ... 8 bar (43.5 ... 116 PSI) 0.3 ... 0.8 MPa
Fluid	50µ filtered, lubricated or non lubricated air

Quantity of liquid in relation to line pressure



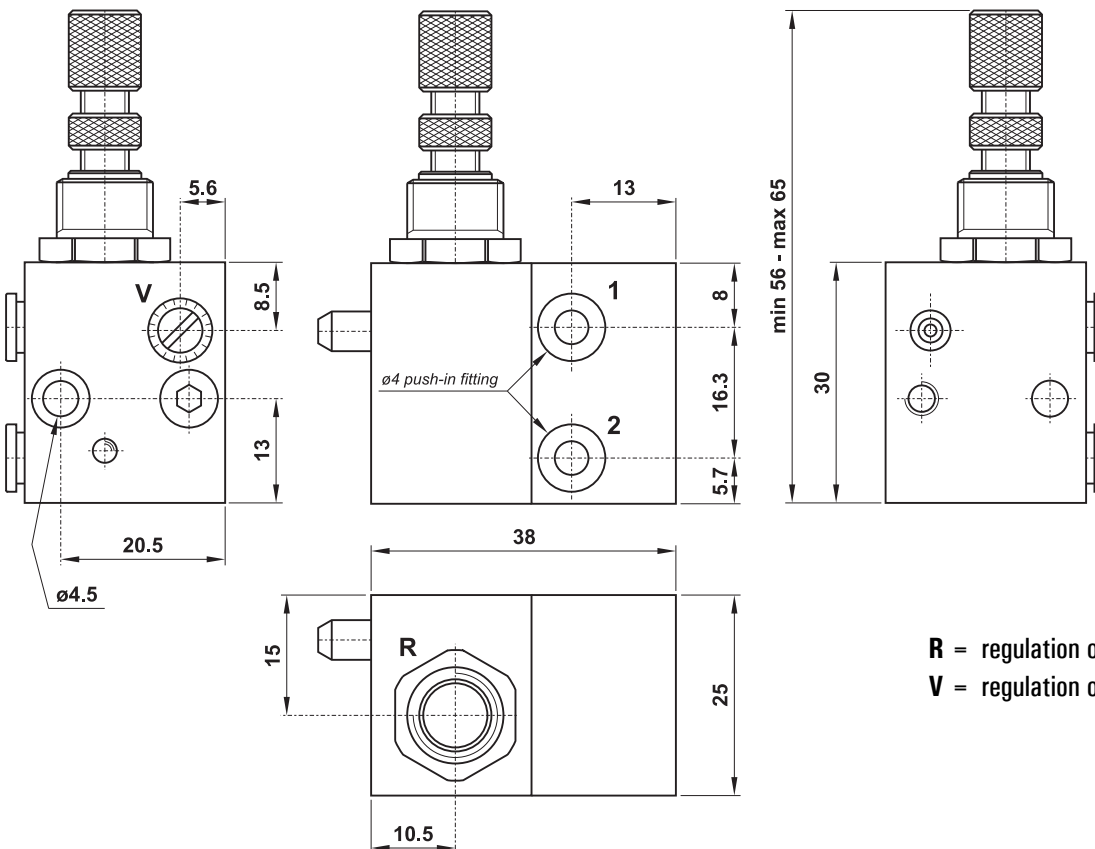
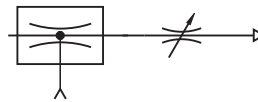
# Vacuum driven liquid sprayer



## AT.005.4

vacuum driven liquid sprayer with push-in fittings for 5/32" or  $\phi 4$  tube

This valve works on the venturi principal and is primarily used for air driven liquid spraying applications such as conveyor lubrication and sawing machines.



**R** = regulation of sprayed fluid  
**V** = regulation of inlet air

### Materials

Body: aluminium 11S

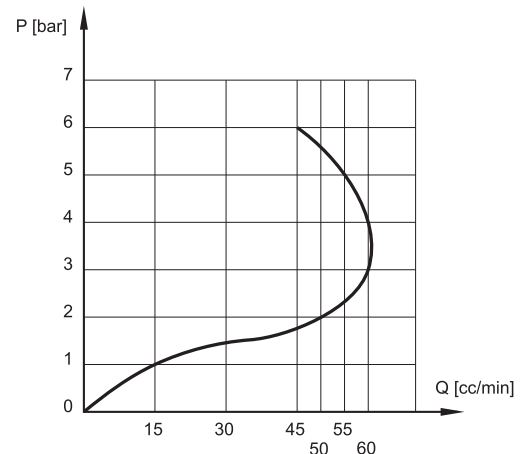
Springs: stainless steel

Seals: NBR

Internal parts: brass OT58

Viscosity of liquid	3°E ... 5°E
Ports	push-in 5/32" or $\phi 4$
Temperature range	-15+60°C (5-140°F)
Working pressure	3 ... 8 bar (43.5 ... 116 PSI) 0.3 ... 0.8 MPa
Fluid	50 $\mu$ filtered, lubricated or non lubricated air

Quantity of sprayed liquid in relation to line pressure with screw V totally open



# Fluid dispenser



This fluid dispenser, with a volume of 1.6 dm<sup>3</sup>, can be used with oil at low pressure to feed, for example, the vacuum driven liquid sprayers (refer to pages 379-380). It is possible to top up and clean the dispenser. Vertical installation. Foot mountings included.

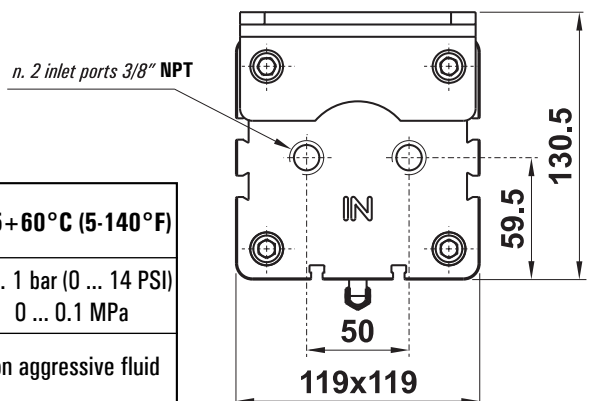
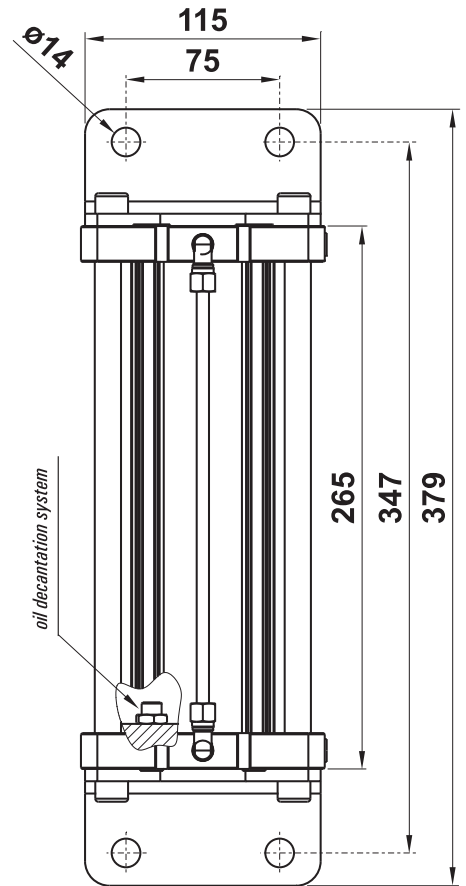
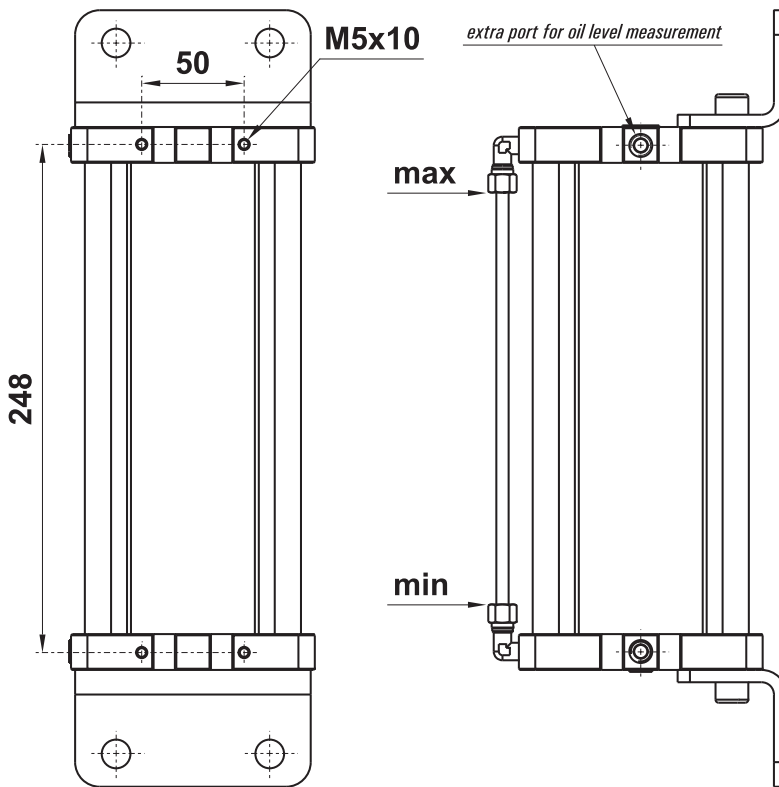
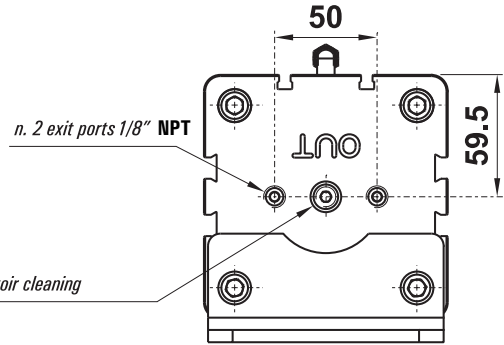
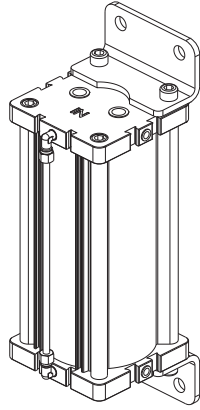
**ORDER CODE**

**US21.130.4**

**Materials**

Valve body: aluminium

11S Seals: NBR



Temperature range	-15+60°C (5-140°F)
Operating pressure	0 ... 1 bar (0 ... 14 PSI) 0 ... 0.1 MPa
Fluid	Hydraulic oil or other non aggressive fluid

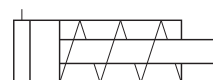
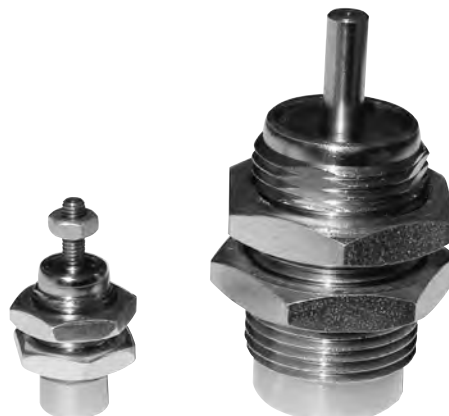






	page
• Cartridge cylinders .....	384
• Minicylinders ISO 6432 .....	386
• Fixing elements for minicylinders ISO 6432 .....	392
• Clamping cylinders .....	397
• Cylinders ISO 6431 VDMA .....	404
• Fixing elements for cylinders ISO 6431 VDMA .....	406
• Accessories for cylinders .....	408
• Rod blocking device .....	426
• Guiding units .....	440
• Compact cylinders .....	445
• Fixing elements for compact cylinders .....	448
• Twin rod cylinders .....	455
• Guided compact cylinders .....	472

- Single acting cylinders with front spring
- Non-magnetic
- Version with threaded or non-threaded piston rod
- High reliability and long lifetime



6

## Materials

Barrel: nickel plated brass

Piston-rod: stainless steel

Nuts: zinc coated steel

Seals: polyurethane

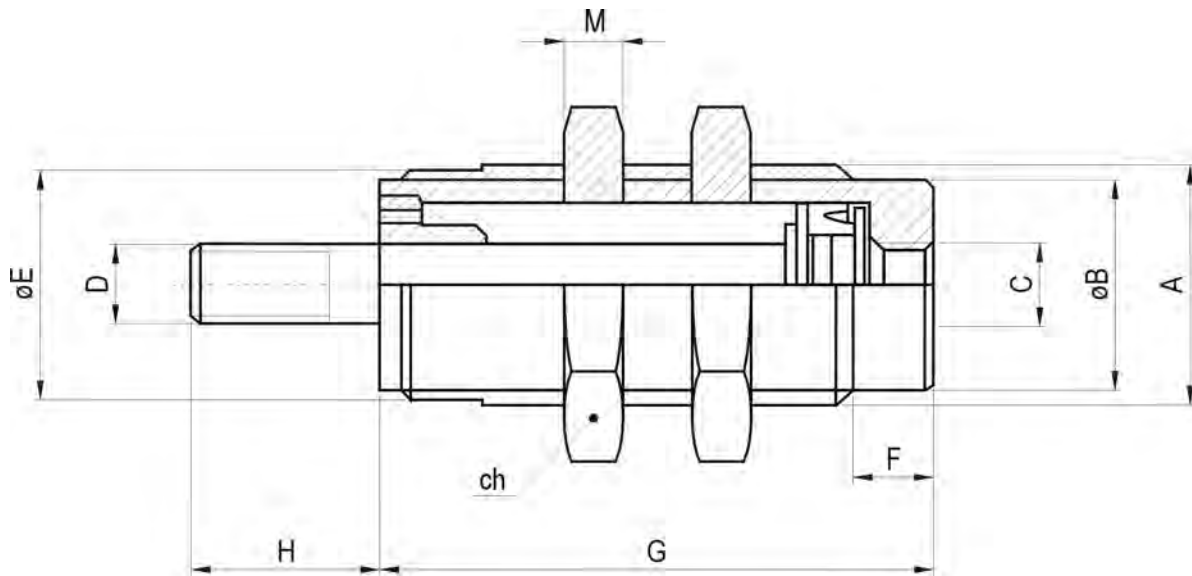
Spring: steel

## WARNING

- Avoid side loads on piston rod
- Do not load the piston rod during the spring retraction

Operating pressure	2 ... 7 bar (30 ... 101 PSI) 0.2 ... 0.7 MPa
Temperature range	-15 + 60°C (5-140° F)
Bores	6; 10; 16 mm
Strokes	5; 10; 15 mm
Fluid	50µ filtered, lubricated or non lubricated air

# Cartridge cylinders



bore	A	B	C	D		øE	F	H	M	ch	G		
				threaded piston rod	non-threaded piston rod						cylinder stroke		
											5	10	15
6	M10x1	8.5	M5	M3	ø3	9	5	8	3	14	19.5	25.5	32.5
10	M15x1.5	13	M5	M4	ø5	14	5	11.5	4	19	20.5	27	34
16	M22x1.5	19	M5	M5	ø5	20	6	14	5	27	23.5	29.5	36

## FORCES at 6 bar (87 PSI)

bore	press force	return spring force	
		stroke 0	stroke end
6	12 N	1.2 N	3.8 N
10	35 N	2.7 N	7.3 N
16	101 N	3.3 N	6.6 N

## WEIGHTS

bore	cylinder stroke		
	5	10	15
6	10 g	13 g	15 g
10	27 g	32 g	36 g
16	71 g	78 g	87 g

## ORDER CODES

cylinders with threaded piston rod			
bore	stroke		
	5	10	15
6	20.100.4	20.101.4	20.102.4
10	20.103.4	20.104.4	20.105.4
16	20.106.4	20.107.4	20.108.4

cylinders with non-threaded piston rod			
bore	stroke		
	5	10	15
6	20.109.4	20.110.4	20.111.4
10	20.112.4	20.113.4	20.114.4
16	20.115.4	20.116.4	20.117.4

- Compliant to norm ISO 6432
- High reliability and long lifetime
- Magnetic or non-magnetic double acting version
- Non-magnetic single acting version
- Special versions on request



### Return spring forces for single acting cylinders

bore	return spring force			spring status
	stroke 10	stroke 25	stroke 50	
10	4.1 N	3.5 N	2.6 N	at rest
	4.5 N	4.5 N	4.5 N	compressed
12	5.5 N	4.8 N	3.5 N	at rest
	6 N	6 N	6 N	compressed
16	16.5 N	13.7 N	9 N	at rest
	18.3 N	18.3 N	18.3 N	compressed
20	19 N	15.5 N	9.5 N	at rest
	21.5 N	21.5 N	21.5 N	compressed
25	27 N	24 N	13.5 N	at rest
	29 N	29 N	29 N	compressed

### Materials

Barrel: stainless steel

Piston-rod: stainless steel

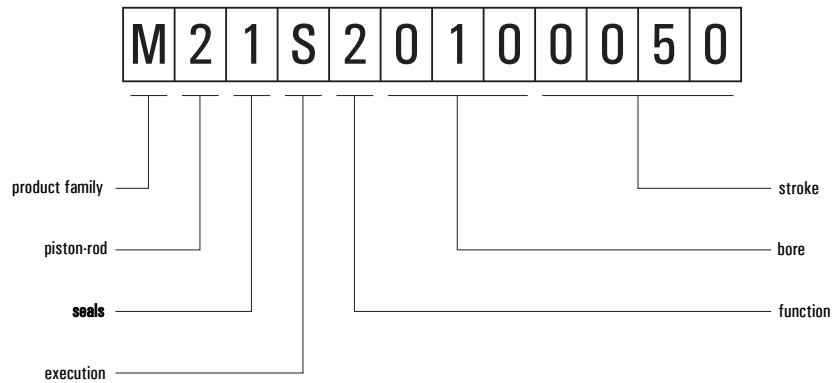
End-cups: aluminium (anodize treatment)

Seals: NBR or VITON

Magnet: magnetic iron compound (not suitable for temperatures over +60°C)

Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	-15+60°C (5-140° F)
Bores	10; 12; 16; 20; 25 mm
Strokes	10 ... 320 mm
Mechanical cushioning	Standard on the whole range
Pneumatic cushioning	Available for bore 20 and 25
Fluid	50µ filtered, lubricated or non lubricated air

## coding example



### Product family

**M** minicylinders ISO 6432

### Piston-rod

**2** stainless steel

### Seals

**1** NBR  
**2** VITON

### Execution

**S** non-magnetic  
**M** magnetic  
**A** non-magnetic with rod lock adaptor  
**B** magnetic with rod lock adaptor

### Function

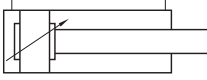
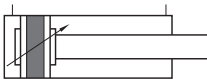
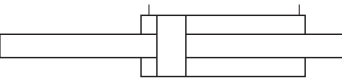
**1** single acting front spring without pneumatic cushioning  
**2** double acting without pneumatic cushioning  
**3** double acting with pneumatic cushioning  
**4** double acting without pneumatic cushioning, with through-rod  
**5** double acting with pneumatic cushioning and through-rod  
**6** single acting back spring without pneumatic cushioning

## available versions

<b>single acting front spring non-magnetic</b> without pneumatic cushioning	bore \ stroke 10	X	X	X	X	X	<b>OPTIONS</b>  The standard is marked with grey background
	25	X	X	X	X	X	
	50	X	X	X	X	X	
<b>single acting back spring non-magnetic</b> without pneumatic cushioning	10			X	X	X	<b>OPTIONS</b>  The standard is marked with grey background
	25			X	X	X	
	50			X	X	X	
<b>double acting non-magnetic</b> without pneumatic cushioning	bore \ stroke 10	X	X	X	X	X	<b>OPTIONS</b>  The standard is marked with grey background
	25	X	X	X	X	X	
	50	X	X	X	X	X	
	80	X	X	X	X	X	
	100	X	X	X	X	X	
	125	X	X	X	X	X	
	160	X	X	X	X	X	
	200	X	X	X	X	X	
	250			X	X	X	
	320			X	X	X	
<b>double acting magnetic</b> without pneumatic cushioning	bore \ stroke 10	X	X	X	X	X	<b>OPTIONS</b>  The standard is marked with grey background
	25	X	X	X	X	X	
	50	X	X	X	X	X	
	80	X	X	X	X	X	
	100	X	X	X	X	X	
	125	X	X	X	X	X	
	160	X	X	X	X	X	
	200	X	X	X	X	X	
	250			X	X	X	
	320			X	X	X	
<b>piston-rod material</b> stainless steel							
<b>seals material</b> NBR      VITON							
<b>rod lock adaptor</b> not available for bore 10							
<b>piston-rod material</b> stainless steel							
<b>seals material</b> NBR      VITON							
<b>rod lock adaptor</b> not available for bore 10							
<b>piston-rod material</b> stainless steel							
<b>seals material</b> NBR      VITON							
<b>rod lock adaptor</b> not available for bore 10							

6

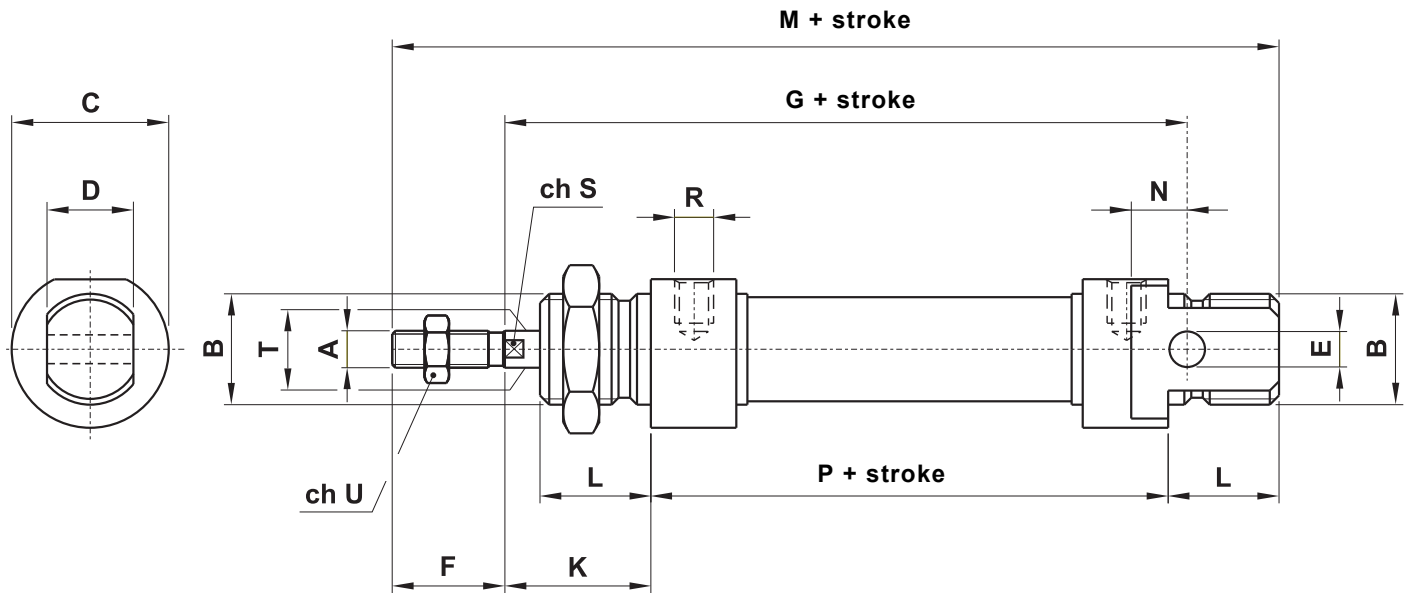
## available versions

<b>double acting</b>  <b>non-magnetic</b>  <b>with pneumatic cushioning</b>  	bore stroke	10	12	16	20	25	<b>OPTIONS</b>  The standard is marked with grey background  <b>piston-rod material</b> stainless steel  <b>seals material</b> NBR      VITON  <b>rod lock adaptor</b>
	10						
25					X	X	
50					X	X	
80					X	X	
100					X	X	
125					X	X	
160					X	X	
200					X	X	
250					X	X	
320					X	X	
<b>double acting</b>  <b>magnetic</b>  <b>with pneumatic cushioning</b>  	bore stroke	10	12	16	20	25	<b>OPTIONS</b>  The standard is marked with grey background  <b>piston-rod material</b> stainless steel  <b>seals material</b> NBR      VITON  <b>rod lock adaptor</b>
	10						
25					X	X	
50					X	X	
80					X	X	
100					X	X	
125					X	X	
160					X	X	
200					X	X	
250					X	X	
320					X	X	
<b>double acting</b>  <b>non-magnetic</b>  <b>without pneumatic cushioning</b>  <b>through-rod</b>  	bore stroke	10	12	16	20	25	<b>OPTIONS</b>  The standard is marked with grey background  <b>piston-rod material</b> stainless steel  <b>seals material</b> NBR      VITON  <b>rod lock adaptor</b>
	10			X	X	X	
25				X	X	X	
50				X	X	X	
80				X	X	X	
100				X	X	X	
125				X	X	X	
160				X	X	X	
200				X	X	X	
250				X	X	X	
320				X	X	X	

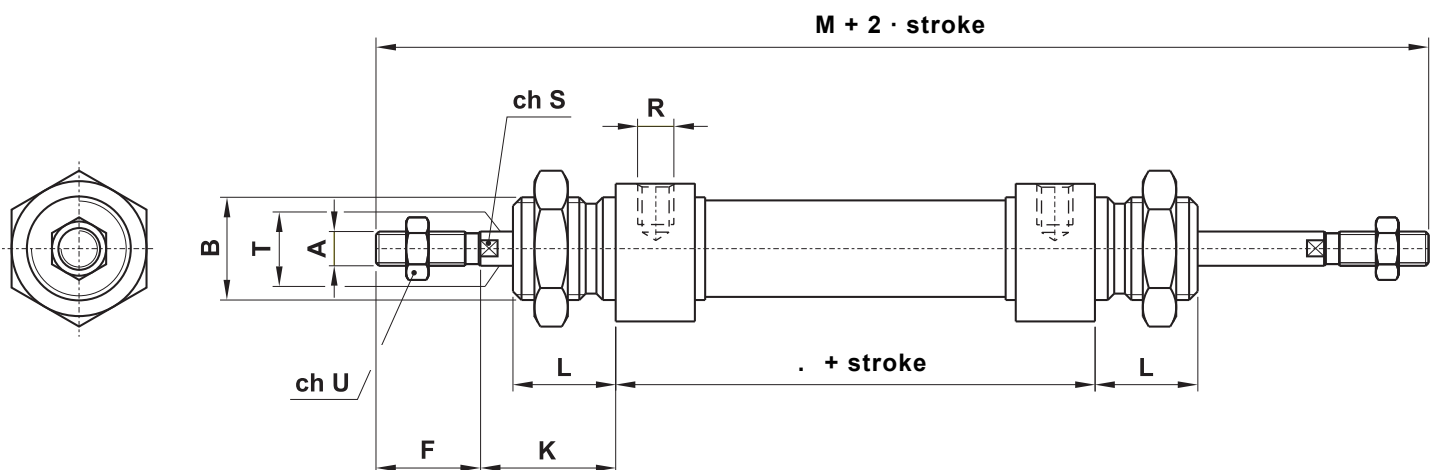




# Minicylinders ISO 6432



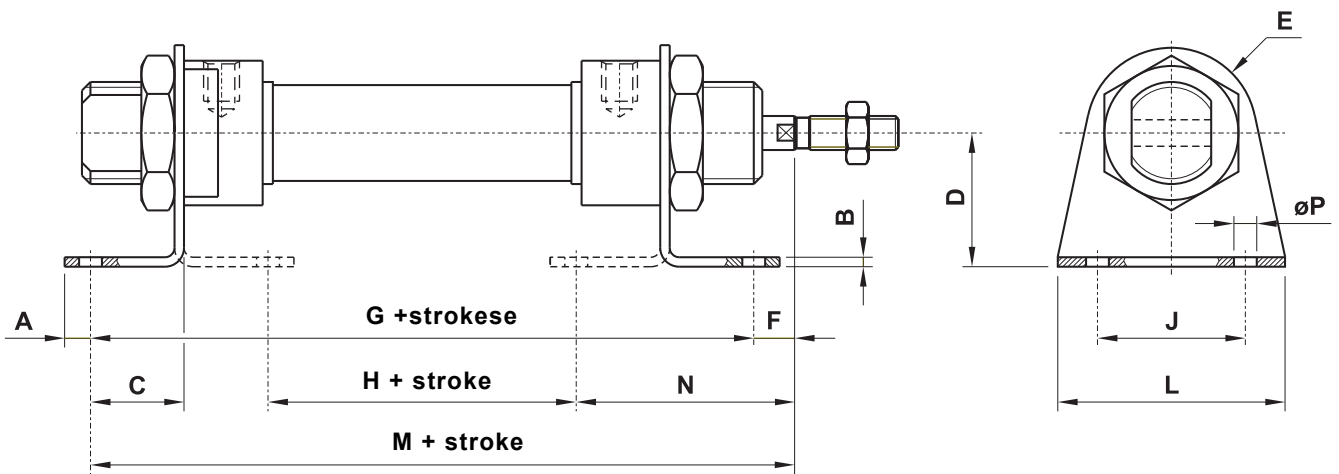
∅	A	B	C	D	E	F	G	K	L	M	N	P	R	S	T	U
10	M4	M12x1.25	∅16	8	∅4	12	64	16	12	86	6	46	M5	-	∅4	7
12	M6	M16x1.5	∅19	12	∅6	16	75	22	18	104	9	48	M5	5	∅6	10
16	M6	M16x1.5	∅19	12	∅6	16	82	22	18	109	9	53	M5	5	∅6	10
20	M8	M22x1.5	∅27	16	∅8	20	95	24	20	131	12	67	G1/8"	7	∅8	13
25	M10x1.25	M22x1.5	∅30	16	∅8	22	104	28	22	140	12	68	G1/8"	9	∅10	17



∅	A	B	F	K	L	M	P	R	S	T	U
16	M6	M16x1.5	16	22	18	129	53	M5	5	∅6	10
20	M8	M22x1.5	20	24	20	155	67	G1/8"	7	∅8	13
25	M10x1.25	M22x1.5	22	28	22	168	68	G1/8"	9	∅10	17

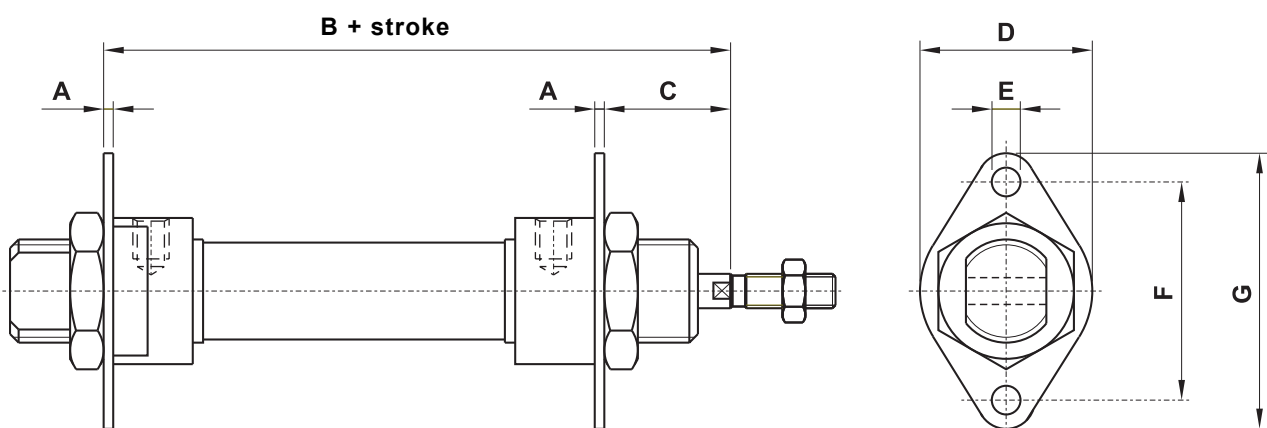


## FOOT MOUNTING



∅	A	B	C	D	E	F	G	H	J	L	M	N	P
10	5	3	11	16	10	5	68	30	25	32	73	24	4.5
12	6	4	14	20	12.5	8	76	28	32	42	84	32	5.5
16	6	4	14	20	12.5	8	81	33	32	42	89	32	5.5
20	8	5	17	25	20	7	101	43	40	54	108	36	6.6
25	8	5	17	25	20	11	102	44	40	54	113	40	6.6

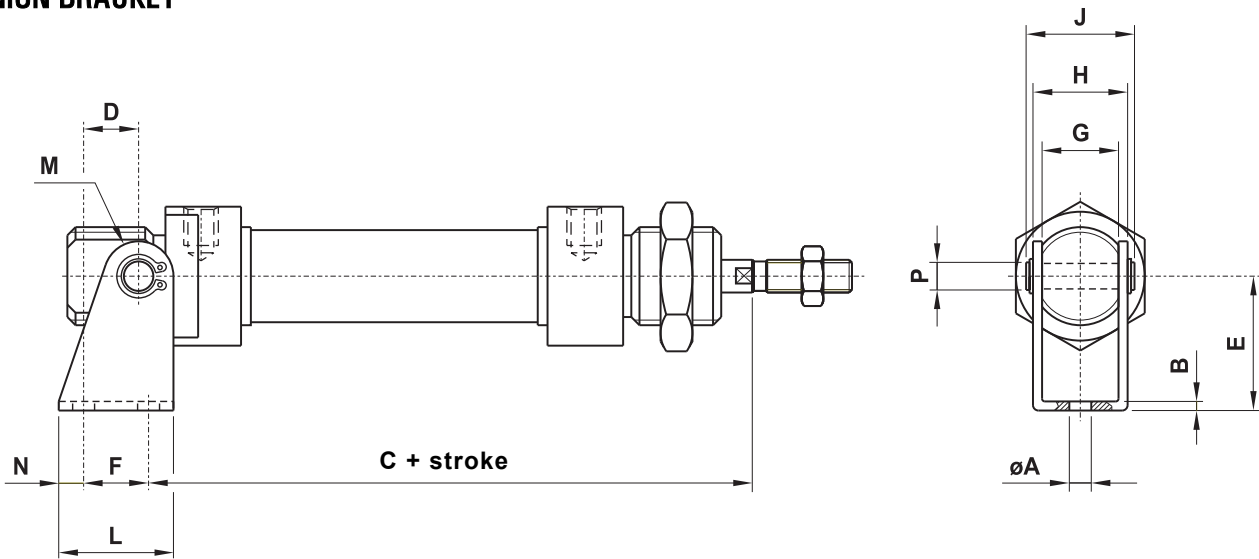
## FLANGE



∅	A	B	C	D	E	F	G
10	3	65	13	22	∅4.5	30	40
12	4	74	18	30	∅5.5	40	52
16	4	79	18	30	∅5.5	40	52
20	5	96	19	40	∅6.6	50	66
25	5	101	23	40	∅6.6	50	66

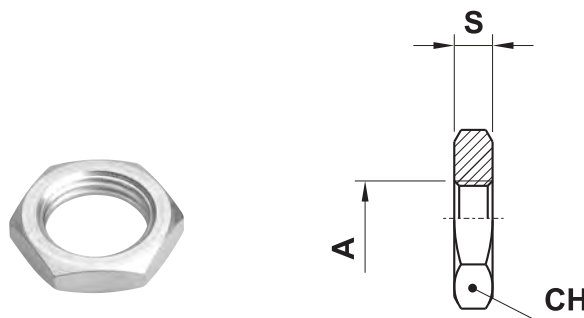


## TRUNNION BRACKET



ø	A	B	C	D	E	F	G	H	J	L	M	N	P
10	4.5	2.5	62.5	12.25	24	12.5	8.1	13	17	20	5	4.75	ø4
12	5.5	3	73	13	27	15	12.1	18	23	25	7	5	ø6
16	5.5	3	80	13	27	15	12.1	18	23	25	7	5	ø6
20	6.6	4	91	16	30	20	16.1	24	29.5	32	10	6	ø8
25	6.6	4	100	16	30	20	16.1	24	29.5	32	10	6	ø8

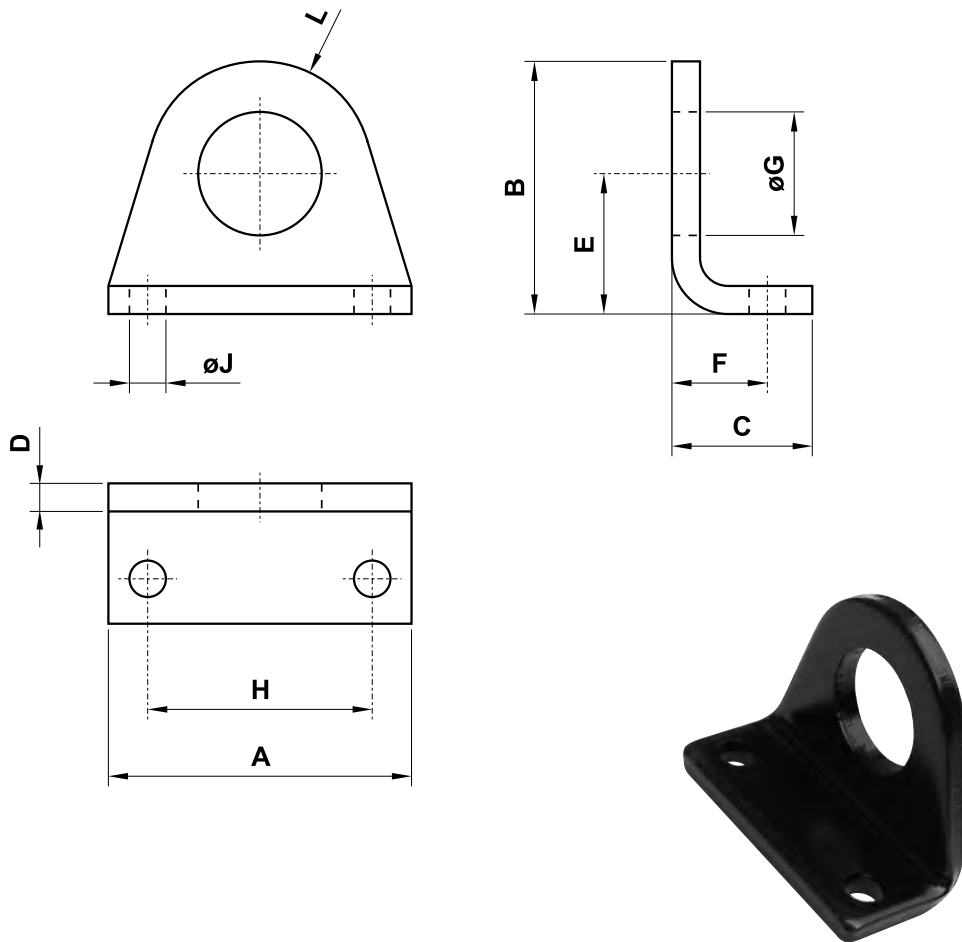
## NUT FOR CYLINDER HEAD



part number	for bore	A	CH	S
<b>GPM010</b>	10	M12x1.25	19	7
<b>GPM12-16</b>	12-16	M16x1.5	22	6
<b>GPM20-25</b>	20-25	M22x1.5	27	8



## FOOT MOUNTING



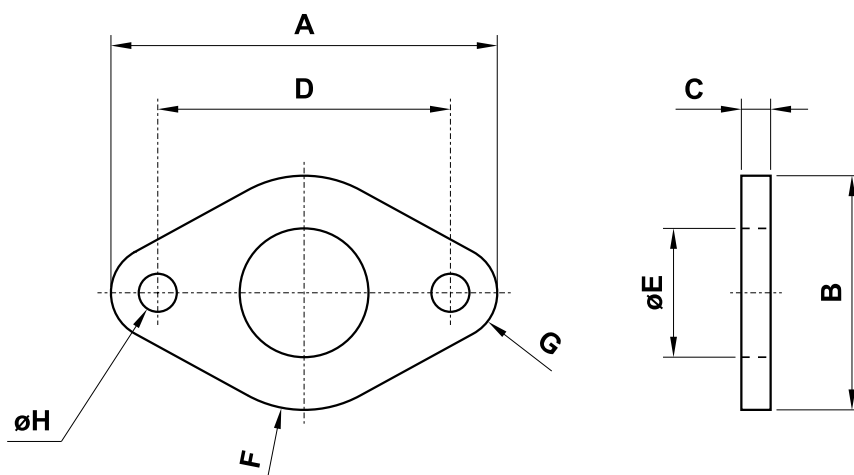
6

part number*	for bore	A	B	C	D	E	F	G	H	J	L
<b>PDMC08-10</b>	8-10	35	26	16	3	16	11	12	25	4.5	10
<b>PDMC12-16</b>	12-16	42	32.5	20	4	20	14	16	32	5.5	12.5
<b>PDMC20-25</b>	20-25	54	45	25	5	25	17	22	40	6.6	20

\* Part number refers to a single element, not to the couple



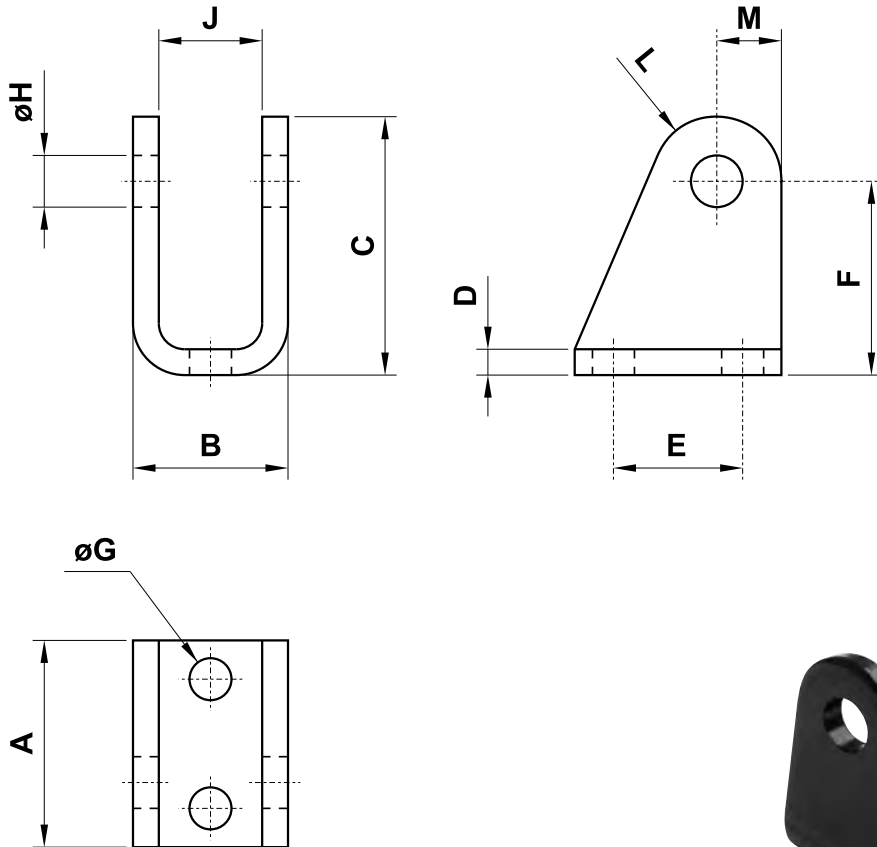
## FLANGE



part number	for bore	A	B	C	D	E	F	G	H
<b>FLMC08-10</b>	8-10	40	22	3	30	12	11	5	4.5
<b>FLMC12-16</b>	12-16	52	30	4	40	16	15	6	5.5
<b>FLMC20-25</b>	20-25	66	40	5	50	22	20	8	6.6



## TRUNNION BRACKET



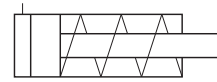
6

part number	for bore	A	B	C	D	E	F	G	H	J	L	M
<b>CCMC08-10</b>	8-10	20	13	29	2.5	12.5	24	4.5	4	8.1	5	5
<b>CCMC12-16</b>	12-16	25	18	34	3	15	27	5.5	6	12.1	7	7
<b>CCMC20-25</b>	20-25	32	24	40	4	20	30	6.6	8	16.1	10	10

# Clamping cylinders



- Single acting front spring cylinders, anti-rotation
- Non magnetic
- Very good cylinders to clamp the pieces in sawing machines for aluminium or wood



model	internal bore	stroke	execution
17.066.0	25 mm	8 mm	with pushing pad
17.062.0	25 mm	75 mm	with pushing pad
17.067.0	25 mm	110 mm	with pushing pad
17.068.0	35 mm	8 mm	with pushing pad
17.060.0	35 mm	75 mm	with pushing pad
17.061.0	35 mm	110 mm	with pushing pad
17.069.0	35 mm	75 mm	with pushing pad and threaded front end cap



## Materials

Body: aluminium (anodize treatment)

Piston-rod: zinc plated AVP iron

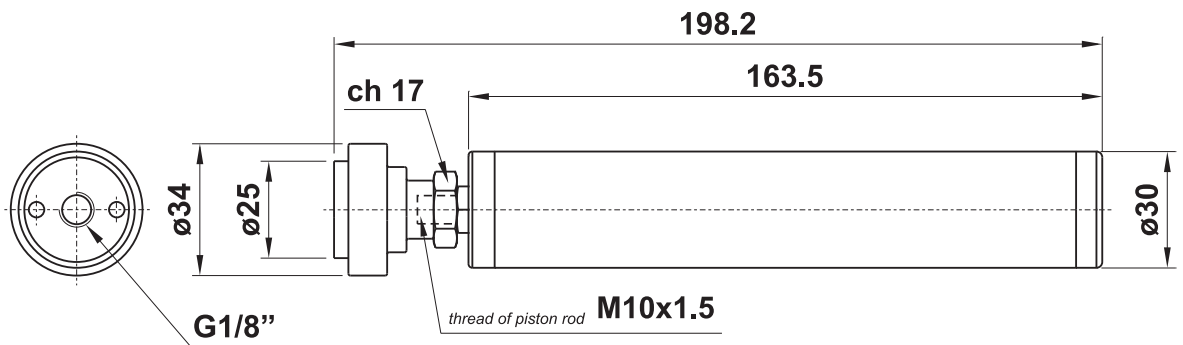
Seals: NBR and polyurethane

Operating pressure	2 ... 10 bar (30 ... 145 PSI) 0.2 ... 1 MPa
Temperature range	-15+60°C (5-140° F)
Internal bores	25; 35 mm
Strokes	8; 75; 110 mm
Fluid	50µ filtered, lubricated or non lubricated air

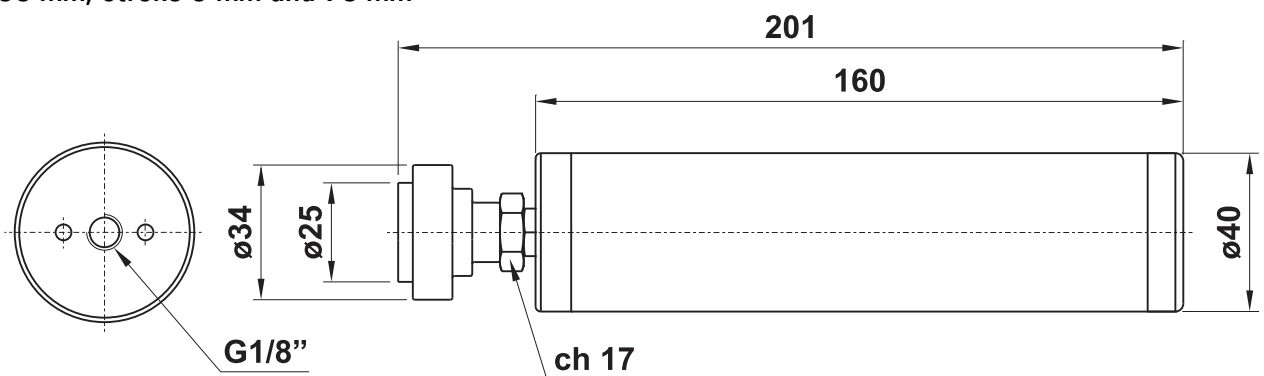
# Clamping cylinders



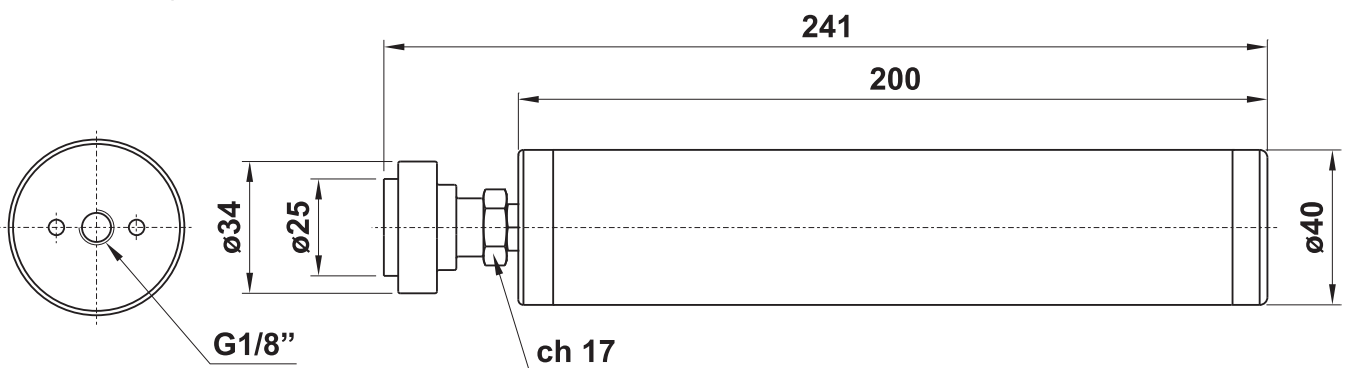
internal bore 25 mm; all strokes



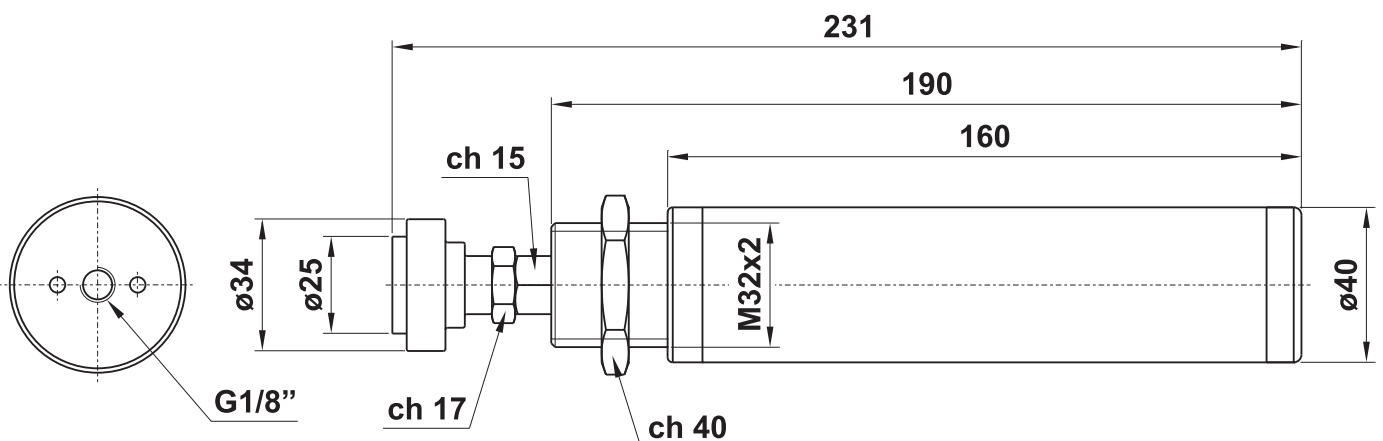
internal bore 35 mm; stroke 8 mm and 75 mm



internal bore 35 mm; stroke 110 mm



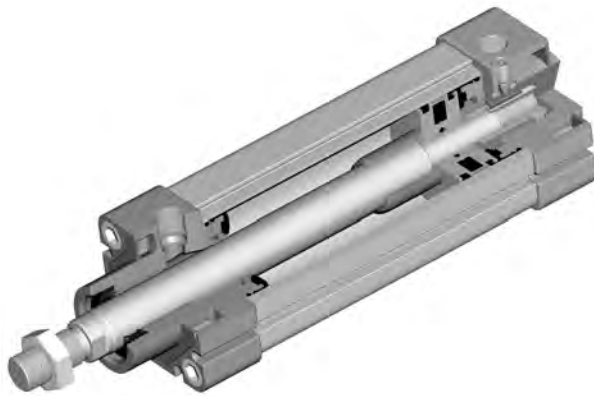
internal bore 35 mm; stroke 75 mm; threaded front end cup



6



- Compliant to norm ISO 6431 VDMA
- High reliability and long lifetime
- Standard magnetic version
- With square profile (N series) or "easy" profile (E series)
- Special versions and strokes on request



## Materials

**Barrel:** aluminium

**Piston-rod:** C45 (chromium plated) or stainless steel

**End-cups:** aluminium

**Piston:** technopolymer (standard) or aluminium (on request) - see table on next page

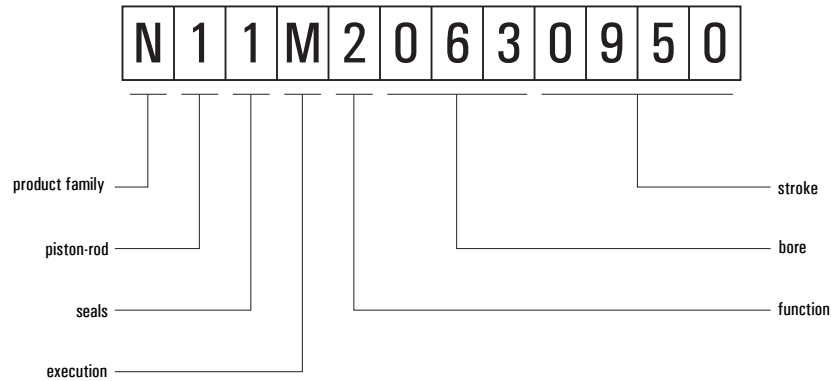
**Seals:** polyurethane or VITON

**Piston-rod seals:** polyurethane or VITON

**Magnet:** magnetic iron compound (not suitable for temperatures over +60°C)

Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	standard (poliuretano/NBR): -15+60°C (5-140° F) VITON: max +110°C (230° F)
Bores	32; 40; 50; 63; 80; 100; 125; 160; 200; 250; 320 mm
Construction type	ø32 ... 125 : square aluminium profile
	ø160-320 : round profile with tie-rods
Strokes	standard: 25 ... 1000 mm; on request up to 3000 mm
Pneumatic cushioning	Standard on the whole range
Fluid	50µ filtered, lubricated or non lubricated air

## coding example



### Product family

- N** cylinders ISO 6431  $\phi$ 32 ... 320 *Standard Profile*
- E** cylinders ISO 6431  $\phi$ 32 ... 125 *Easy Profile*
- K** cylinders ISO 6431  $\phi$ 32 ... 125 *Tubes & Ti rods*

### Function

- 2** double acting with pneumatic cushioning
- 4** double acting with pneumatic cushioning, with through-rod

### Piston-rod

- 1** C45 chromium plated
- 2** stainless steel

### Seals

- 1** polyurethane
- 2** all seals in VITON
- 3** rod seals in VITON

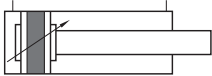
### Execution

- M** magnetic
- B** magnetic with rod lock adaptor

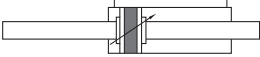
bore	maximum stroke (mm)
32	350
40	350
50	500
63	500
80	500
100	350
125	only aluminium
160	only aluminium
200	only aluminium
250	only aluminium
320	only aluminium

Maximum stroke for cylinders with standard piston in technopolymer. If the stroke is longer, the cylinder can be supplied only with piston in aluminium. The piston in technopolymer is not suitable for ATEX.

## available versions

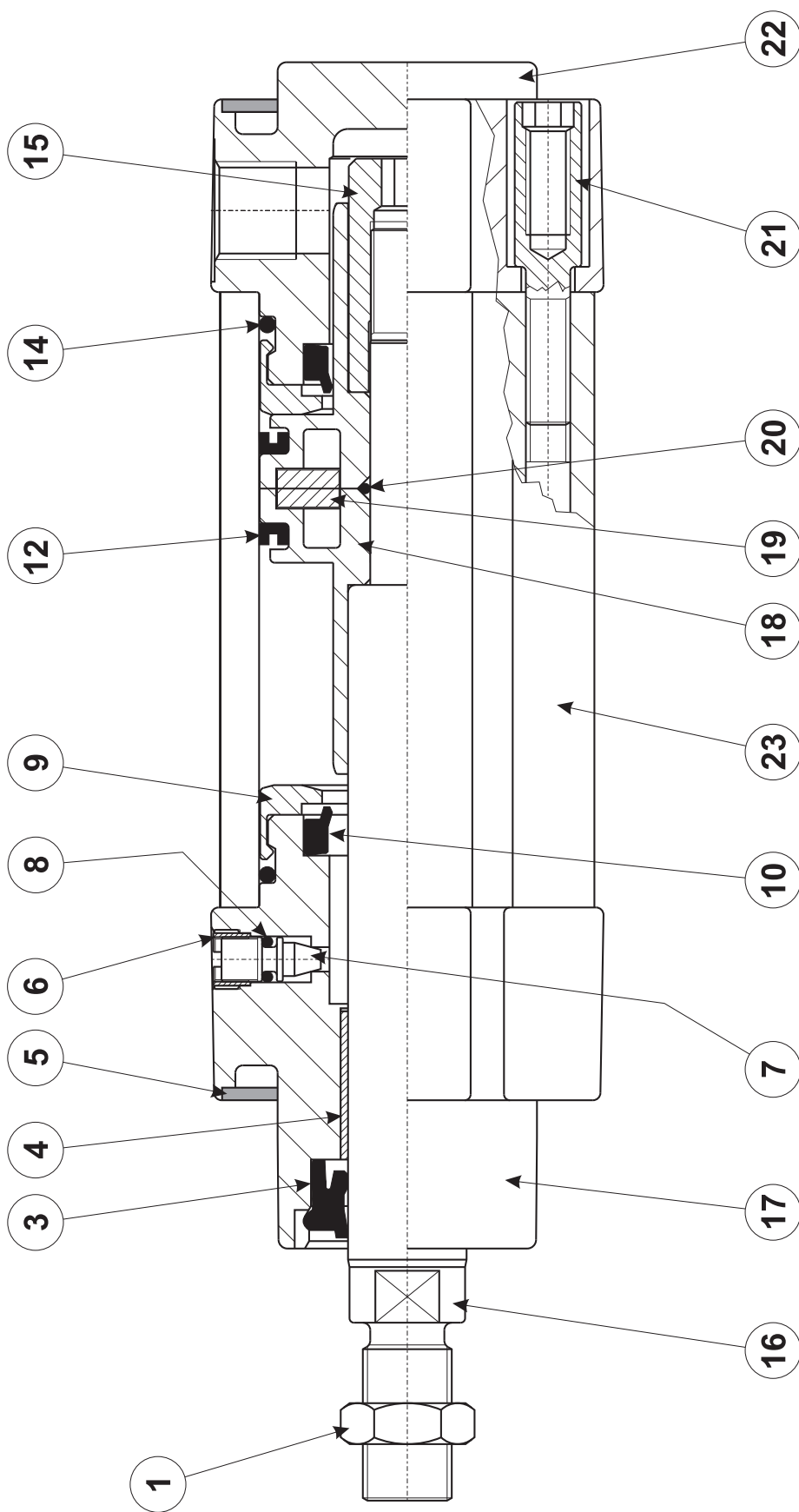
<b>double acting</b>  <b>magnetic</b>  <b>with pneumatic cushioning</b>  	bore stroke	32	40	50	63	80	100	125	160	200	250 (**)	320 (**)	<b>OPTIONS</b>  The standard is marked with grey background		
			25	X	X	X	X	X	X	X					
	50	X	X	X	X	X	X	X	X	X	X	X	<b>seals material</b> polyuret.    all seals in VITON    rod seals in VITON		
	75	X	X	X	X	X	X	X							
	80	X	X	X	X	X	X	X	X	X					
	100	X	X	X	X	X	X	X	X	X	X	X			
	125	X	X	X	X	X	X	X							
	150	X	X	X	X	X	X	X	X	X					
	160	X	X	X	X	X	X	X	X	X					
	200	X	X	X	X	X	X	X	X	X	X	X			
	250	X	X	X	X	X	X	X	X	X					
	300	X	X	X	X	X	X	X	X	X	X	X			
	320	X	X	X	X	X	X	X	X	X					
	350	X	X	X	X	X	X	X							
	400	X	X	X	X	X	X	X	X	X	X	X			
	450	X	X	X	X	X	X	X							
	500	X	X	X	X	X	X	X	X	X	X	X			
	550	X	X	X	X	X	X	X							
	600	X	X	X	X	X	X	X	X	X	X	X			
	650	X	X	X	X	X	X	X							
	700	X	X	X	X	X	X	X	X	X	X	X			
	750	X	X	X	X	X	X	X							
	800	X	X	X	X	X	X	X	X	X	X	X			
	850	X	X	X	X	X	X	X							
	900	X	X	X	X	X	X	X	X	X	X	X			
	950	X	X	X	X	X	X	X							
	1000	X	X	X	X	X	X	X	X	X	X	X			

<b>double acting</b>  <b>magnetic</b>  <b>with pneumatic cushioning</b>  <b>through-rod</b>  	bore stroke	32	40	50	63	80	100	125	160	200	250	320	<b>OPTIONS</b>  The standard is marked with grey background		
			25	X	X	X	X	X	X	X					
	50	X	X	X	X	X	X	X	X	X			<b>seals material</b> polyuret.    all seals in VITON    rod seals in VITON		
	75	X	X	X	X	X	X	X							
	80	X	X	X	X	X	X	X	X	X					
	100	X	X	X	X	X	X	X	X	X					
	125	X	X	X	X	X	X	X							
	150	X	X	X	X	X	X	X	X	X					
	160	X	X	X	X	X	X	X	X	X					
	200	X	X	X	X	X	X	X	X	X	X	X			
	250	X	X	X	X	X	X	X	X	X					
	300	X	X	X	X	X	X	X	X	X	X	X			
	320	X	X	X	X	X	X	X	X	X					
	350	X	X	X	X	X	X	X							
	400	X	X	X	X	X	X	X	X	X	X	X			
	450	X	X	X	X	X	X	X							
	500	X	X	X	X	X	X	X	X	X	X	X			
	550	X	X	X	X	X	X	X							
	600	X	X	X	X	X	X	X	X	X	X	X			
	650	X	X	X	X	X	X	X							
	700	X	X	X	X	X	X	X	X	X	X	X			
	750	X	X	X	X	X	X	X							
	800	X	X	X	X	X	X	X	X	X	X	X			
	850	X	X	X	X	X	X	X							
	900	X	X	X	X	X	X	X	X	X	X	X			
	950	X	X	X	X	X	X	X							
	1000	X	X	X	X	X	X	X	X	X	X	X			

6

the drawing is valid from bore 32 to bore 125 - PISTON IN TECHNOPOLYMER



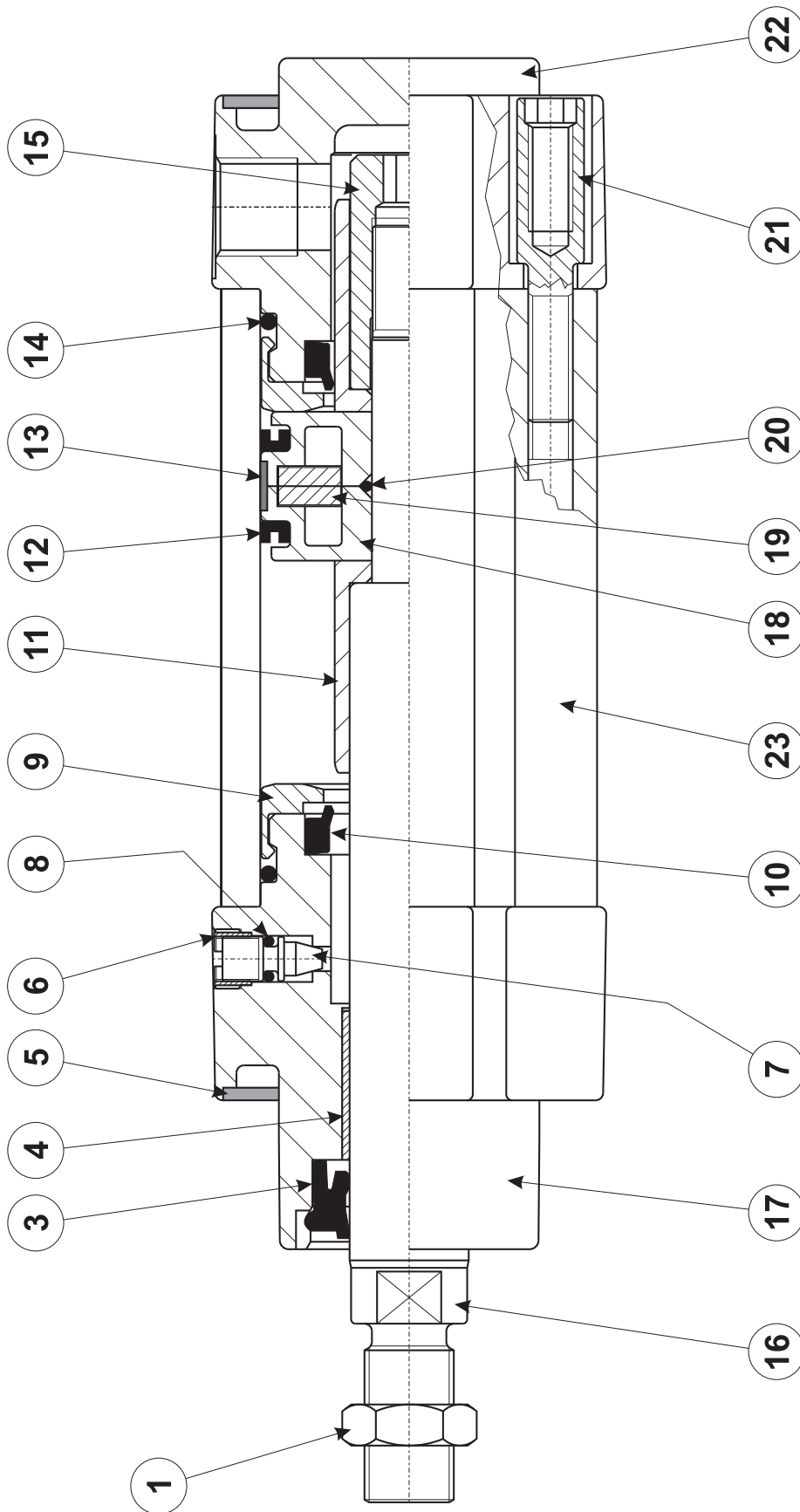
- 1. Hexagonal rod nut
- 3. Piston-rod seal: polyurethane or VITON
- 4. Guide bushing: self-lubricating material
- 5. Protection plate: MOPLEN
- 6. Ring for cushioning screw: nickeled brass
- 7. Cushioning screw: nickeled brass
- 8. O-Ring seal for cushioning screw: NBR or VITON
- 9. Bumper: HYTREL
- 10. Seal for cushioning: polyurethane or VITON
- 12. Piston lip seal: polyurethane or VITON
- 14. O-Ring head seal: NBR o VITON

- 15. Compass rod locking: UNI 5105 material 35S Mn Pb 10, zinc plated
- 16. Rod: C45 chromium plated steel or stainless steel AISI 304
- 17. Front head: aluminium alloy die-casting
- 18. Piston with ogive: technopolymer
- 19. Magnet: magnetic iron compound
- 20. O-Ring piston seal: NBR or VITON
- 21. Head assembling screw: self-threading till bore 63, then normal to tap
- 22. Rear head: aluminium alloy die-casting
- 23. Barrel: profiled, calibrated, anodized aluminium

# Cylinders ISO 6431 VDMA



the drawing is valid from bore 32 to bore 125 - PISTON IN ALUMINIUM



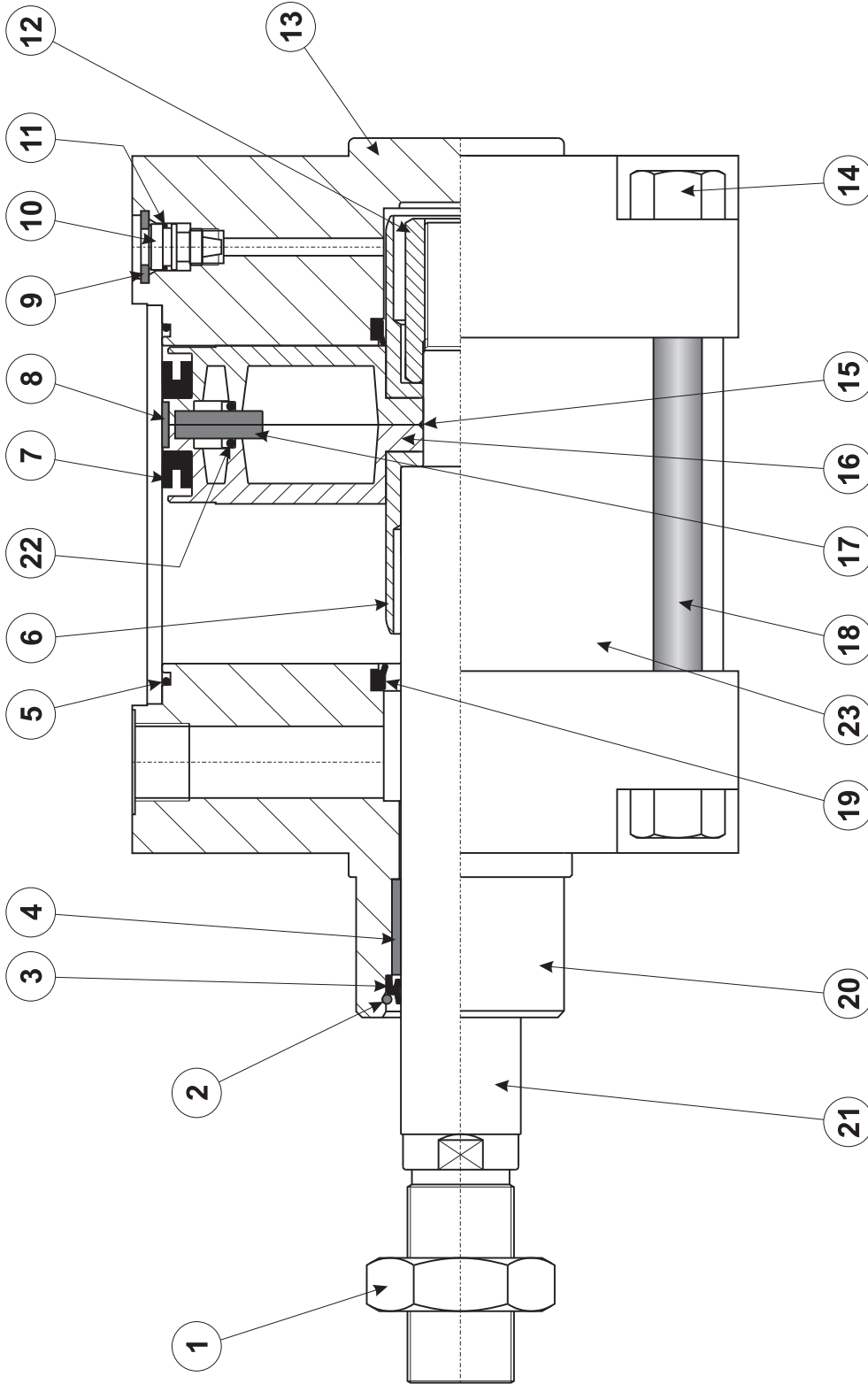
- 1. Hexagonal rod nut
- 3. Piston rod seal: polyurethane or VITON
- 4. Guide bushing: self-lubricating material
- 5. Protection plate: MOPLEN
- 6. Ring for cushioning screw: nickeled brass
- 7. Cushioning screw: nickeled brass
- 8. O-Ring seal for cushioning screw: NBR or VITON
- 9. Bumper: HYTREL
- 10. Seal for cushioning: polyurethane or VITON
- 11. Ogive: aluminium
- 12. Piston lip seal: polyurethane or VITON
- 13. Piston guide ring: bronze PTFE

- 14. O-Ring head seal: NBR or VITON
- 15. Compass rod locking: UNI 5105 material 35S Mn Pb 10, zinc plated
- 16. Rod: C45 chromium plated steel or stainless steel AISI 304
- 17. Front head: aluminium alloy die-casting
- 18. Piston: aluminium
- 19. Magnet: magnetic iron compound
- 20. O-Ring piston seal: NBR or VITON
- 21. Head assembling screw: self-threading till bore 63, then normal
- 22. Rear head: aluminium alloy die-casting
- 23. Barrel: profiled, calibrated, anodized aluminium

# Cylinders ISO 6431 VDMA



the drawing is valid for bore 160 and 200



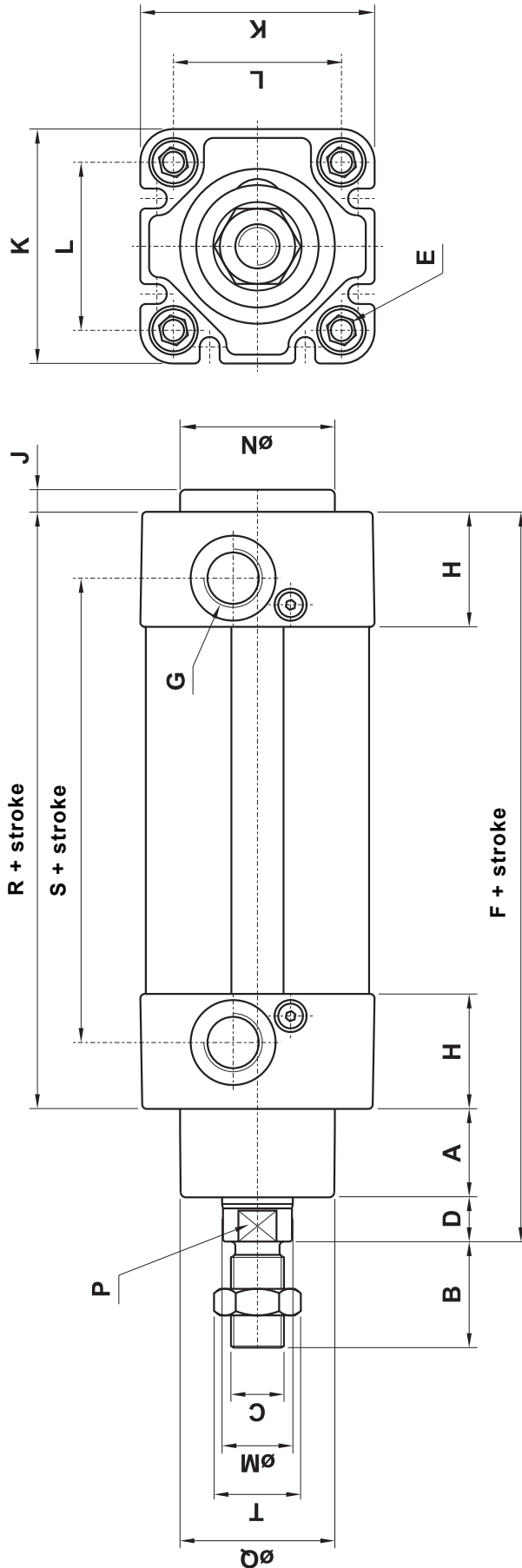
- 1. Hexagonal rod nut
- 2. Stainless steel ring for seal fixing
- 3. Piston rod seal: polyurethane or VITON
- 4. Guide bushing: sintered bronze
- 5. O-Ring head seal: NBR or VITON
- 6. O-giva: aluminium
- 7. Piston lip seal: polyurethane or VITON
- 8. Piston guide ring
- 9. Safety cushioning ring
- 10. Cushioning screw: brass OT58
- 11. O-Ring seal for cushioning screw: NBR or VITON

- 12. Compass rod locking
- 13. Rear head: aluminium alloy shell casting
- 14. Head assembling screw
- 15. O-Ring piston seal: NBR or VITON
- 16. Piston: aluminium
- 17. Magnet: magnetic iron compound
- 18. Tie rod: stainless steel
- 19. Cushioning seal: polyurethane or VITON
- 20. Front head: aluminium alloy shell casting
- 21. Rod: C45 chromium plated steel or stainless steel AISI 304
- 22. O-Ring piston keeping seal: NBR or VITON
- 23. Barrel: aluminium, round tube

# Cylinders ISO 6431 VDMA



ø32 ... 125

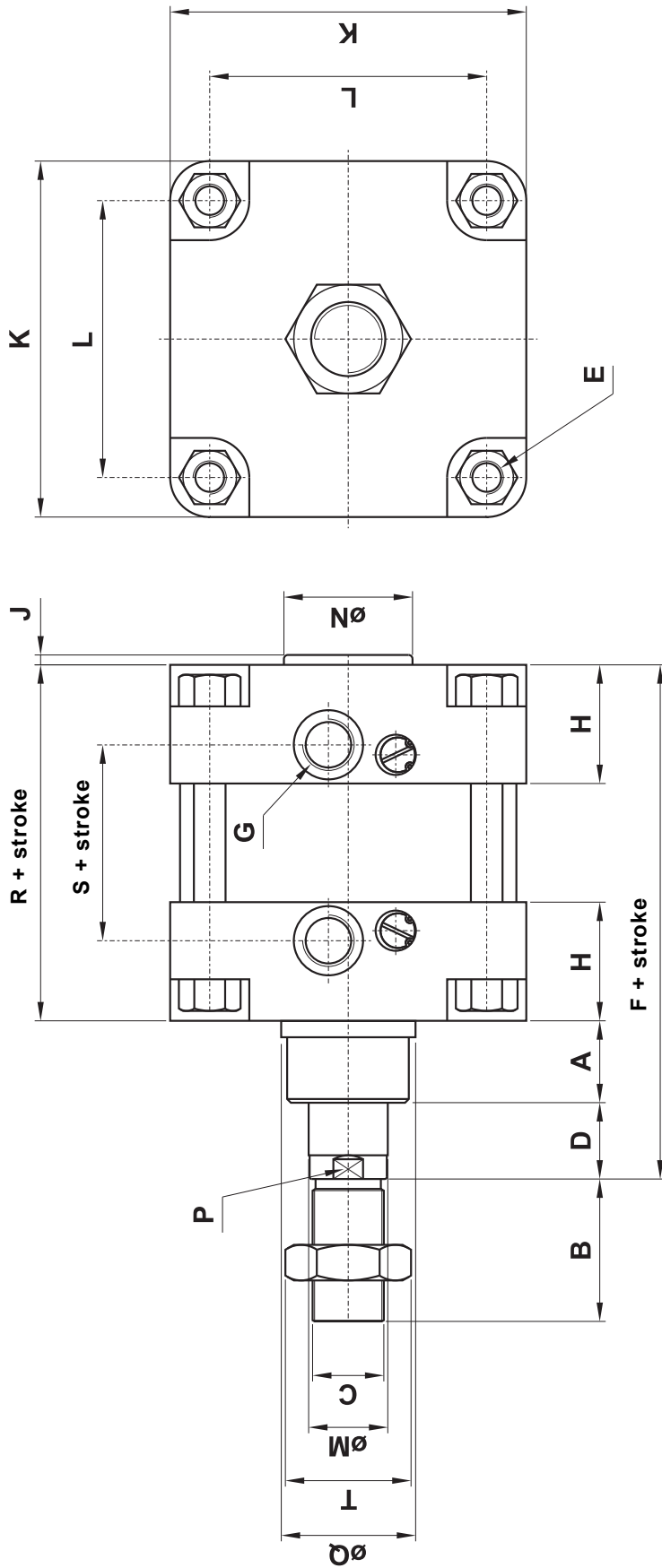


ø	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
32	16	22	M10x1.25	10	M6	120	G1/8"	25.5	5	47	32.5	12	30	CH 10	30	94	63.6	CH 17
40	20	24	M12x1.25	10	M6	135	G1/4"	28	5	53	38	16	35	CH 13	35	105	76	CH 19
50	25	32	M16x1.5	12	M8	143	G1/4"	30	5	64	46.5	20	40	CH 17	40	106	69.4	CH 24
63	25	32	M16x1.5	12	M8	158	G3/8"	31	5	74	56.5	20	45	CH 17	45	121	85.2	CH 24
80	32.5	40	M20x1.5	13.5	M10	174	G3/8"	34	5	94	72	25	45	CH 22	45	128	90	CH 30
100	35	40	M20x1.5	16	M10	189	G1/2"	35	5	112	89	25	55	CH 22	55	138	104	CH 30
125	40	54	M27x2	25	M12	225	G1/2"	41	5	136	110	32	60	CH 27	60	160	112	CH 41

# Cylinders ISO 6431 VDMA



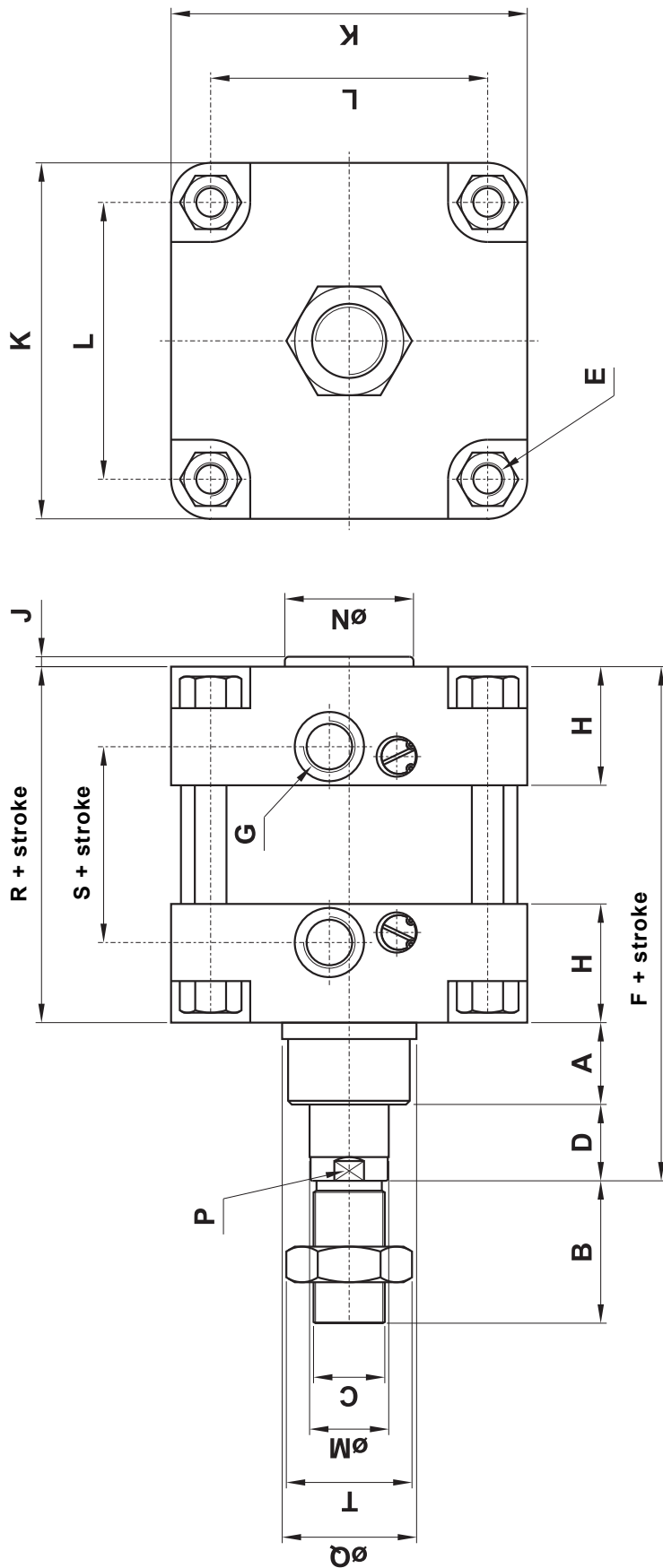
ø160-200



ø	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
160	50	72	M36x2	30	M16	260	G3/4"	50	6	180	140	40	65	CH 36	65	180	119	CH 55
200	55	72	M36x2	40	M16	275	G3/4"	50	6	220	175	40	75	CH 36	75	180	119	CH 55



ø250-320

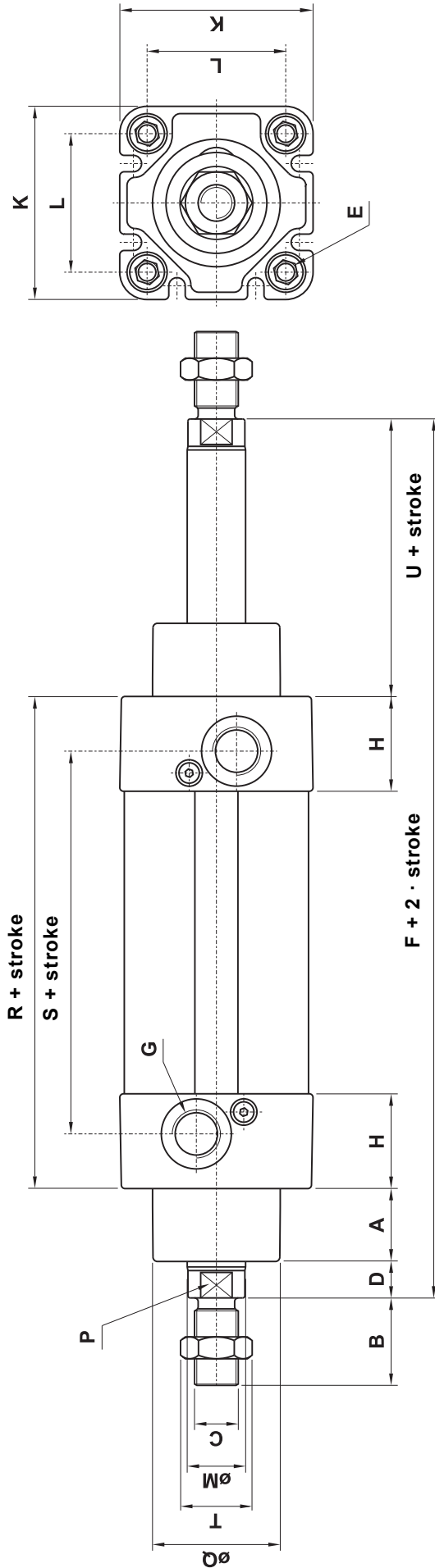


ø	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
250	76	84	M42x2	29	M20	305	G1"	54	10	270	220	50	90	CH 46	90	200	136	CH 65
320	85	96	M48x2	35	M24	340	G1"	57	10	350	270	63	110	CH 55	110	220	156	CH 75



ø32 ... 125

## VERSION WITH THROUGH-ROD

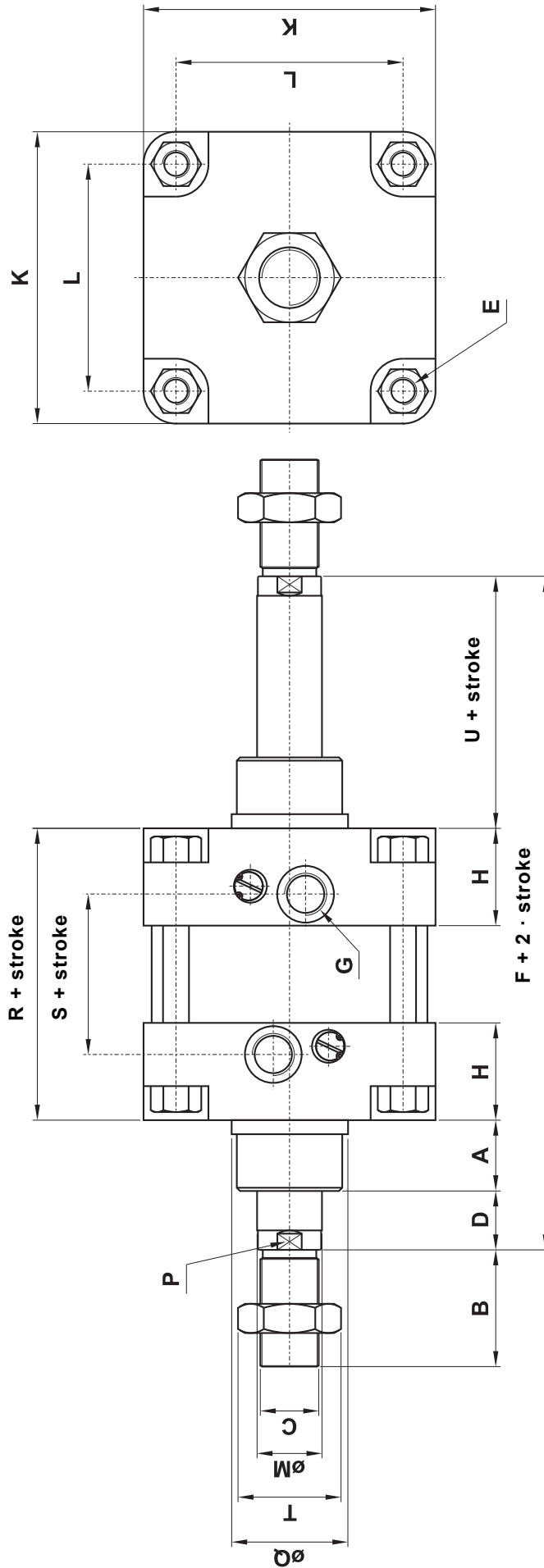


ø	A	B	C	D	E	F	G	H	K	L	M	P	Q	R	S	T	U
32	16	22	M10x1.25	10	M6	146	G1/8"	25.5	47	32.5	12	CH 10	30	94	63.6	CH 17	26
40	20	24	M12x1.25	10	M6	165	G1/4"	28	53	38	16	CH 13	35	105	75	CH 19	30
50	25	32	M16x1.5	12	M8	180	G1/4"	30	64	46.5	20	CH 17	40	106	69.4	CH 24	37
63	25	32	M16x1.5	12	M8	195	G3/8"	31	74	56.5	20	CH 17	45	121	85.2	CH 24	37
80	32.5	40	M20x1.5	13.5	M10	220	G3/8"	34	94	72	25	CH 22	45	128	90	CH 30	46
100	35	40	M20x1.5	16	M10	240	G1/2"	35	112	89	25	CH 22	55	138	104	CH 30	51
125	40	54	M27x2	25	M12	290	G1/2"	41	136	110	32	CH 27	60	160	112	CH 41	65



ø160-200

## VERSION WITH THROUGH-ROD



ø	A	B	C	D	E	F	G	H	K	L	M	P	Q	R	S	T	U
160	50	72	M36x2	30	M16	340	G3/4"	50	180	140	40	CH 36	65	180	119	CH 55	80
200	55	72	M36x2	40	M16	370	G3/4"	50	220	175	40	CH 36	75	180	119	CH 55	95

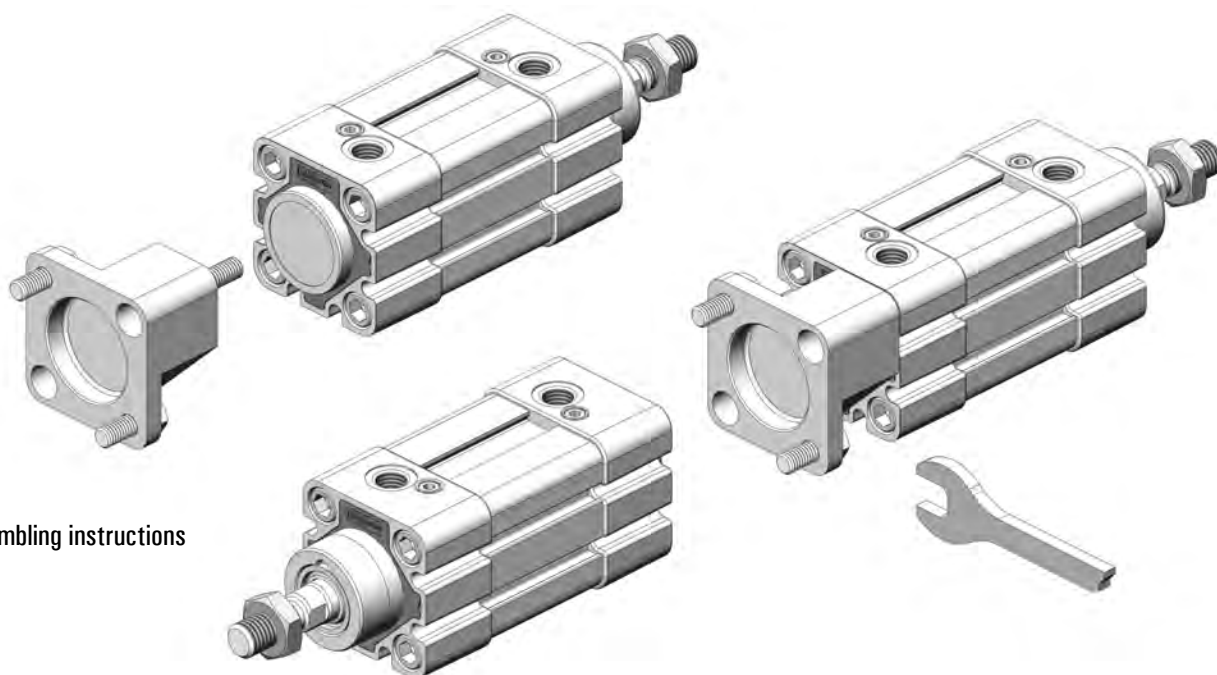
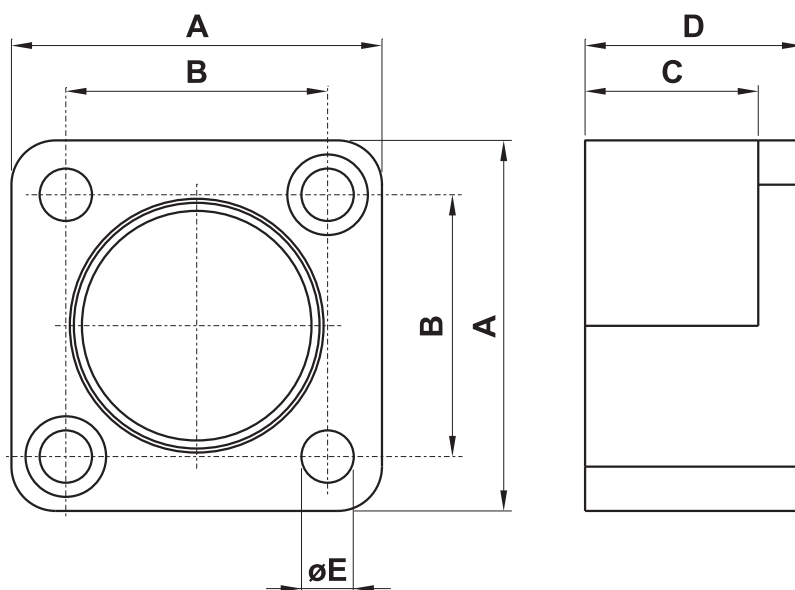
## Seals Kit



MAGNETIC, standard seals					
normal			passing-through rod		
for bore	part number	code	for bore	part number	code
32	<b>SGM032</b>	21.100.2	32	<b>SGM032P</b>	21.110.2
40	<b>SGM040</b>	21.101.2	40	<b>SGM040P</b>	21.111.2
50	<b>SGM050</b>	21.102.2	50	<b>SGM050P</b>	21.112.2
63	<b>SGM063</b>	21.103.2	63	<b>SGM063P</b>	21.113.2
80	<b>SGM080</b>	21.104.2	80	<b>SGM080P</b>	21.114.2
100	<b>SGM100</b>	21.105.2	100	<b>SGM100P</b>	21.115.2
125	<b>SGM125</b>	21.106.2	125	<b>SGM125P</b>	21.116.2
160	<b>SGM160</b>	21.107.2	160	<b>SGM160P</b>	21.117.2
200	<b>SGM200</b>	21.108.2	200	<b>SGM200P</b>	21.118.2
MAGNETIC, VITON seals					
normal			passing-through rod		
for bore	part number	code	for bore	part number	code
32	<b>SGM032V</b>	21.120.2	32	<b>SGM032PV</b>	21.130.2
40	<b>SGM040V</b>	21.121.2	40	<b>SGM040PV</b>	21.131.2
50	<b>SGM050V</b>	21.122.2	50	<b>SGM050PV</b>	21.132.2
63	<b>SGM063V</b>	21.123.2	63	<b>SGM063PV</b>	21.133.2
80	<b>SGM080V</b>	21.124.2	80	<b>SGM080PV</b>	21.134.2
100	<b>SGM100V</b>	21.125.2	100	<b>SGM100PV</b>	21.135.2
125	<b>SGM125V</b>	21.126.2	125	<b>SGM125PV</b>	21.136.2
160	<b>SGM160V</b>	21.127.2	160	<b>SGM160PV</b>	21.137.2
200	<b>SGM200V</b>	21.128.2	200	<b>SGM200PV</b>	21.138.2

## Intermediate flange for opposite ISO 6431 cylinders

This intermediate flange has to be inserted between two ISO 6431 VDMA cylinders to form an opposite cylinder. It is sold in kit with all necessary pieces for installation.



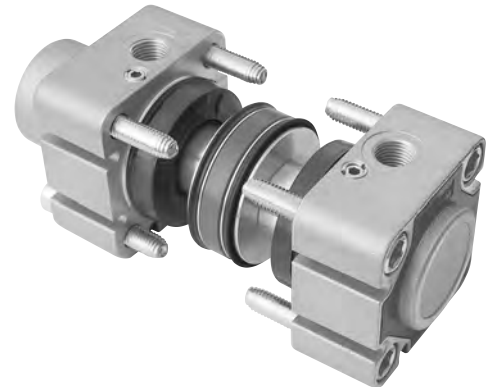
Assembling instructions

code	for bore	A	B	C	D	E
21.190.2	32	46	32.5	21.5	27	6.5
21.191.2	40	52	38	20.5	27	6.5
21.192.2	50	63	46.5	25.5	32	8.5
21.193.2	63	73	56.5	21.5	28	8.5
21.194.2	80	92	72	31	38	10.5
21.195.2	100	110	89	31	38	10.5
21.196.2	125	134	110	33	44	12.5

## cylinder kit

### The kit contains:

- Pre mounted heads with bushing, bumper and cushioning
- Piston with magnet, seals and guide ring (for aluminium piston)
- Ogive
- Screws
- Protection plates
- All necessary seals



MAGNETIC, standard seals					
normal			through-rod		
for bore	part number	code	for bore	part number	code
32	<b>KSM032</b>	21.001.3	32	<b>KSM032P</b>	21.011.3
40	<b>KSM040</b>	21.002.3	40	<b>KSM040P</b>	21.012.3
50	<b>KSM050</b>	21.003.3	50	<b>KSM050P</b>	21.013.3
63	<b>KSM063</b>	21.004.3	63	<b>KSM063P</b>	21.014.3
80	<b>KSM080</b>	21.005.3	80	<b>KSM080P</b>	21.015.3
100	<b>KSM100</b>	21.006.3	100	<b>KSM100P</b>	21.016.3
125	<b>KSM125</b>	21.007.3	125	<b>KSM125P</b>	21.017.3
160	<b>KSM160</b>	21.008.3	160	<b>KSM160P</b>	21.018.3
200	<b>KSM200</b>	21.009.3	200	<b>KSM200P</b>	21.019.3
MAGNETIC, VITON seals					
normal			through-rod		
for bore	part number	code	for bore	part number	code
32	<b>KSM032V</b>	21.021.3	32	<b>KSM032PV</b>	21.031.3
40	<b>KSM040V</b>	21.022.3	40	<b>KSM040PV</b>	21.032.3
50	<b>KSM050V</b>	21.023.3	50	<b>KSM050PV</b>	21.033.3
63	<b>KSM063V</b>	21.024.3	63	<b>KSM063PV</b>	21.034.3
80	<b>KSM080V</b>	21.025.3	80	<b>KSM080PV</b>	21.035.3
100	<b>KSM100V</b>	21.026.3	100	<b>KSM100PV</b>	21.036.3
125	<b>KSM125V</b>	21.027.3	125	<b>KSM125PV</b>	21.037.3
160	<b>KSM160V</b>	21.028.3	160	<b>KSM160PV</b>	21.038.3
200	<b>KSM200V</b>	21.029.3	200	<b>KSM200PV</b>	21.039.3

## cylinder kit assembly instructions

### INSTRUCTIONS TO USE ISO 6431 ASSEMBLING CYLINDER KIT

All components contained in this ISO 6431 assembling pneumatic cylinder kit are manufactured with first quality materials. In order to ensure consistent quality and to respect accurate dimensional tolerances, die-cast heads and all internal components are lathes' and numerical control work centres' machine worked. The cylinder is designed and built to offer high performances also in the hardest work conditions. To ensure constant quality, the assembly has to be executed according to the instructions reported below. All safety standards have to be respected during installation and cylinder testing.

#### 1. PRELIMINARY OPERATIONS

Before assembling, blow with compressed air and clean accurately surfaces, all components and the barrel previously cut to the desired length. The cylinder has to be installed in a clean and dustless work environment.

#### 2. ASSEMBLE PISTON ON THE ROD

Insert the following components in this order on the rod (Refer to image 1): ogive, semi-piston, O-Ring seal, attracting magnets , semi-piston, ogive.

Before screwing, put on the rod thread one or two drops of threadlocker. Screw the nut on the rod respecting the torque given in the following table:

bore	torque	
	aluminium piston	technopolymer piston
32	10 Nm	7 Nm
40	20 Nm	9 Nm
50	30 Nm	15 Nm
63	45 Nm	19 Nm
80	60 Nm	27 Nm
100	60 Nm	35 Nm
125	70 Nm	-
160-200	80 Nm	-

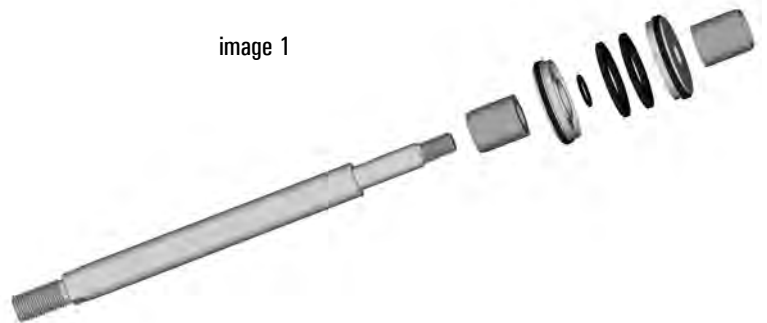


image 1



image 2

#### 3. INSERT THE LOCK ROD-PISTON IN THE BARREL

With an appropriate grease (eventually purchasable from AZ Pneumatica) lubricate lightly the barrel inside, piston seals and heads seals. Position the guide ring in teflon-copper (available only for aluminium pistons), lubricated with grease, around the piston (see image 2); insert the lock rod-piston, previously assembled, in the barrel paying attention to not damage the piston seals (see image 3). To simplify this operation, it is possible to purchase a specific adaptor from AZ Pneumatica.

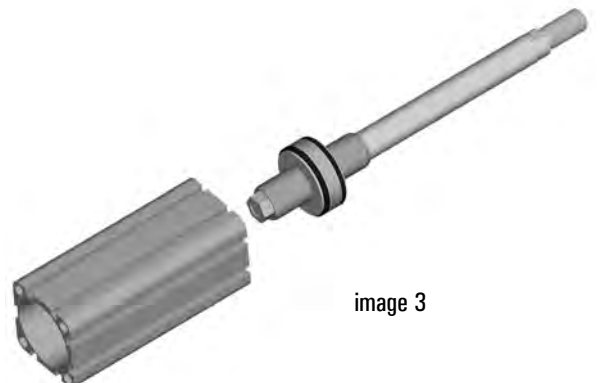


image 3

## 4. ASSEMBLE HEADS

Insert front and rear head in the tube, paying attention to not damage the O-Ring seals.

Head lock screws are self-tapping till the M8 thread (bore 63). For larger diameter screws is recommended to thread the barrel, even if is possible use them ,with effort, as they were self-tapping. In any case, before tightening the screws is necessary to lubricate the threading with some drops of hydraulic oil. Screw manually or with a pneumatic utensil almost till the end. To tighten definitely the screws is necessary to use a torque wrench or a pneumatic utensil with torque indication. Act progressively till the torque given in the following table:

### TORQUE FOR MOUNTING HEAD SCREW

bore	torque
32	10 Nm
40	10 Nm
50	22 Nm
63	22 Nm
80	40 Nm
100	40 Nm
125	50 Nm
160-200	60 Nm

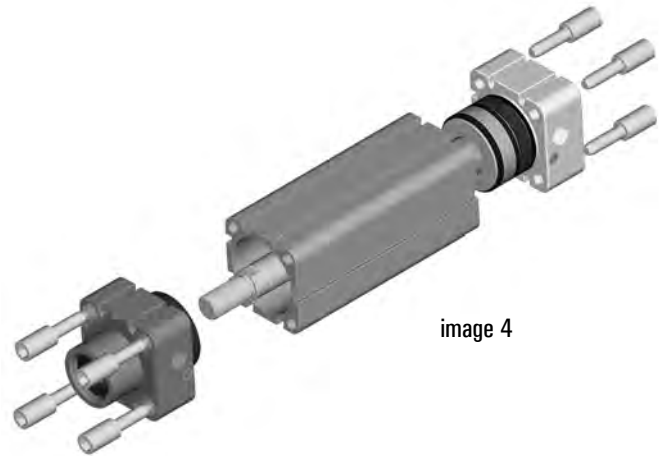


image 4

Screw the nut on the front part of the rod, now the cylinder is assembled.

## 5. TESTING

Connect the cylinder to a five way valve and activate it a few times to verify the correct operation.

Do the following operations at 2 bar (30 PSI) pressure and at 7 bar (101 PSI) pressure or more .

- verify the perfect holding of front head and of location of cushioning screw;
- verify the perfect holding of rear head and of location of cushioning screw;
- verify the perfect holding of scraper ring;
- verify the perfect piston holding between the two chambers.

For obvious reasons, these operations have to be executed with air supply.

Once verified the perfect holding of cylinder in all parts, regulate the dampings as needed and eventually insert the caps in the feed opening. Now the cylinder is ready to be used.

Contact AZ Pneumatica in case of doubts.



## STANDARD profile for N series

	order code	dimensions [mm]					weight [kg/m]
		A	B	C	D	E	
	<b>000.510.7</b>	ø32 H11	32.5	44.5	17	-	2.198
	<b>000.511.7</b>	ø40 H11	38	50.5	23	-	2.506
	<b>000.512.7</b>	ø50 H11	46.5	60.3	26	-	3.394
	<b>000.513.7</b>	ø63 H11	56.5	70	37	35	3.452
	<b>000.514.7</b>	ø80 H11	72	87	45	45	5.214
	<b>000.515.7</b>	ø100 H12	89	106	50	46	5.619
	<b>000.516.7</b>	ø125 H12	110	132	56	50	7.788

chemical composition	Cu	Fe	Mn	Mg	Si	Zn	Cr	Ti	Al
	≤ 0.10	≤ 0.35	≤ 0.10	0.45 ÷ 0.90	0.20 ÷ 0.60	≤ 0.10	≤ 0.10	≤ 0.10	rest

### Fixing holes

from ø32 to ø63 : prepared for metric thread through rolling or self-tapping screws

from ø80 to ø125 : prepared for metric thread through rolling

### Round profile for cylinders

ø160: 000.517.7

ø200: 000.518.7

## EASY profile for E series

	order code	dimensions [mm]					weight [kg/m]
		A	B	C	D	E	
	<b>000.530.7</b>	ø32 H11	36	32.5	44.4	13±0.2	1.407
	<b>000.531.7</b>	ø40 H11	44	38	51	18.8±0.2	1.644
	<b>000.532.7</b>	ø50 H11	54	46.5	60.8	22.4±0.25	2.035
	<b>000.533.7</b>	ø63 H11	67	56.5	70.9	32.6±0.3	2.312
	<b>000.534.7</b>	ø80 H11	84	72	87	41±0.3	2.877
	<b>000.535.7</b>	ø100 H12	104.5	89	105.5	53±0.3	3.873
	<b>000.536.7</b>	ø125 H12	130	110	131	64±0.35	5.316

chemical composition	Cu	Fe	Mn	Mg	Si	Zn	Cr	Ti	Al
	≤ 0.10	≤ 0.35	≤ 0.10	0.45 ÷ 0.90	0.20 ÷ 0.60	≤ 0.10	≤ 0.10	≤ 0.10	rest

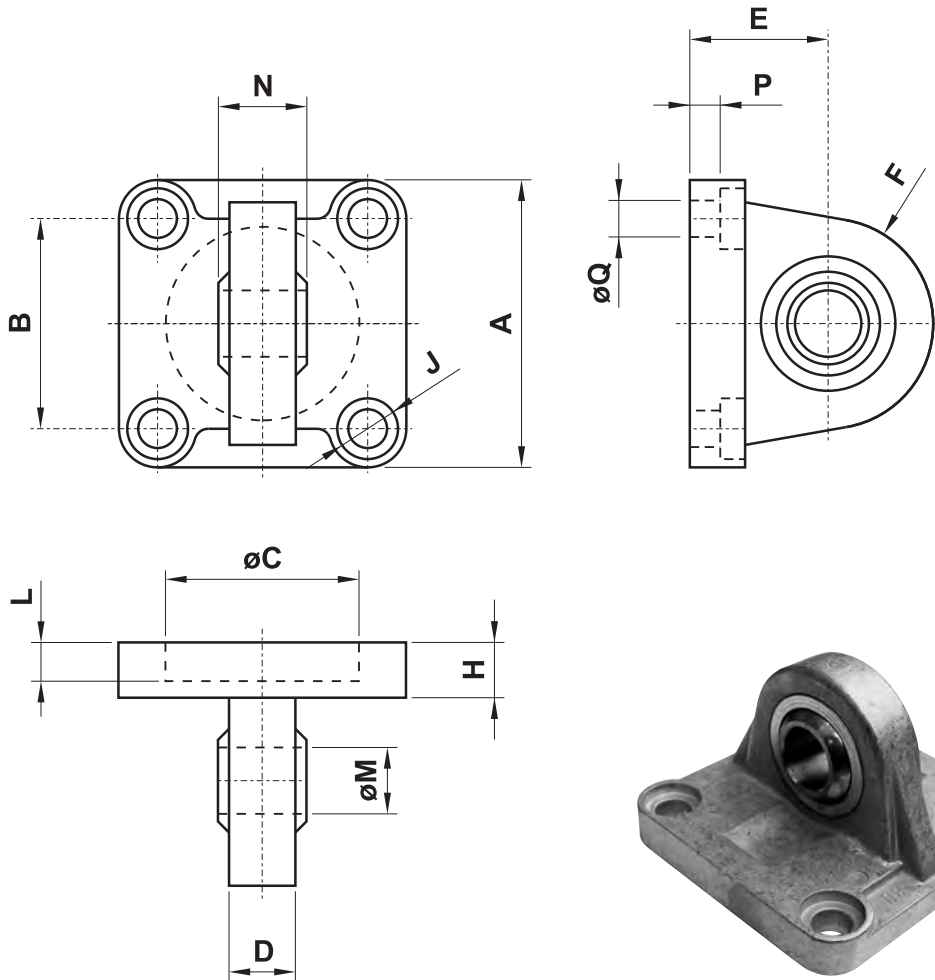
### Fixing holes

from ø32 to ø63 : prepared for metric thread through rolling or self-tapping screws

from ø80 to ø125 : prepared for metric thread through rolling



## NARROW MALE HINGE WITH ARTICULATED HEAD DIN 648K

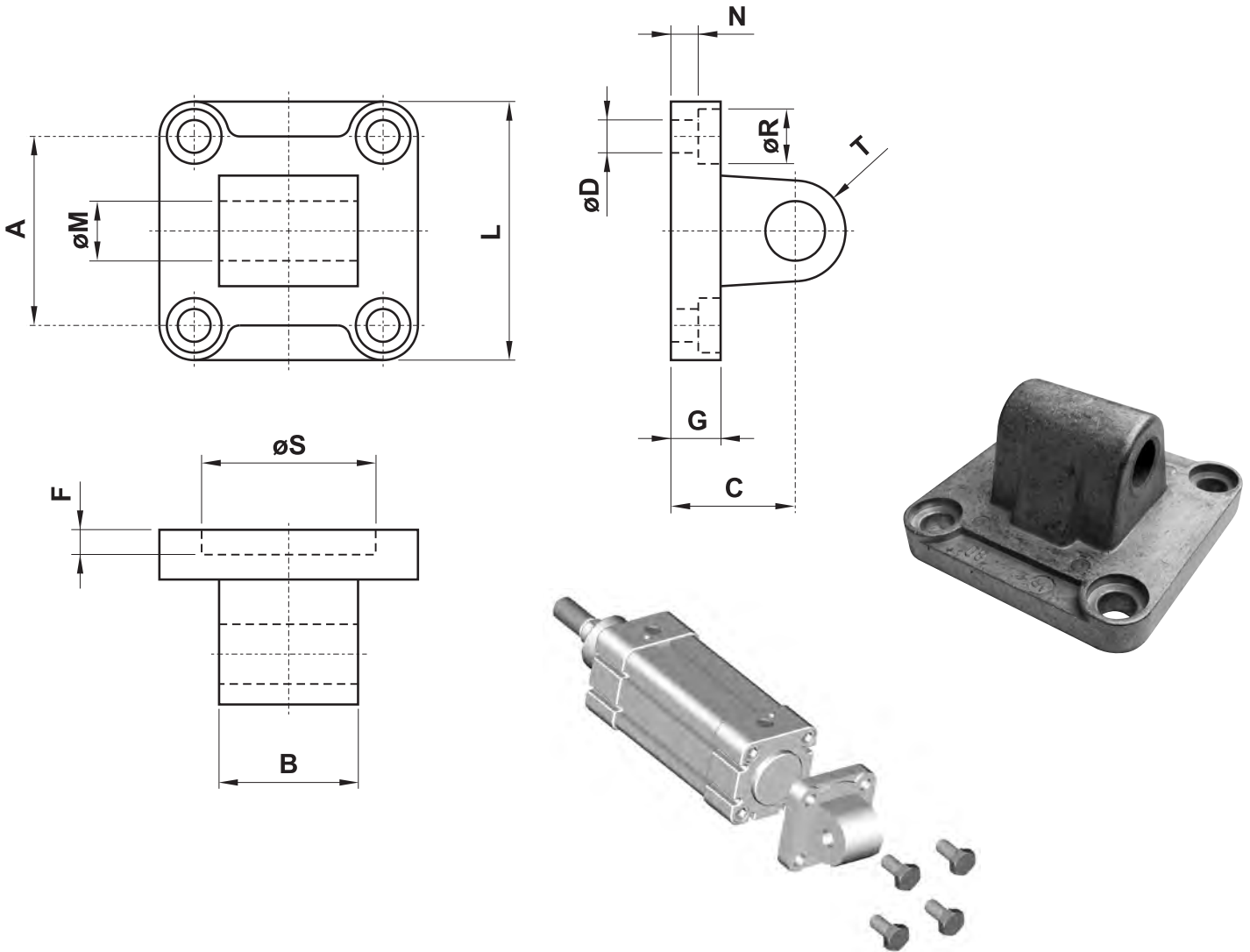


6

part number	for bore	A	B	C	D	E	F	H	J	L	M	N	P	Q
CMSS032	32	45	32.5	30	10.5	22	16	9	∅11	5	10	14	5.5	6.6
CMSS040	40	52	38	35	12	25	19	9	∅11	5	12	16	5.5	6.6
CMSS050	50	65	46.5	40	15	27	21	11	∅15	5	16	21	6.5	9
CMSS063	63	75	56.5	45	15	32	24	11	∅15	5	16	21	6.5	9
CMSS080	80	95	72	45	18	36	28.5	14	∅18	5	20	25	10	11
CMSS100	100	115	89	55	18	41	30	14	∅18	5	20	25	10	11
CMSS125	125	140	110	60	25	50	40	20	∅20	7	30	37	10	13.5
CMSS160	160	180	140	65	28	55	45	20	∅26	7	35	43	10	18
CMSS200	200	220	175	75	28	60	48	25	∅26	7	35	43	11	18



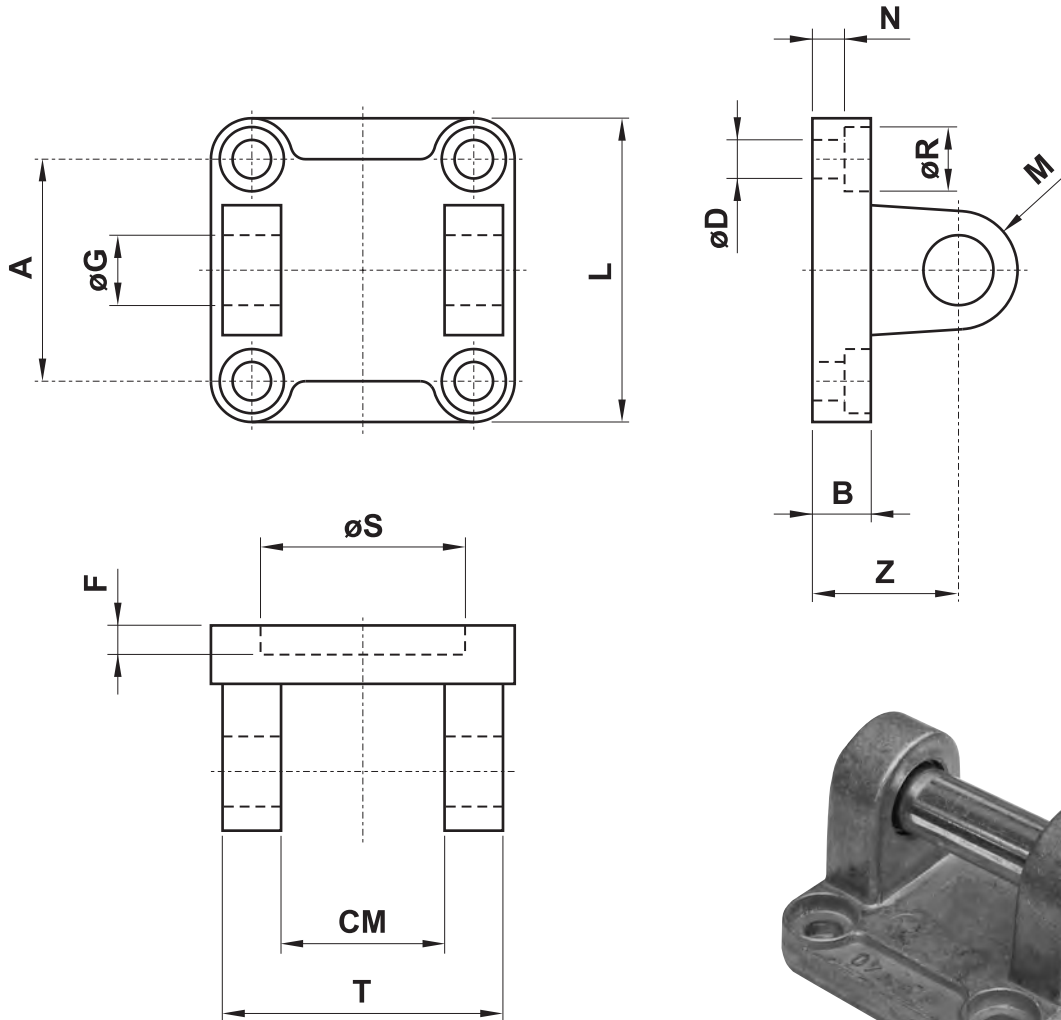
## MALE HINGE MP4



part number	part number	for bore	A	B	C	D	F	G	L	M	N	R	S	T
standard	with bronze bushing													
<b>CMIS032</b>	<b>CMKS032</b>	32	32.5	26	22	6.6	5	9	45	10	5.5	11	30	10
<b>CMIS040</b>	<b>CMKS040</b>	40	38	28	25	6.6	5	9	52	12	5.5	11	35	12
<b>CMIS050</b>	<b>CMKS050</b>	50	46.5	32	27	9	5	11	65	12	6.5	15	40	12
<b>CMIS063</b>	<b>CMKS063</b>	63	56.5	40	32	9	5	11	75	16	6.5	15	45	16
<b>CMIS080</b>	<b>CMKS080</b>	80	72	50	36	11	5	14	95	16	10	18	45	16
<b>CMIS100</b>	<b>CMKS100</b>	100	89	60	41	11	5	14	115	20	10	18	55	20
<b>CMIS125</b>	<b>CMKS125</b>	125	110	70	50	14	7	20	140	25	10	20	60	25
<b>CMIS160</b>	<b>CMKS160</b>	160	140	90	55	18	7	20	180	30	10	26	65	25
<b>CMIS200</b>	<b>CMKS200</b>	200	175	90	60	18	7	25	220	30	11	26	75	25

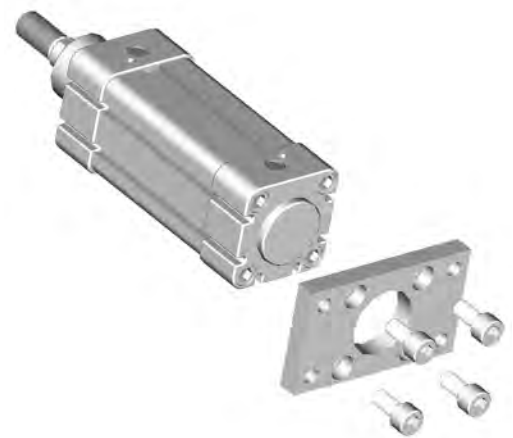
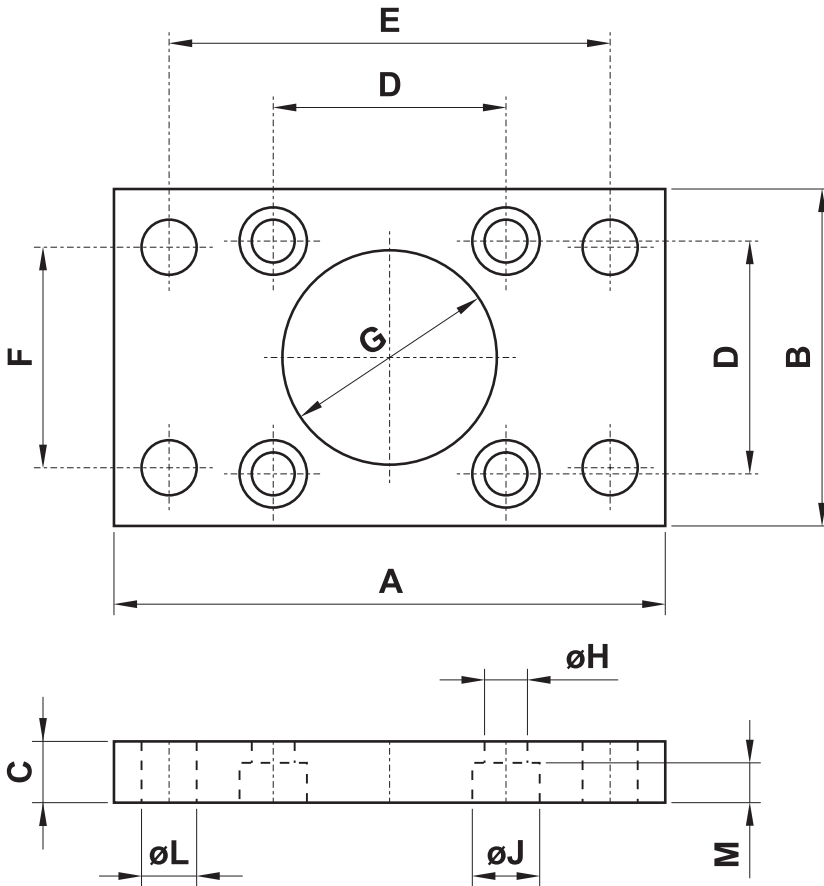


## FEMALE HINGE MP2 WITH PIN



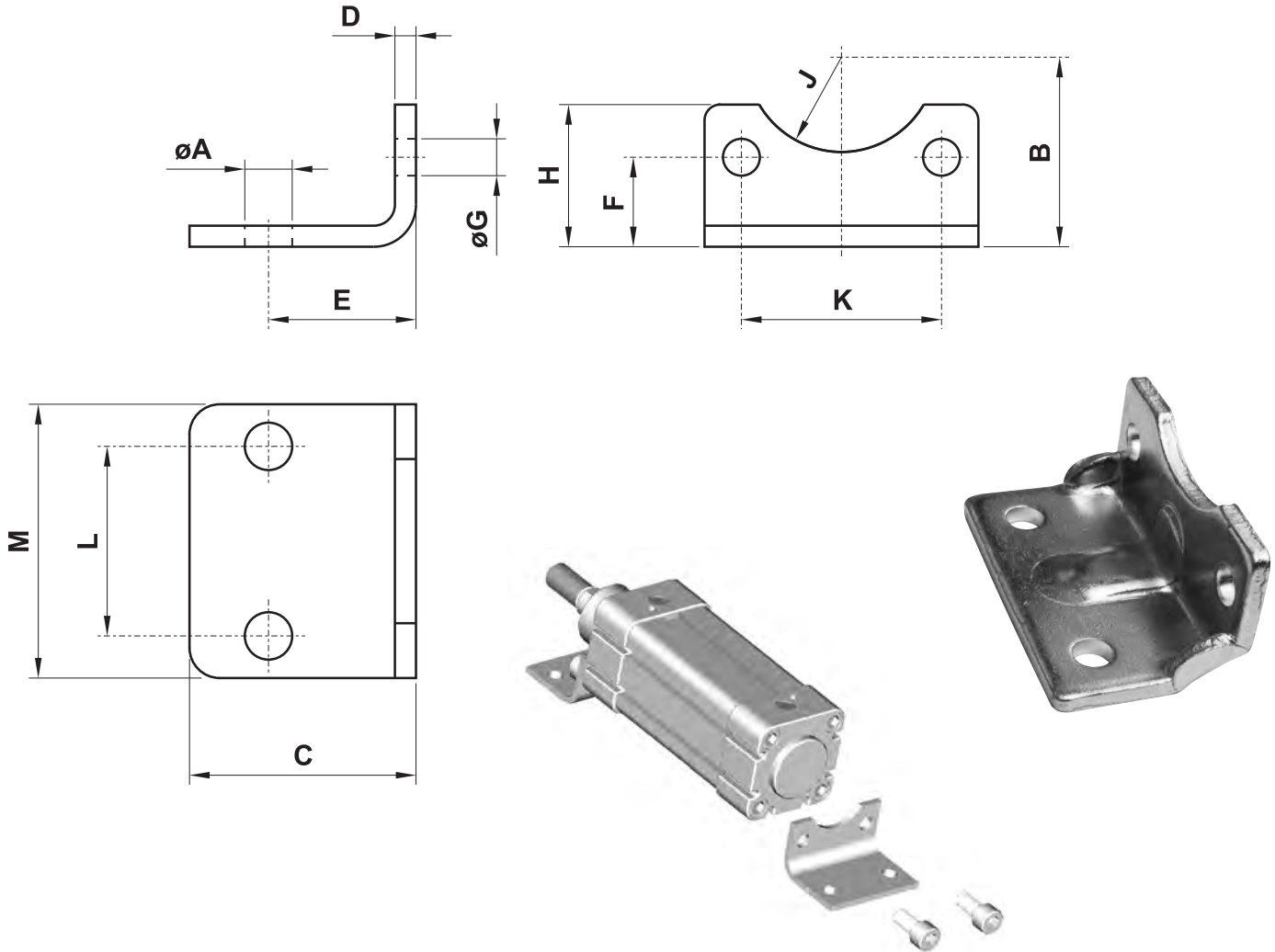
part number	part number	for bore	A	B	CM	D	F	G	L	M	N	R	S	T	Z
standard	with bronze bushing														
<b>CFIS032</b>	<b>CFKS032</b>	32	32.5	9	26	6.6	5	10	45	10	5.5	11	30	45	22
<b>CFIS040</b>	<b>CFKS040</b>	40	38	9	28	6.6	5	12	52	12	5.5	11	35	52	25
<b>CFIS050</b>	<b>CFKS050</b>	50	46.5	11	32	9	5	12	65	12	6.5	15	40	60	27
<b>CFIS063</b>	<b>CFKS063</b>	63	56.5	11	40	9	5	16	75	16	6.5	15	45	70	32
<b>CFIS080</b>	<b>CFKS080</b>	80	72	14	50	11	5	16	95	16	10	18	45	90	36
<b>CFIS100</b>	<b>CFKS100</b>	100	89	14	60	11	5	20	115	20	10	18	55	110	41
<b>CFIS125</b>	<b>CFKS125</b>	125	110	20	70	14	7	25	140	25	10	20	60	130	50
<b>CFIS160</b>	<b>CFKS160</b>	160	140	20	90	18	7	30	180	25	10	26	65	170	55
<b>CFIS200</b>	<b>CFKS200</b>	200	175	25	90	18	7	30	220	25	11	26	75	170	60

## FLANGE



part number	for bore	A	B	C	D	E	F	G	H	J	L	M
<b>FLIS032</b>	32	80	45	10	32.5	64	32	ø30	6.6	10.5	7	6.5
<b>FLIS040</b>	40	90	52	10	38	72	36	ø35	6.6	11	9	6.5
<b>FLIS050</b>	50	110	65	12	46.5	90	45	ø40	9	15	9	8.5
<b>FLIS063</b>	63	120	75	12	56.5	100	50	ø45	9	15	9	8.5
<b>FLIS080</b>	80	150	95	16	72	126	63	ø45	11	18	12	10.5
<b>FLIS100</b>	100	170	115	16	89	150	75	ø55	11	18	14	10.5
<b>FLIS125</b>	125	205	140	20	110	180	90	ø60	13.5	20	16	12.5
<b>FLIS160</b>	160	260	180	20	140	230	115	ø65	18	26	18	16.5
<b>FLIS200</b>	200	300	220	25	175	270	135	ø75	18	26	22	16.5

## FOOT MOUNTING



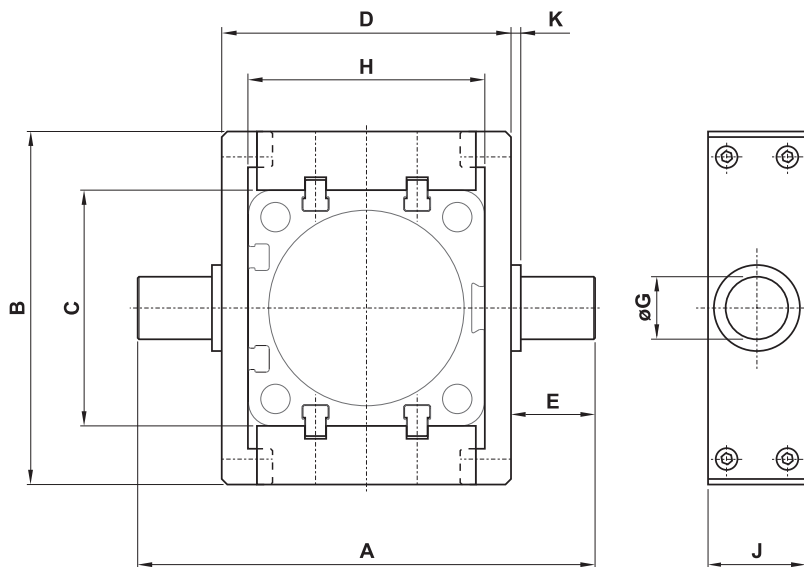
6

part number*	for bore	A	B	C	D	E	F	G	H	J	K	L	M
PBIS032	32	7	32	35	4	24	15.75	7	30	15	32.5	32	45
PBIS040	40	9	36	36	4	28	17	7	30	17.5	38	36	52
PBIS050	50	9	45	47	5	32	21.75	9	36	20	46.5	45	65
PBIS063	63	9	50	45	5	32	21.75	9	35	22.5	56.5	50	75
PBIS080	80	12	63	55	6	41	27	11	47	22.5	72	63	95
PBIS100	100	14	71	57	6	41	26.5	11	53	27.5	89	75	115
PBIS125	125	16	90	70	8	45	35	14	70	30	110	90	140
PBIS160	160	18	115	75	9	60	45	18	100	32.5	140	115	180
PBIS200	200	22	135	100	12	70	47.5	18	100	37.5	175	135	220

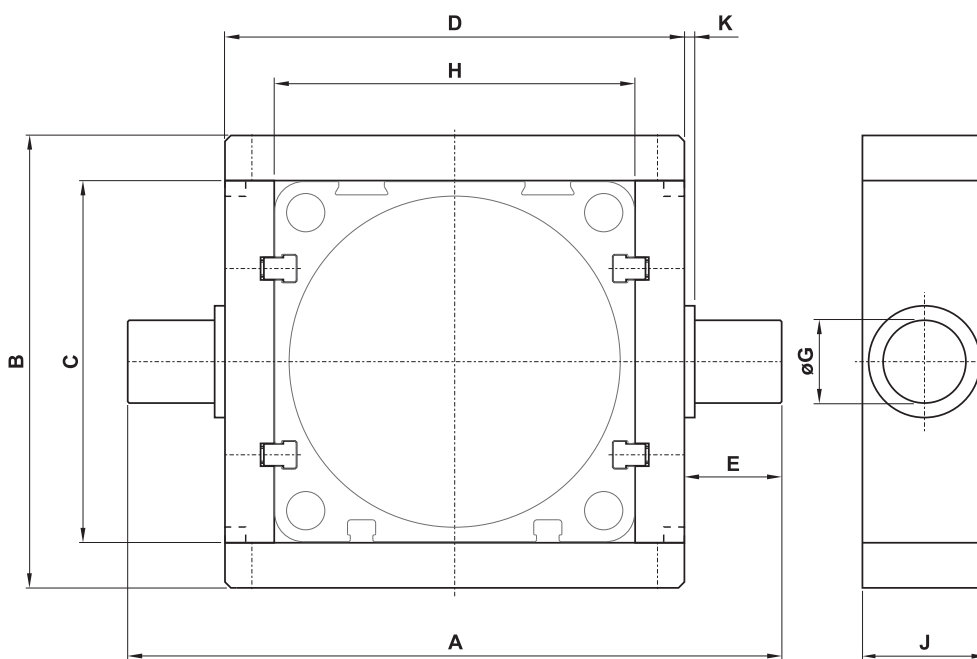
\* Part number refers to a single element, not to the couple



## INTERMEDIATE TRUNNION - ONLY FOR "N" SERIES

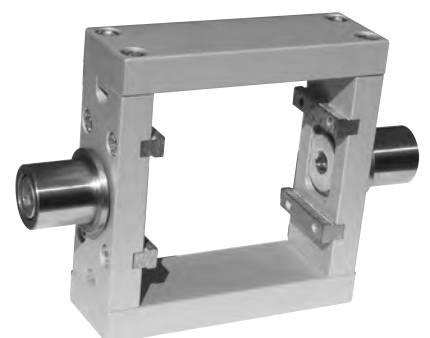


bores: 32, 40, 50



bores: 63, 80, 100, 125

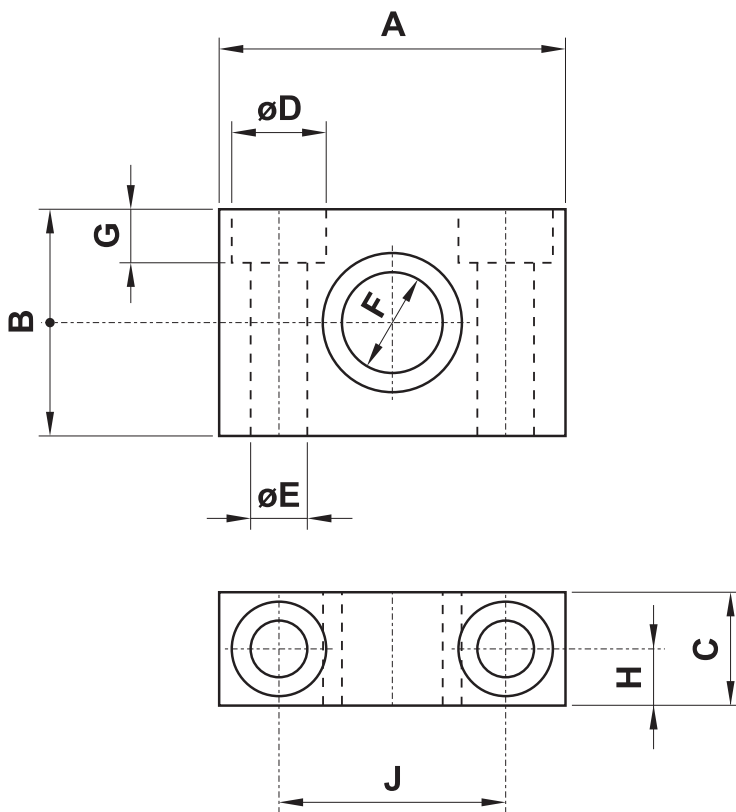
part number	for bore	A	B	C	D	E	G	H	J	K
<b>CIN032</b>	32	87	65	44.5	52	17.5	12	45	25	2
<b>CIN040</b>	40	105	74.8	50.5	62	21.5	16	51	25	2.5
<b>CIN050</b>	50	117	90.3	60.3	74	21.5	16	60.8	25	2.5
<b>CIN063</b>	63	136	94.5	70.5	91	22.5	20	70	30	2.5
<b>CIN080</b>	80	156	109.3	87.5	111	22.5	20	87	30	2.5
<b>CIN100</b>	100	195	134	106.6	129	33	25	106	40	2.5
<b>CIN125</b>	125	223	160	132.6	157	33	25	132	40	2.5







## SUPPORT FOR INTERMEDIATE TRUNNION

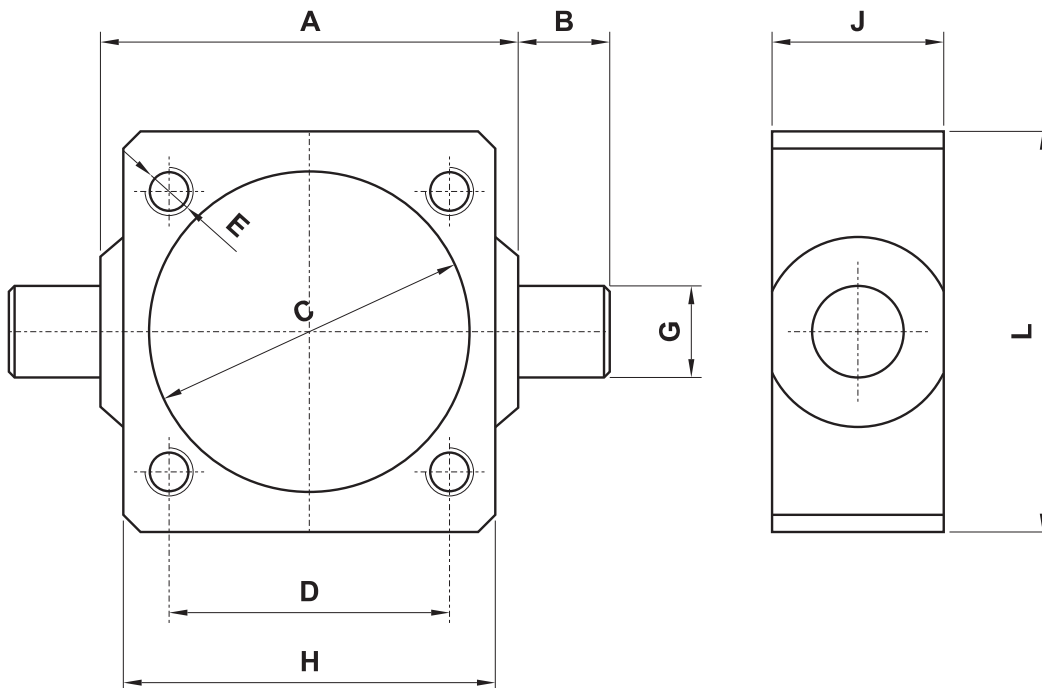


part number*	for bore	A	B	C	D	E	F	G	H	J
<b>SNINT 032 B</b>	32	46	30	15	10.5	6.5	∅12	6.5	7.5	32
<b>SNINT 040-050 B</b>	40-50	55	35	20	14	9	∅16	8	10	36
<b>SNINT 063-080 B</b>	63-80	65	40	20	17	11	∅20	12	10	42
<b>SNINT 100-125 B</b>	100-125	75	50	30	19	14	∅25	10	15	50

\* Part number refers to a couple of elements



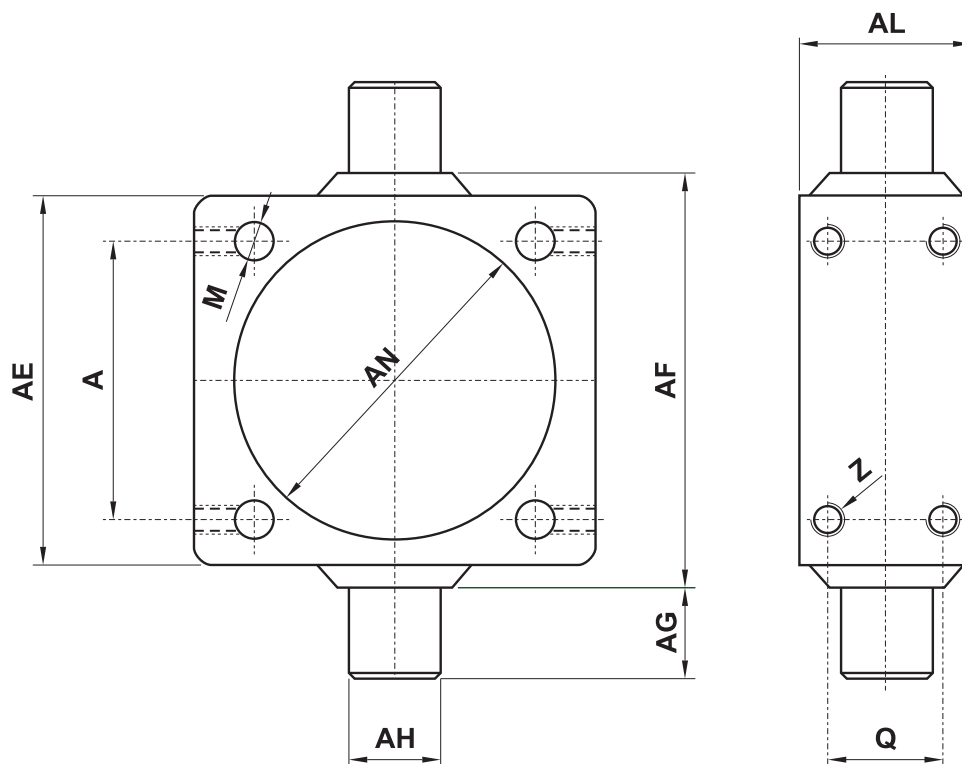
## FIXED INTERMEDIATE TRUNNION for cylinders bores 160 and 200 tie-rods version



This intermediate trunnion can be mounted only on a cylinder with round barrel and tie-rods.  
The request for cylinders with tie-rods must be clearly specified on the order.  
On the order please specify also the position where the fixing element should be mounted on the cylinder.

part number	for bore	A	B	C	D	E	G	H	J	L
<b>CSIS160TI</b>	160	200	32	ø171	140	M16	ø32	190	40	190
<b>CSIS200TI</b>	200	250	32	ø211	175	M16	ø32	240	40	240

## ADJUSTABLE INTERMEDIATE TRUNNION for cylinders bores 160 and 200 tie-rods version



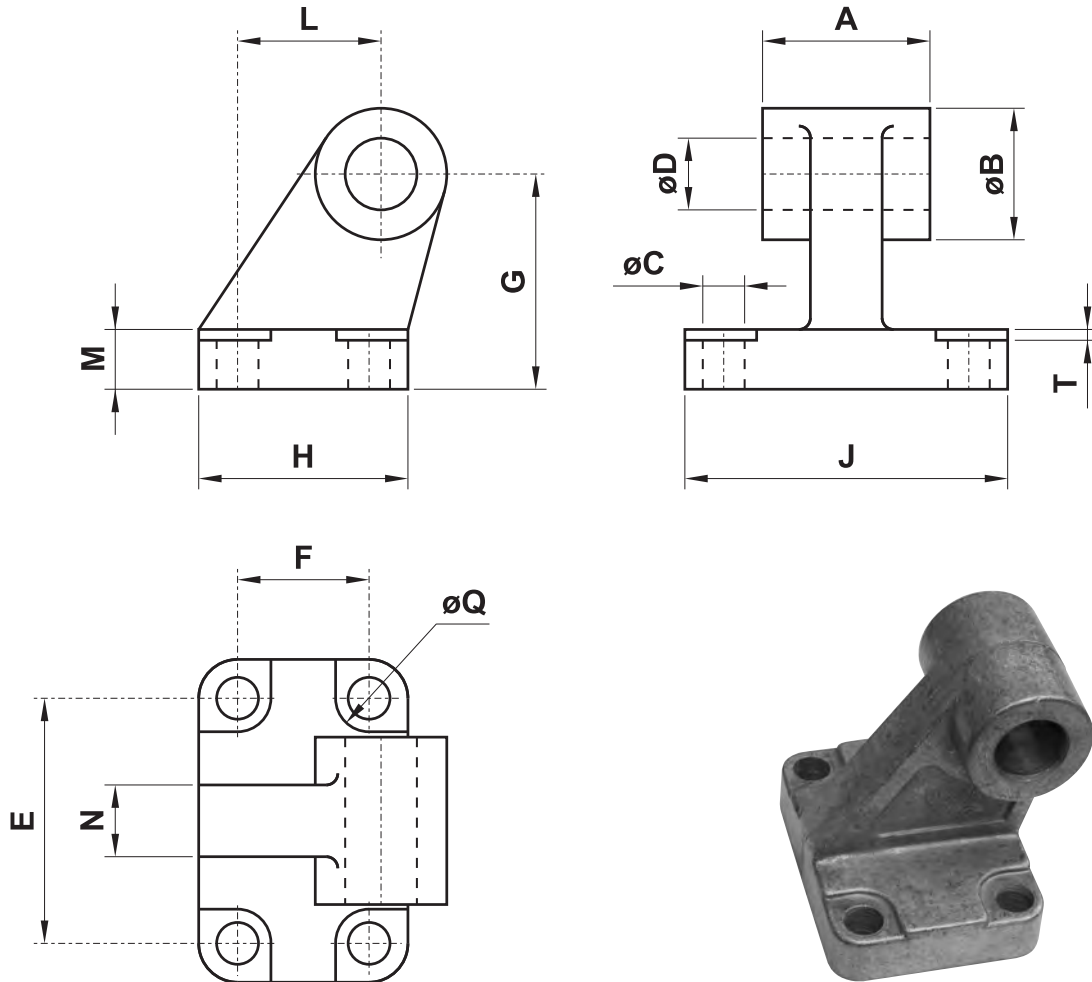
This intermediate trunnion can be mounted only on a cylinder with round barrel and tie-rods.

**ATTENTION:** This adjustable intermediate trunnion, even if it is correctly mounted on the cylinder, because of the weight can move and cause very serious injury. To avoid this it is better to **use a fixed intermediate trunnion!**

part number	for bore	A	AE	AL	AH	AG	AF	AN	M	Q	Z
26.327.2N	160	140	190	40	∅32	32	200	∅171	∅16.25	18	M12
26.328.2N	200	175	240	40	∅32	32	250	∅211	∅16.25	18	M12

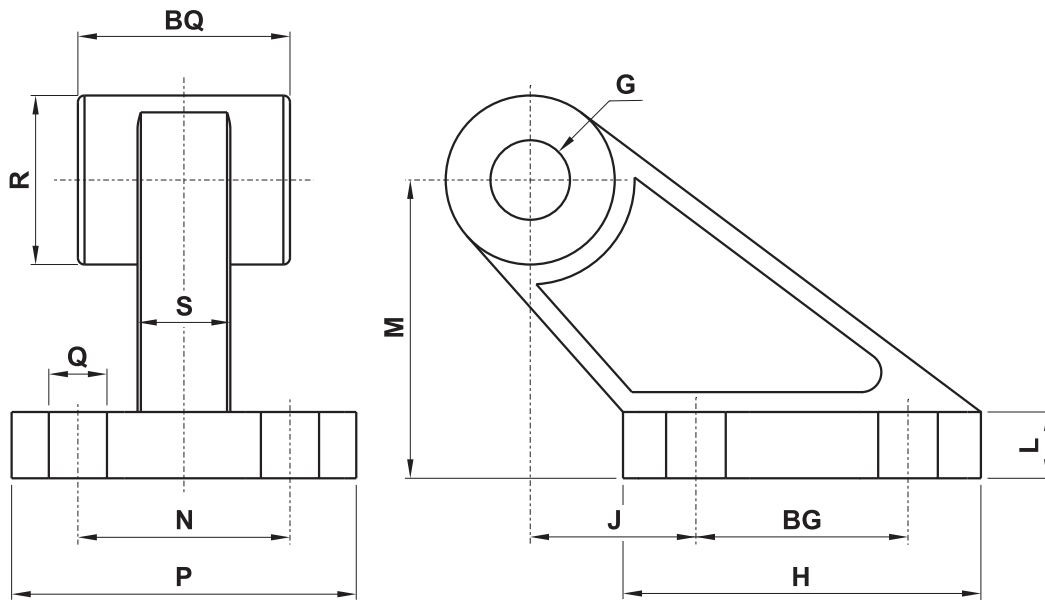


## RECTANGULAR JOINT CETOP RP107P NORM



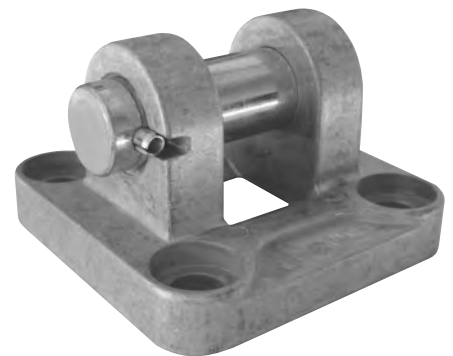
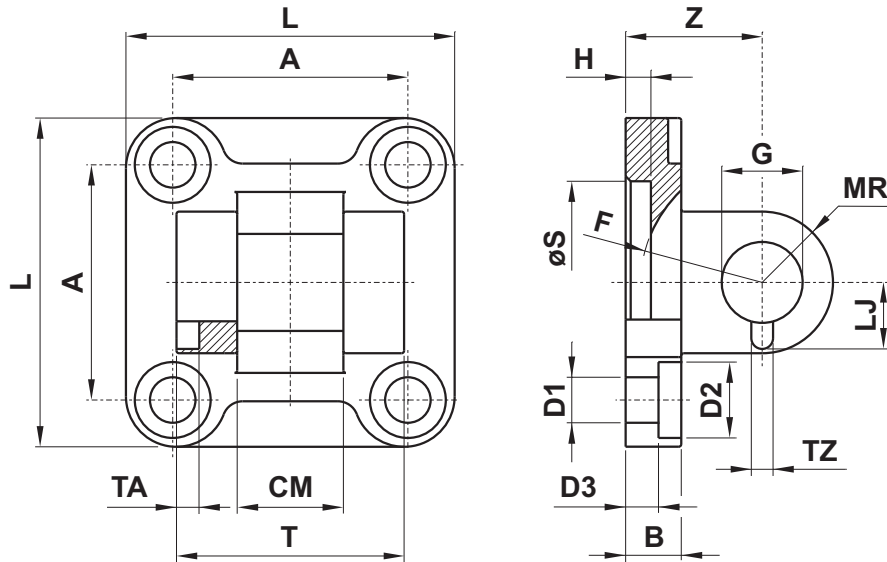
part number	for bore	A	B	C	D	E	F	G	H	J	L	M	N	Q	T
<b>COIS032</b>	32	26	20	6.6	10	38	18	32	31	51	21	8	10	11	1.6
<b>COIS040</b>	40	28	22	6.6	12	41	22	36	35	54	24	10	15	11	1.6
<b>COIS050</b>	50	32	26	9	12	50	30	45	45	65	33	12	16	15	1.6
<b>COIS063</b>	63	40	30	9	16	52	35	50	50	67	37	14	16	15	1.6
<b>COIS080</b>	80	50	30	11	16	66	40	63	60	86	47	14	20	18	2.5
<b>COIS100</b>	100	60	38	11	20	76	50	71	70	96	55	17	20	18	2.5
<b>COIS125</b>	125	70	45	14	25	94	60	90	90	124	70	20	30	20	3.2
<b>COIS160</b>	160	90	63	14	30	118	88	115	126	156	97	25	36	20	4
<b>COIS200</b>	200	90	63	18	30	122	90	135	130	162	105	30	40	26	4

## RECTANGULAR JOINT ISO 6431 - VDMA



part number	for bore	Q	BG	H	J	L	M	N	P	S	R	BQ	G
<b>COVDMA32</b>	32	ø7	20	37	18	8	32	25	41	9	19	26	ø10
<b>COVDMA40</b>	40	ø9	32	54	25	10	45	32	52	14	25.5	28	ø12
<b>COVDMA50</b>	50	ø9	32	54	25	10	45	32	52	14	25.5	32	ø12
<b>COVDMA63</b>	63	ø11	50	75	32	12	63	40	63	14	32	40	ø16
<b>COVDMA80</b>	80	ø11	50	75	32	12	63	40	63	14	32	50	ø16
<b>COVDMA100</b>	100	ø14	70	103	40	17	90	50	80	22	42	60	ø20
<b>COVDMA125</b>	125	ø14	70	103	40	17	90	50	80	22	46	70	ø25
<b>COVDMA160</b>	160	ø18	110	154	50	20	140	63	110	26	53.5	89	ø30
<b>COVDMA200</b>	200	ø18	110	154	50	20	140	63	110	26	53.5	89	ø30

## NARROW FEMALE HINGE FOR JOINT WITH ARTICULATED HEAD DIN 648K

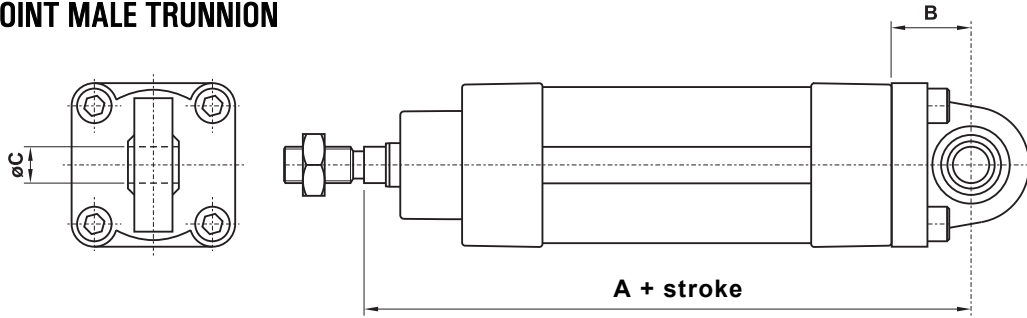


6

part number	for bore	L	T	CM	A	Z	H	B	D3	S	G	MR	D1	D2	TA	TZ	LJ	F
<b>CFSIS032</b>	32	45	34	14	32.5	22	5	9	5.5	30	ø10	10	ø6.6	ø11	3	3.3	11.5	17
<b>CFSIS040</b>	40	52	40	16	38	25	5	9	5.5	35	ø12	12	ø6.6	ø11	4	4.3	12	20
<b>CFSIS050</b>	50	65	45	21	46.5	27	5	11	6.5	40	ø16	14	ø9	ø15	4	4.3	14	22
<b>CFSIS063</b>	63	75	51	21	56.5	32	5	11	6.5	45	ø16	18	ø9	ø15	4	4.3	14	25
<b>CFSIS080</b>	80	95	65	25	72	36	5	14	10	45	ø20	20	ø11	ø18	4	4.3	16	30
<b>CFSIS100</b>	100	115	75	25	89	41	5	14	10	55	ø20	22	ø11	ø18	4	6.3	16	32
<b>CFSIS125</b>	125	140	97	37	110	50	7	20	10	60	ø30	25	ø14	ø20	6	6.3	24	42
<b>CFSIS160</b>	160	180	122	43	140	55	7	20	10	65	ø35	30	ø18	ø26	6	6.3	26.5	46
<b>CFSIS200</b>	200	220	122	43	175	60	7	25	11	75	ø35	30	ø18	ø26	6	6.3	26.5	49

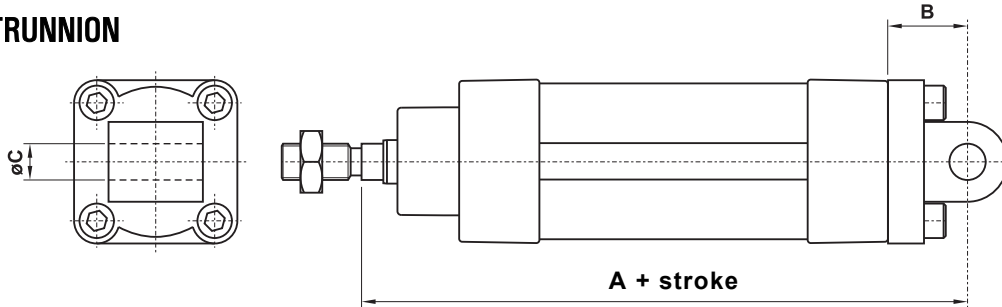


## BALL-JOINT MALE TRUNNION



CMSS...

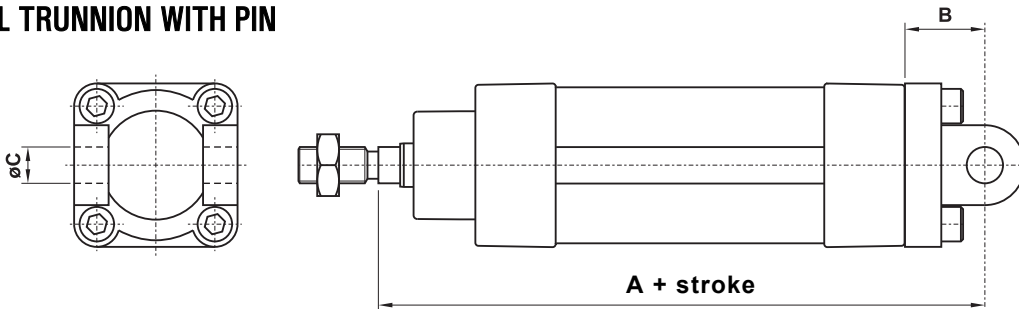
## MALE TRUNNION



CMIS...

CMKS...

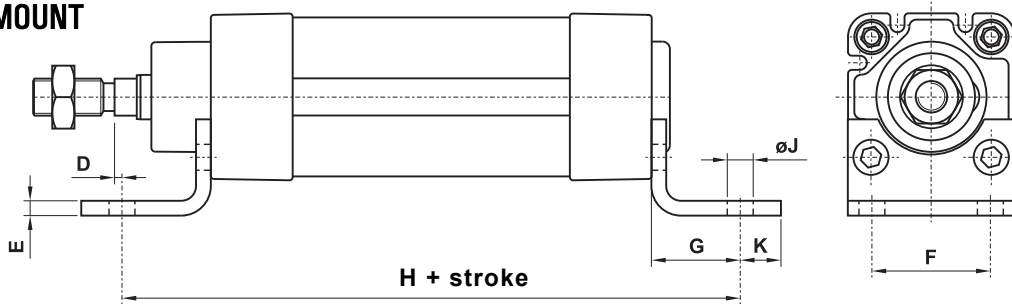
## FEMAL TRUNNION WITH PIN



CFIS...

CFKS...

## FOOT MOUNT



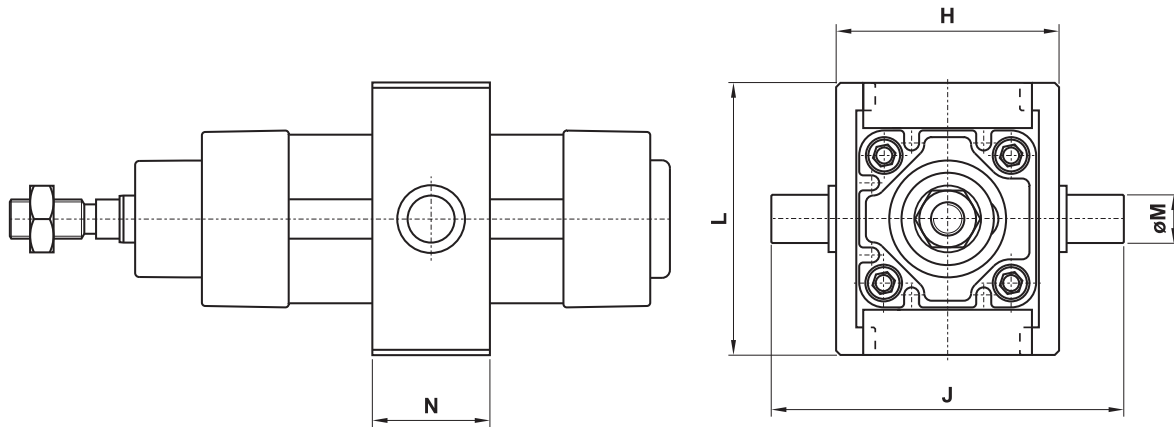
PBIS...

Ø	A	B	C	D	E	F	G	H	J	K
32	142	22	10	2	4	32	24	142	7	11
40	160	25	12	2	4	36	28	161	9	8
50	170	27	12	5	5	45	32	170	9	15
63	190	32	16	5	5	50	32	185	9	13
80	210	36	16	5	6	63	41	210	12	14
100	230	41	20	10	6	75	41	220	14	16
125	275	50	25	20	8	90	45	250	16	25
160	315	55	30	20	9	115	60	300	18	15
200	335	60	30	25	12	135	70	320	22	30



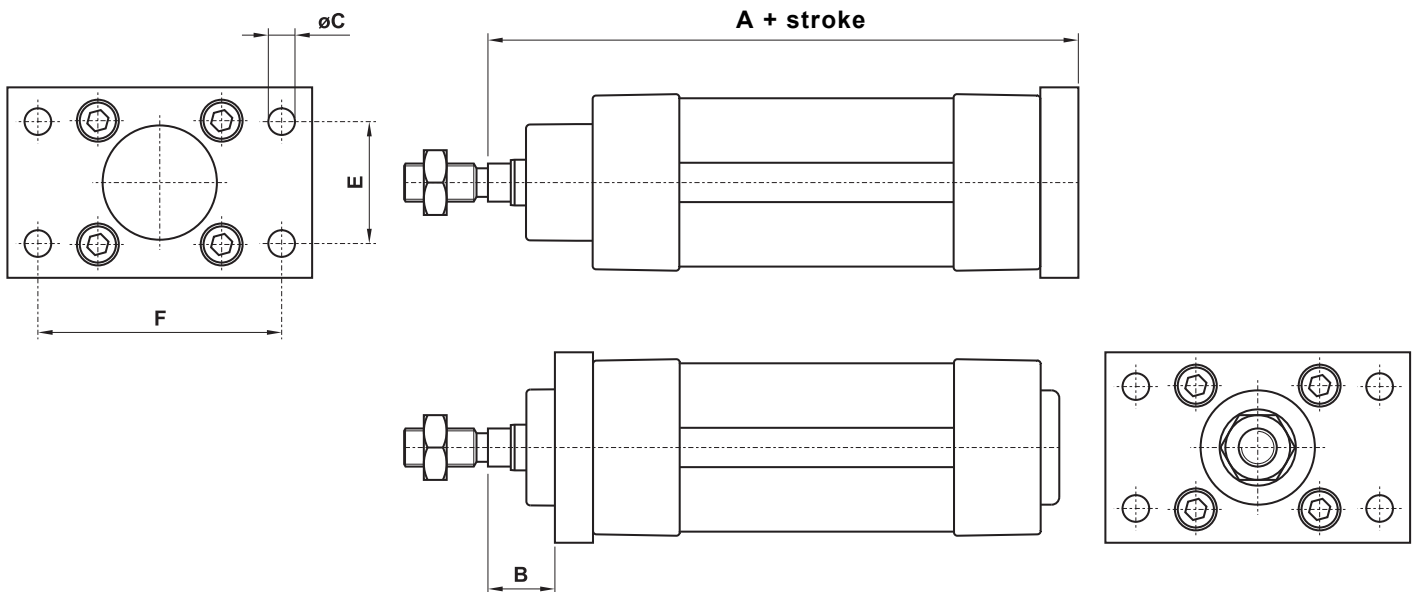
## INTERMEDIATE TRUNNION PER ESTRUSO - ONLY FOR "N" SERIES

CIN...  
CSIS...TI



## FLANGE

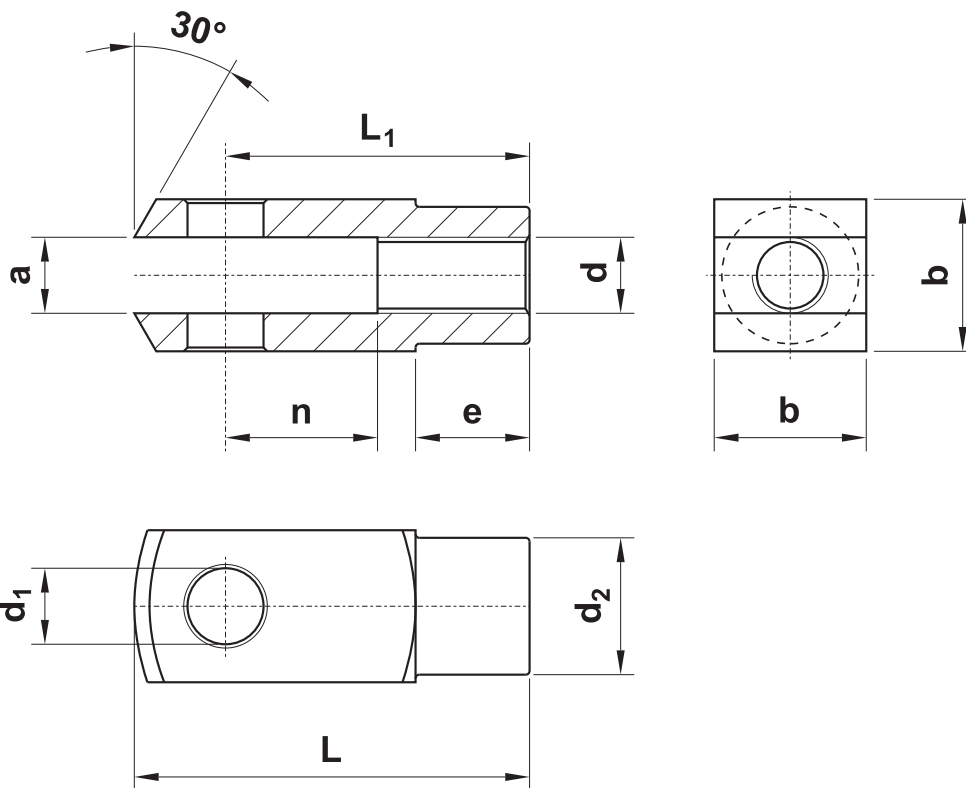
FLIS...



Ø	A	B	C	E	F	H	J	L	M	N
32	130	16	7	32	64	52	87	65	12	25
40	145	20	9	36	72	62	105	74.8	16	25
50	155	25	9	45	90	74	117	90.3	16	25
63	170	25	9	50	100	91	136	94.5	20	30
80	190	30	12	63	126	111	156	109.3	20	30
100	205	35	14	75	150	129	195	134	25	40
125	245	45	16	90	180	156.7	222.7	160	25	40
160	280	60	18	115	230	190	262	200	32	40
200	300	70	22	135	270	240	312	250	32	40

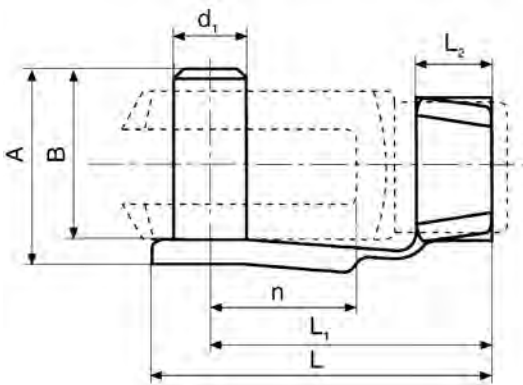


## FORKS



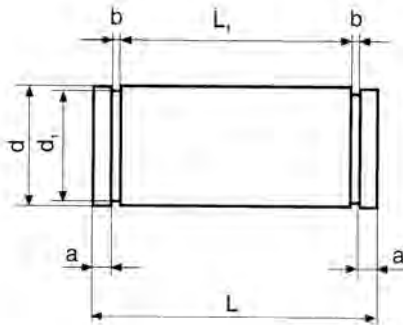
part number	for bores	d	a	b	d <sub>1</sub>	d <sub>2</sub>	e	L	L <sub>1</sub>	n	supplied with
<b>FR8C10</b>	8-10	M4x0.7	4	8	ø4	ø8	6	21	16	8	clip
<b>FR12C16</b>	12-16	M6x1	6	12	ø6	ø10	9	31	24	12	clip
<b>FRC20</b>	20	M8x1.25	8	16	ø8	ø14	12	42	32	16	clip
<b>FR25C32</b>	25-32	M10x1.25	10	20	ø10	ø18	15	52	40	20	clip
<b>FRC40</b>	40	M12x1.25	12	24	ø12	ø20	18	62	48	24	clip
<b>FR50C63</b>	50-63	M16x1.5	16	32	ø16	ø26	24	83	64	32	clip
<b>FR80C100</b>	80-100	M20x1.5	20	40	ø20	ø34	30	105	80	40	clip
<b>FRC125</b>	125	M27x2	30	55	ø30	ø48	38	148	110	54	pin
<b>FR160C200</b>	160-200	M36x2	35	70	ø35	ø60	40	188	144	72	pin

## CLIPS FOR FORKS



code	used for fork	d <sub>1</sub>	n	A	B	L	L <sub>1</sub>	L <sub>2</sub>
26.119.0	<b>M4x0.7</b>	4	8	11	9	19	15	5
26.120.0	<b>M6x1</b>	6	12	16	14	28	23	6
26.121.0	<b>M8x1.25</b>	8	16	22	19	37	31	8
26.122.0	<b>M10x1.25</b>	10	20	26	23	46	39	10
26.123.0	<b>M12x1.25</b>	12	24	32	28	55	47	12
26.124.0	<b>M16x1.5</b>	16	32	40	36	72	62	14
26.125.0	<b>M20x1.5</b>	20	40	48	44	88	72	16

## PINS FOR FORKS



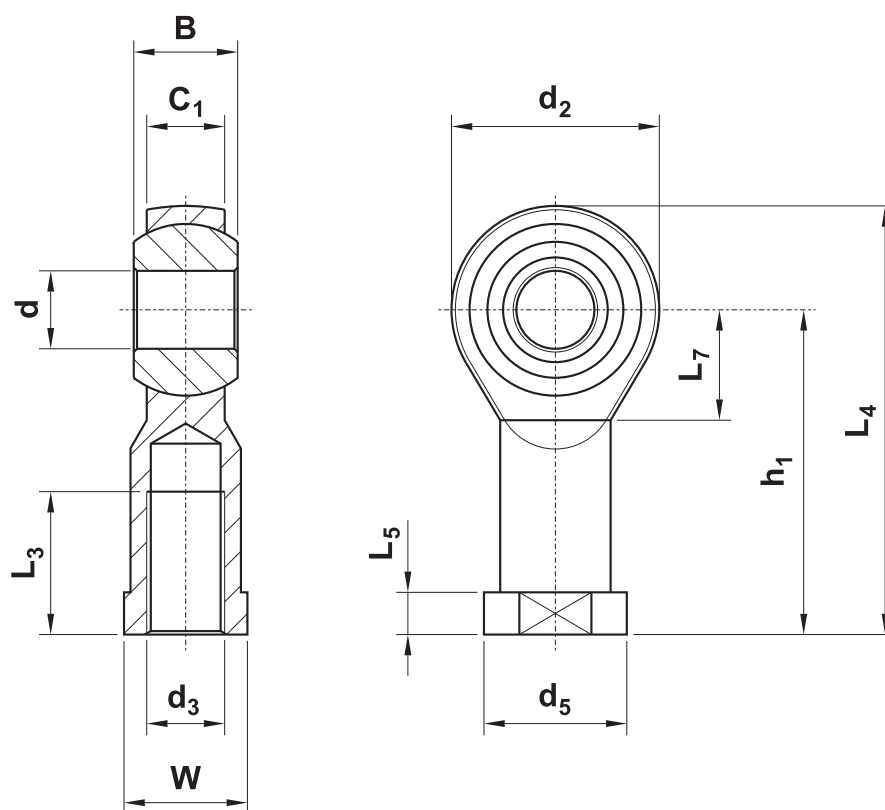
used for fork	d	L	d <sub>1</sub>	L <sub>1</sub>	a	b
<b>M27x2</b>	30	65	28.6	55	3.4	1.6
<b>M36x2</b>	35	84	33.4	70	5.4	1.6

## NUTS FOR PISTON-ROD



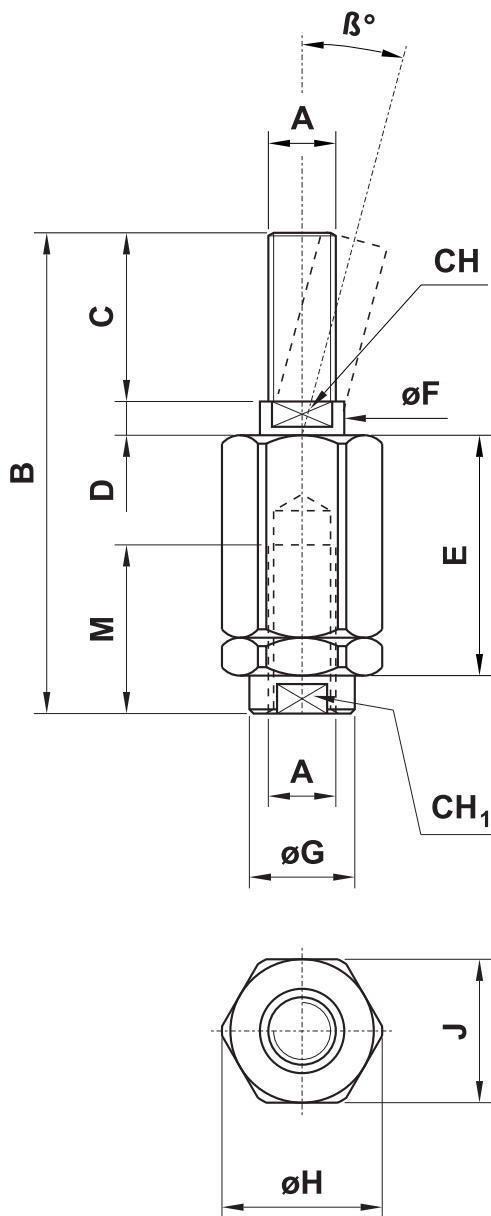
STANDARD part number	STAINLESS STEEL part number	code	for bore	thread	key
<b>DSMC8-10</b>		26.196.2	8-10	<b>M4x0.7</b>	7
<b>DSMC12-16</b>		26.197.2	12-16	<b>M6x1</b>	10
<b>DSMC20</b>		26.198.2	20	<b>M8x1.25</b>	13
<b>DSIS032</b>	<b>DSIS032X</b>	21.750.0	25-32	<b>M10x1.25</b>	17
<b>DSIS040</b>	<b>DSIS040X</b>	21.751.0	40	<b>M12x1.25</b>	19
<b>DSIS05063</b>	<b>DSIS05063X</b>	21.752.0	50-63	<b>M16x1.5</b>	24
<b>DSIS080100</b>	<b>DSIS080100X</b>	21.753.0	80-100	<b>M20x1.5</b>	30
<b>DSIS125</b>	<b>DSIS125X</b>	21.754.0	125	<b>M27x2</b>	41
<b>DSIS160200</b>	<b>DSIS160200X</b>	21.755.0	160-200	<b>M36x2</b>	55

## SWIVEL BALL JOINT



STANDARD part number	STAINLESS STEEL part number	for bores	$d_3$	$d$	$B$	$C_1$	$d_2$	$d_5$	$h_1$	$L_3$	$L_4$	$L_5$	$L_7$	$W$
TS8T10	TS8T10X	8-10	M4x0.7	ø5	8	6	18	ø11	27	10	36	4	10	9
TS12T16	TS12T16X	12-16	M6x1	ø6	9	6.75	20	ø13	30	12	40	5	11	11
TST20	TST20X	20	M8x1.25	ø8	12	9	24	ø16	36	16	48	5	13	14
TS25T32	TS25T32X	25-32	M10x1.25	ø10	14	10.5	28	ø19	43	20	57	6.5	15	17
TST40	TST40X	40	M12x1.25	ø12	16	12	32	ø22	50	22	66	6.5	17	19
TS50T63	TS50T63X	50-63	M16x1.5	ø16	21	15	42	ø27	64	28	85	8	23	22
TS80T100	TS80T100X	80-100	M20x1.5	ø20	25	18	50	ø34	77	33	102	10	27	30
TST125	TST125X	125	M27x2	ø30	37	25	70	ø50	110	51	145	15	36	41
TS160T200	TS160T200X	160-200	M36x2	ø35	43	28	80	ø58	125	56	165	17	41	50

## SELF-ALIGNING JOINTS



part number	for bores	A	B	C	D	E	F	G	H	J	M	CH	$\beta^\circ$	CH <sub>1</sub>
<b>SN12D16</b>	12-16	M6x1	35	10	3.5	17.5	6	8.5	14.5	13	10	5	10	7
<b>SND20</b>	20	M8x1.25	57	20	4	28.5	8	12.5	19	17	20	7	10	11
<b>SN25D32</b>	25-32	M10x1.25	71	20	5	35	14	22	32	30	20	12	10	19
<b>SND40</b>	40	M12x1.25	75	24	5	35	14	22	32	30	20	12	10	19
<b>SN50D63</b>	50-63	M16x1.5	103	32	8	54	22	32	45	41	32	20	10	30
<b>SN80D100</b>	80-100	M20x1.5	119	40	8	54	22	32	45	41	40	20	10	30
<b>SND125</b>	125	M27x2	147	54	10	60	32	57	70	65	48	24	8	54

## PISTON ROD PROTECTION COVERS

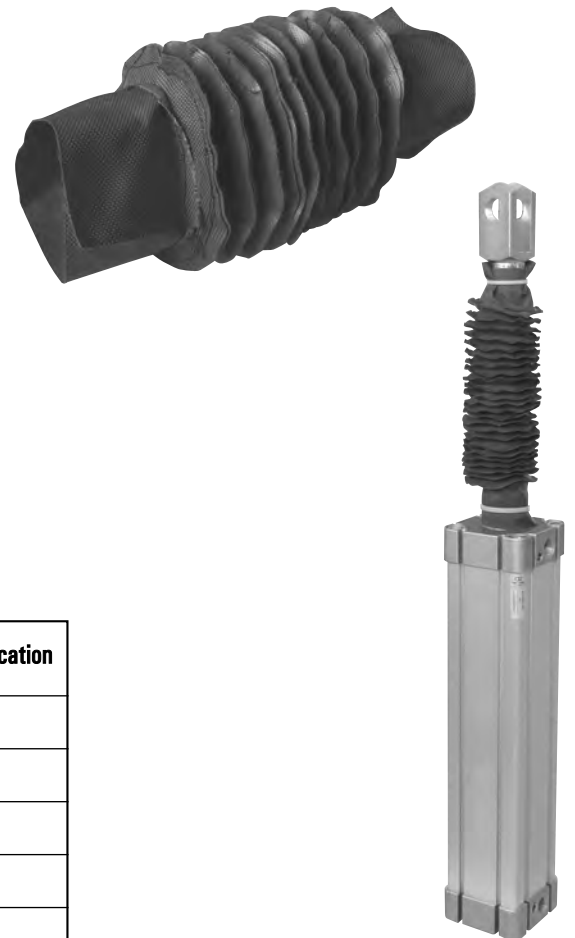
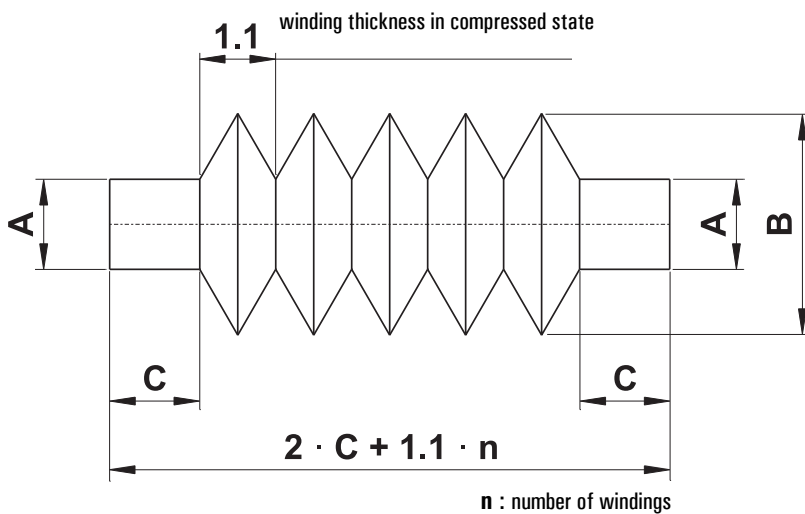
Piston rod protection cover for ISO 6431 VDMA cylinders, in double-sided hyped-up cloth (fabric). Water, oil and dust resistant. Colour: blue.

The protection cover must be fixed on the piston rod by two clamps, not provided with the protection cover.

SO	A	1	0
----	---	---	---

size identification

number of windings



for cylinder ø	A	B	C	number of windings for 100 mm stroke	size identification
32; 40	30	60	36	10	A
50; 63; 80	40	80	46	8	B
100; 125	55	130	40	4	C
160; 200	70	155	55	3	D
250; 320	110	180	60	3	E

bore	maximum stroke (mm)	corresponding number of windings
32	90	9
40	90	9
50	130	11
63	130	11
80	140	12
100	330	14
125	550	22
160	870	27
200	1170	36

If the cylinder stroke is longer than the value in this table, we advise to increase the dimension D of the piston rod length (refer to pages 414-415) by 1.1 mm for each winding.

Example: a cylinder bore 80 and stroke 300 needs 24 windings. It is necessary to increase the piston rod length by  $(24 - 12) \times 1.1 \text{ mm} = 13.2 \text{ mm}$ .

The cylinder with longer piston rod must be ordered as special (please contact the commercial office).

# Rod blocking device



The rod blocking device can be used with cylinders ISO 6431 VDMA (bores from 32 to 125) and with minicylinders ISO 6432 (bores from 12 to 25).

The device is normally locked. It is unlocked by applying a pneumatic signal. Therefore it is possible to block the cylinder in case of pressure drop or to stop the movement in intermediate positions.



## Materials

Body: aluminium (anodize treatment)

Internal parts: brass

Pistons: polymer

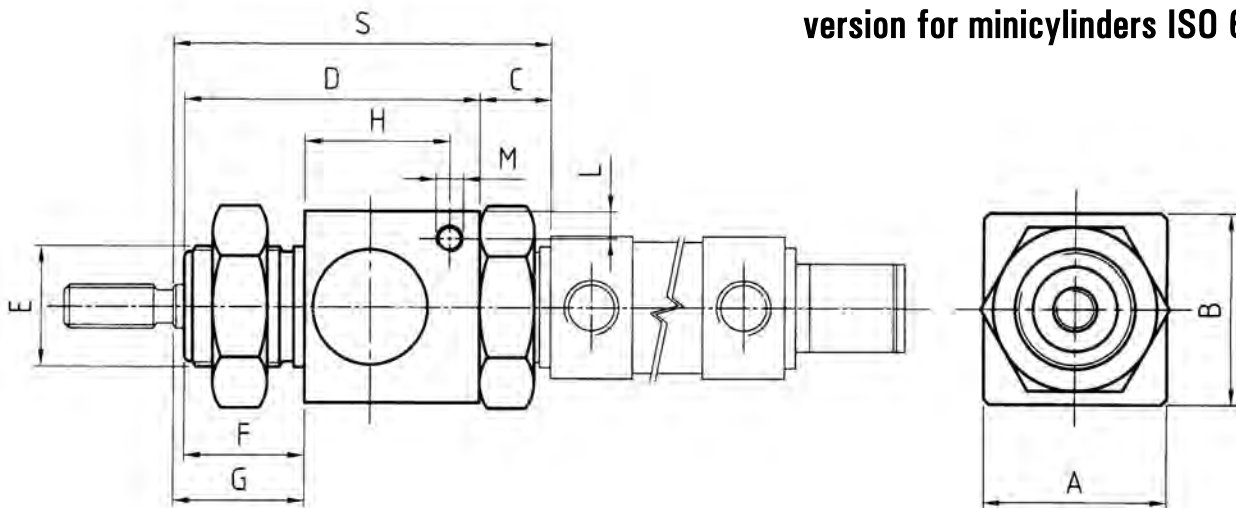
Springs: steel

Minimum actuating pressure		3 bar (43.5 PSI) 0.3 MPa											
Temperature range		-15+60°C (5-140° F)											
Construction type		Mechanical bi-directional											
Function		NC (pneumatic piloted unlock)											
Locking force	∅	12	16	20	25	32	40	50	63	80	100	125	
	force (N)	200	200	490	490	790	1240	1930	3060	5400	7700	12040	
Fluid		50µ filtered, lubricated or non lubricated air											

# Rod blocking device

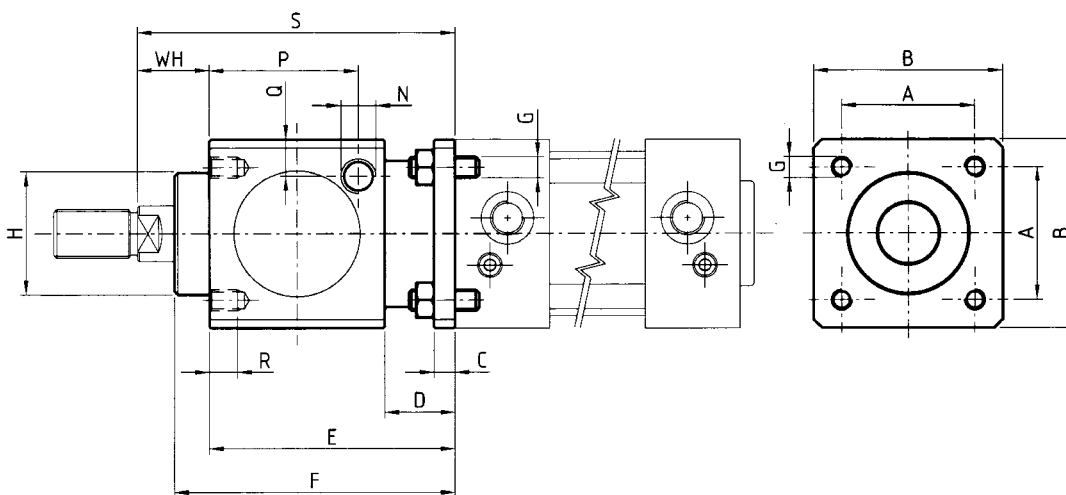


## version for minicylinders ISO 6432



model	for bores	A	B	C	D	E	F	G	H	L	M
<b>BM012</b>	12-16	30	29.5	10.5	44.5	M16x1.5	17	22	24.5	4	M5
<b>BM020</b>	20	35	33.5	13	54	M22x1.5	22	24	26.5	4.5	M5
<b>BM025</b>	25	35	33.5	13	54	M22x1.5	22	28	26.5	4.5	M5

## version for cylinders ISO 6431

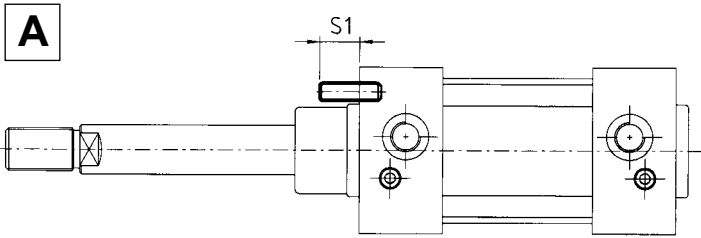


part number	for bores	A	B	C	D	E	F	G	H	WH	N	P	Q	R	S
<b>BM032</b>	32	32.5	47	6	22.5	60	67.5	M6	30	26	G1/8"	33.5	9.5	8	86
<b>BM040</b>	40	38	54	6	20	70	80	M6	35	30	G1/8"	42.5	10.5	8	100
<b>BM050</b>	50	46.5	65	8	24	90	100	M8	40	32	G1/8"	58	12.5	12	122
<b>BM063</b>	63	56.5	75	8	24	90	100	M8	45	37	G1/8"	59	17.5	12	127
<b>BM080</b>	80	72	95	12	32	110	120	M10	45	46	G1/4"	69	17.5	16	156
<b>BM100</b>	100	89	114	12	32	110	120	M10	55	51	G1/4"	69	27	16	161
<b>BM125</b>	125	110	140	20	45	140	156	M12	60	65	G1/4"	84.5	20	20	205

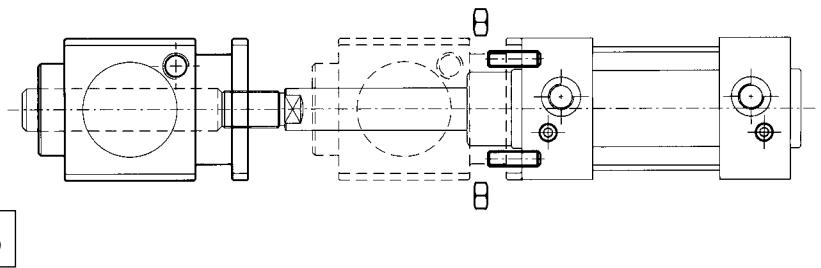
# Rod blocking device



## assembling scheme

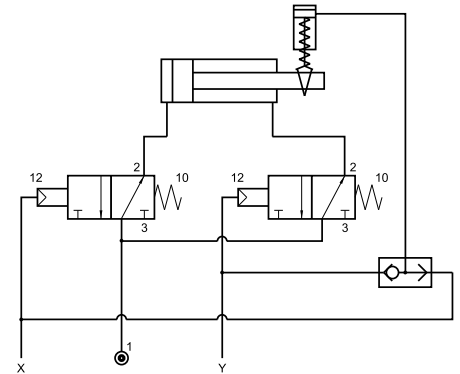
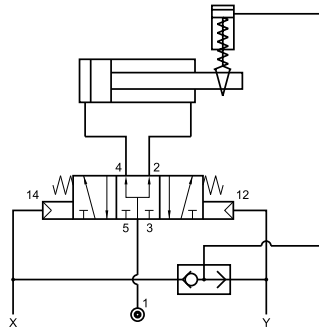


CILINDRO $\phi$	32	40	50	63	80	100	125
S1	12	12	16	16	22	22	32

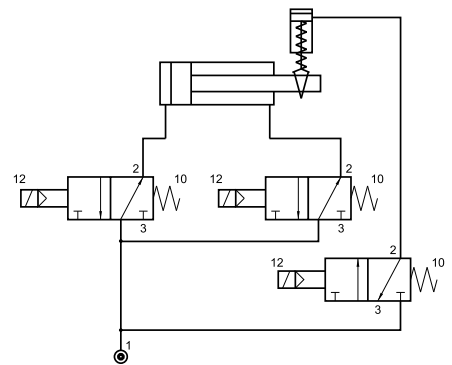
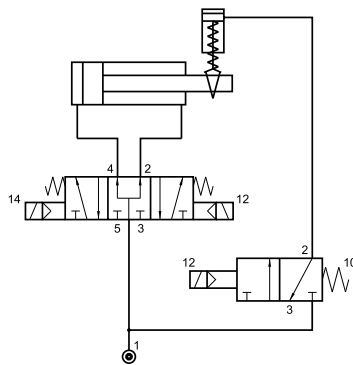


## connection scheme

### pneumatic control



### electropneumatic control





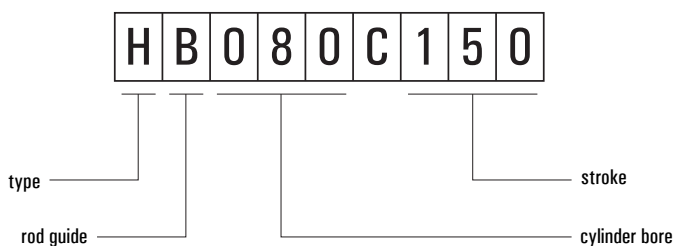
- Guide units for cylinders ISO 6431 and minicylinders ISO 6432
- Available versions:
  - type "U" with sintered bronze rod guide (code UB...) - cylinder bores from 12 to 100
  - type "H" with sintered bronze rod guide (code HB...) - cylinder bores from 12 to 100
  - type "H" with linear ball bearings (code HS...) - cylinder bores from 12 to 100
- Type "U" with sintered bronze rod guide: movements with medium loads and low speeds
- Type "H" with sintered bronze rod guide: movements with heavy loads and low speeds
- Type "H" with linear ball bearings: movements with medium loads and high speeds

## Materials

Body: aluminium (anodize treatment)

Rods: C40 (chromium plated)

### coding example



### Type

**H** "H" type

**U** "U" type

### Rod guide

**B** sintered bronze

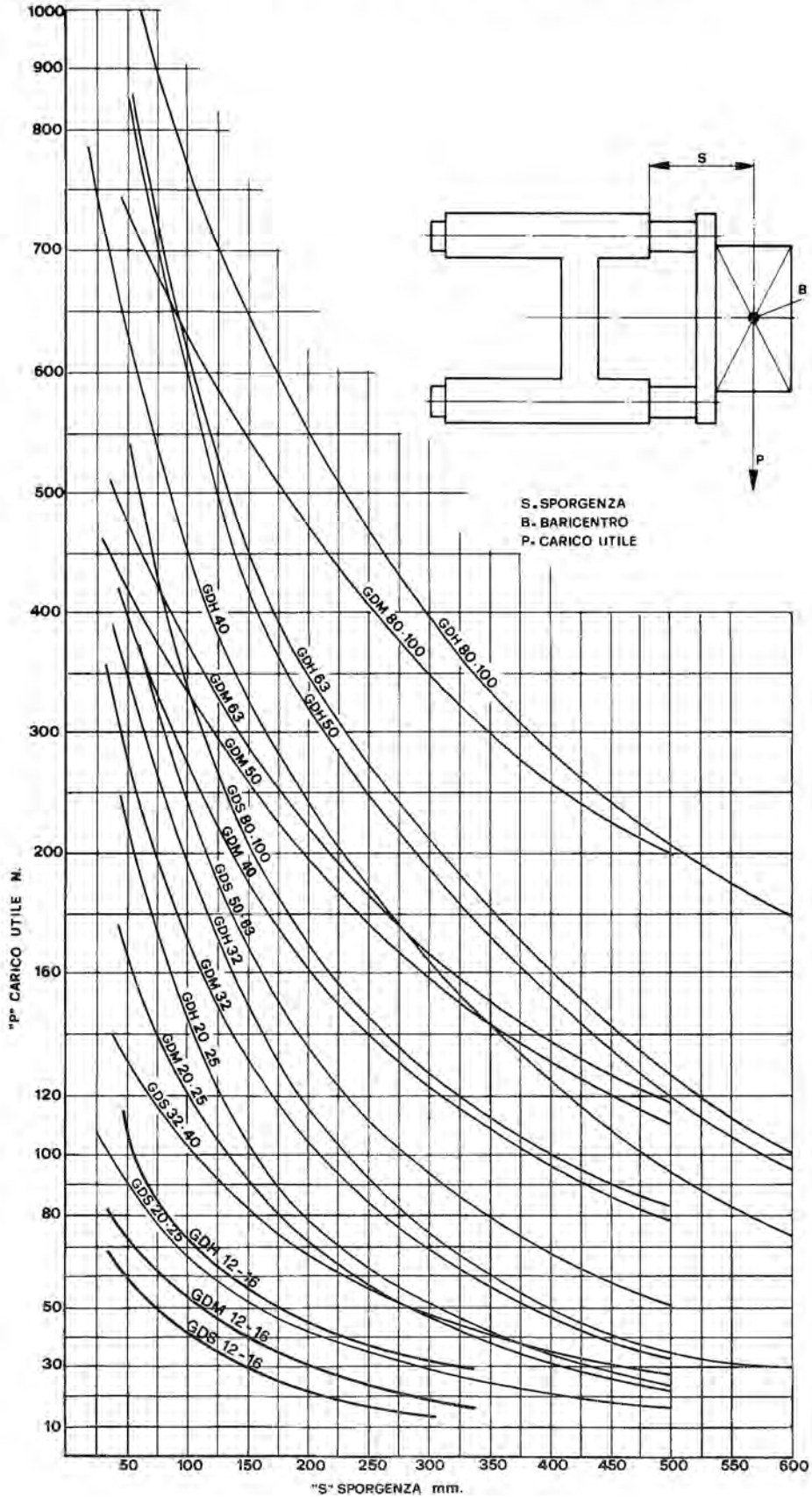
**S** linear ball bearings

### available bores and strokes

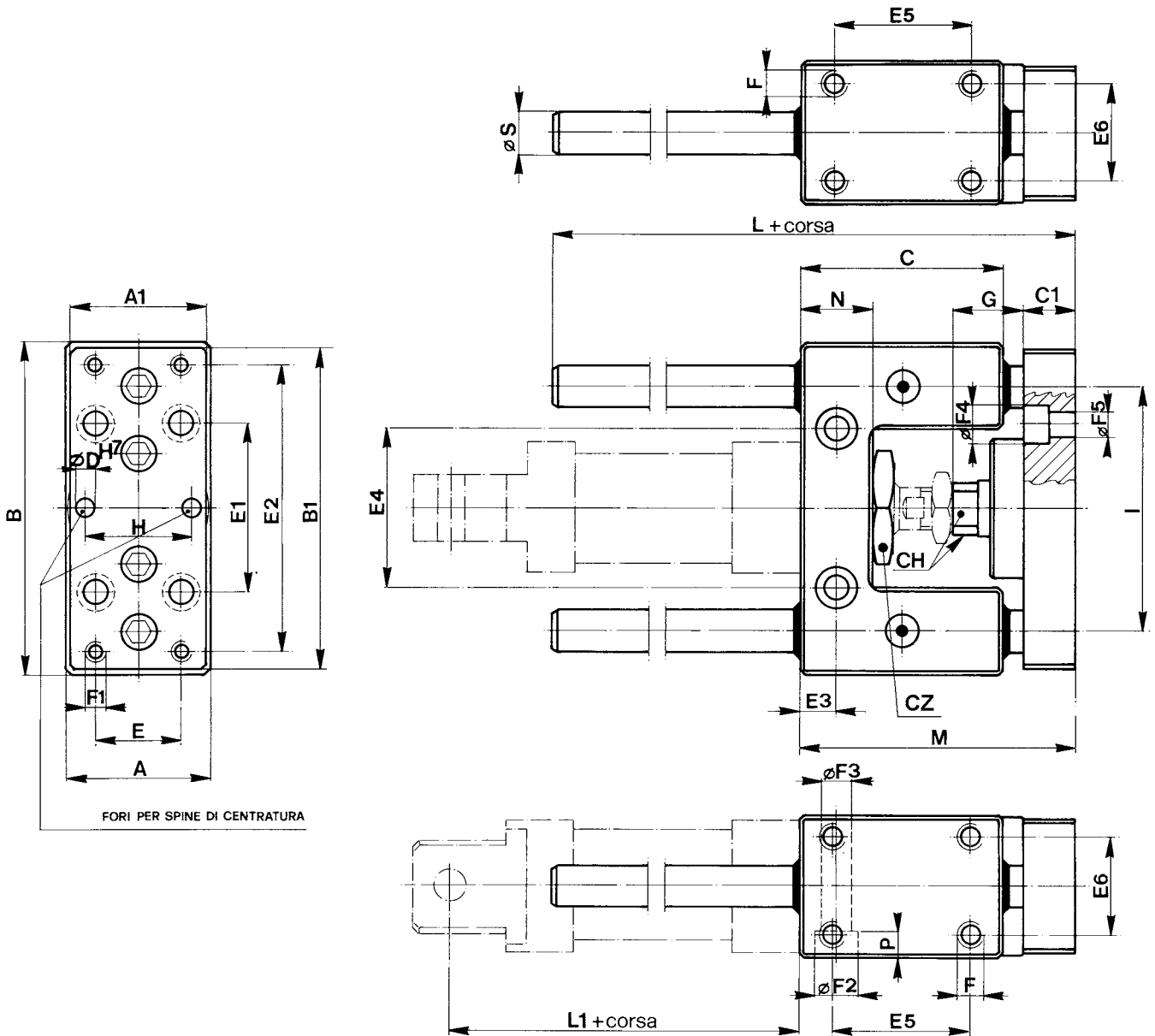
stroke \ bore	12*	16	20	25	32	40	50	63	80	100
50	X	X	X	X	X	X	X	X	X	X
100	X	X	X	X	X	X	X	X	X	X
150				X	X	X	X	X	X	X
160	X	X	X							
200	X	X	X	X	X	X	X	X	X	X
250	X	X	X	X	X	X	X	X	X	X
300				X	X	X	X	X	X	X
400				X	X	X	X	X	X	X
500				X	X	X	X	X	X	X

\* The guide unit for bore 12 is used also for bore 16, with the same code.

## Carico ammissibile / Permissible loads

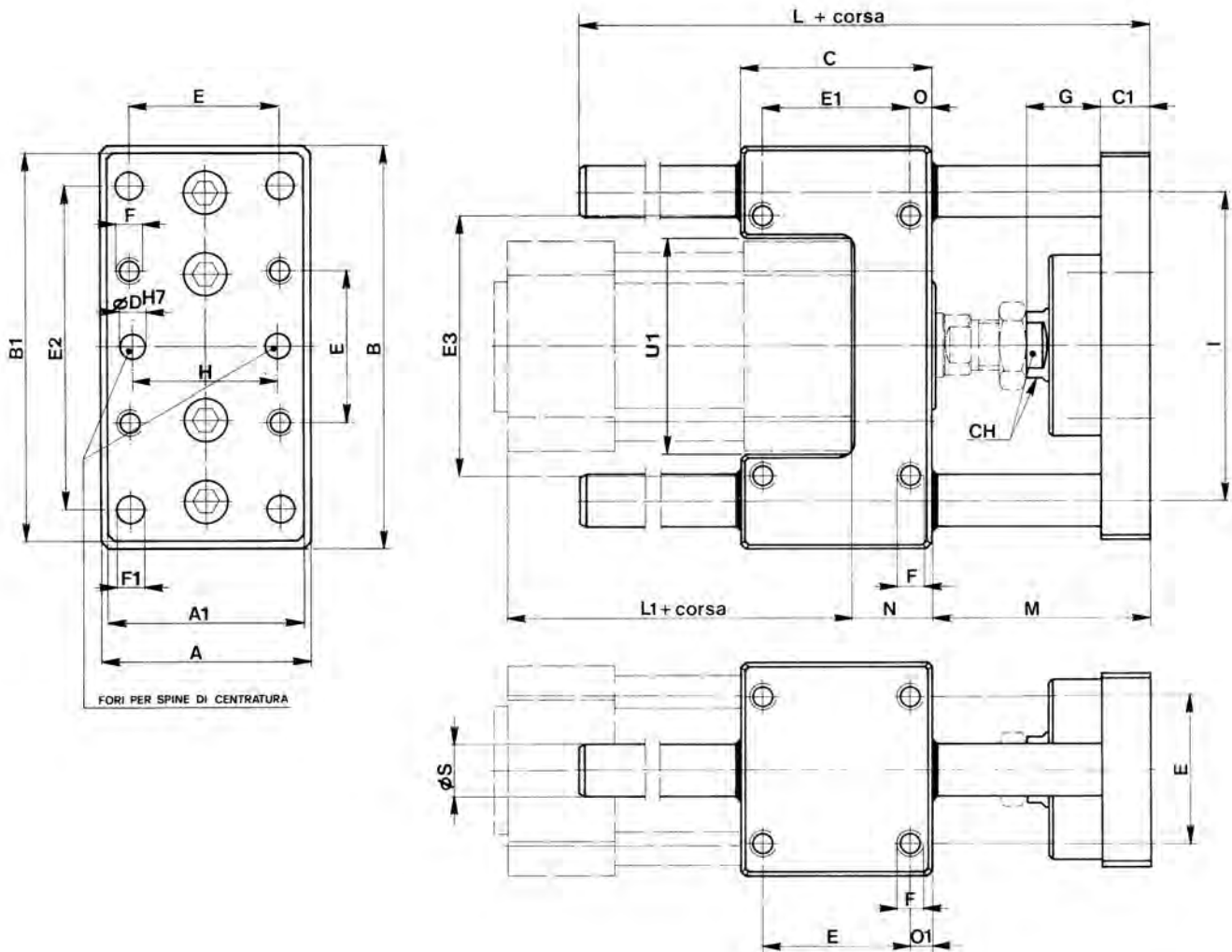


## tipo "U" per microcilindri ISO 6432 type "U" for minicylinders ISO 6432



ø CIL	A	A1	B	B1	C	C1	CH	CZ	D	E	E1	E2	E3	E4	E5	E6	F	F1	F2	F3	F4	F5	G	H	I	L	L1	M	N	P	S
12 16	30	27	65	63	38	10	8	19	4	15	32	54	6.5	24	25	22	M4	M4	8.5	5.1	7.5	4.5	12	15	46	70	53	51	13	5.5	8
																											60				
20	34	32	79	76	48	12	12	27	6	20	40	68	8.5	38	32.5	23	M6	M5	10.5	6.5	9	5.5	22	20	58	83	71	65	17	6.5	10
25	34	32	79	76	48	12	12	27	6	20	40	68	8.5	38	32.5	23	M6	M5	10.5	6.5	9	5.5	17	20	58	83	76	65	17	6.5	10

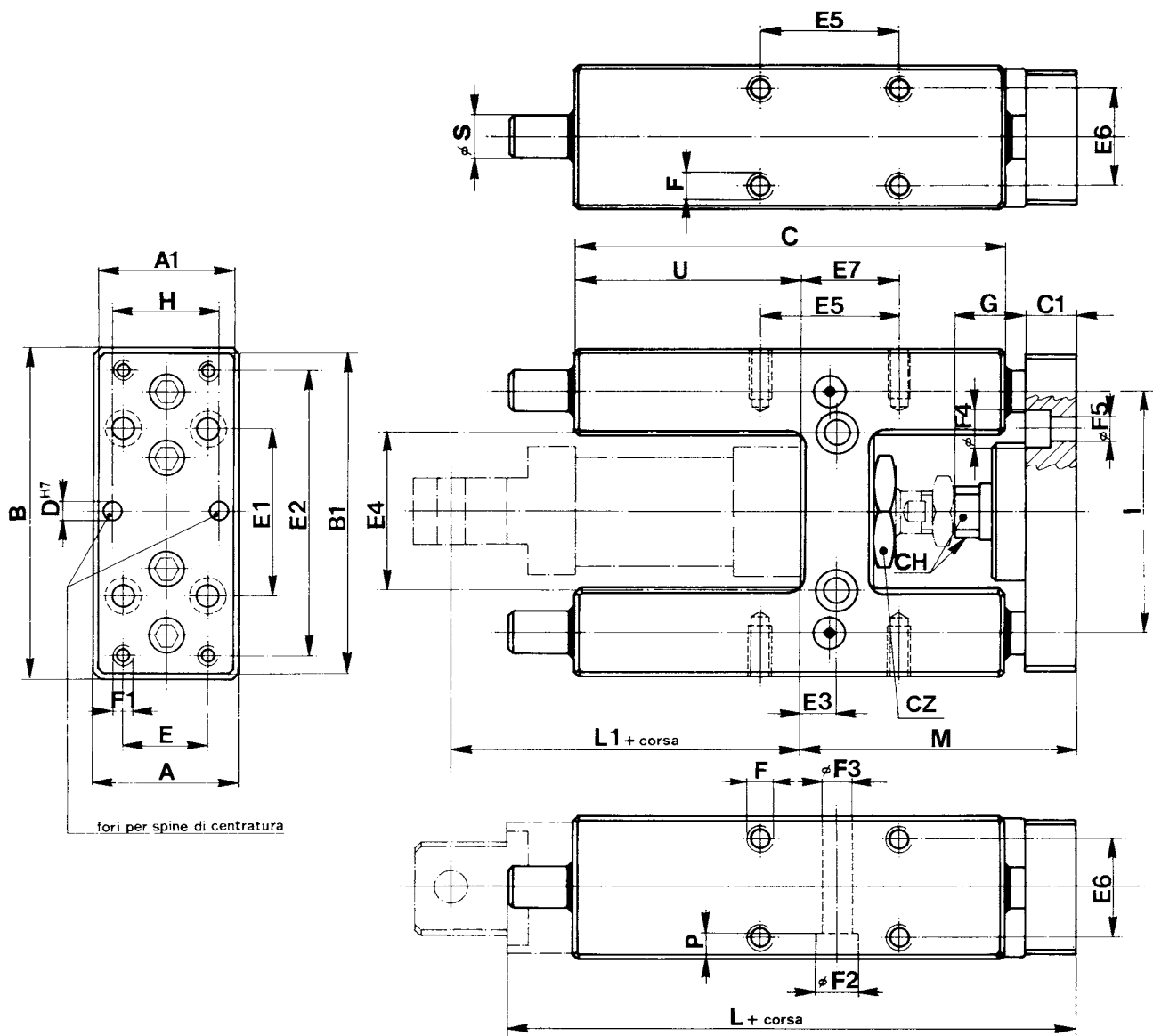
## tipo "U" per cilindri ISO 6431 type "U" for cylinders ISO 6431



∅ CIL	A	A1	B	B1	C	C1	D	E	E1	E2	E3	F	F1	G	H	I	L	L1	M	N	O	O1	S	CH	U1
32	48	45	100	90	48	12	6	32.5	32.5	78	58	M6	6.5	20	31	74	106	94	54	17	7.8	7.8	12	13	48
40	56	50	106	105	58	12	6	38	38	84	64	M6	6.5	22	36	80	117	105	55	21	10	10	12	15	54
50	66	60	125	124	59	15	6	46.5	46.5	100	80	M8	9	23	45	96	129	106	68	25	6.3	6.3	16	21	67
63	76	70	132	125	76	15	6	56.5	56.5	105	95	M8	9	23	45	104	146	121	68	25	9.8	9.8	16	21	76
80	98	90	165	155	90	18	6	72	50	130	130	M10	11	30	56	130	170	128	78	34	20	9	20	27	97
100	118	110	185	175	110	18	6	89	70	150	150	M10	11	30	56	150	190	138	78	39	20	10.5	20	27	117

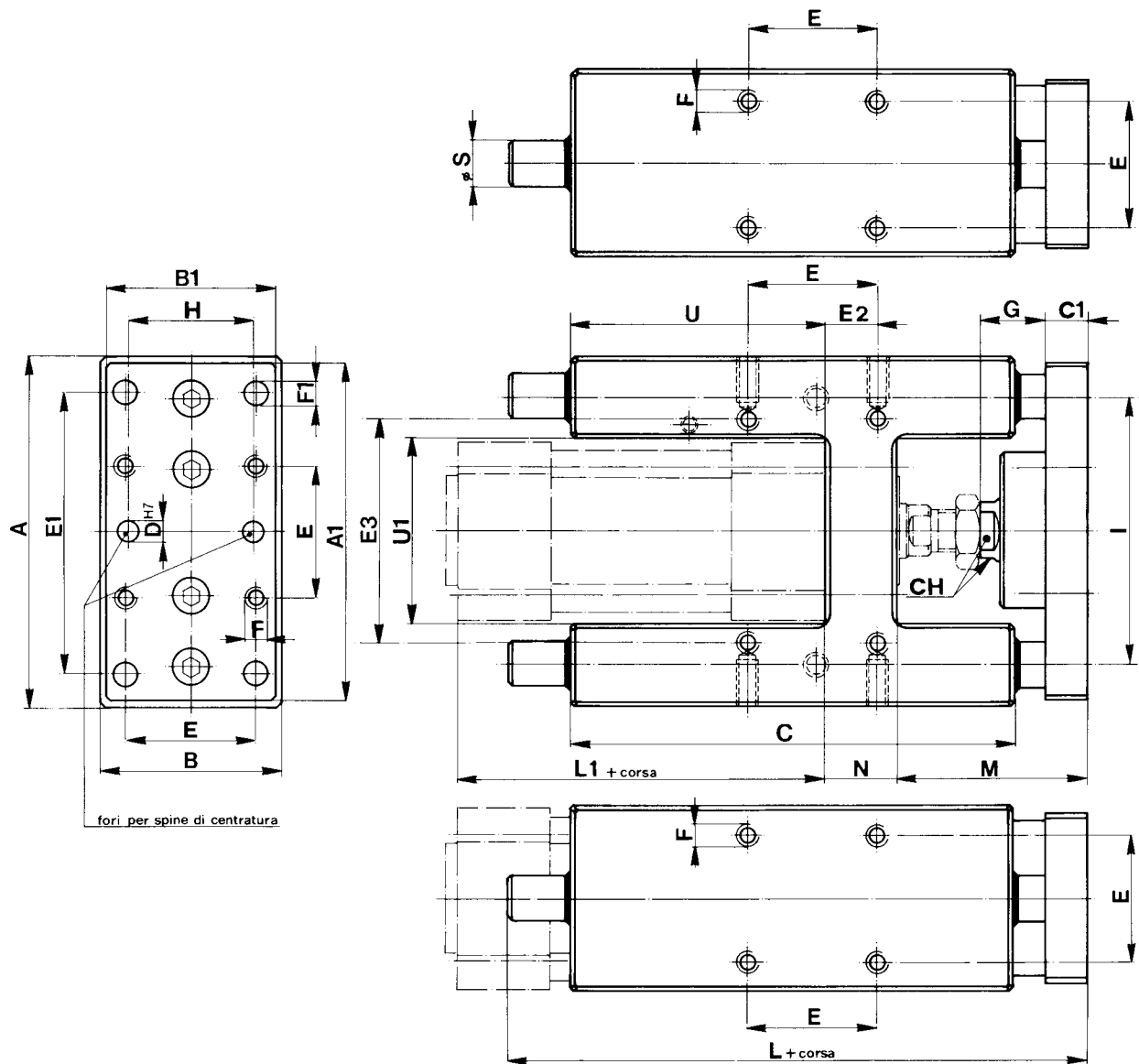
## tipo "H" per microcilindri ISO 6432

type "H" for minicylinders ISO 6432



∅ CIL	A	A1	B	B1	C	C1	CH	CZ	D	E	E1	E2	E3	E4	E5	E6	E7	F	F1	F2	F3	F4	F5	G	H	I	L	L1	M	P	S	U
12 16	30	27	65	63	75	10	8	19	4	15	32	54	6.5	24	32.5	22	11	M4	M4	8.5	5.1	7.5	4.5	12	15	46	130	53	51	5.5	8	37
																												60				
20	34	32	79	76	108	12	12	27	6	20	40	68	8.5	38	32.5	23	15	M6	M5	10.5	6.5	9	5.5	22	20	58	159	71	65	6.5	10	58
25	34	32	79	76	108	12	12	27	6	20	40	68	8.5	38	32.5	23	15	M6	M5	10.5	6.5	9	5.5	17	20	58	159	76	65	6.5	10	58

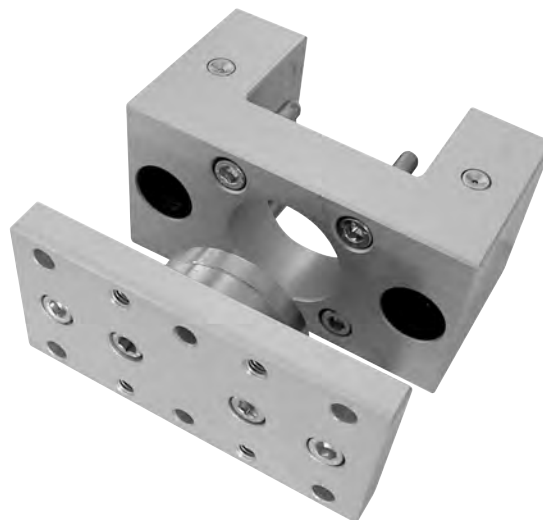
## tipo "H" per cilindri ISO 6431 type "H" for cylinders ISO 6431



∅ CIL	A	A1	B	B1	C	C1	CH	D	E	E1	E2	E3	F	F1	G	H	I	L	L1	M	N	S	U	U1
32	97	90	50	45	125	12	13	6	32.5	78	4.3	61	M6	6.5	20	31	74	177	94	54	17	12	76	50.5
40	115	105	58	50	136	12	15	6	38	84	11	69	M6	6.5	22	36	87	192	105	55	21	16	81	58.5
50	137	124	70	60	144	15	21	6	46.5	100	18.5	85	M8	9	23	45	104	237	106	68	26	20	79	70.5
63	152	145	85	70	176	15	21	6	56.5	105	15.3	100	M8	9	23	45	119	237	121	68	26	20	111	85.5
80	189	180	105	100	215	20	27	6	72	130	21	130	M10	11	30	56	148	280	128	78	34	25	128	106
100	213	200	130	120	220	20	27	6	89	150	24.5	150	M10	11	30	56	173	280	138	78	39	25	128	131

## guide units kit

Kit includes all necessary pieces. Rods are not included.  
The drawing for rod machining is available on:  
<http://www.azpneumatica.com/azweb/ita/kitguid.htm>



### "U" type with sintered bronze rod guide

for bore	part number	code
12-16	<b>KUB012-016</b>	27.271.0
20	<b>KUB020</b>	27.272.0
25	<b>KUB025</b>	27.273.0
32	<b>KUB032</b>	27.274.0
40	<b>KUB040</b>	27.275.0
50	<b>KUB050</b>	27.278.0
63	<b>KUB063</b>	27.279.0
80	<b>KUB080</b>	27.280.0
100	<b>KUB100</b>	27.281.0

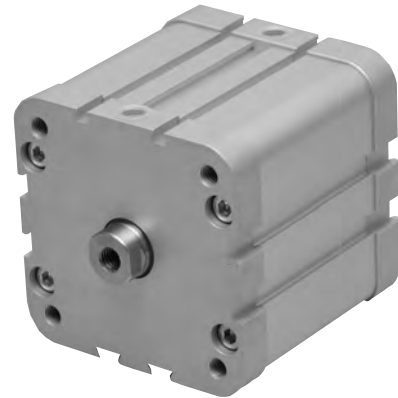
### "H" type with sintered bronze rod guide

for bore	part number	code
12-16	<b>KHB012-016</b>	27.259.0
20	<b>KHB020</b>	27.250.0
25	<b>KHB025</b>	27.251.0
32	<b>KHB032</b>	27.252.0
40	<b>KHB040</b>	27.253.0
50	<b>KHB050</b>	27.254.0
63	<b>KHB063</b>	27.255.0
80	<b>KHB080</b>	27.256.0
100	<b>KHB100</b>	27.257.0

### "H" type with linear ball bearings

for bore	part number	code
12-16	<b>KHS012-016</b>	27.260.0
20	<b>KHS020</b>	27.261.0
25	<b>KHS025</b>	27.268.0
32	<b>KHS032</b>	27.262.0
40	<b>KHS040</b>	27.263.0
50	<b>KHS050</b>	27.264.0
63	<b>KHS063</b>	27.265.0
80	<b>KHS080</b>	27.266.0
100	<b>KHS100</b>	27.267.0

- Fixing dimensions are compliant to norm ISO 6431 or UNITOP
- Suitable for standard fixing elements
- High reliability and long lifetime
- Standard magnetic version
- Special strokes on request



## Materials

Barrel: aluminium

Piston-rod: C45 (chromium plated) or stainless steel

End-cups: aluminium

Piston: technopolymer (standard) or aluminium (on request). Technopolymer piston is not suitable for ATEX.

Seals: polyurethane or VITON

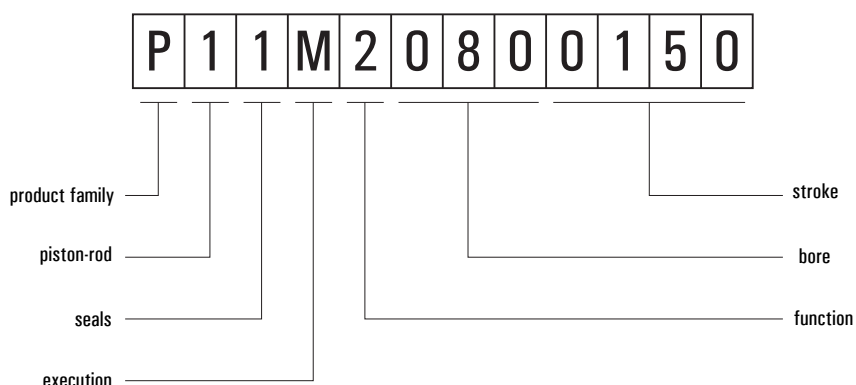
Piston-rod seal: polyurethane or VITON

Magnet: magnetic iron compound (not suitable for temperatures over +60°C)

Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	standard (polyurethane/NBR): -15+60°C (5-140° F) VITON: max +110°C (230° F)
Bores	32; 40; 50; 63; 80; 100 mm
Construction type	Square aluminium profile
Strokes	5 ... 200 mm
Fluid	50µ filtered, lubricated or non lubricated air



## coding example



### Product family

- P** compact cylinders with fixing distances ISO 6431
- R** compact cylinders with fixing distances UNITOP

### Piston-rod

- 1** C45 chromium plated - female rod thread
- 2** stainless steel - female rod thread
- 3** C45 chromium plated - male rod thread
- 4** stainless steel - male rod thread

### Seals

- 1** polyurethane
- 2** all seals in VITON
- 3** rod seals in VITON

### Execution

- M** magnetic

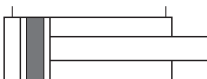
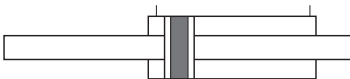
### Function

- 1** single acting front spring without pneumatic cushioning
- 2** double acting without pneumatic cushioning
- 3** single acting back spring without pneumatic cushioning
- 4** double acting without pneumatic cushioning, with through-rod

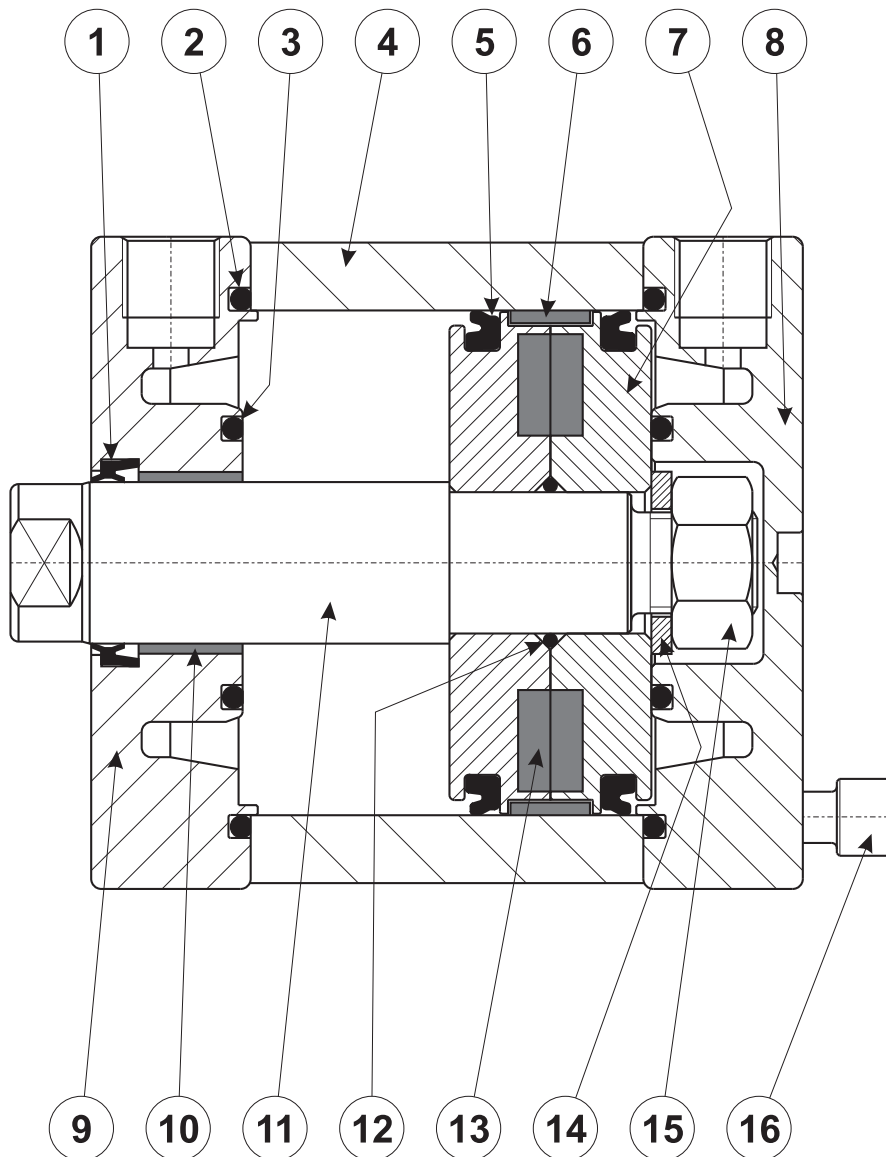
## available versions

<b>single acting front spring</b>  <b>magnetic</b>  <b>without pneumatic cushioning</b>	bore		32	40	50	63	80	100	<b>OPTIONS</b>  The standard is marked with grey background
	stroke								
	5		X	X	X	X	X	X	<b>piston-rod material</b> C45 chromium plated    stainless steel  <b>seals material</b> polyuret.    all seals in VITON    rod seals in VITON  <b>rod thread</b> female rod thread    male rod thread
	10		X	X	X	X	X	X	
	25		X	X	X	X	X	X	
	30				X	X	X	X	
	40								
	50								
	75								
	80								
	100								
	125								
	150								
	160								
	200								
<b>single acting back spring</b>  <b>magnetic</b>  <b>without pneumatic cushioning</b>	bore		32	40	50	63	80	100	<b>OPTIONS</b>  The standard is marked with grey background
stroke									
	5		X	X	X	X	X	X	<b>piston-rod material</b> C45 chromium plated    stainless steel  <b>seals material</b> polyuret.    all seals in VITON    rod seals in VITON  <b>rod thread</b> female rod thread    male rod thread
	10		X	X	X	X	X	X	
	25		X	X	X	X	X	X	
	30				X	X	X	X	
	40								
	50								
	75								
	80								
	100								
	125								
	150								
	160								
	200								

## available versions

<b>double acting</b>  <b>magnetic</b>  <b>without pneumatic cushioning</b>  	bore		32	40	50	63	80	100	<b>OPTIONS</b>  The standard is marked with grey background																				
	stroke																												
	5		X	X	X	X	X	X	<table border="1"> <thead> <tr> <th colspan="3">piston-rod material</th> </tr> <tr> <td>C45 chromium plated</td> <td colspan="2">stainless steel</td> </tr> <tr> <th colspan="3">seals material</th> </tr> <tr> <td>polyuret.</td> <td>all seals in VITON</td> <td>rod seals in VITON</td> </tr> <tr> <th colspan="3">rod thread</th> </tr> <tr> <td>female rod thread</td> <td colspan="2">male rod thread</td> </tr> </thead> </table>			piston-rod material			C45 chromium plated	stainless steel		seals material			polyuret.	all seals in VITON	rod seals in VITON	rod thread			female rod thread	male rod thread	
piston-rod material																													
C45 chromium plated	stainless steel																												
seals material																													
polyuret.	all seals in VITON	rod seals in VITON																											
rod thread																													
female rod thread	male rod thread																												
	10		X	X	X	X	X	X																					
	25		X	X	X	X	X	X																					
	30		X	X	X	X	X	X																					
	40		X	X	X	X	X	X																					
	50		X	X	X	X	X	X																					
	75		X	X	X	X	X	X																					
	80		X	X	X	X	X	X																					
	100		X	X	X	X	X	X																					
	125		X	X	X	X	X	X																					
	150		X	X	X	X	X	X																					
	160		X	X	X	X	X	X																					
	200		X	X	X	X	X	X																					
<b>double acting</b>  <b>magnetic</b>  <b>without pneumatic cushioning</b>  <b>through-rod</b>  	bore		32	40	50	63	80	100	<b>OPTIONS</b>  The standard is marked with grey background																				
	stroke																												
	5		X	X	X	X	X	X	<table border="1"> <thead> <tr> <th colspan="3">piston-rod material</th> </tr> <tr> <td>C45 chromium plated</td> <td colspan="2">stainless steel</td> </tr> <tr> <th colspan="3">seals material</th> </tr> <tr> <td>polyuret.</td> <td>all seals in VITON</td> <td>rod seals in VITON</td> </tr> <tr> <th colspan="3">rod thread</th> </tr> <tr> <td>female rod thread</td> <td colspan="2">male rod thread</td> </tr> </thead> </table>			piston-rod material			C45 chromium plated	stainless steel		seals material			polyuret.	all seals in VITON	rod seals in VITON	rod thread			female rod thread	male rod thread	
piston-rod material																													
C45 chromium plated	stainless steel																												
seals material																													
polyuret.	all seals in VITON	rod seals in VITON																											
rod thread																													
female rod thread	male rod thread																												
	10		X	X	X	X	X	X																					
	25		X	X	X	X	X	X																					
	30		X	X	X	X	X	X																					
	40		X	X	X	X	X	X																					
	50		X	X	X	X	X	X																					
	75		X	X	X	X	X	X																					
	80		X	X	X	X	X	X																					
	100		X	X	X	X	X	X																					
	125		X	X	X	X	X	X																					
	150		X	X	X	X	X	X																					
	160		X	X	X	X	X	X																					
	200		X	X	X	X	X	X																					

6



1. Piston-rod seal: polyurethane or VITON
2. O-Ring head seal: NBR or VITON
3. O-Ring bumper: NBR or VITON
4. Barrel: profiled, calibrated, anodized aluminium
5. Piston lip seal: polyurethane or VITON
6. Piston guide ring: bronze PTFE (only for aluminium piston)
7. Piston: technopolymer or aluminium
8. Rear head: aluminium
9. Front head: aluminium
10. Guide bushing: self-lubricating material
11. Rod: C45 chromium plated steel or stainless steel AISI 304
12. O-Ring piston seal: NBR or VITON
13. Magnet: magnetic iron compound
14. Flat washer
15. Rod locking nut
16. Head fixing screw

## seals kit

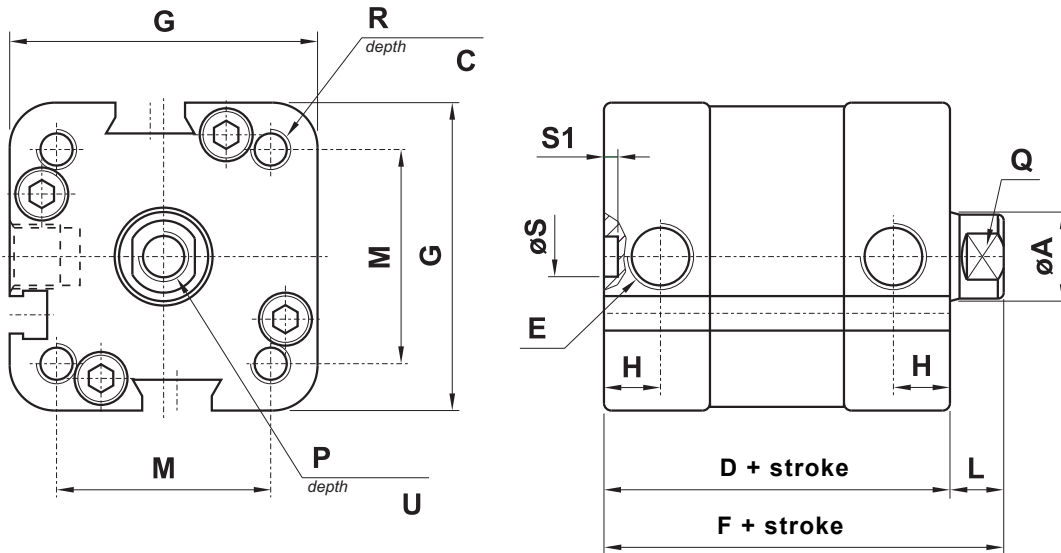
<b>MAGNETIC, standard seals</b>					
<b>normal</b>			<b>through-rod</b>		
for bore	part number	code	for bore	part number	code
32	<b>GP032</b>	25.103.2	32	<b>GP032P</b>	25.113.2
40	<b>GP040</b>	25.104.2	40	<b>GP040P</b>	25.114.2
50	<b>GP050</b>	25.105.2	50	<b>GP050P</b>	25.115.2
63	<b>GP063</b>	25.106.2	63	<b>GP063P</b>	25.116.2
80	<b>GP080</b>	25.107.2	80	<b>GP080P</b>	25.117.2
100	<b>GP100</b>	25.108.2	100	<b>GP100P</b>	25.118.2

<b>MAGNETIC, VITON seals</b>					
<b>normal</b>			<b>through-rod</b>		
for bore	part number	code	for bore	part number	code
32	<b>GP032V</b>	25.123.2	32	<b>GP032PV</b>	25.133.2
40	<b>GP040V</b>	25.124.2	40	<b>GP040PV</b>	25.134.2
50	<b>GP050V</b>	25.125.2	50	<b>GP050PV</b>	25.135.2
63	<b>GP063V</b>	25.126.2	63	<b>GP063PV</b>	25.136.2
80	<b>GP080V</b>	25.127.2	80	<b>GP080PV</b>	25.137.2
100	<b>GP100V</b>	25.128.2	100	<b>GP100PV</b>	25.138.2

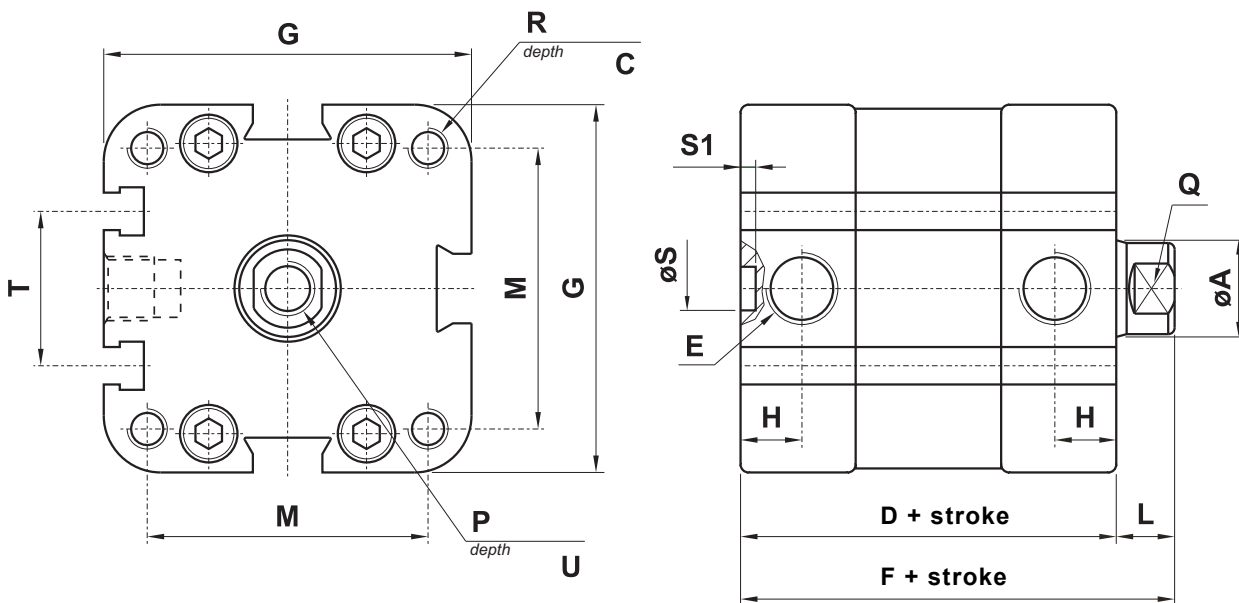
## MAGNETIC VERSION, FEMALE ROD THREAD

bore 32



ø	A	C	D	E	F*	G		H	L*	M		P	Q	R		S	S1	U
						ISO	UNITOP			ISO	UNITOP			ISO	UNITOP			
32	12	14	46	G1/8"	53	46	46	7	7	32.3	32.3	M8	ch 10	M6	M6	6	2.5	13.5

bore 40 - 50 - 63

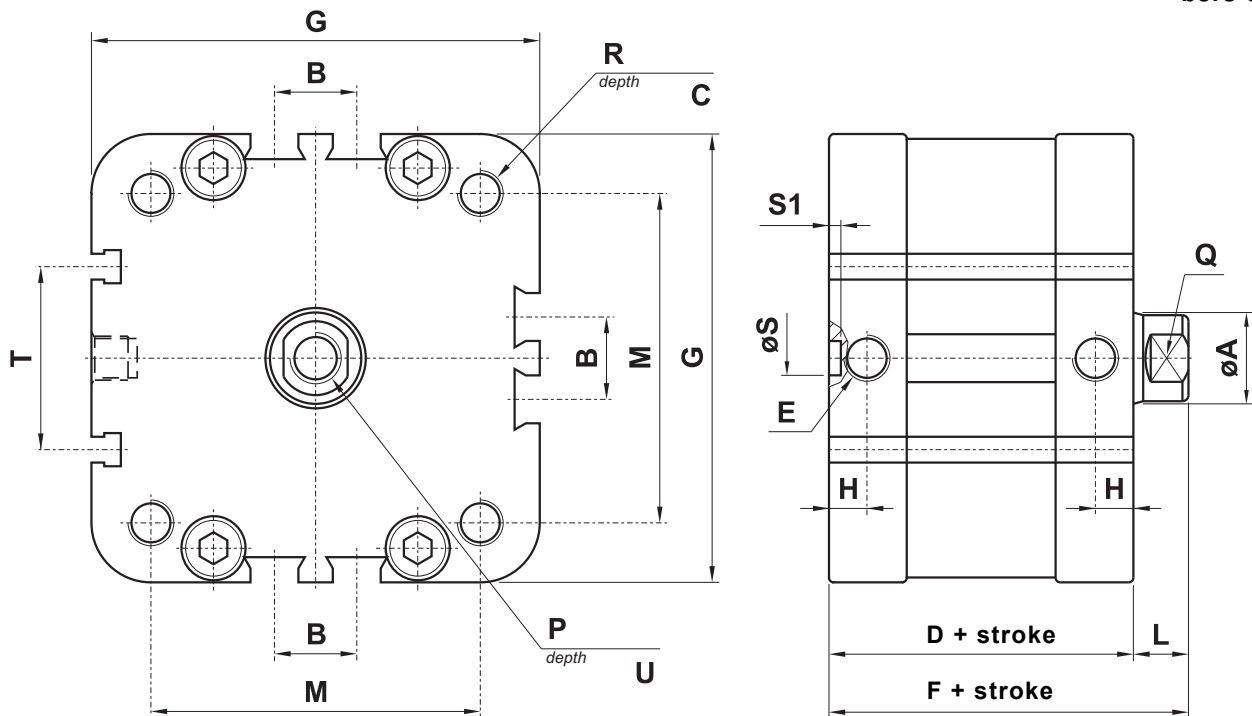


ø	A	C	D	E	F*	G		H	L*	M		P	Q	R		S	S1	T	U
						ISO	UNITOP			ISO	UNITOP			ISO	UNITOP				
40	12	14	46	G1/8"	53	55	55	6.5	7	38	42	M8	ch 10	M6	M6	6	2.5	22	13.5
50	16	16	50	G1/8"	58	64.5	64.5	8	8	46.5	50	M10	ch 13	M8	M8	6	2.5	24	16
63	16	16	53	G1/8"	61	78	78	8	8	56.5	62	M10	ch 13	M8	M10	6	2.5	29	16

# Compact cylinders



bore 80 - 100



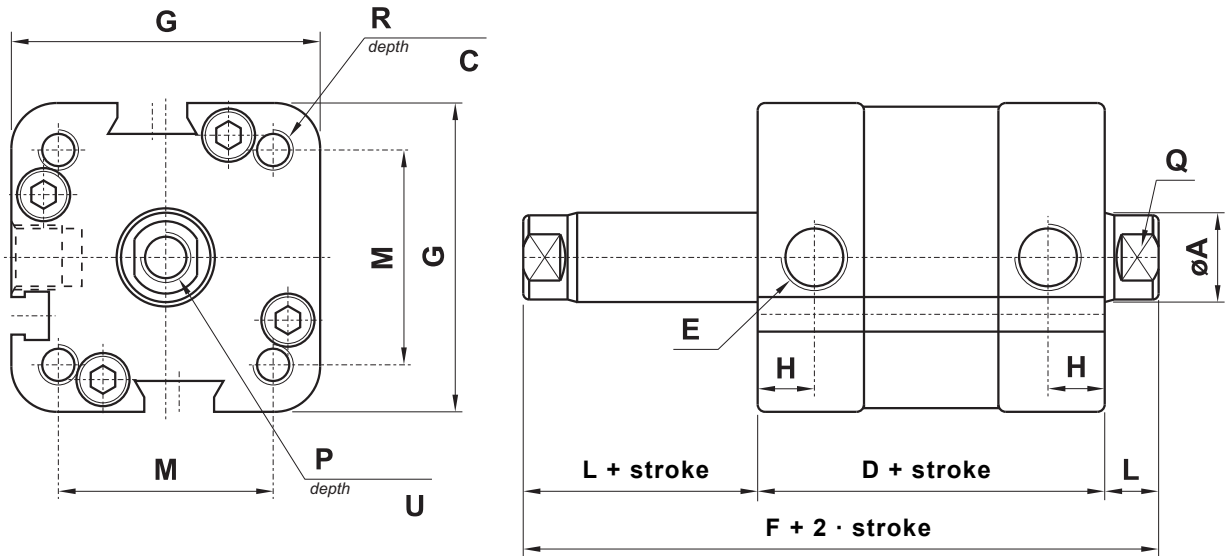
ø	A	B	C	D	E	F*	G		H	L*	M		P	Q	R		S	S1	T	U
							ISO	UNITOP			ISO	UNITOP			ISO	UNITOP				
80	20	18	17	56	G1/8"	66	99	99	8	10	72	82	M10	ch 17	M10	M10	8	4	40	20
100	25	28	17.5	67	G1/4"	77	119	119	9	10	89	103	M12	ch 22	M10	M10	8	4	40	24

**F\***; **L\***: In case of single acting cylinder with back spring add stroke length

6

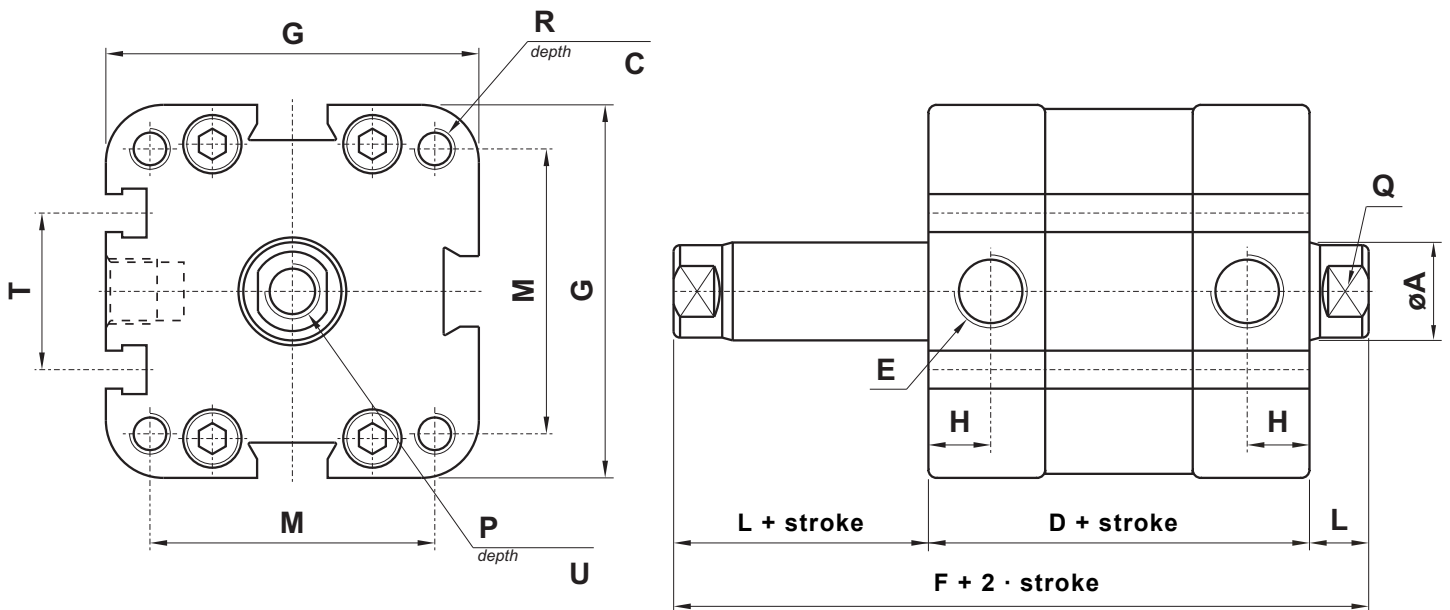
## MAGNETIC VERSION, FEMALE ROD THREAD, THROUGH-ROD

bore 32



ø	A	C	D	E	F	G		H	L	M		P	Q	R		U
						ISO	UNITOP			ISO	UNITOP			ISO	UNITOP	
32	12	14	46	G1/8"	60	46	46	7	7	32.3	32.3	M8	ch 10	M6	M6	13.5

bore 40 - 50 - 63



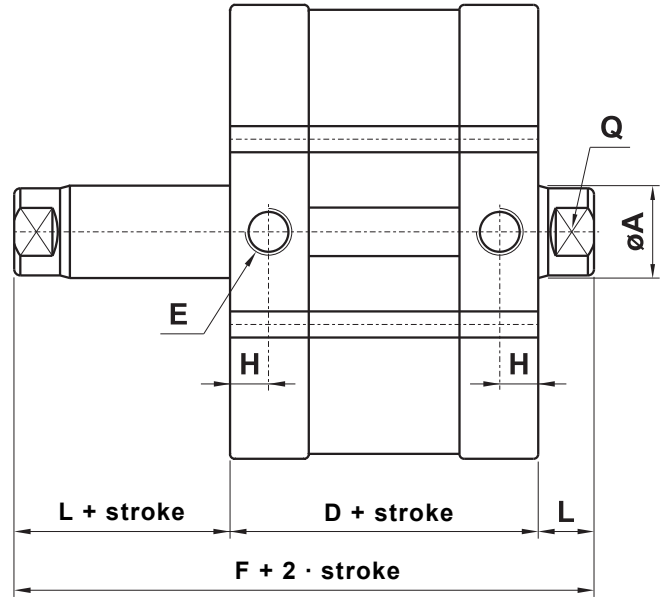
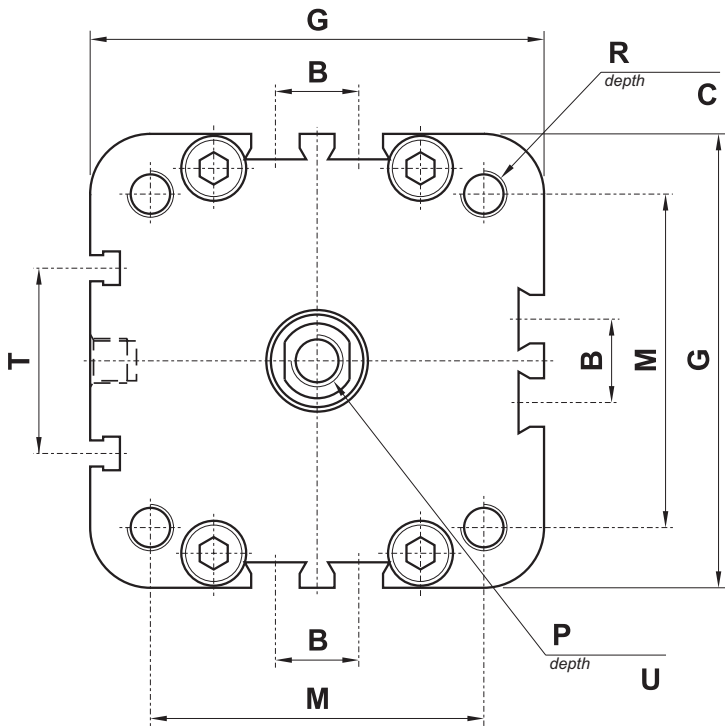
ø	A	C	D	E	F	G		H	L	M		P	Q	R		T	U
						ISO	UNITOP			ISO	UNITOP			ISO	UNITOP		
40	12	14	46	G1/8"	60	55	55	6.5	7	38	42	M8	ch 10	M6	M6	22	13.5
50	16	16	50	G1/8"	66	64.5	64.5	8	8	46.5	50	M10	ch 13	M8	M8	24	16
63	16	16	53	G1/8"	69	78	78	8	8	56.5	62	M10	ch 13	M8	M10	29	16



# Compact cylinders



bore 80 - 100

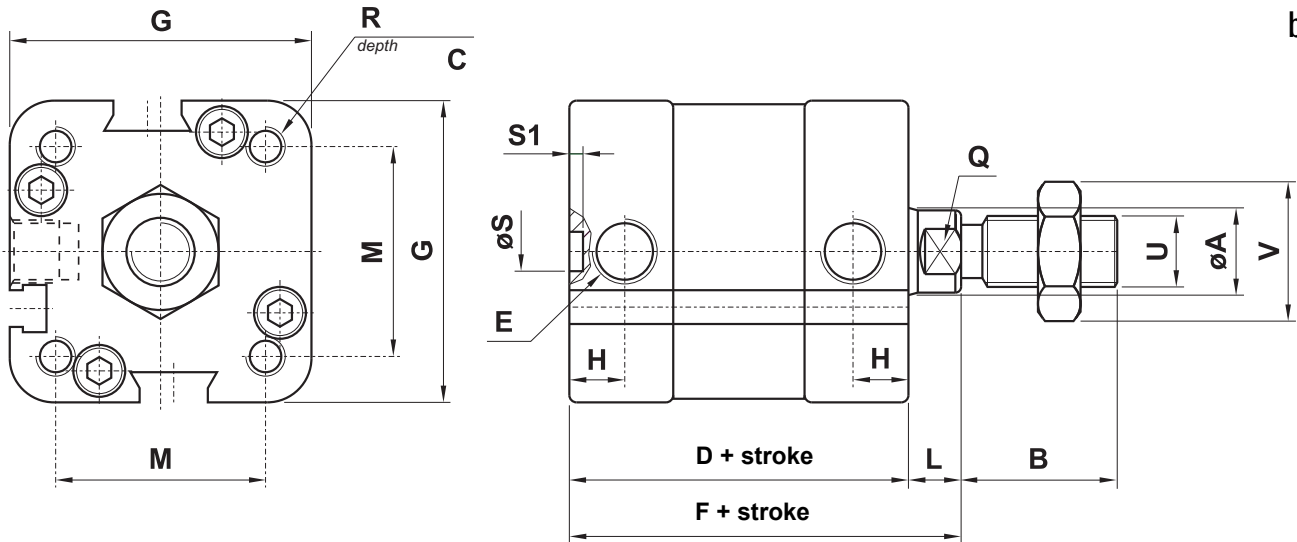


$\phi$	A	B	C	D	E	F	G		H	L	M		P	Q	R		T	U
							ISO	UNITOP			ISO	UNITOP			ISO	UNITOP		
80	20	18	17	56	G1/8"	76	99	99	8	10	72	82	M10	ch 17	M10	M10	40	20
100	25	28	17.5	67	G1/4"	87	119	119	9	10	89	103	M12	ch 22	M10	M10	40	24

6

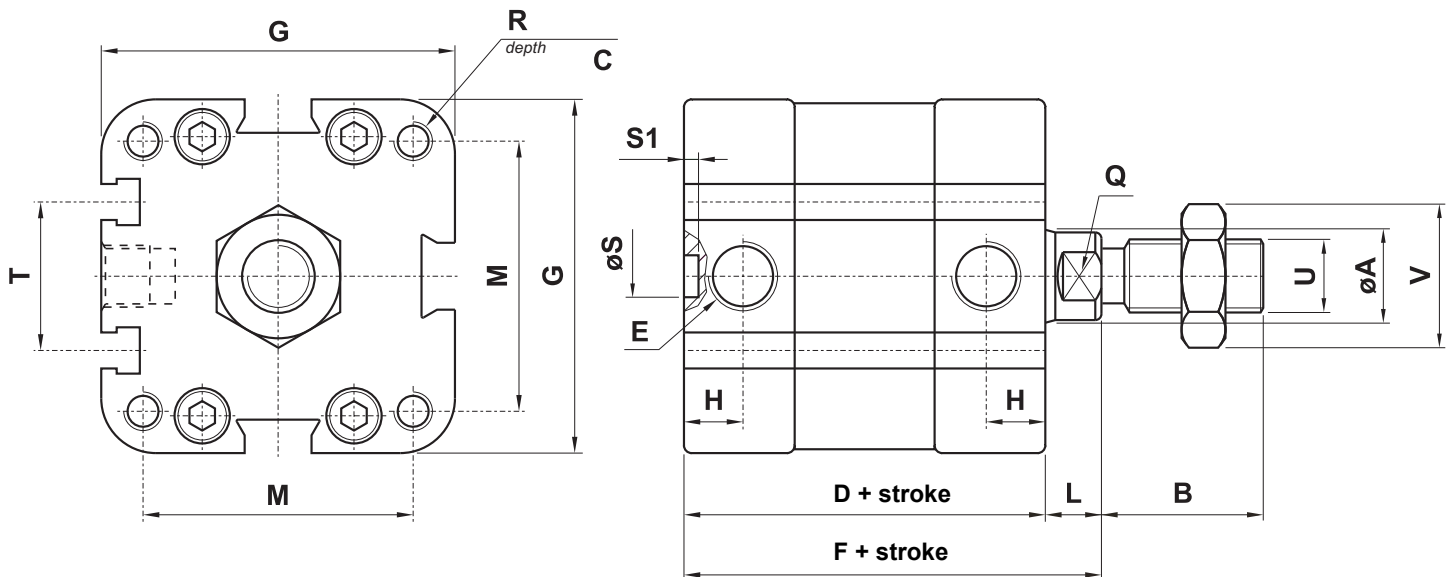
## MAGNETIC VERSION, MALE ROD THREAD

bore 32



$\phi$	A	B	C	D	E	F*	G		H	L*	M		Q	R		S	S1	U	V
							ISO	UNITOP			ISO	UNITOP		ISO	UNITOP				
32	12	22	14	46	G1/8"	53	46	46	7	7	32.3	32.3	ch 10	M6	M6	6	2.5	M10x1.25	ch 17

bore 40 - 50 - 63

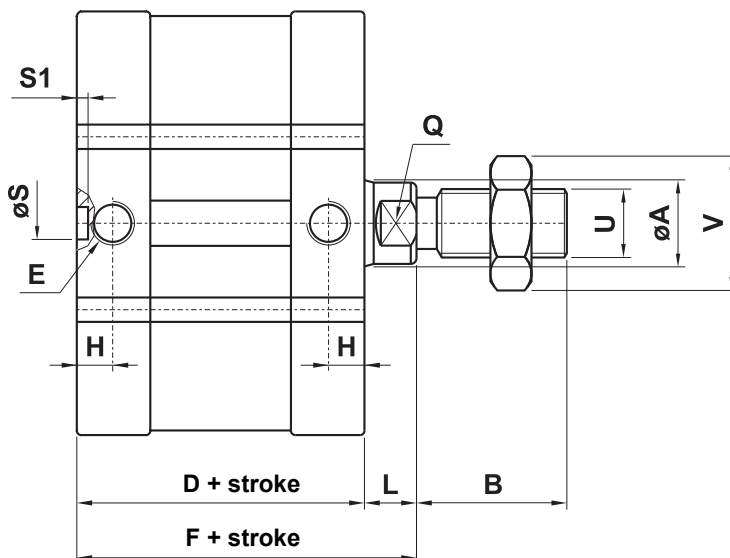
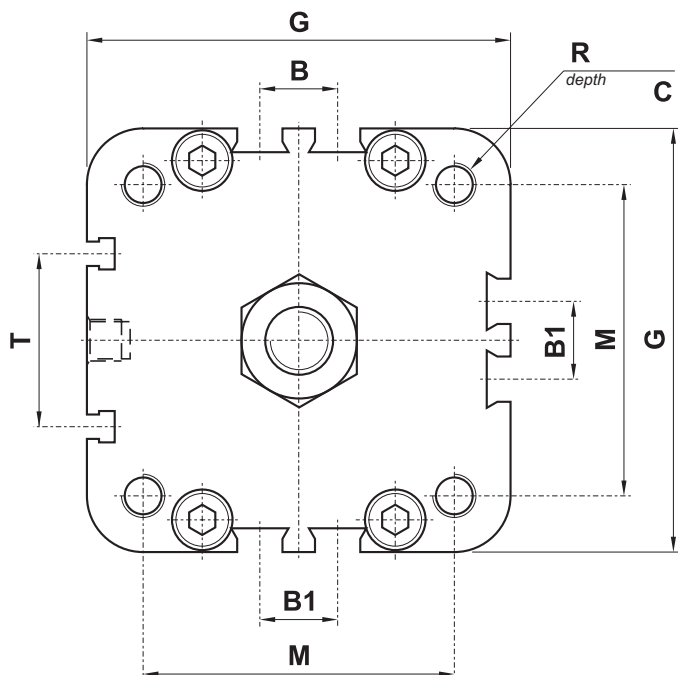


$\phi$	A	B	C	D	E	F*	G		H	L*	M		Q	R		S	S1	T	U	V
							ISO	UNITOP			ISO	UNITOP		ISO	UNITOP					
40	12	22	14	46	G1/8"	53	55	55	6.5	7	38	42	ch 10	M6	M6	6	2.5	22	M10x1.25	ch 17
50	16	24	16	50	G1/8"	58	64.5	64.5	8	8	46.5	50	ch 13	M8	M8	6	2.5	24	M12x1.25	ch 19
63	16	24	16	53	G1/8"	61	78	78	8	8	56.5	62	ch 13	M8	M10	6	2.5	29	M12x1.25	ch 19

# Compact cylinders



bore 80 - 100



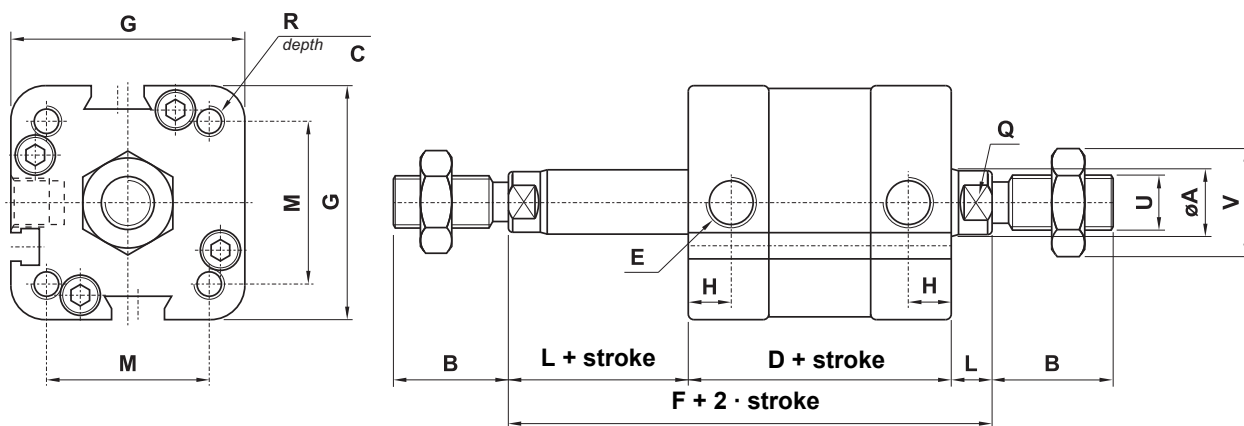
ø	A	B	B1	C	D	E	F*	G		H	L*	M		Q	R		S	S1	T	U	V
								ISO	UNITOP			ISO	UNITOP		ISO	UNITOP					
80	20	32	18	17	56	G1/8"	66	99	99	8	10	72	82	ch 17	M10	M10	8	4	40	M16x1.5	ch 24
100	25	40	28	17.5	67	G1/4"	77	119	119	9	10	89	103	ch 22	M10	M10	8	4	40	M20x1.5	ch 30

**F\***; **L\***: In case of single acting cylinder with back spring add stroke length

6

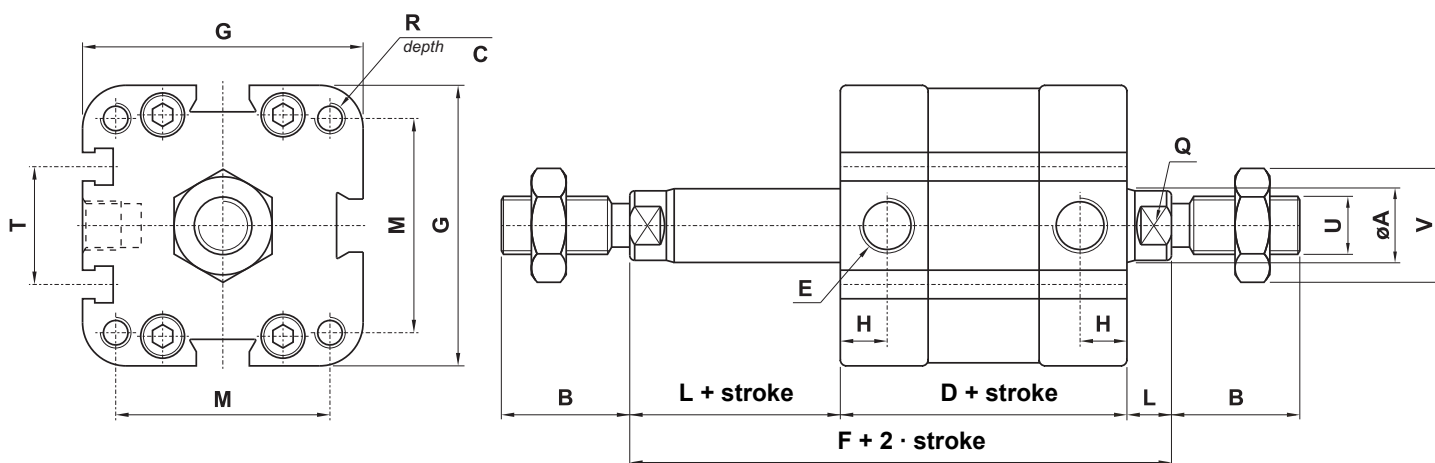
## MAGNETIC VERSION, MALE ROD THREAD, THROUGH-ROD

bore 32



ø	A	B	C	D	E	F	G		H	L	M		Q	R		U	V
							ISO	UNITOP			ISO	UNITOP		ISO	UNITOP		
32	12	22	14	46	G1/8"	60	46	46	7	7	32.3	32.3	ch 10	M6	M6	M10x1.25	ch 17

bore 40 - 50 - 63

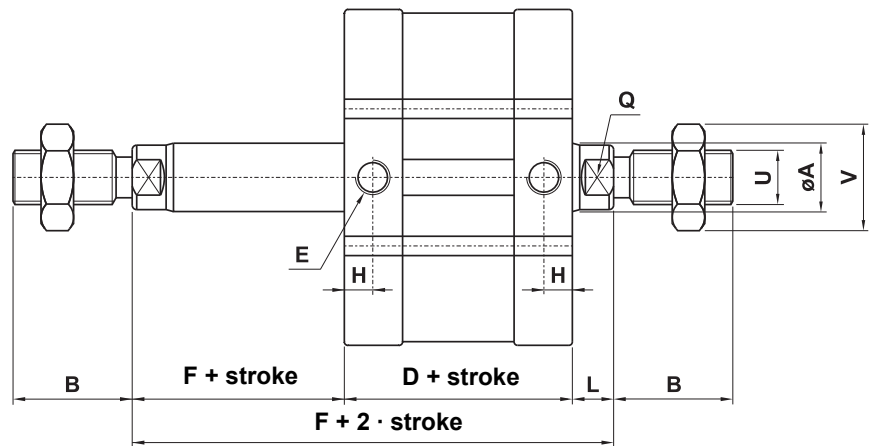
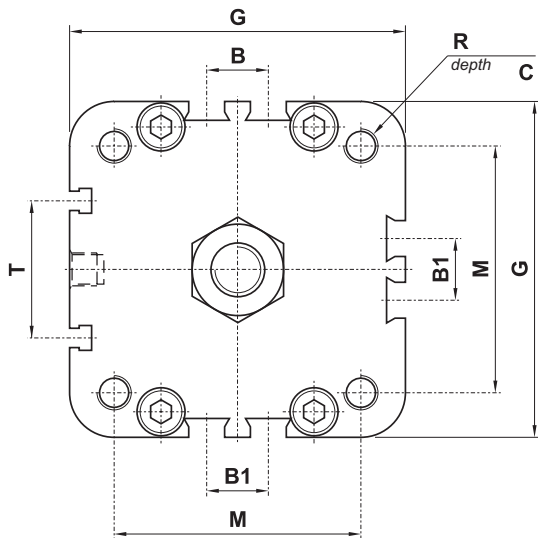


ø	A	B	C	D	E	F	G		H	L	M		Q	R		T	U	V
							ISO	UNITOP			ISO	UNITOP		ISO	UNITOP			
40	12	22	14	46	G1/8"	60	55	55	6.5	7	38	42	ch 10	M6	M6	22	M10x1.25	ch 17
50	16	24	16	50	G1/8"	66	64.5	64.5	8	8	46.5	50	ch 13	M8	M8	24	M12x1.25	ch 19
63	16	24	16	53	G1/8"	69	78	78	8	8	56.5	62	ch 13	M8	M10	29	M12x1.25	ch 19

# Compact cylinders



bore 80 - 100

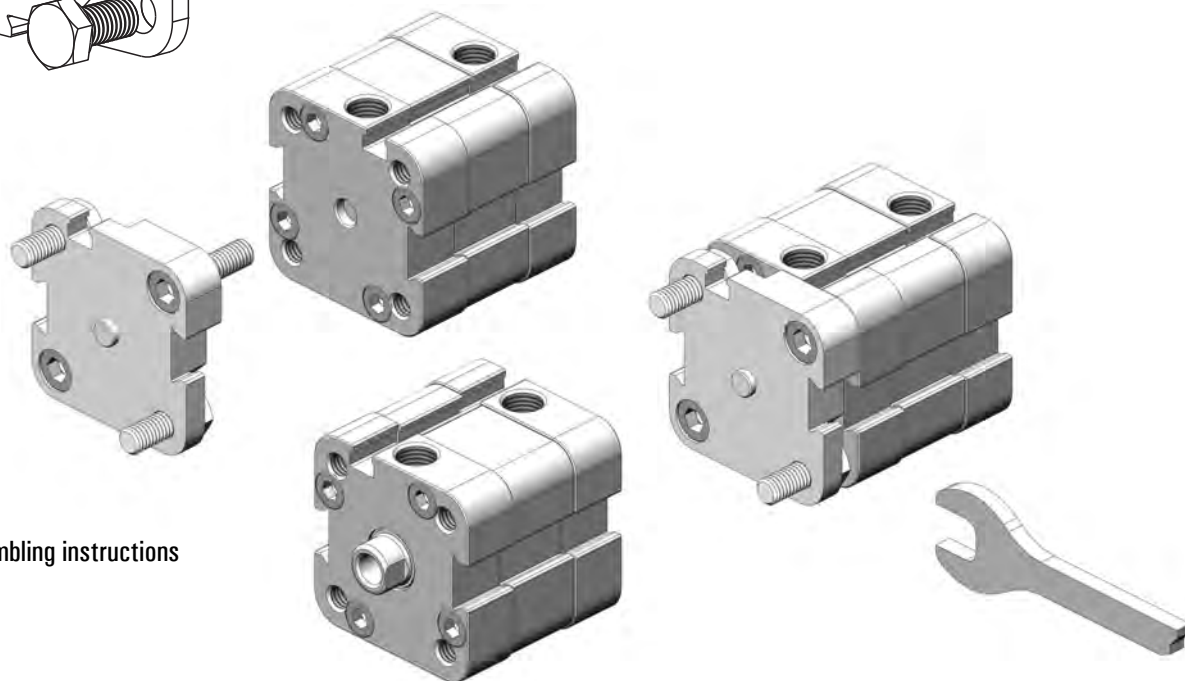
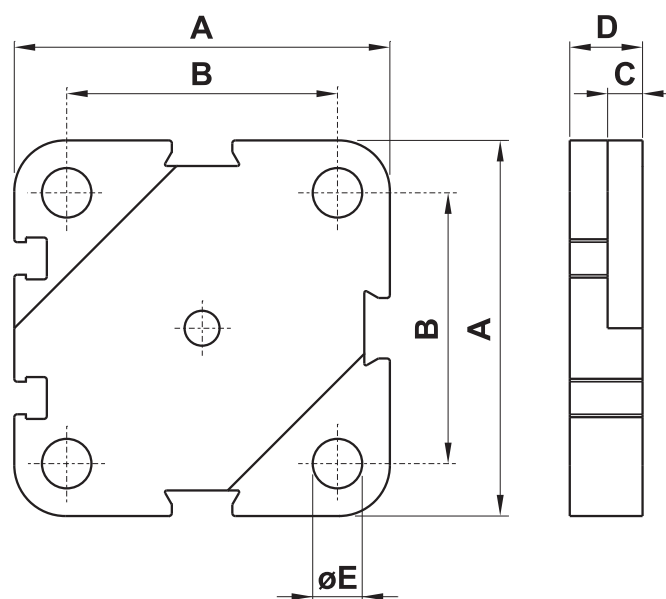
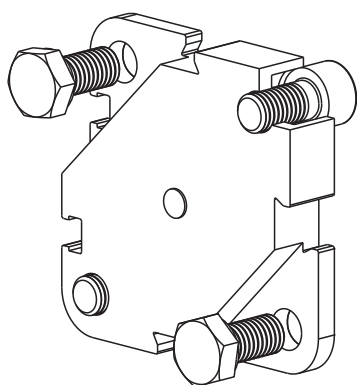


ø	A	B	B1	C	D	E	F	G		H	L	M		Q	R		T	U	V
								ISO	UNITOP			ISO	UNITOP		ISO	UNITOP			
80	20	32	18	17	56	G1/8"	76	99	99	8	10	72	82	ch 17	M10	M10	40	M16x1.5	ch 24
100	25	40	28	17.5	67	G1/4"	87	119	119	9	10	89	103	ch 22	M10	M10	40	M20x1.5	ch 30

6

## intermediate flange for opposite compact cylinders

This intermediate flange has to be inserted between two compact cylinders to form an opposite cylinder. It is sold in kit with all necessary pieces for installation.



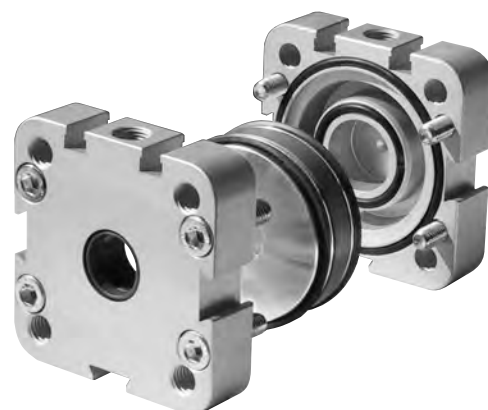
Assembling instructions

code		for bore	A	B		C	D	E
ISO	UNITOP			ISO	UNITOP			
25.082.2	25.082.2	32	46	32.3	32.3	5	10.5	6.5
25.083.2	25.088.2	40	55	38	42	6	12.5	6.5
25.084.2	25.089.2	50	64.5	46.5	50	6	12.5	8.5
25.085.2	25.090.2	63	78	56.5	62	7	13.5	8.5
25.086.2	25.091.2	80	98	72	82	7	15	10.5
25.087.2	25.092.2	100	119	89	103	7	15	10.5

## compact cylinder kit

### Kit includes:

- pre-mounted heads
- piston with magnet, seals and guide ring (for aluminium piston)
- screws
- all necessary seals



### MAGNETIC, standard seals

normal					passing-through rod				
for bore	ISO		UNITOP		for bore	ISO		UNITOP	
	part number	code	part number	code		part number	code	part number	code
32	<b>KP032</b>	25.004.3	<b>KR032</b>	25.104.3	32	<b>KP032P</b>	25.014.3	<b>KR032P</b>	25.114.3
40	<b>KP040</b>	25.005.3	<b>KR040</b>	25.105.3	40	<b>KP040P</b>	25.015.3	<b>KR040P</b>	25.115.3
50	<b>KP050</b>	25.006.3	<b>KR050</b>	25.106.3	50	<b>KP050P</b>	25.016.3	<b>KR050P</b>	25.116.3
63	<b>KP063</b>	25.007.3	<b>KR063</b>	25.107.3	63	<b>KP063P</b>	25.017.3	<b>KR063P</b>	25.117.3
80	<b>KP080</b>	25.008.3	<b>KR080</b>	25.108.3	80	<b>KP080P</b>	25.018.3	<b>KR080P</b>	25.118.3
100	<b>KP100</b>	25.009.3	<b>KR100</b>	25.109.3	100	<b>KP100P</b>	25.019.3	<b>KR100P</b>	25.119.3

### MAGNETIC, VITON seals

normal					passing-through rod				
for bore	ISO		UNITOP		for bore	ISO		UNITOP	
	part number	code	part number	code		part number	code	part number	code
32	<b>KP032V</b>	25.024.3	<b>KR032V</b>	25.124.3	32	<b>KP032PV</b>	25.034.3	<b>KR032PV</b>	25.134.3
40	<b>KP040V</b>	25.025.3	<b>KR040V</b>	25.125.3	40	<b>KP040PV</b>	25.035.3	<b>KR040PV</b>	25.135.3
50	<b>KP050V</b>	25.026.3	<b>KR050V</b>	25.126.3	50	<b>KP050PV</b>	25.036.3	<b>KR050PV</b>	25.136.3
63	<b>KP063V</b>	25.027.3	<b>KR063V</b>	25.127.3	63	<b>KP063PV</b>	25.037.3	<b>KR063PV</b>	25.137.3
80	<b>KP080V</b>	25.028.3	<b>KR080V</b>	25.128.3	80	<b>KP080PV</b>	25.038.3	<b>KR080PV</b>	25.138.3
100	<b>KP100V</b>	25.029.3	<b>KR100V</b>	25.129.3	100	<b>KP100PV</b>	25.039.3	<b>KR100PV</b>	25.139.3

# Barrel for compact cylinders



	order code	dimensions [mm]					weight [kg/m]
		A	B	C	D	E	
	<b>000.523.7</b>	$\varnothing 32^{+0.16}$	32.5	45	14.5	20.5	2.368
	<b>000.524.7</b>	$\varnothing 40^{+0.16}$	38	53	22	-	2.984
	<b>000.525.7</b>	$\varnothing 50^{+0.19}$	46.5	63	24	-	3.823
	<b>000.526.7</b>	$\varnothing 63^{+0.19}$	56.5	76.5	29	-	5.686
	<b>000.527.7</b>	$\varnothing 80^{+0.22}$	72	95	40	18	7.544
	<b>000.528.7</b>	$\varnothing 100^{+0.45}$	89	115	40	28	10.919

chemical composition	Cu	Fe	Mn	Mg	Si	Zn	Cr	Ti	Al
	≤ 0.10	0.10 ÷ 0.30	≤ 0.10	0.35 ÷ 0.60	0.30 ÷ 0.60	≤ 0.15	≤ 0.05	≤ 0.10	rest

## Fixing holes

from  $\varnothing 32$  to  $\varnothing 100$  : prepared for metric thread through rolling



# Fixing elements for ISO compact cylinders



(fixing elements for cylinders ISO 6431 VDMA)

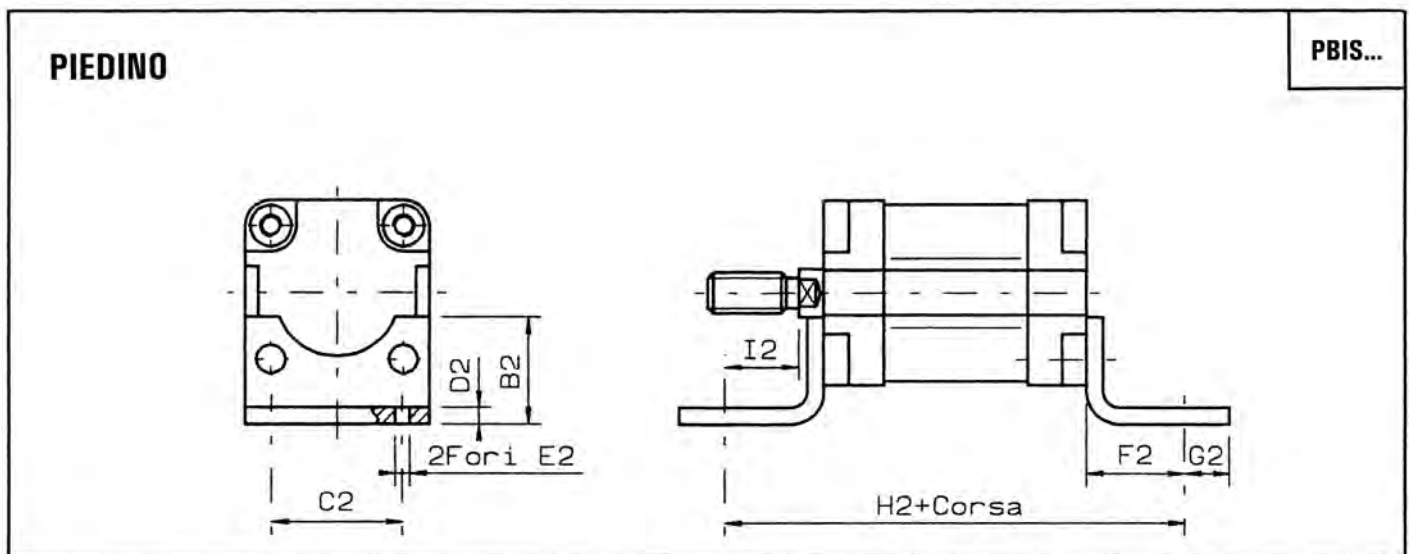
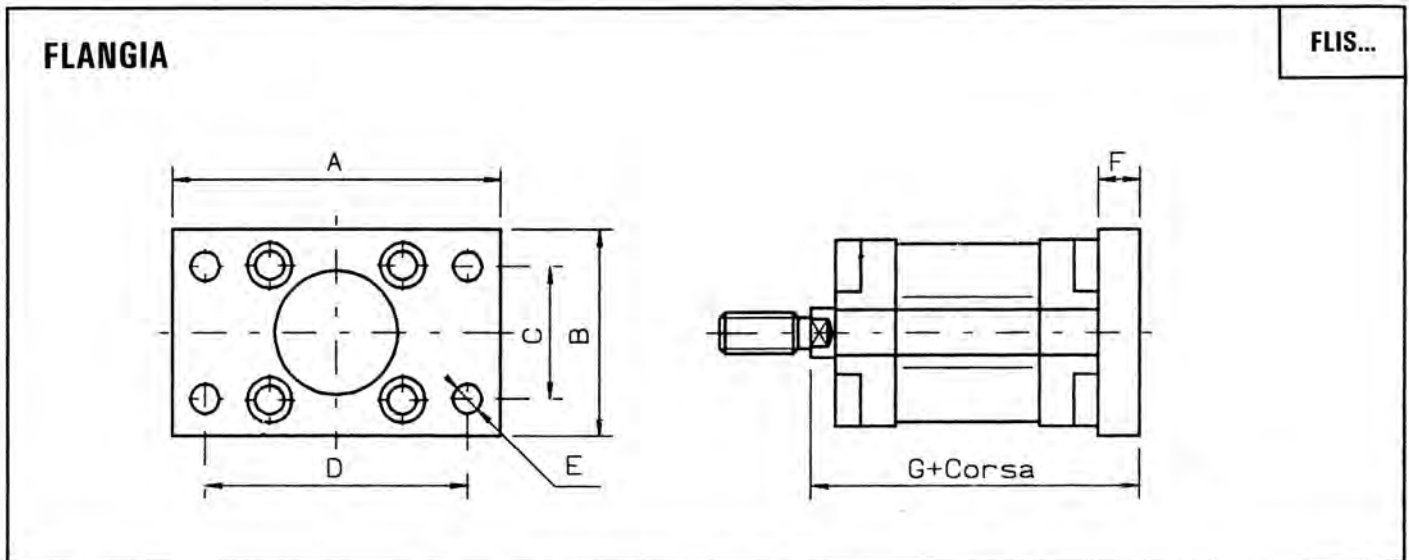
<p><b>CERNIERA MASCHIO SNODO SFERICO</b></p>	<p><b>CMSS...</b></p>
<p><b>CERNIERA MASCHIO</b></p>	<p><b>CMIS...</b> <b>CMKS...</b></p>
<p><b>CERNIERA FEMMINA CON PERNO</b></p>	<p><b>CFIS...</b> <b>CFKS...</b></p>

$\varnothing$	A1	B1	C	D1
32	75	22	10	26
40	78	25	12	28
50	85	27	12	32
63	93	32	16	40
80	102	36	16	50
100	118	41	20	60

# Fixing elements for ISO compact cylinders



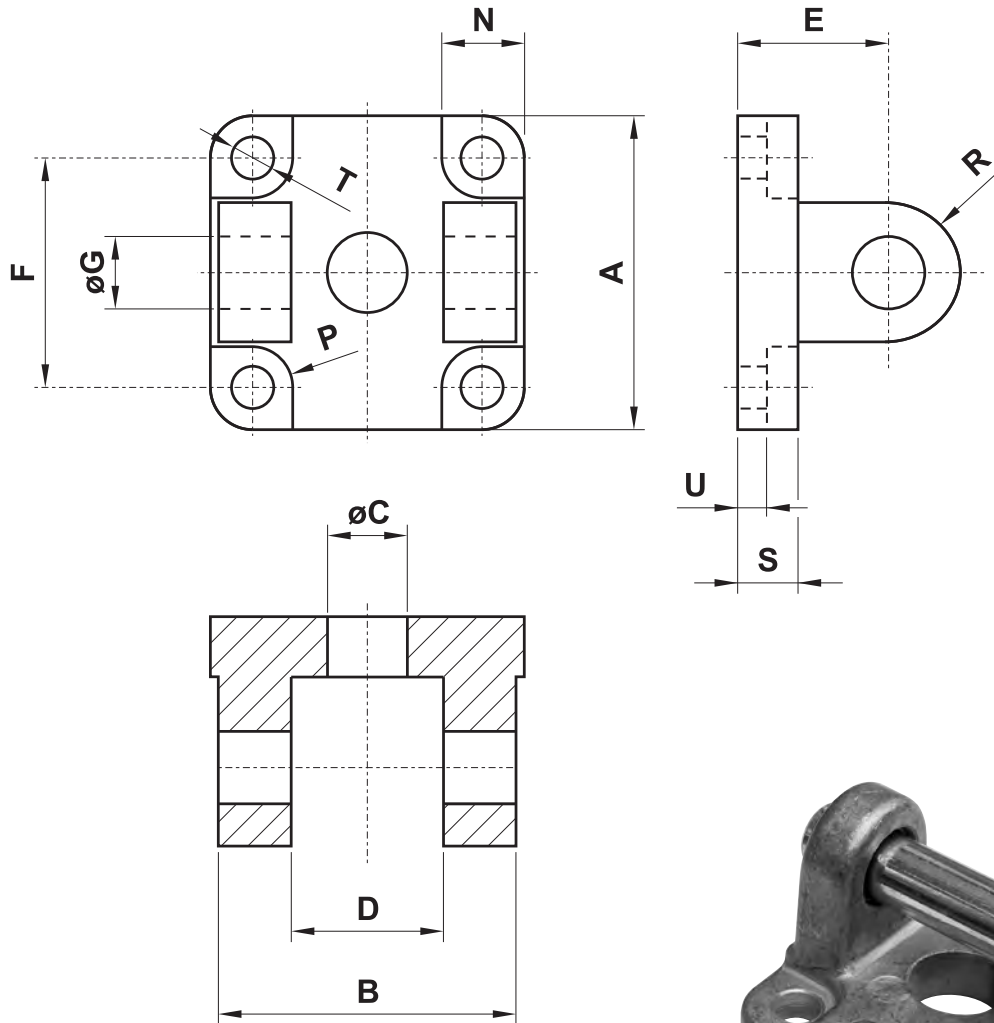
(fixing elements for cylinders ISO 6431 VDMA)



G	F	E	D	C	B	A	∅	B2	C2	D2	E2	F2	G2	H2	I2
63	10	7	64	32	45	80	32	30	32.5	4	7	24	11	94	17
63	10	9	72	36	52	90	40	30	38	4	9	28	8	102	21
70	12	9	90	45	65	110	50	36	46.5	5	9	32	15	114	24
73	12	9	100	50	75	120	63	35	56.5	5	9	32	13	117	24
82	16	12	126	63	95	150	80	47	72	6	12	41	14	138	31
93	16	14	150	75	115	170	100	53	89	6	14	41	16	149	31



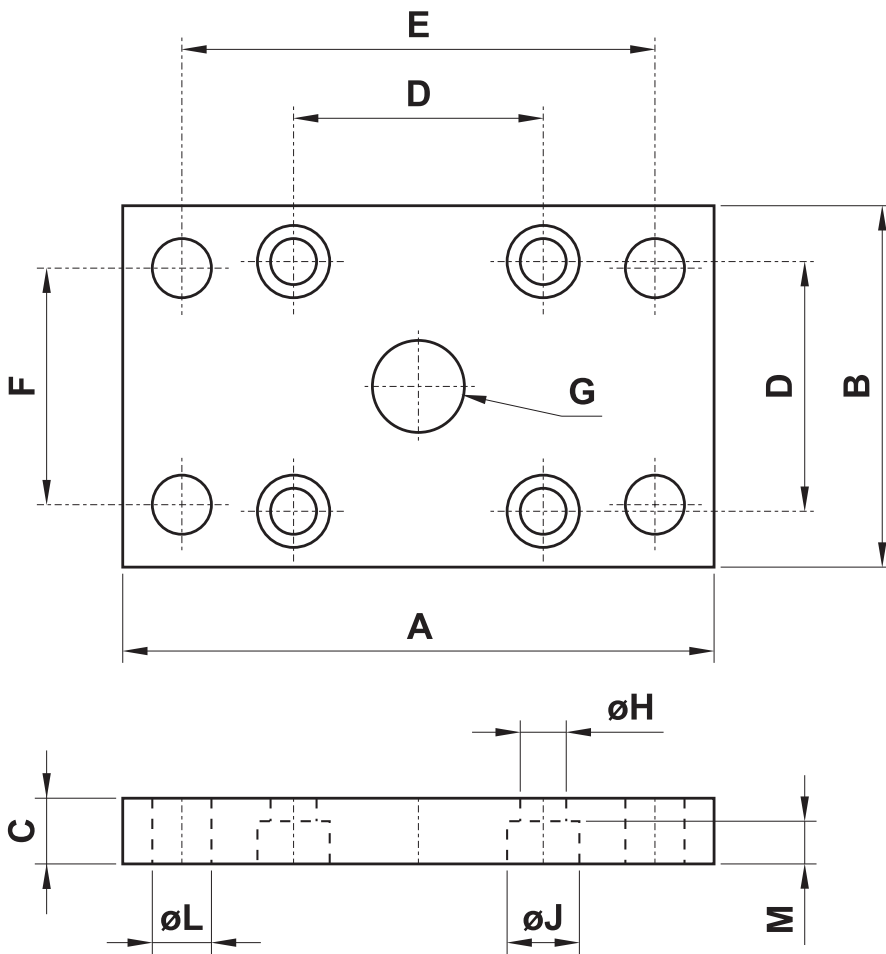
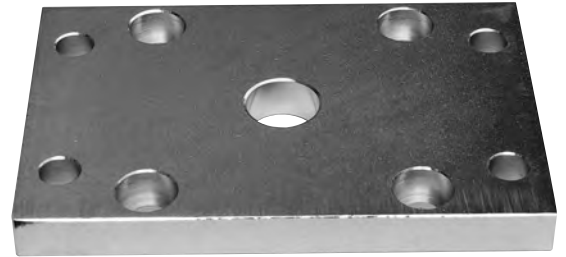
## FEMALE TRUNNION WITH PIN



part number	part number	for bore	A	B	C	D	E	F	G	N	P	R	S	T	U
standard	with bronze bushing														
<b>CFUN032</b>	<b>CFKN032</b>	32	48	45	14	26	22	32	10	13.5	5.5	10	9	6.6	5.5
<b>CFUN040</b>	<b>CFKN040</b>	40	58	52	14	28	25	42	12	13.5	5.5	12.5	9	6.6	5.5
<b>CFUN050</b>	<b>CFKN050</b>	50	66	60	18	32	27	50	12	15.5	7.5	12.5	11	9	6.5
<b>CFUN063</b>	<b>CFKN063</b>	63	83	70	18	40	32	62	16	18	7.5	15	11	11	6.5
<b>CFUN080</b>	<b>CFKN080</b>	80	102	90	23	50	36	82	16	19	9	15	13	11	10
<b>CFUN100</b>	<b>CFKN100</b>	100	123	110	28	60	41	103	20	19	9	20	15	11	10

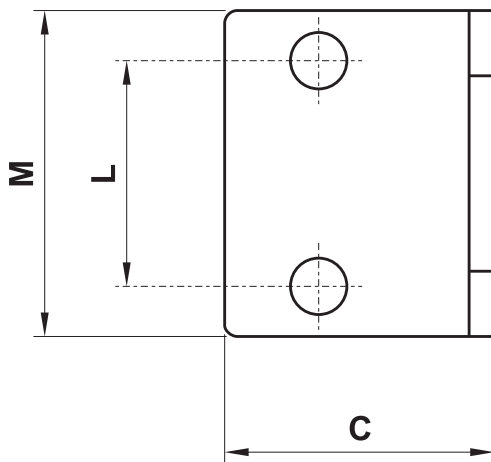
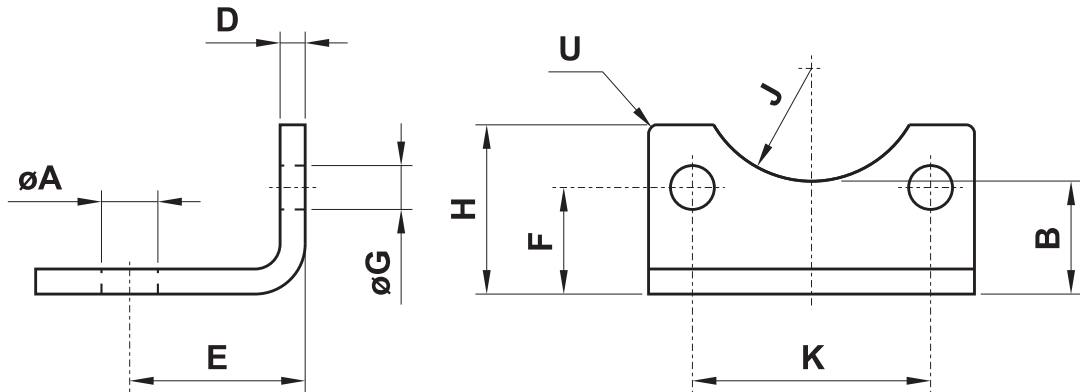


## FLANGE



part number	for bore	A	B	C	D	E	F	G	H	J	L	M
<b>FLUN032</b>	32	80	50	10	32	65	32	$\varnothing 14$	6.6	11	7	6.4
<b>FLUN040</b>	40	102	60	10	42	82	36	$\varnothing 14$	6.6	11	9	6.4
<b>FLUN050</b>	50	110	68	12	50	90	45	$\varnothing 18$	9	15	9	8.6
<b>FLUN063</b>	63	130	87	15	62	110	50	$\varnothing 18$	11	15	9	8.6
<b>FLUN080</b>	80	160	107	15	82	135	63	$\varnothing 23$	11	18	12	10.6
<b>FLUN100</b>	100	190	128	15	103	163	75	$\varnothing 28$	11	18	14	10.6

## FOOT MOUNTING



part number*	for bore	A	B	C	D	E	F	G	H	J	K	L	M	U
<b>PBUN032</b>	32	6.6	20	26	5	18	16	6.6	24	12	32	32	50	2
<b>PBUN040</b>	40	9	-	28	5	20	21.5	6.6	29.5	-	42	42	60	5
<b>PBUN050</b>	50	9	-	32	6	24	22	9	30	-	50	50	68	5
<b>PBUN063</b>	63	11	-	39	6	27	28.5	11	39	-	62	62	84	5
<b>PBUN080</b>	80	11	-	42	8	30	24.5	11	36.5	-	82	82	102	5
<b>PBUN100</b>	100	13.5	-	45	8	33	26.5	11	38.5	-	103	103	123	5

\* Part number refers to a single element, not to the couple

# Twin rod cylinders



- High reliability and long lifetime
- Standard magnetic version
- Standard pneumatic cushioning on whole range
- Special versions and strokes on request



6

## Materials

Barrel: aluminium

Piston-rods: C45 (chromium plated)

Heads: aluminium

Piston: aluminium

Seals: NBR

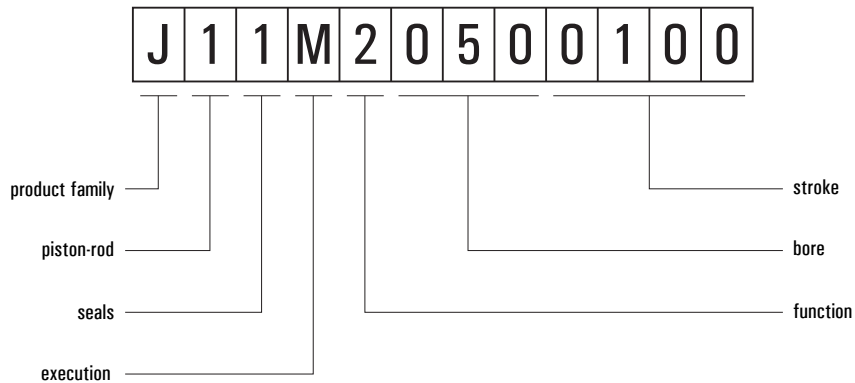
Flange: burnished steel

Bushing rod guides: sintered bronze

Piston guide: low friction PTFE

Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	<b>-15+60°C (5-140° F)</b>
Bores	32; 40; 50; 63; 80; 100 mm
Strokes	25; 50; 80; 100; 125; 150; 160; 200; 250; 300; 320; 400; 500 mm
Fluid	50µ filtered, lubricated or non lubricated air

## coding example



### Product family

**J** twin rod cylinders

### Piston-rods

**1** C45 chromium plated

### Seals

**1** NBR

### Execution

**M** magnetic

### Function

**2** double acting with pneumatic cushioning

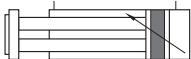
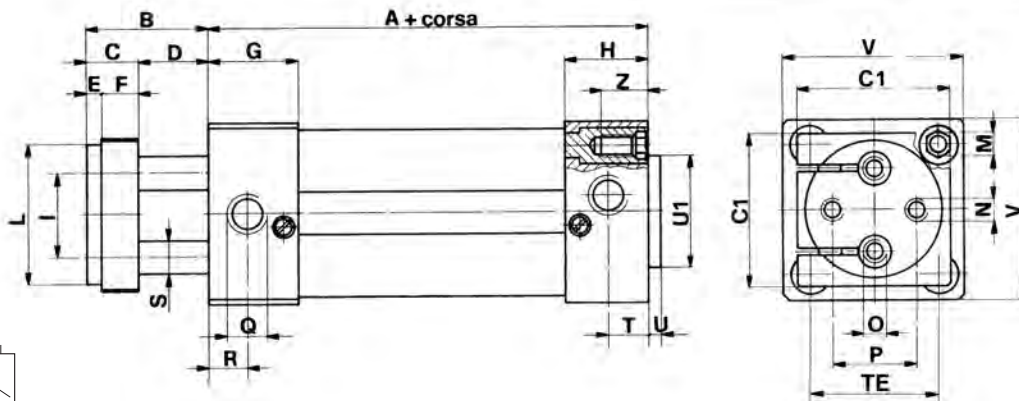
**4** double acting with pneumatic cushioning, with ISO through-rod

**9** double acting with pneumatic cushioning, with twin through-rod

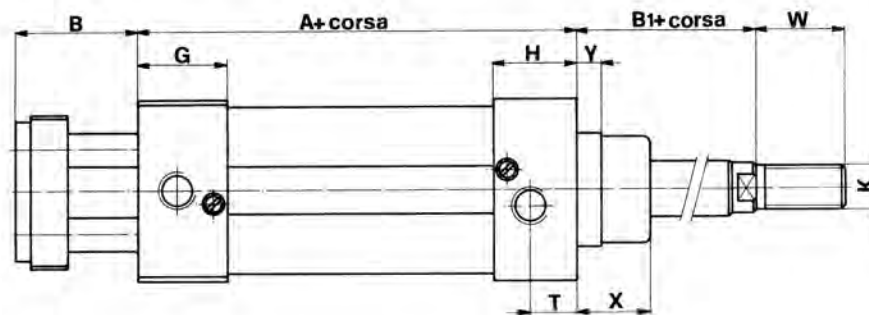
# Twin rod cylinders



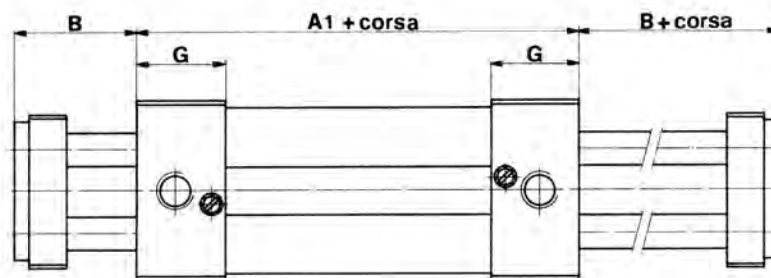
## J11M2



## J11M4



## J11M9

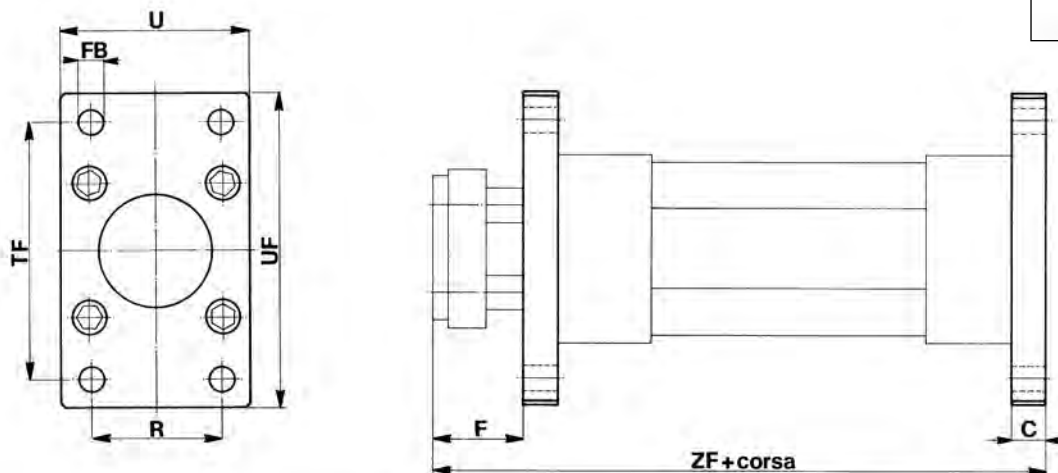


Ø	A	A1	B	B1	C	C1	D	E	F	G	H	I	L	M	N	O	P	Q
32	100	111	40	26	15	45	25	4	11	30	24,5	18	32	M6	M6	-	19	G1/8
40	101	104	40	30	15	50	25	4	11	26,5	27,5	22	40	M6	M8	-	22	G1/4
50	108,5	113	43	37	18	55	25	5	13	32	31	30	50	M8	M8	M8	30	G1/4
63	119	125	47	37	22	70	25	5	17	34	35,5	38	63	M8	M10	M10	38	G3/8
80	134	135	50	46	25	90	25	5	20	38	40	48	80	M10	M12	M12	50	G3/8
100	144	142	50	51	25	110	25	5	20	36	43	60	100	M10	M12	M12	70	G1/2
Ø	R	S	T	TE	U	U1	V	Z	W	Y	X	K						
32	13	10	14	32,5	4	30	45	18	22	6	20	M10X1,25						
40	11,5	10	17	38	4	35	52	18	24	6	22	M12X1,25						
50	14	12	18	46,5	4	40	65	23	32	8	26	M16X1,5						
63	14	16	17,5	56,5	4	45	75	23	32	8	26	M16X1,5						
80	15	22	20,5	72	4	45	95	30	40	10	40	M20X1,5						
100	15	22	18	89	4	55	115	30	40	10	40	M20X1,5						



## FLANGE

FLIS...



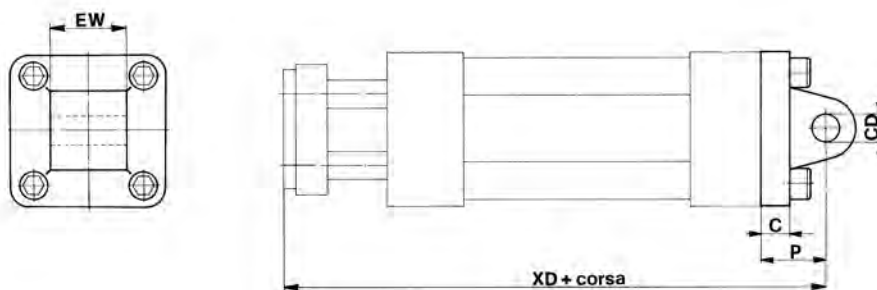
ø	DIM.	C	F	R	U	FB	TF	UF	ZF
32		10	30	32	45	7	64	80	150
40		10	30	36	52	9	72	90	151
50		12	31	45	65	9	90	110	163,5
63		12	35	50	75	9	100	120	178
80		16	34	63	95	12	126	150	200
100		16	34	75	115	14	150	170	210

Standard ISO flange can be mounted on all bores rear head. On front head it can be mounted only on bores 32 and 40. For other bores, please contact the commercial office.

## MALE TRUNNION

CMIS...

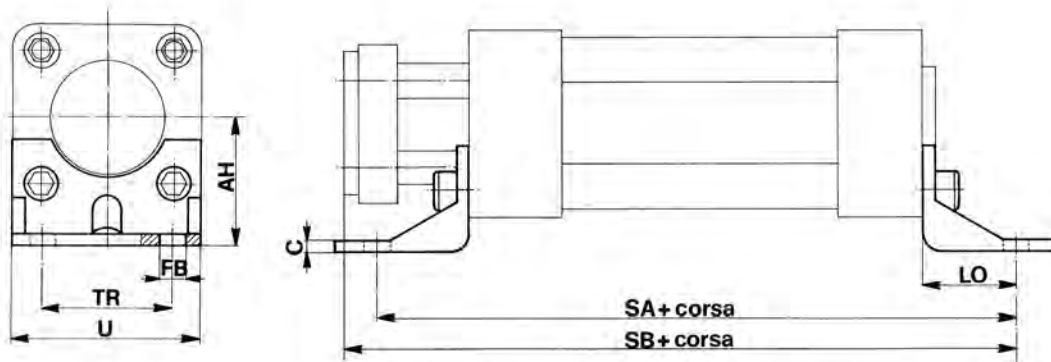
CMKS...



ø	DIM.	C	CD	P	EW	XD
32		9	10	22	26	162
40		9	12	25	28	166
50		11	12	27	32	178,5
63		11	16	32	40	198
80		14	16	36	50	220
100		14	20	41	60	235

## FOOT MOUNT

PBIS...

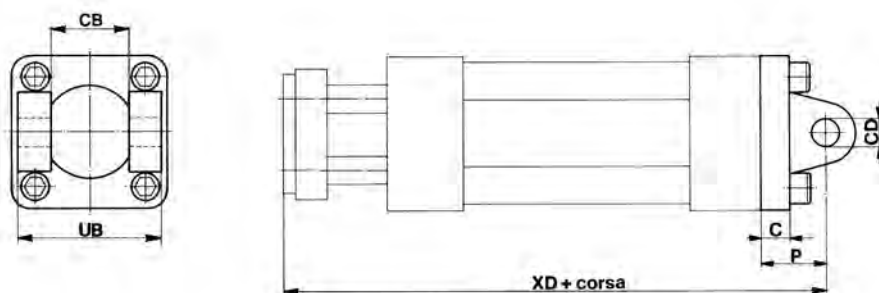


ø	DIM.	C	AH	FB	LO	SA	SB	TR	U
32		4	32	7	24	148	164	32	45
40		4	36	9	28	157	169	36	52
50		5	45	9	32	172,5	183,5	45	65
63		5	50	9	32	183	198	50	75
80		6	63	12	41	216	225	63	95
100		6	71	14	41	226	235	75	115

## FEMALE TRUNNION WITH PIN

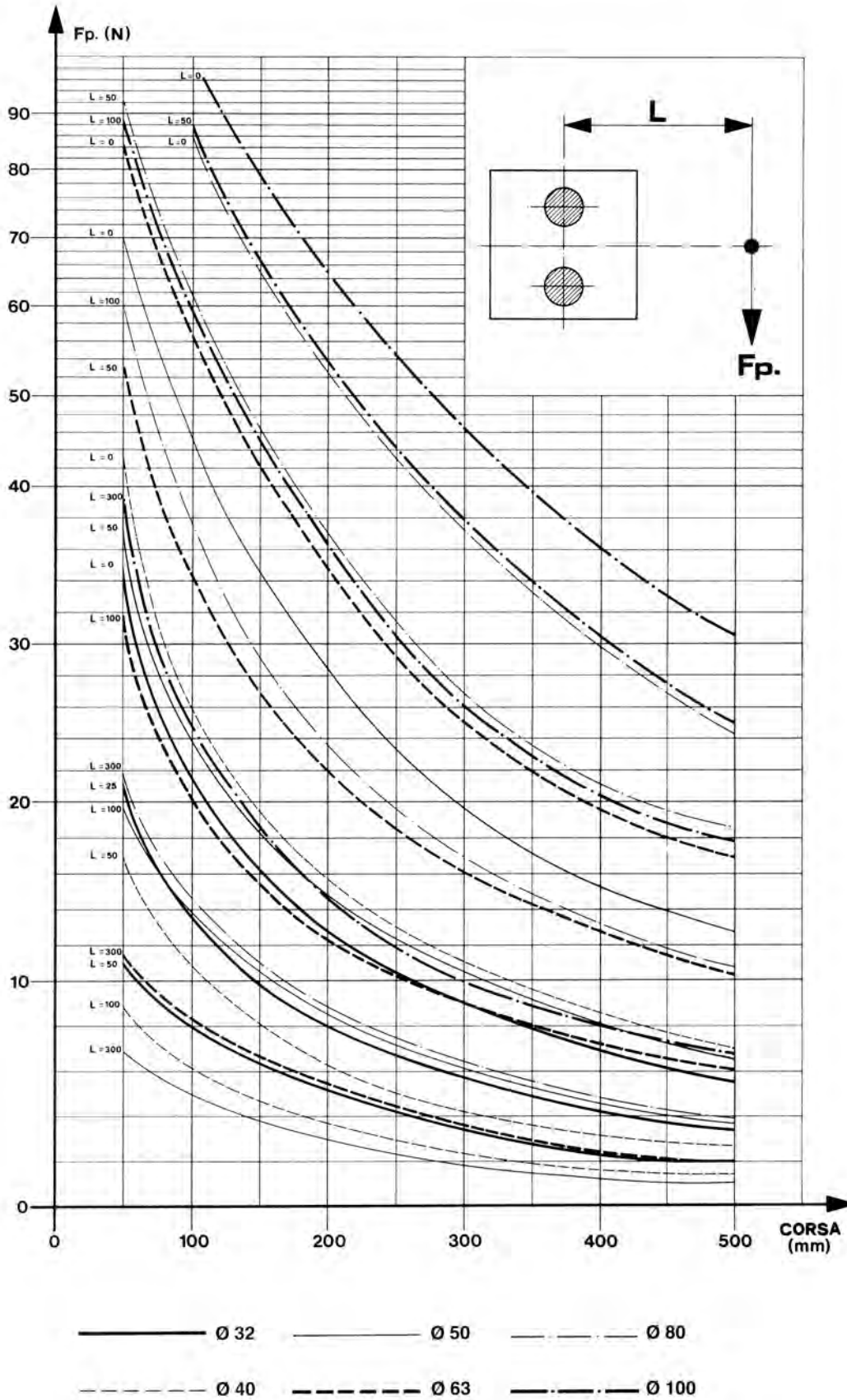
CFIS...

CFKS...

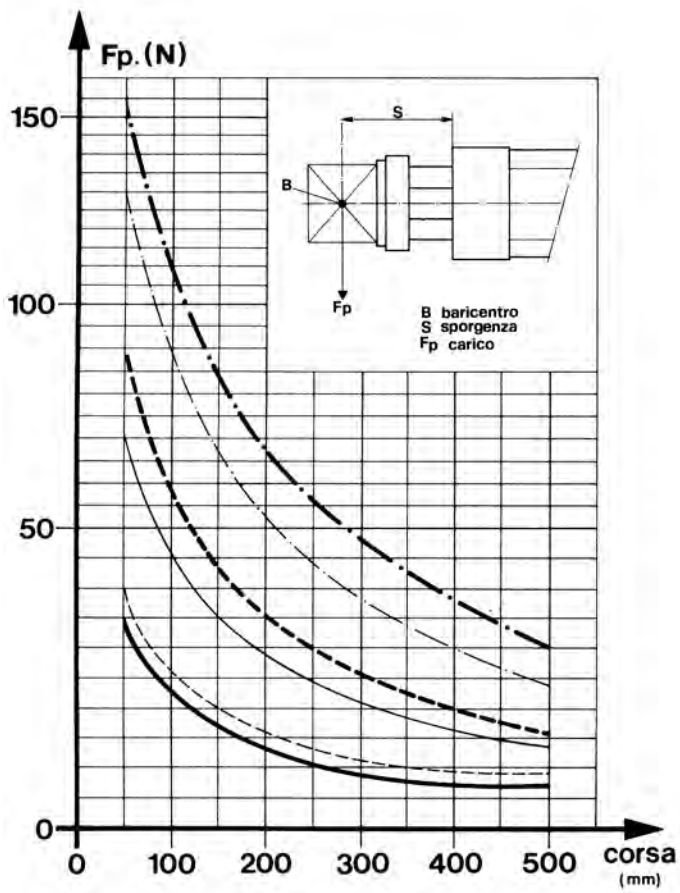


ø	DIM.	C	CD	P	CB	UB	XD
32		9	10	22	26	45	162
40		9	12	25	28	52	166
50		11	12	27	32	60	178,5
63		11	16	32	40	70	198
80		14	16	36	50	90	220
100		14	20	41	60	110	235

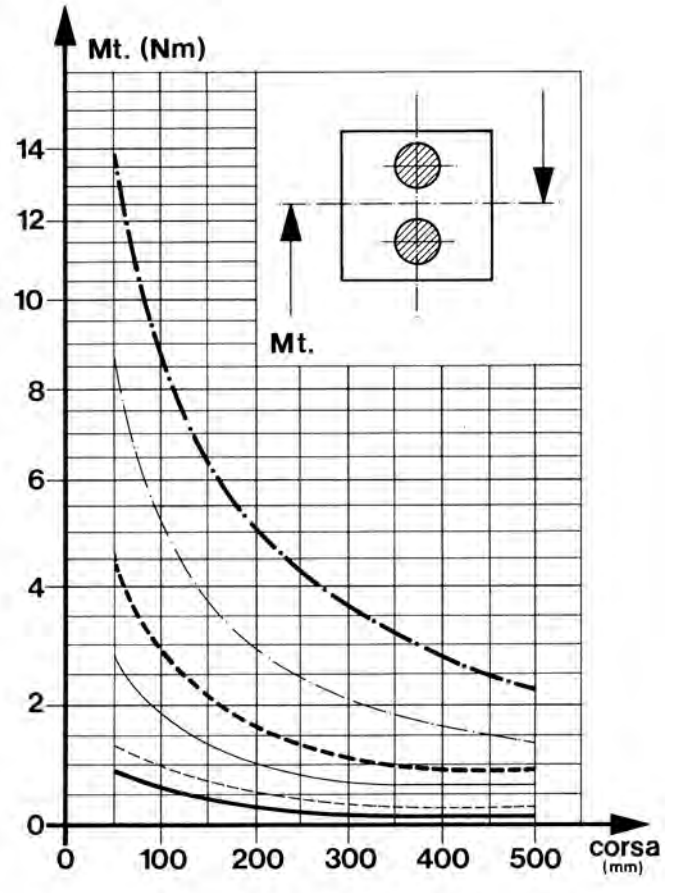
## bending moments



## bending loads



## twisting moments



- |       |      |       |      |         |       |
|-------|------|-------|------|---------|-------|
| —     | Ø 32 | —     | Ø 50 | —       | Ø 80  |
| - - - | Ø 40 | - - - | Ø 63 | - . - . | Ø 100 |

6

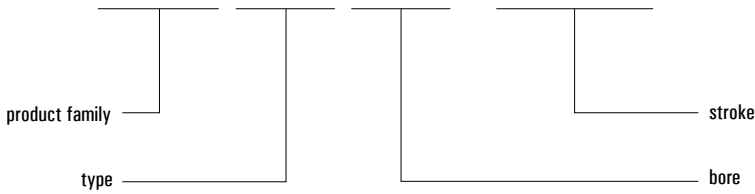
# Guided compact cylinders



- High reliability and long lifetime
- Standard magnetic version
- Standard magnetic sensors (pages 532-535)
- Air ports on the top or on the side



CG	B	B	1	6	-	0	1	0
----	---	---	---	---	---	---	---	---



## Product family

**CG** guided compact cylinders

## Type

**B** with sintered bronze rod guide

**BB** with linear ball bearings

## Materials

Body: anodized aluminium

Piston-rod: C40 (chromium plated)

Carrier plate: nickel plated steel

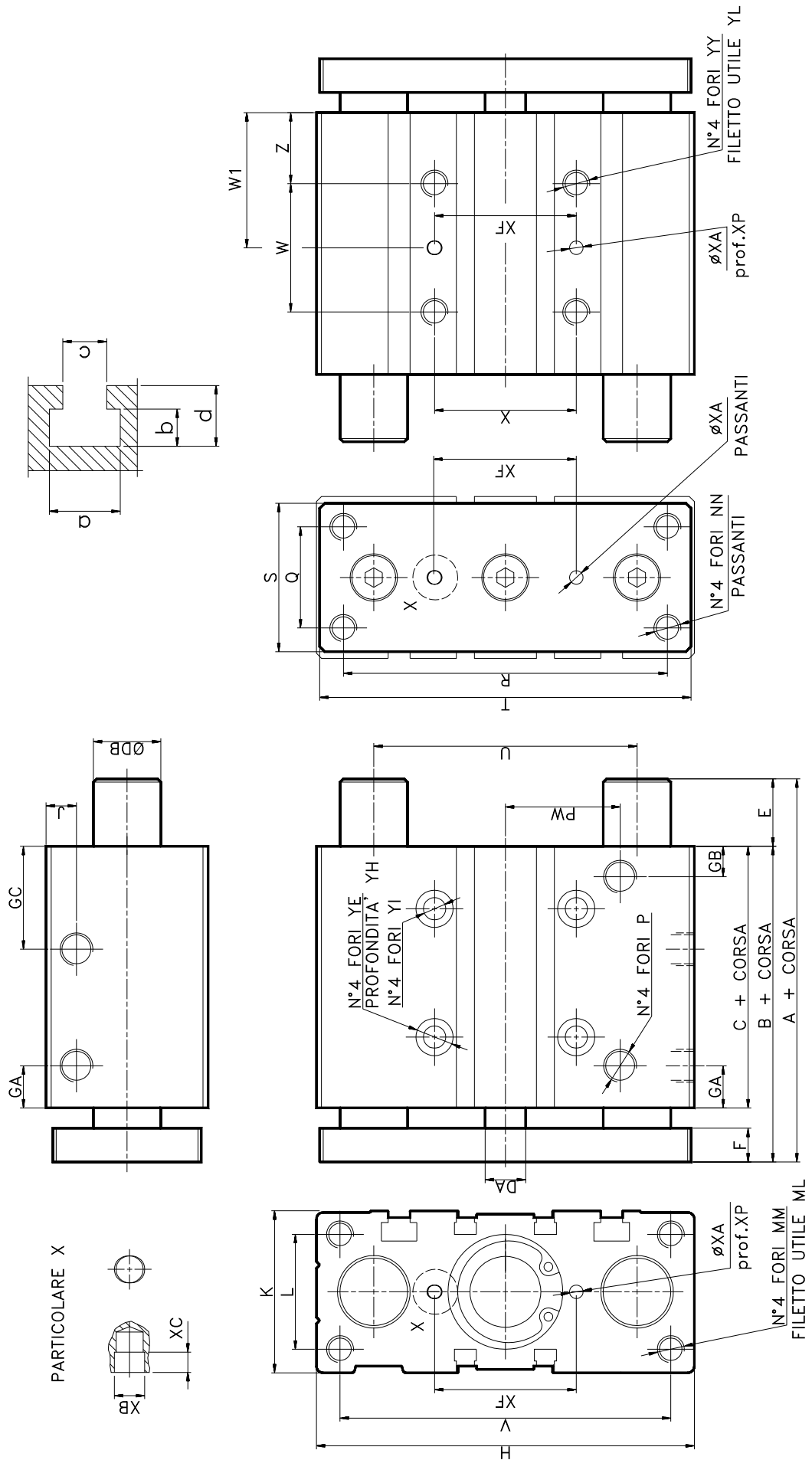
Seals: NBR and polyurethane

Piston-rod seal: polyurethane

## available strokes

bore \ stroke	16	20	25	32	40	50	63
10	X						
20	X	X	X				
25				X	X	X	X
30	X	X	X				
40	X	X	X				
50	X	X	X	X	X	X	X
75	X	X	X	X	X	X	X
100	X	X	X	X	X	X	X
125		X	X	X	X	X	X
150		X	X	X	X	X	X
175		X	X	X	X	X	X
200		X	X	X	X	X	X

Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	-15 + 60°C (5-140° F)
Bores	16; 20; 25; 32; 40; 50; 63 mm
Strokes	See table above
Fluid	50µ filtered, lubricated or non lubricated air



# Guided compact cylinders



Ø	B	C	DA	F	GA	GB	GC	H	J	K	L	MM	ML	NN	P	PW	Q	R	S	T	U	V	X	YY	YL	YE	YH	YI	Z	XF	XA	XP	XB	XC	a	b	c	d
16	4.6	3.3	8	8	11	8	18	6.4	5	3.0	2.2	M5	12	M5	M5	19	16	5.4	2.5	6.2	4.6	5.6	2.4	M5	10	8	4.5	4.3	5	2.4	3	6	3.5	3	7.4	3.7	4.4	6.2
20	5.3	3.7	10	10	10.5	8.5	24.5	8.3	6.5	3.6	2.4	M5	13	M5	G1/8	25	18	7.0	3.0	8.1	5.4	7.2	2.8	M6	12	9.5	5.5	5.6	17	2.8	3	6	3.5	3	8.4	4.5	5.5	7.3
25	5.3	3.7	5	10	11.5	9	2.5	9.3	7.5	4.2	3.0	M6	15	M6	G1/8	28.5	26	7.8	3.8	9.1	6.4	8.2	3.4	M6	12	9.5	5.5	5.6	17	3.4	4	6	4.5	3	8.4	4.5	5.5	7.5
32	5.9	5.3	7.5	12	12	12.5	9	30.5	11.2	9	4.8	3.4	M8	20	M8	G1/8	34	30	9.6	4.4	11.0	7.8	4.2	M8	16	11	7.5	6.6	21	4.2	4	6	4.5	3	10.5	5.5	6.5	9
40	6.6	4.4	12	12	14	10	31	12.0	9	5.4	4.0	M8	20	M8	G1/8	38	30	10.4	4.4	11.8	8.6	10.6	5.0	M8	16	11	7.5	6.6	22	5.0	4	6	4.5	3	10.5	5.5	6.5	9
50	7.2	4.4	16	16	14	11	35	14.8	9.5	6.4	4.6	M10	22	M10	G1/4	4.7	4.0	13.0	6.0	14.6	11.0	13.0	6.6	M10	20	14	9	8.6	22	6.6	5	8	6	4	13.5	7.5	8.5	12
63	7.7	4.9	16	16	16.5	13.5	35	16.2	11	7.8	5.8	M10	22	M10	G1/4	5.5	5.0	13.0	7.0	15.8	12.4	14.2	8.0	M10	20	14	9	8.6	24	8.0	5	8	6	4	17.8	10	11	16.5

quote W e W1 dimensions W and W1												
Ø	quota W (CORSE-STROKES)						quota W1 (CORSE-STROKES)					
	16	24 (10+30)	44 (40+100)					17 (10+30)	27 (40+100)			
20	24 (20+30)	44 (40+100)	120 (125+200)				29 (20+30)	39 (40+100)	77 (125+200)			
25	24 (20+30)	44 (40+100)	120 (125+200)				29 (20+30)	39 (40+100)	77 (125+200)			
32	24 (25)	48 (50+100)	124 (125+200)				33 (25)	45 (50+100)	83 (125+200)			
40	24 (25)	48 (50+100)	124 (125+200)				34 (25)	46 (50+100)	84 (125+200)			
50	24 (25)	48 (50+100)	124 (125+200)				36 (25)	48 (50+100)	86 (125+200)			
63	28 (25)	52 (50+100)	128 (125+200)				38 (25)	50 (50+100)	88 (125+200)			

con cuscinetti a rotolamento with linear ball bearings											
Ø	quota A (CORSE-STROKES)			quota E (CORSE-STROKES)			quota E (CORSE-STROKES)			DB	
	16	46 (10+30)	66 (40+100)	0 (10+30)	20 (40+100)	8					
20	53 (20+30)	85.5 (40+200)	0 (20+30)	32.5 (40+200)	12						
25	53.5 (20+30)	86 (40+200)	0 (20+30)	32.5 (40+200)	12						
32	97 (25+50)	107 (75+200)	37.5 (25+50)	47.5 (75+200)	20						
40	97 (25+50)	107 (75+200)	31 (25+50)	41 (75+200)	20						
50	106.5 (25+50)	114 (75+200)	34.5 (25)	46 (75+200)	25						
63	106.5 (25+50)	114 (75+200)	29.5 (25)	37 (75+200)	25						

con bronzone with sintered bronze rod guide											
Ø	quota A (CORSE-STROKES)			quota E (CORSE-STROKES)			DB				
	16	46 (10+50)	64.5 (75+100)	0 (10+50)	18.5 (75+100)	10					
20	53 (20+50)	84.5 (75+200)	0 (20+50)	31.5 (75+200)	12						
25	53.5 (20+50)	85 (75+200)	0 (20+50)	31.5 (75+200)	16						
32	97 (25+50)	107 (75+200)	37.5 (25+50)	47.5 (75+200)	20						
40	97 (25+50)	107 (75+200)	31 (25+50)	41 (75+200)	20						
50	106.5 (25+50)	118 (75+200)	34.5 (25+50)	46 (75+200)	25						
63	106.5 (25+50)	118 (75+200)	29.5 (25+50)	41 (75+200)	25						

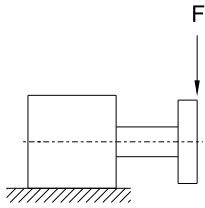
weight (grams)

Ø	10	20	25	30	40	50	75	100	125	150	175	200
16	352	402		452	502	552	752	902				
20		689		830	910	990	1310	1510	1625	1740	1855	1970
25		870		990	1080	1260	1680	2100	2500	2900	3300	3700
32			1770			2120	2770	3080	3408	3737	4066	4395
40			1990			2390	2940	3050	3460	3880	4300	4720
50			3355			3955	4755	5355	5955	6555	7155	7755
63			4030			5070	5786	6505	7224	7943	8662	9380

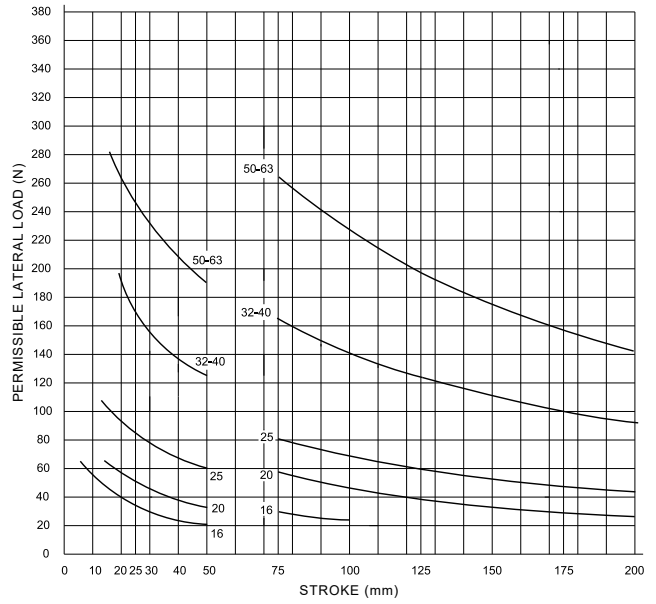
# Guided compact cylinders



## permissible lateral loads with self-lubricating sintered bronze guide

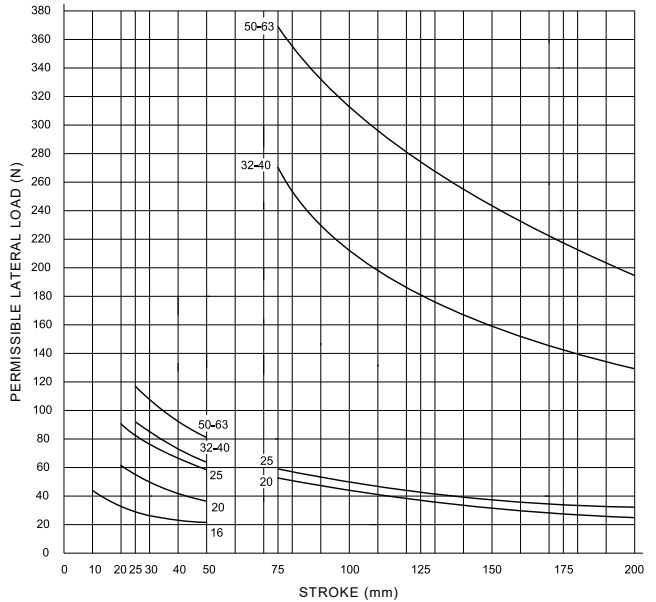


Ø mm	LOAD (N)												
16	56	40		30	25	21	30	24					
20		57		46	38	33	55	45	38	33.5	30	27	
25		93		78	68	60	81	67	60	54	48	43	
32			170			125	166	142	124	110	99	90	
40			170			125	166	142	124	110	99	90	
50			250			190	265	227	197	177	156	141	
63			250			190	265	227	197	177	156	141	
STROKES →	10	20	25	30	40	50	75	100	125	150	175	200	



## permissible lateral loads with linear ball bearings

Ø mm	LOAD (N)												
16	44	34		27	23	21							
20		62		50	42	36	53	42	36	31	27	25	
25		94		79	68	60	59	50	43	39	35	33	
32			84			58	270	213	180	159	142	130	
40			92			64	270	213	180	159	142	130	
50			117			81	370	312	275	243	216	193	
63			117			81	370	312	275	243	216	193	
STROKES →	10	20	25	30	40	50	75	100	125	150	175	200	

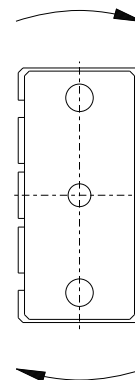


## permissible torque with self-lubricating sintered bronze guide

Ø mm	MOMENT (Nm)												
16	0.65	0.51		0.42	0.36	0.32							
20		0.99		0.84	0.71	0.64	0.97	0.78	0.63	0.54	0.48	0.43	
25		1.98		1.67	1.45	1.28	1.73	1.43	1.31	1.18	1.05	0.94	
32			4.10			3.19	3.97	3.36	2.46	2.2	2	1.84	
40			4.51			3.51	4.38	3.70	2.46	2.2	2	1.84	
50			6.60			5.19	6.68	5.72	4.68	4.25	3.88	3.5	
63			6.60			5.19	6.68	5.72	4.68	4.25	3.88	3.5	
STROKES →	10	20	25	30	40	50	75	100	125	150	175	200	

## permissible torque with linear ball bearings

Ø mm	MOMENT (Nm)												
16	0.83	0.65		0.52	0.44	0.40							
20		1.20		0.96	0.81	0.69	1.02	0.93	0.82	0.71	0.64	0.58	
25		2.00		1.69	1.45	1.28	1.26	1.09	0.98	0.87	0.79	0.70	
32			2.04			1.41	6.58	5.19	4.49	3.87	3.58	3.17	
40			2.47			1.72	7.25	5.72	4.49	3.87	3.58	3.17	
50			3.22			2.22	10.17	8.58	7.75	6.86	5.99	5.30	
63			3.22			2.22	10.17	8.58	7.75	6.86	5.99	5.30	
STROKES →	10	20	25	30	40	50	75	100	125	150	175	200	

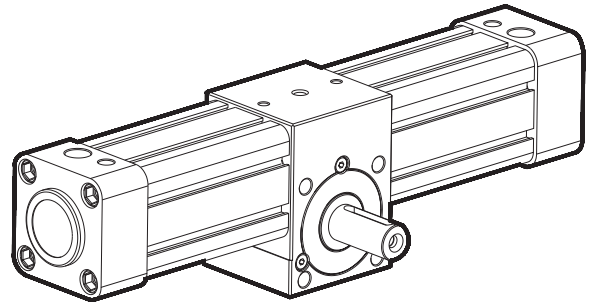
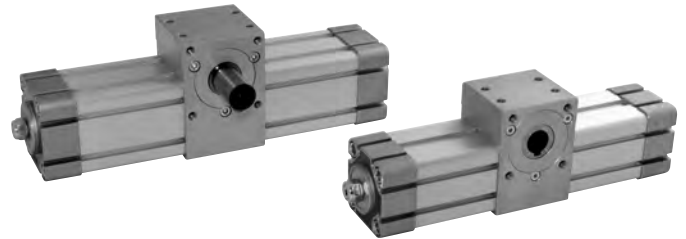




# Rotary cylinders



- High reliability and long lifetime
- Standard magnetic version
- Standard magnetic sensors (pages 532-535)
- Integrated pneumatic cushioning



AR M 1 8 0 - 0 3 2

product family

pinion

bore

rotation angle

## Product family

**AR** rotary cylinders

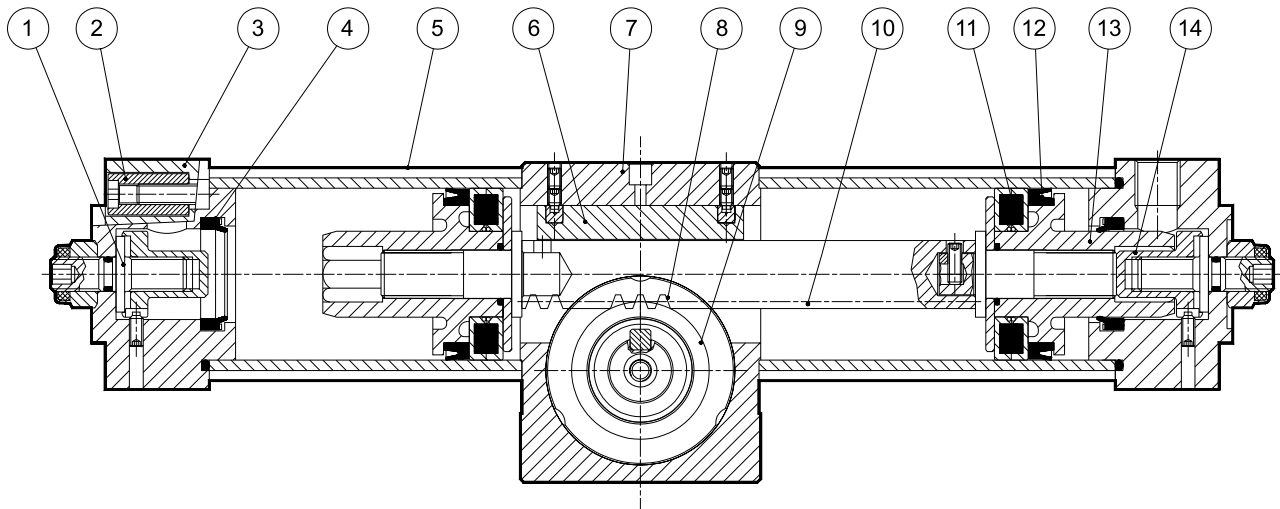
## Pinion

**M** male pinion

**F** female pinion

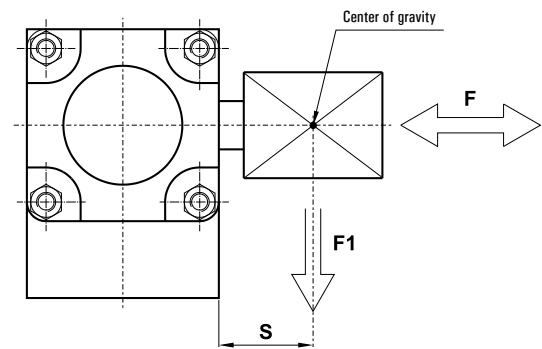
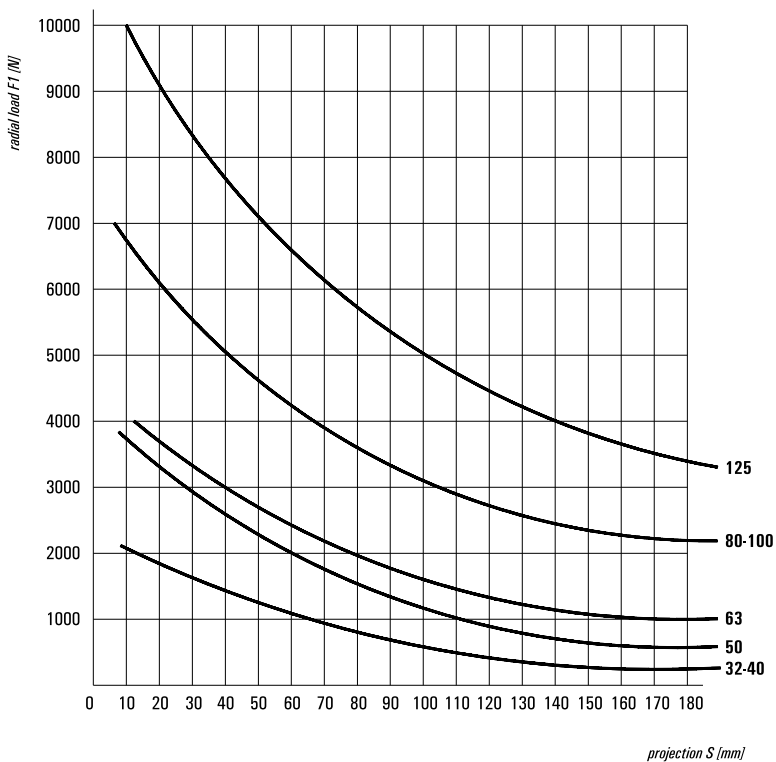
Operating pressure	max 10 bar (145 PSI) max 1 MPa
Temperature range	-15+60°C (5-140° F)
Bores	32; 40; 50; 63; 80; 100; 125 mm
Rotation angle	90°; 180°; 270°; 360° angle adjustment: 10°
Fluid	50µ filtered, lubricated or non lubricated air

# Rotary cylinders



- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Regulation screw: zinc-plated steel</li> <li>2. Head fixing screw: zinc-plated steel</li> <li>3. Cylinder head: die-cast aluminium</li> <li>4. Barrel: extruded anodized aluminium alloy</li> <li>5. Piattino di guida cremagliera: Delrin acetal resin</li> <li>6. Rotary cylinders body: anodized aluminium</li> </ol> | <ol style="list-style-type: none"> <li>8. Pinion: nitrided steel</li> <li>9. Cuscinetto a sfera</li> <li>10. Cremagliera: acciaio normalizzato</li> <li>11. Anello magnetico: plastoferrite</li> <li>12. Guarnizione pistone: NBR</li> <li>13. Pistone: alluminio pressofuso</li> <li>14. Vite bloccaggio pistone: acciaio zincato</li> </ol> |
|--|---|

Maximum radial load F1 with F=0



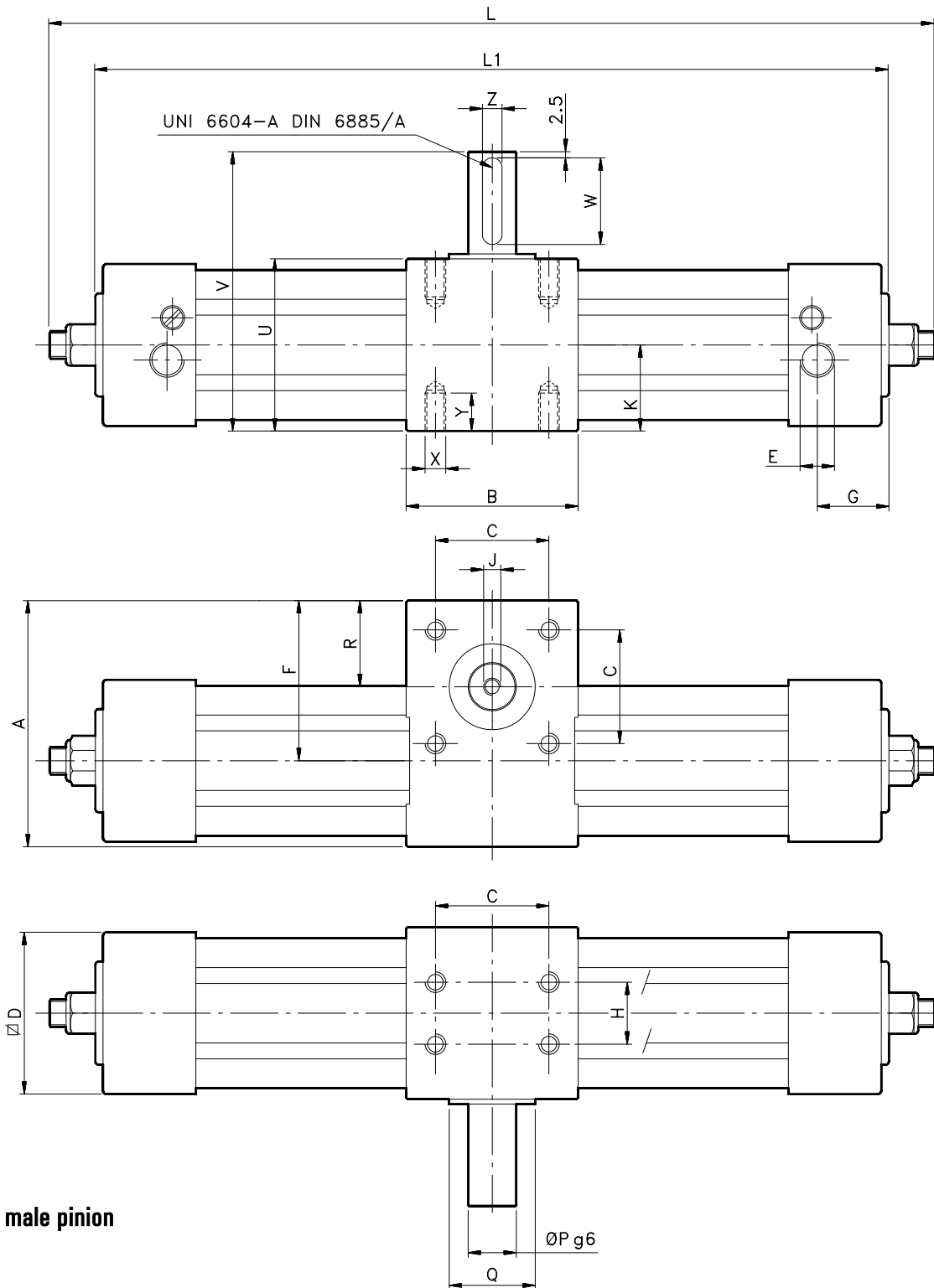
Maximum axial load F with F1=0

bore	F
32	100 N
40	100 N
50	120 N
63	120 N
80	200 N
100	250 N
125	300 N

Torque

bore	M (1 bar)	M (6 bar)
32	1.2 Nm	7.2 Nm
40	2.25 Nm	13.5 Nm
50	3.9 Nm	23.4 Nm
63	7.3 Nm	43.8 Nm
80	15.7 Nm	94.2 Nm
100	26.35 Nm	158.1 Nm
125	51 Nm	306 Nm

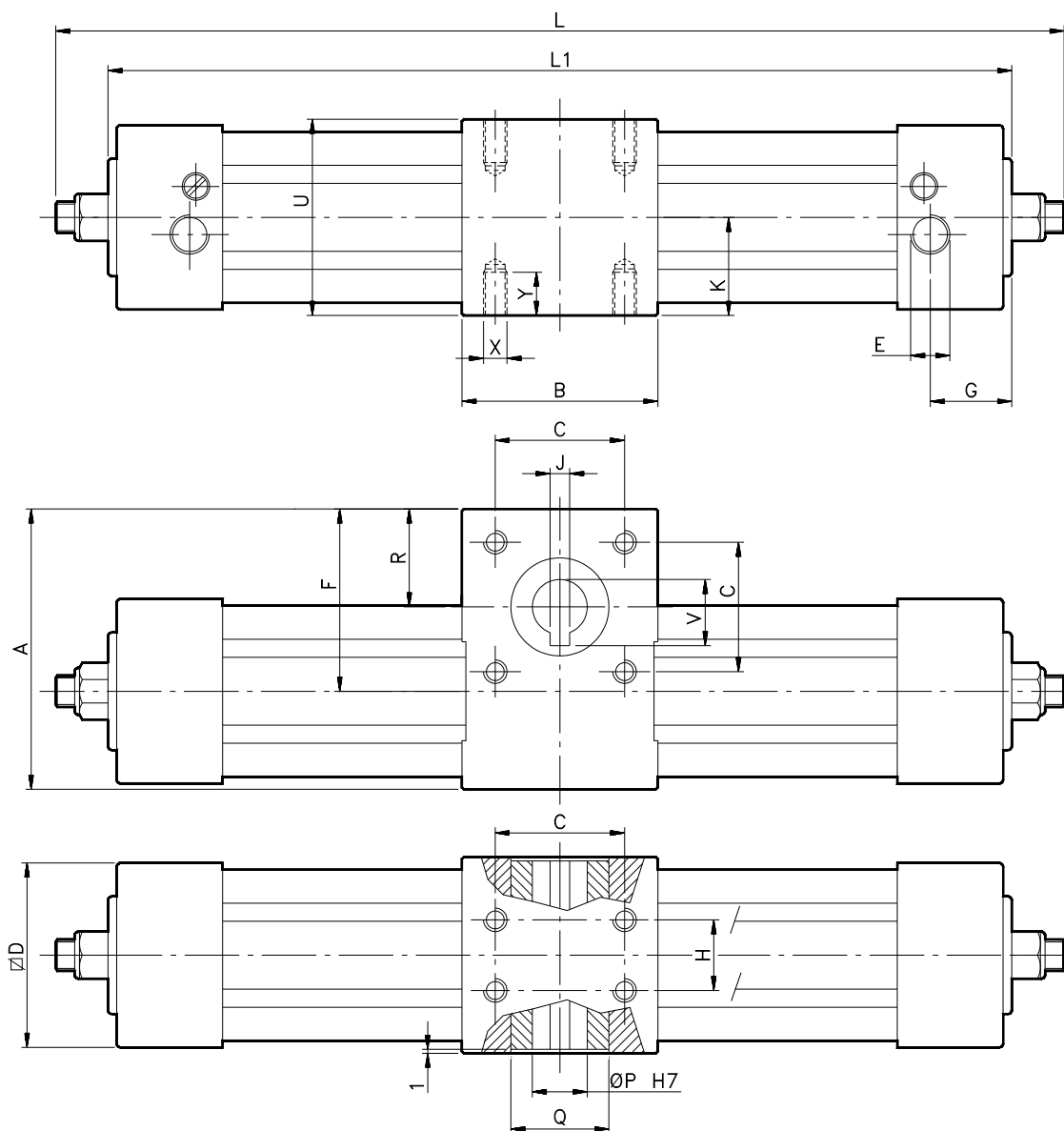
# Rotary cylinders



90° rotation		
ø CIL.	L	L1
32	238	219
40	282	261
50	306	284
63	353	330
80	408	380
100	451	419
125	520	490
180° rotation		
ø CIL.	L	L1
32	285	266
40	339	318
50	369	347
63	428	405
80	507	479
100	558	526
125	652	622
270° rotation		
ø CIL.	L	L1
32	332	313
40	396	375
50	432	410
63	503	480
80	606	578
100	665	633
125	784	754
360° rotation		
ø CIL.	L	L1
32	379	360
40	453	432
50	495	473
63	578	555
80	705	677
100	772	740
125	916	886

ø CIL.	A	B	C	D	E	F	G	H	J	K	P	Q	R	U	V	W	X	Y	Z
32	71.5	50	33	48	G1/8"	46.5	18	18	M5	25	14	25	25	50	81	25	M6	10	5
40	82	60	40	54	G1/4"	54.5	21	22	M5	30	14	25	30	60	91	25	M6	10	5
50	93	70	50	67	G1/4"	60.5	24	25	M6	32.5	19	30	32.5	65	106	35	M8	13	6
63	109	75	60	78	G3/8"	70.8	26	35	M8	37.5	24	30	37	75	116	35	M8	13	8
80	142	99	80	97	G3/8"	93.5	26	50	M8	49.5	28	45	50	99	150	45	M10	16	8
100	156.5	115	80	115	G1/2"	99	30	60	M10	57.5	38	50	54	115	166	45	M10	16	10
125	188	125	90	140	G1/2"	118	32	70	M10	70	38	60	60	140	191	45	M12	20	10

# Rotary cylinders

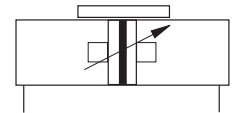
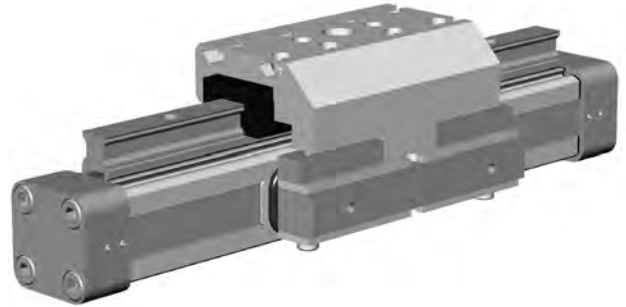


90° rotation		
ø CIL.	L	L1
32	238	219
40	282	261
50	306	284
63	353	330
80	408	380
100	451	419
125	520	490
180° rotation		
ø CIL.	L	L1
32	285	266
40	339	318
50	369	347
63	428	405
80	507	479
100	558	526
125	652	622
270° rotation		
ø CIL.	L	L1
32	332	313
40	396	375
50	432	410
63	503	480
80	606	578
100	665	633
125	784	754
360° rotation		
ø CIL.	L	L1
32	379	360
40	453	432
50	495	473
63	578	555
80	705	677
100	772	740
125	916	886

female pinion

ø CIL.	A	B	C	D	E	F	G	H	J	K	P	Q	R	U	V	X	Y
32	71.5	50	33	47	G1/8"	46.5	20	18	5	25	14	25	25	50	16.3	M6	10
40	82	60	40	53	G1/4"	54.5	19	22	5	30	14	25	30	60	16.3	M6	10
50	93	70	50	65	G1/4"	60.5	22	25	6	32.5	19	30	32.5	65	21.8	M8	13
63	109	75	60	76	G3/8"	70.8	24	35	6	37.5	19	30	37	75	21.8	M8	13
80	142	99	80	94	G3/8"	93.5	24	50	8	49.5	24	45	50	99	27.3	M10	16
100	156.5	115	80	112.5	G1/2"	99	22	60	8	57.5	28	50	54	115	31.3	M10	16
125	188	125	90	136.5	G1/2"	118	29	70	8	70	28	60	60	140	31.3	M12	20

- Standard magnetic version
- High reliability and long lifetime
- Low friction and good resistance to loads
- Installation in any position
- Mounting elements and switches can be ordered separately
- Version with recirculating ball bearing guide

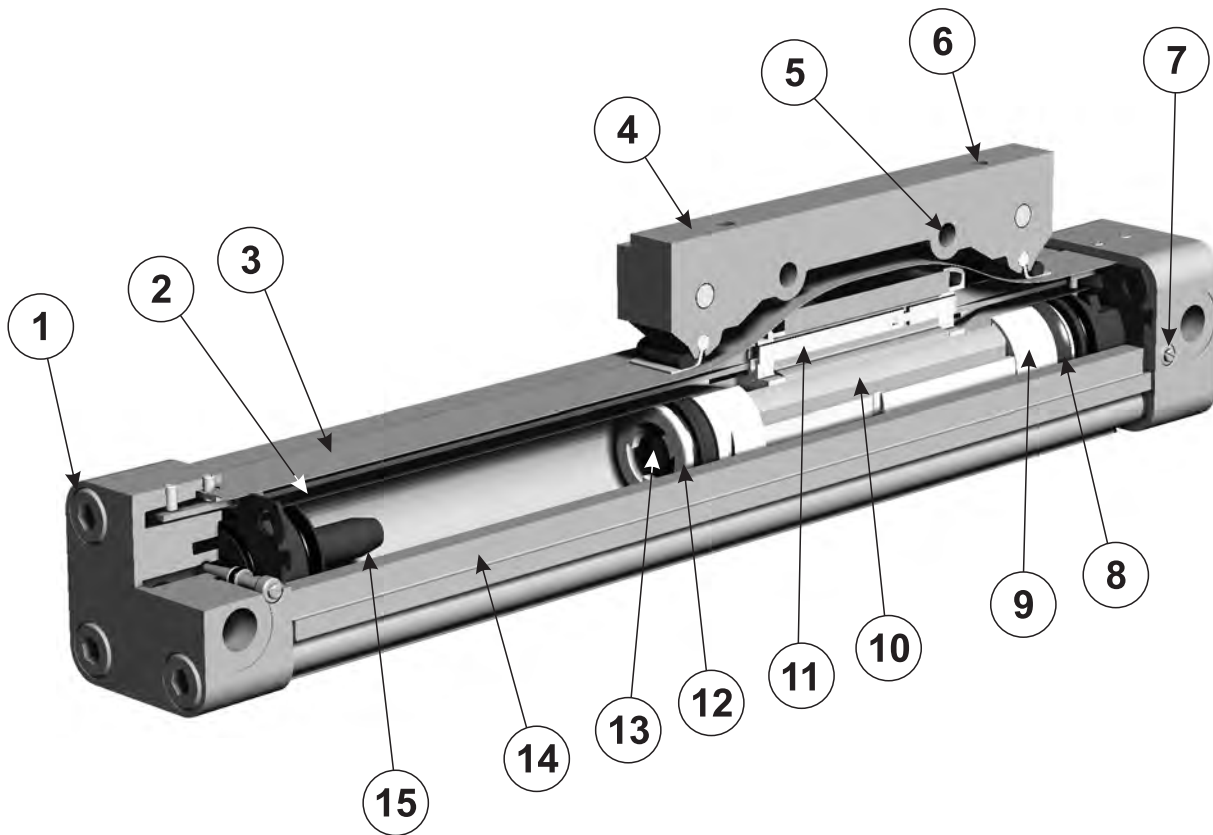


## General features

Rodless cylinders consist of an extruded profile with two heads and a piston inside it. The cylinder barrel has a groove along its entire length. A flexible corrosion resistant steel inner band running along the entire length of the bore and passing through the piston provides a near-zero-leakage metal to metal seal. An outer band of the same material acts as a cover over the groove preventing foreign particles to enter into the cylinder. The aluminium piston is fitted with synthetic bearing rings and houses the internal magnet. A physical connection through the slot between the piston and the external mounting plate allows the power transmission outwards. This solid connection permits the acceptance of big external forces and moments, and minimizes frictional losses. Magnetic switches can be mounted on the aluminium profile with mounting brackets.

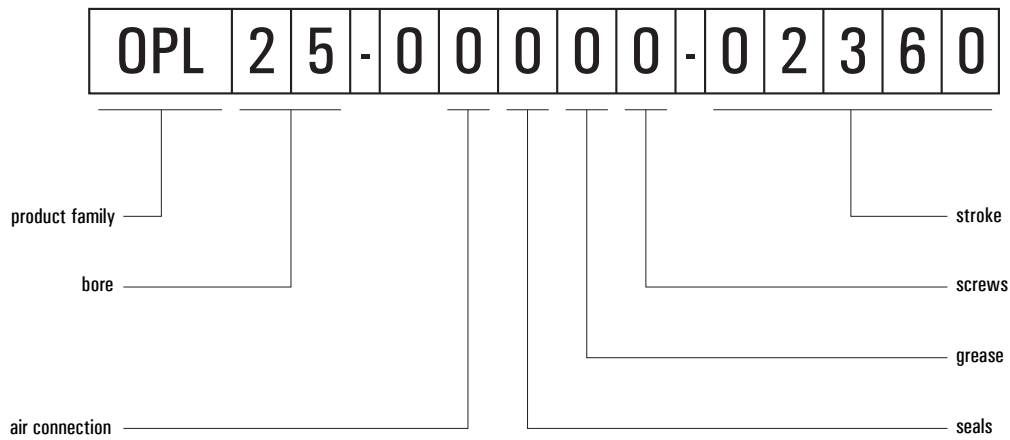
Rodless cylinders are available in seven different diameters:  $\varnothing 16$ ; 25; 32; 40; 50; 63; 80 and in two versions:

- basic (part number begins with **OPL**), suitable for small and medium loads
- with recirculating ball bearing guide (part number begins with **OPL-KF**), suitable for big loads and precision.



- |  |   |
|--|---|
| 1. Screw for assembling cylinder head                | 8. Piston sealing   |
| 2. Corrosion resistant steel inner sealing band      | 9. Bearing ring, low friction material                                  |
| 3. Corrosion resistant steel outer sealing band      | 10. Magnet  |
| 4. Standard mounting plate for external loads        | 11. Sliding pad   |
| 5. Passing-through hole to fasten the external loads | 12. Piston  |
| 6. Threaded holes to fasten the external load        | 13. Cushioning seal   |
| 7. Adjustable cushioning screw                       | 14. Cylinder barrel: extruded profile with grooves for magnetic sensors |
|  | 15. Cushioning pipe   |

## coding example



### Product family

**OPL** rodless cylinders - basic version

**OPL-KF** rodless cylinders with recirculating ball bearing guide

### Air connection

**option available only for OPL-KF**

**0** opposite side guide rail

**1** same side guide rail

### Seals

**0** NBR

### Grease

**0** standard grease

**1** special grease for low speed

### Screws

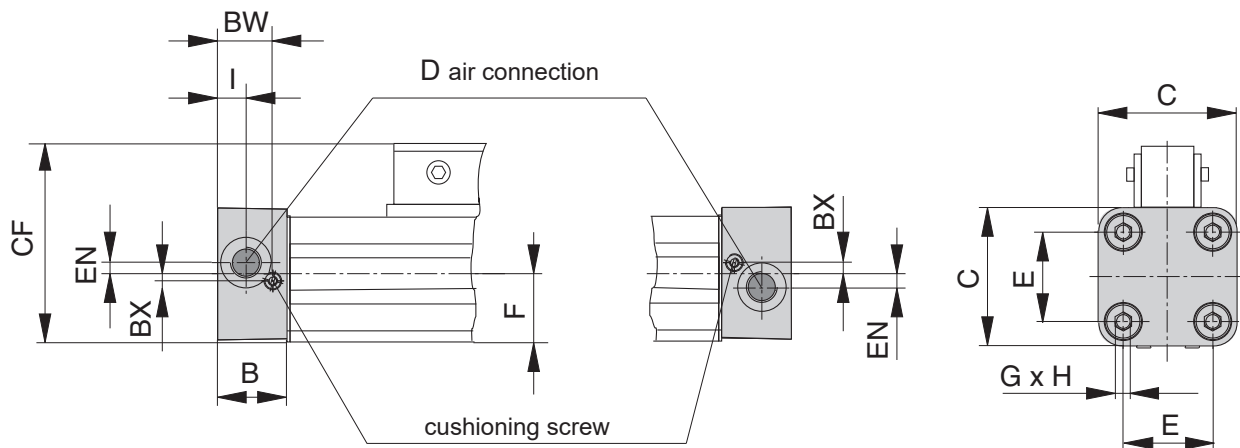
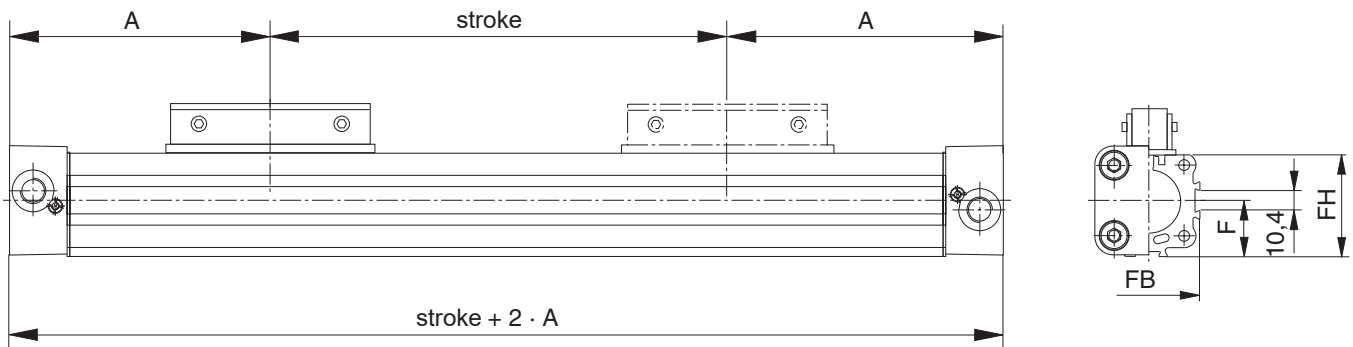
**0** standard screws in galvanized steel

Standard version represented by number 0

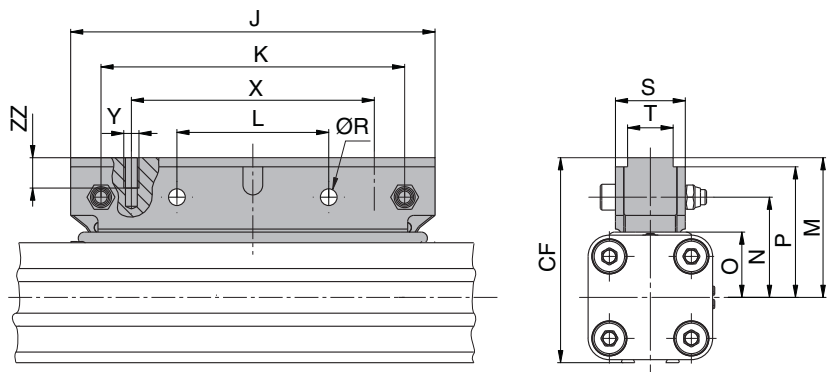
# Rodless cylinders type OPL



Overall dimensions  
bore 16 ... 32



**6** Standard mounting plate for external loads  
bore 16 ... 32



∅	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
16	65	14	30	M5	18	15	M3	9	5.5	76	64	32	30	24	17	29
25	100	22	41	G1/8"	27	21.5	M5	15	9	120	100	50	46	33	22.5	43
32	125	25.5	52	G1/4"	36	28.5	M6	15	11.5	160	120	60	59.8	45.8	28.5	54.3

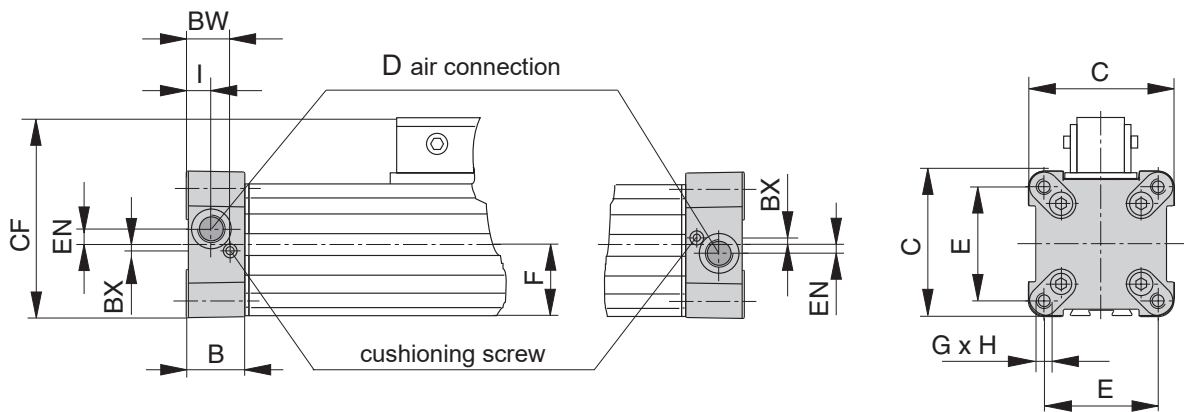
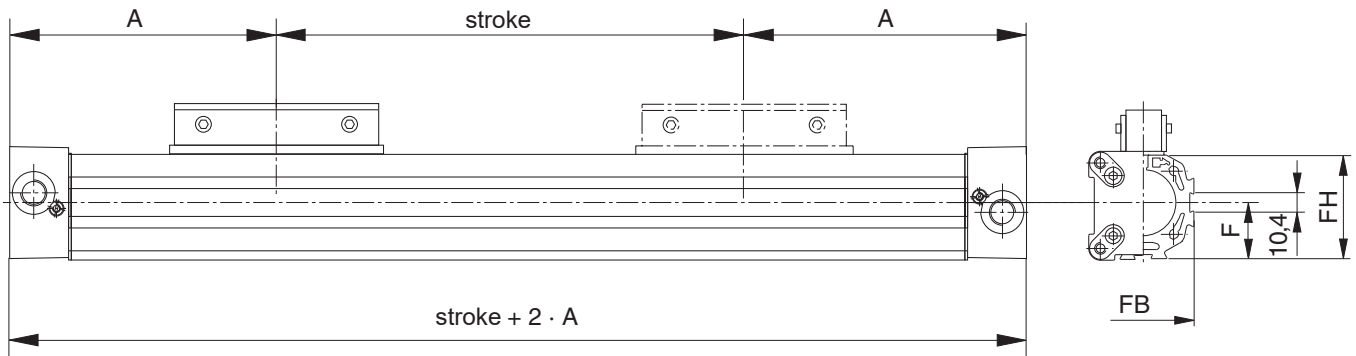
∅	R	S	T	X	Y	BW	BX	CF	EN	FB	FH	ZZ				
16	4.5	18	10.5	48	M4	10.8	1.8	45	3	30	27.2	8				
25	5.5	23	17.5	80	M5	17.5	2.2	67.5	3.6	40	39.5	10				
32	7	27	18	90	M6	20.5	2.5	88.3	5.5	52	51.7	15				



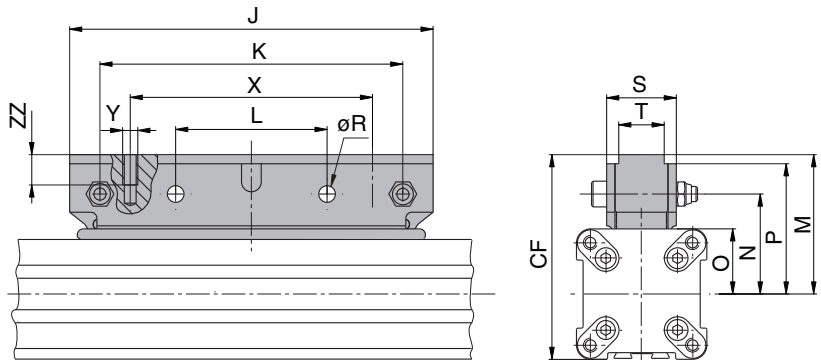
# Rodless cylinders type OPL



## Overall dimensions bore 40 ... 80



## Standard mounting plate for external loads bore 40 ... 80



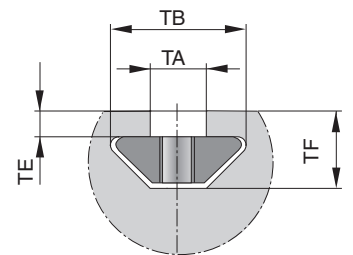
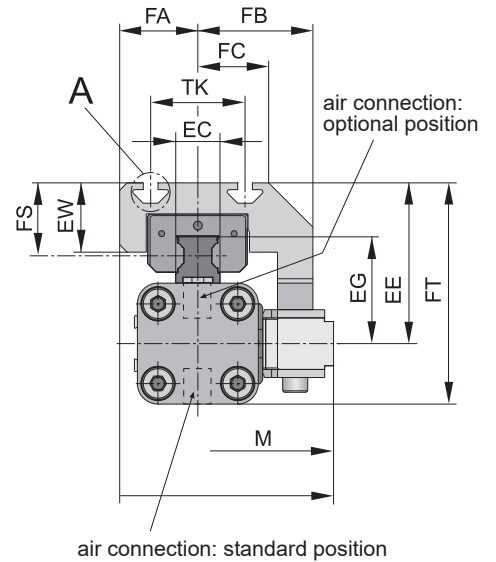
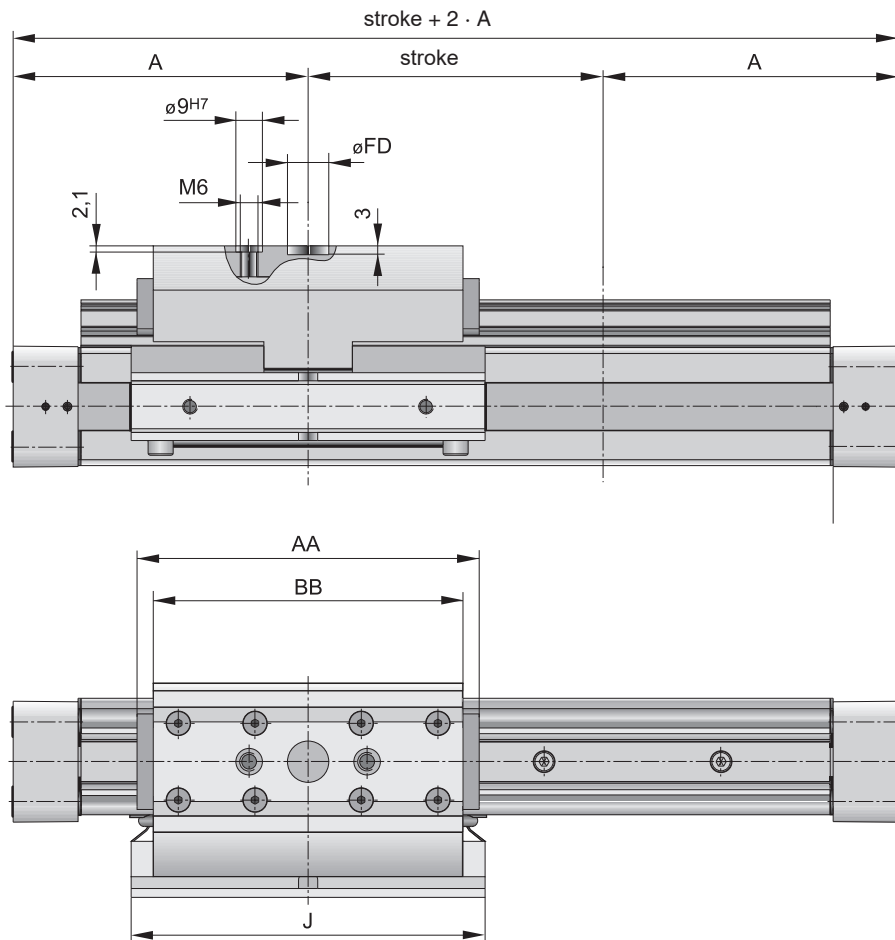
∅	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
40	150	28	69	G1/4"	54	34	M6	15	12	150	110	55	60.8	48.8	35	56.8
50	175	33	87	G1/4"	70	43	M6	15	14.5	180	140	70	69	57	40	65
63	215	38	106	G3/8"	78	54	M8	21	14.5	220	180	90	82.8	67.8	50	77.8
80	260	47	132	G1/2"	96	67	M10	25	22	280	240	120	101	83	57	95

∅	R	S	T	X	Y	BW	BX	CF	EN	FB	FH	ZZ				
40	7	28	18	90	M6	21	3	95.3	7.5	62	63	12				
50	7	28	18	110	M6	27	-	112.5	11	76	77	12				
63	9	30	19	140	M8	30	-	136.8	12	96	96	16				
80	11	32	20	180	M10	37.5	-	168	16.5	122	122	20				

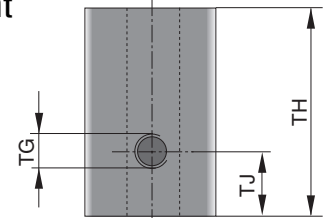
# Rodless cylinders type OPL-KF



Overall dimensions; for other dimensions refer to pages 508-509



**A element**



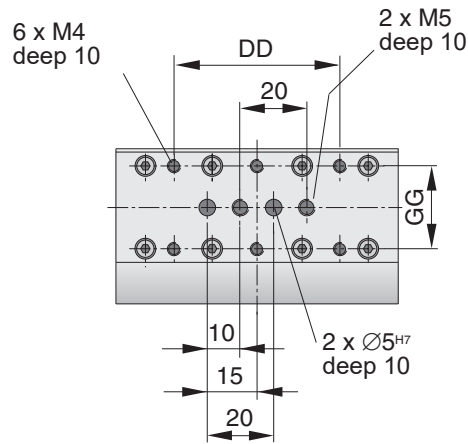
Standard T-nuts can be purchased from ITEM company.

ø	A	B	J	AA	BB	CF	DD	EC	EE	EG	EW	JJ	GG	M	FA	FB
16	65	14	76	93	85	48	50	15	41	24.6	10	-	25	30	17.7	29
25	100	22	120	120.2	105	72.5	40	15	54.5	36.2	23.5	-	-	46	26.5	39
32	125	25.5	160	146.2	131	93.8	40	15	60.5	42.2	23.5	-	20	59.8	34	53.8
40	150	28	150	188.5	167	103.3	40	20	69.5	51.6	26.5	120	20	60.8	42.5	56.8
50	175	33	180	220.2	202	121	40	23	90.5	62.3	32.5	120	40	69	52	65

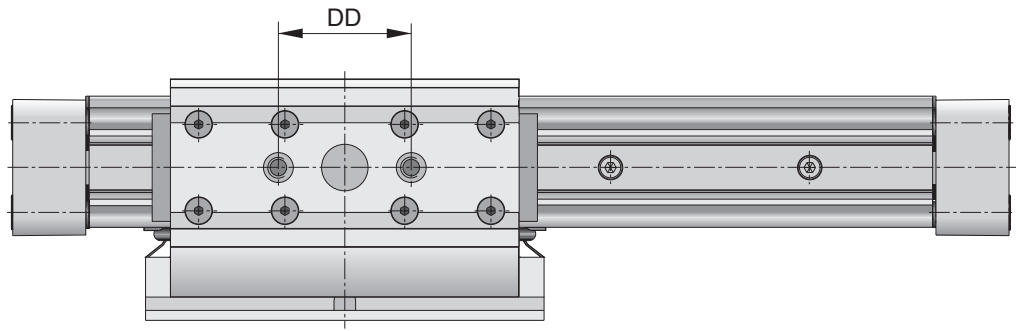
# Rodless cylinders type OPL-KF



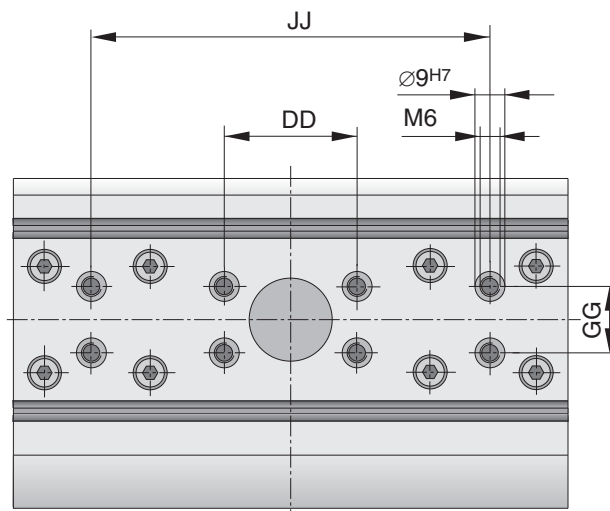
## Load fixing bores for cylinder $\phi 16$



## Load fixing bores for cylinder $\phi 25$



## Load fixing bores for cylinder $\phi 32$ ; 40; 50



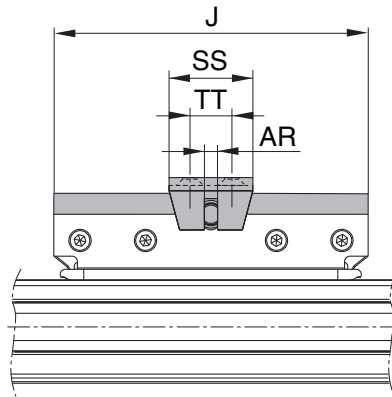
$\phi$	FC	FD	FT	FS	TA	TB	TE	TF	TG	TH	TJ	TK				
16	16.5	-	56	19	-	-	-	-	-	-	-	-				
25	24	14 <sup>G7</sup>	75	24.7	5	12.1	2.3	6.9	M5	11.5	4	32				
32	34	25 <sup>G7</sup>	86.5	24.7	5	12.1	1.8	6.4	M5	11.5	4	47				
40	41	25 <sup>G7</sup>	104	26	6	12.8	1.8	8.4	M6	17	5.5	55				
50	50	25 <sup>G7</sup>	134	38	8	21.1	4.5	12.5	M8	23	7.5	72				

# Mounting elements for rodless cylinders OPL

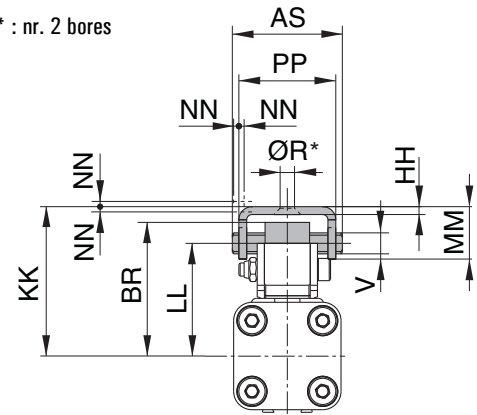


## clevis mounting

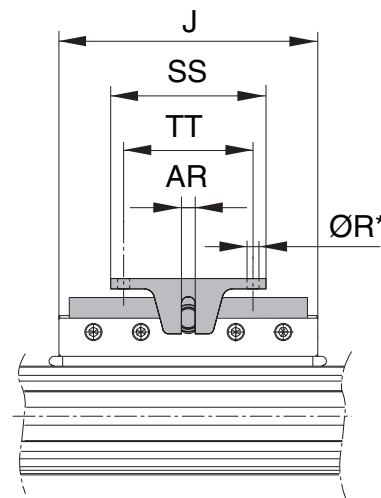
bore	part number
16	<b>21054</b>
25	<b>21055</b>
32	<b>21056</b>



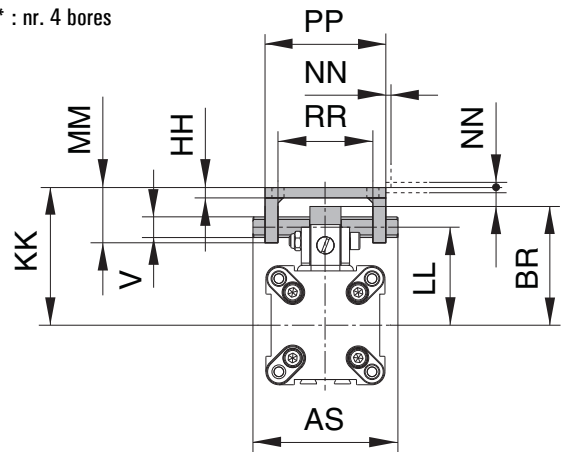
\* : nr. 2 bores



bore	part number
40	<b>21057</b>
50	<b>21058</b>
63	<b>21059</b>
80	<b>21060</b>



\* : nr. 4 bores

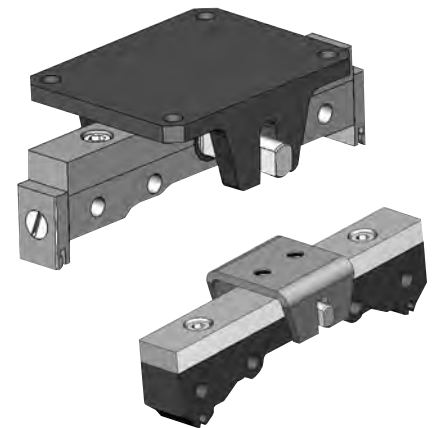


6

When external guides are used, possible parallelism deviations can lead to mechanical strains on the piston. This can be avoided using a clevis mounting.

Freedom of movement is provided as follows:

- Tilting in direction of movement
- Vertical compensation
- Lateral tilting
- Horizontal compensation



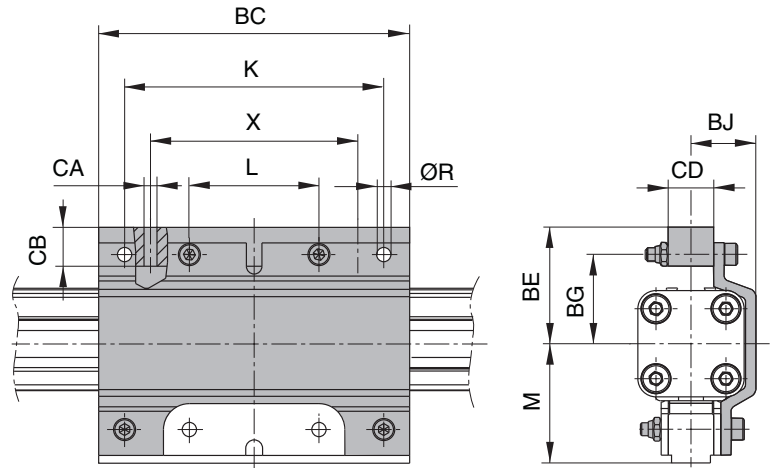
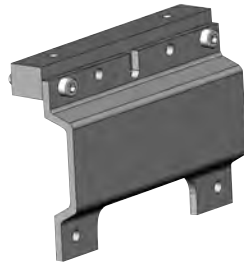
Ø	J	ØR	V	AR	AS	BR	HH	KK	LL	MM	NN	PP	RR	SS	TT
16	76	4.5	5	3	28	34	2	38	29	13	1.5	25	-	20	10
25	120	5.5	8	5	42	51	3	57	43	20	1.5	37	-	32	16
32	160	6.6	12	8	55	65.5	4	74	54.5	30	3	44	-	60	40
40	150	7	12	8	84	69	6	80	57	32	3.5	70	55	90	75
50	180	7	12	8	84	77	6	88	65	32	3.5	70	55	90	75
63	220	9	16	10	90	98	8	112.5	83	40	3	90	70	120	100
80	280	11	20	13	110	118	8	137.5	101	48	4	110	85	150	125

# Mounting elements for rodless cylinders OPL

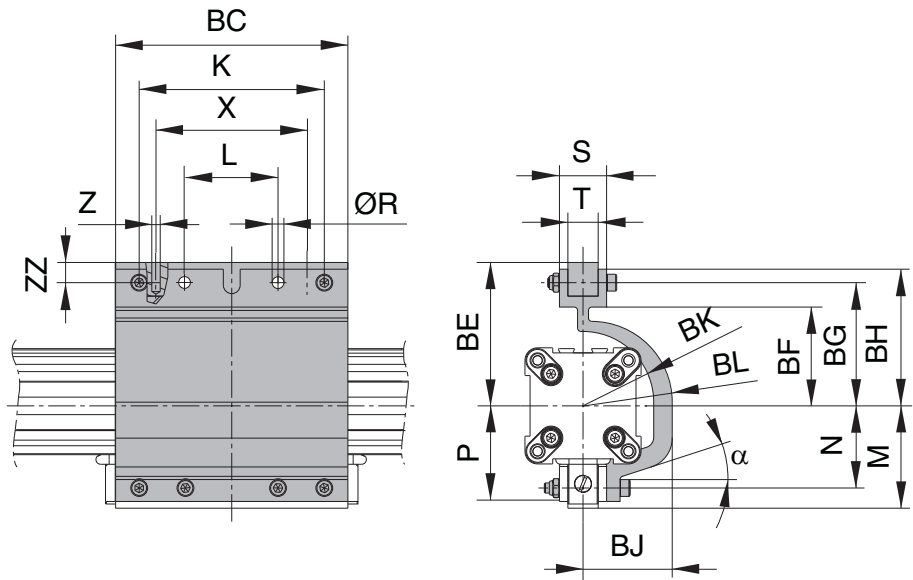
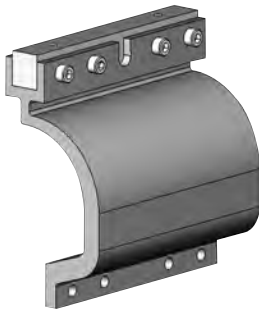


## inversion mounting

bore	part number
32	<b>3510</b>



bore	part number
40	<b>4510</b>
50	<b>5510</b>
63	<b>6510</b>
80	<b>8510</b>



∅	K	L	M	N	P	∅R	S	T	X	Z	BC
32	140	60	60	-	-	7	-	-	90	-	160
40	110	55	61	49	57	7	28	18	90	M6	138
50	140	70	69	57	65	7	28	18	110	M6	168
63	180	90	83	68	78	9	30	19	140	M8	208
80	240	120	101	83	95	11	32	20	180	M10	268

∅	BE	BF	BG	BH	BJ	BK	BL	CA	CB	CD	ZZ	α
32	58	-	44	-	33	-	-	M8	25	20	-	-
40	85	58.5	73	81	53	42	48	-	-	-	12	22°
50	97	70	85	93	62	50	56	-	-	-	12	18°
63	117	82	102	112	77	62	71	-	-	-	16	15°
80	143	102	125	137	96	78	88	-	-	-	20	15°

In dirty environments, or in case of special space problems, inversion of the cylinder is recommended.

This element transfers driving force to the opposite side of the cylinder. Size and position of mounting holes are the same of standard cylinder.

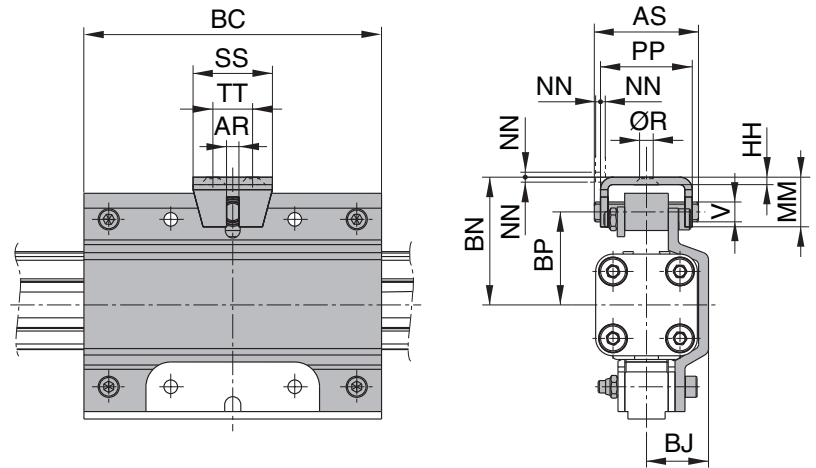
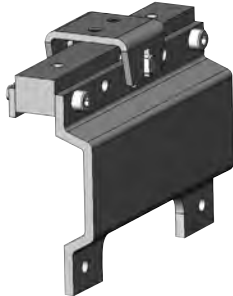
Note: other components such as mid-section supports and magnetic switches can be mounted on the free side of the cylinder.

# Mounting elements for rodless cylinders OPL

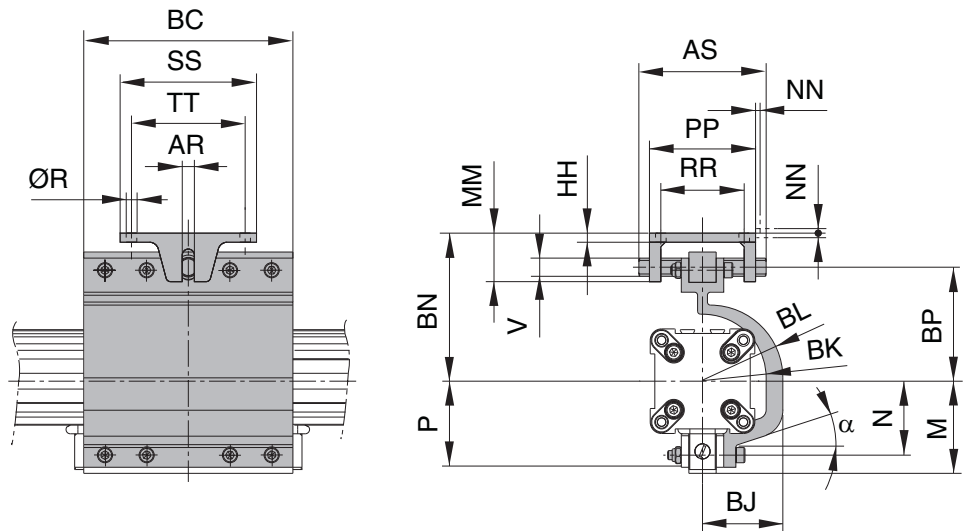
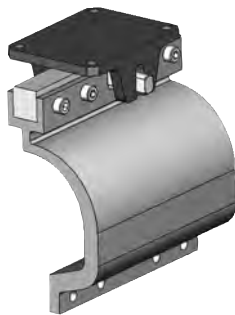


## clevis mounting with inversion

bore	part number
16	<b>21063</b>
25	<b>21064</b>
32	<b>3550</b>



bore	part number
40	<b>4530</b>
50	<b>5530</b>
63	<b>6530</b>
80	<b>8530</b>



∅	M	N	P	∅R	V	AR	AS	BC	BJ	BK
16	-	-	-	4.5	5	3	28	76	21.5	-
25	-	-	-	5.5	8	5	42	120	26	-
32	-	-	-	6.6	12	8	55	160	33	-
40	61	49	57	7	12	8	84	138	53	42
50	69	57	65	7	12	8	84	168	62	50
63	83	68	78	9	16	10	90	208	77	62
80	101	83	95	11	20	13	110	268	96	78

In dirty environments, or in case of special space problems, inversion of the cylinder is recommended. This element transfers driving force to the opposite side of the cylinder and provides movement advantages typical of clevis mounting (refer to page 512). Size and position of mounting holes are the same of clevis mounting.

Note: other components such as mid-section supports and magnetic switches can be mounted on the free side of the cylinder.

∅	BL	BN	BP	HH	MM	NN	PP	RR	SS	TT	α
16	-	38.5	29	2	13	1.5	25	-	20	10	-
25	-	48	34	3	20	1.5	37	-	32	16	-
32	-	67	46.5	4	30	3	44	-	60	40	-
40	48	99	75	6	32	3.5	70	55	90	75	22°
50	56	111	87	6	32	3.5	70	55	90	75	18°
63	71	134	104.5	8	40	3	90	70	120	100	15°
80	88	163	128	8	48	4	110	85	150	125	15°

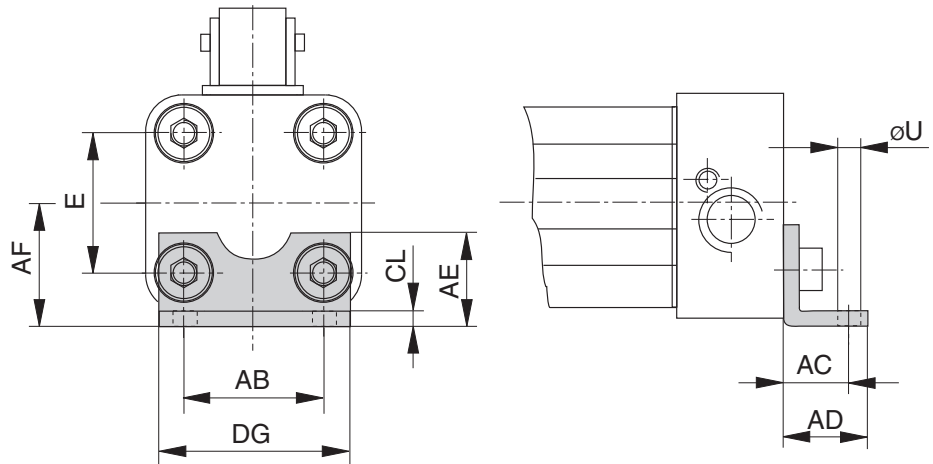
# Mounting elements for rodless cylinders OPL



## end cap foot mounting

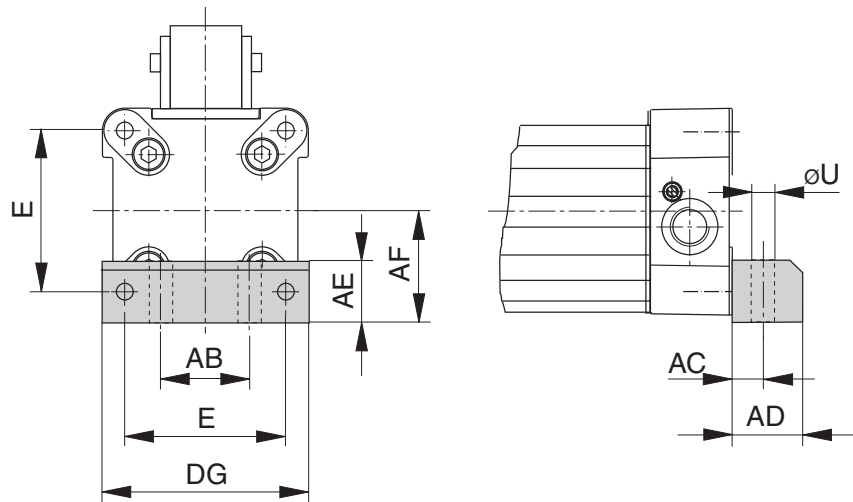
bore	part number
16	<b>20408</b>
25	<b>2010</b>
32	<b>3010</b>

Material: galvanized steel



bore	part number
40	<b>4010</b>
50	<b>5010</b>
63	<b>6010</b>
80	<b>8010</b>

Material: anodized aluminium



On each end cap there are four threaded holes for cylinder mounting. Hole layout is square, so that the foot mounting can be assembled on the bottom, top or either side, regardless of position chosen for air connection.

Order codes refer to a foot mounting couple.



ø	E	øU	AB	AC	AD	AE	AF	CL	DG								
16	18	3.6	18	10	14	12.5	15	1.6	26								
25	27	5.8	27	16	22	18	22	2.5	39								
32	36	6.6	36	18	26	20	30	3	50								
40	54	9	30	12.5	24	24	38	-	68								
50	70	9	40	12.5	24	30	48	-	86								
63	78	11	48	15	30	40	57	-	104								
80	96	14	60	17.5	35	50	72	-	130								

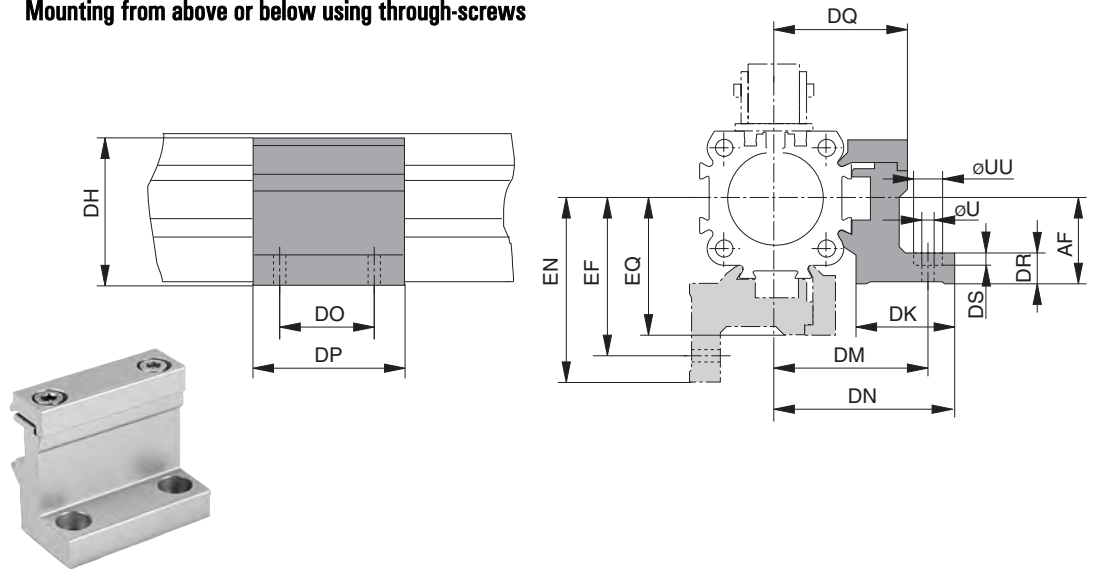
# Mounting elements for rodless cylinders OPL



## mid support

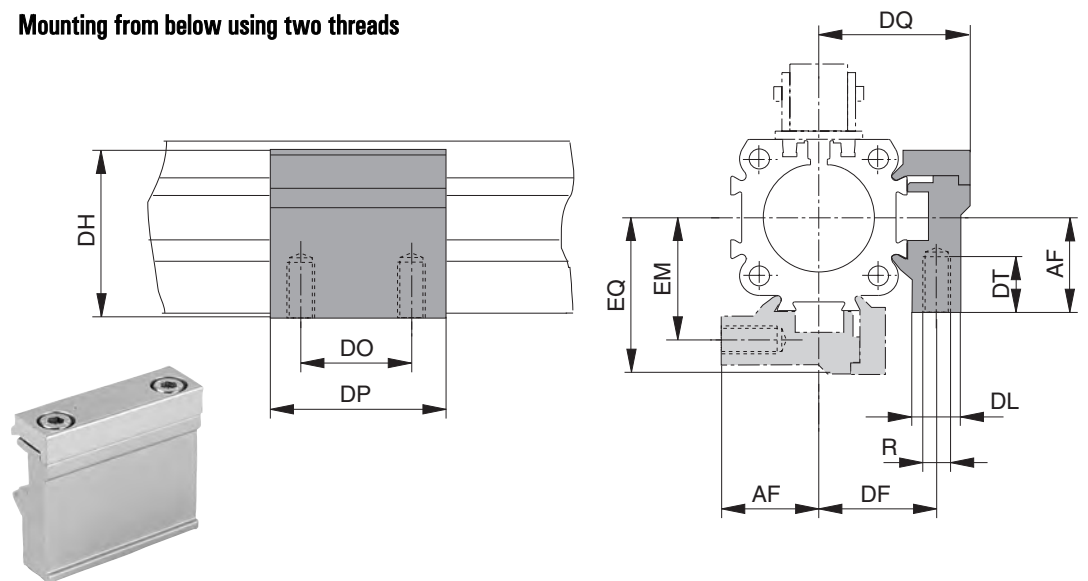
### Mounting from above or below using through-screws

bore	part number
16	<b>20435</b>
25	<b>20009</b>
32	<b>20158</b>
40	<b>20028</b>
50	<b>20163</b>
63	<b>20452</b>
80	<b>20482</b>



bore	part number
16	<b>20434</b>
25	<b>20008</b>
32	<b>20157</b>
40	<b>20027</b>
50	<b>20162</b>
63	<b>20451</b>
80	<b>20480</b>

### Mounting from below using two threads



This element can be mounted also on the underside of the cylinder. In this case its distance from the centre of the cylinder is different (see drawing).

For more information about installation, refer to page 528.

ø	R	øU	øUU	AF	DF	DH	DK	DM	DN	DO	DP	DL	DQ	DR	DS	DT	EF	EM	EN	EQ
16	M3	3.4	6	15	20	29.2	24	32	36.4	18	30	14.6	27	6	3.4	6.5	32	20	36.4	27
25	M5	5.5	10	22	27	38	26	40	47.5	36	50	13	34.5	8	5.7	10	41.5	28.5	49	36
32	M5	5.5	10	30	33	46	27	46	54.5	36	50	13	40.5	10	5.7	10	48.5	35.5	57	43
40	M6	7	-	38	35	61	34	53	60	45	60	19	45	10	-	11	56	38	63	48
50	M6	7	-	48	40	71	34	59	67	45	60	19	52	10	-	11	64	45	72	57
63	M8	9	-	57	47.5	91	44	73	83	45	65	24	63	12	-	16	79	53.5	89	69
80	M10	11	-	72	60	111.5	63	97	112	55	80	32	81	15	-	25	103	66	118	87



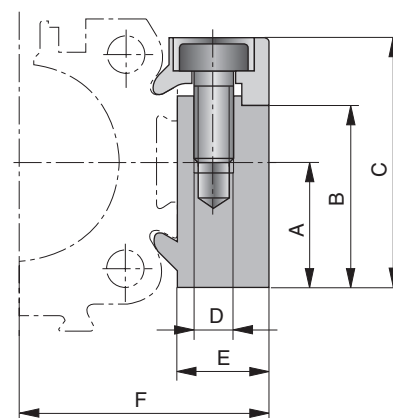
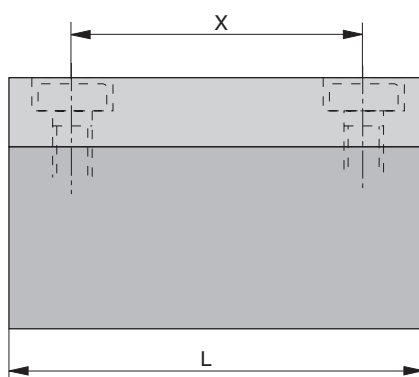
# Mounting elements for rodless cylinders OPL and OPL-KF



## mounting profile

bore	part number
16	<b>20432</b>
25-32	<b>20006</b>
40-50	<b>20025</b>

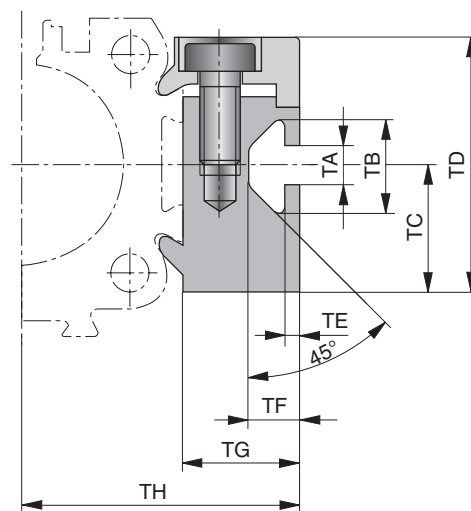
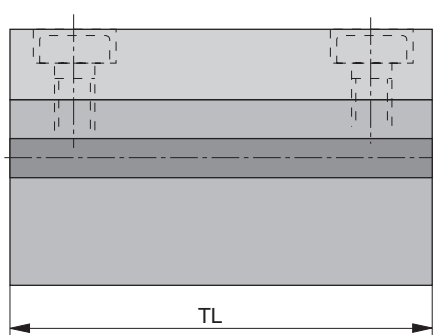
Universal profile in full solid aluminium which can be bored for mounting of various elements on the cylinder.



## T-nut profile

bore	part number
16	<b>20433</b>
25-32	<b>20007</b>
40-50	<b>20026</b>

Universal profile to fix various elements on the cylinder with standard T-nuts, purchasable from ITEM company.



∅	A	B	C	D	E	F	L	X	TA	TB	TC	TD	TE	TF	TG	TH	TL
16	14	20.5	28	M3	12	27	50	38	5	11.5	14	28	1.8	6.4	12	27	50
25	16	23	32	M5	10.5	30.5	50	36	5	11.5	16	32	1.8	6.4	14.5	34.5	50
32	16	23	32	M5	10.5	36.5	50	36	5	11.5	16	32	1.8	6.4	14.5	40.5	50
40	20	33	43	M6	14	45	80	65	8.2	20	20	43	4.5	12.3	20	51	80
50	20	33	43	M6	14	52	80	65	8.2	20	20	43	4.5	12.3	20	58	80

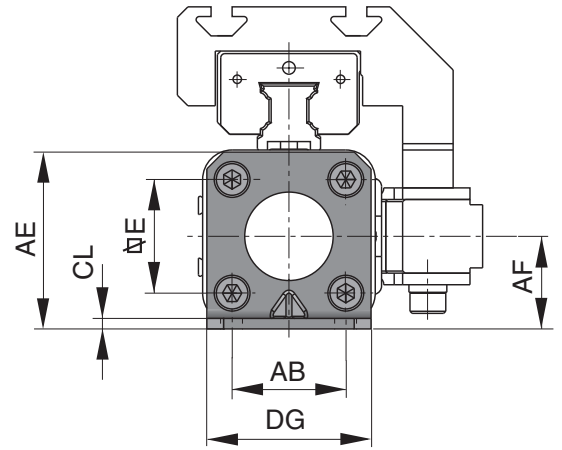
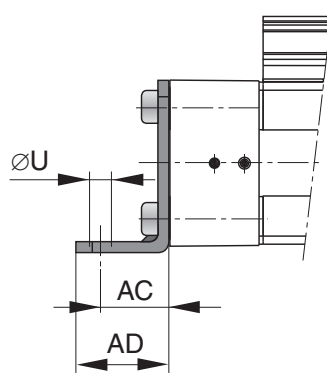
# Mounting elements for rodless cylinders OPL-KF



end cap foot mounting (galvanized steel)

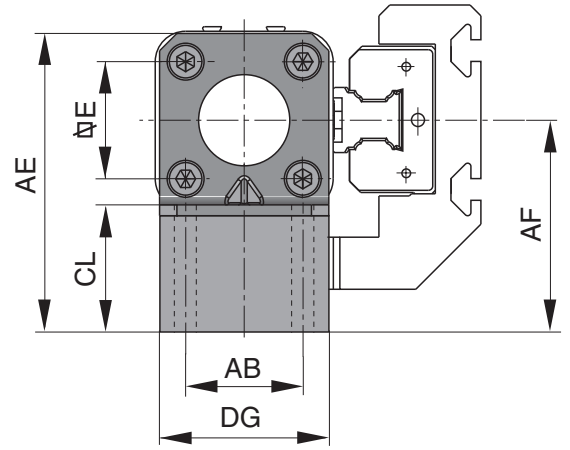
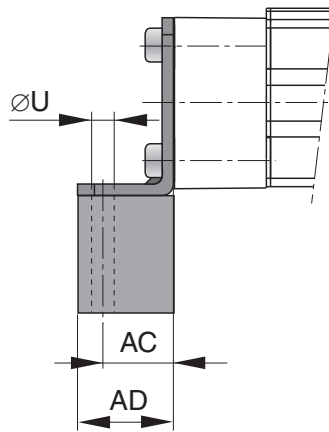
bore	part number
16	<b>21135</b>
25	<b>20311</b>
32	<b>20313</b>

∅	AE	AF	CL
16	28	15	2
25	42	22	2.5
32	55	30	3



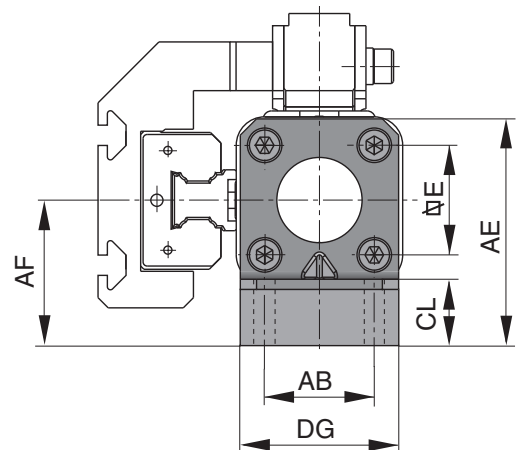
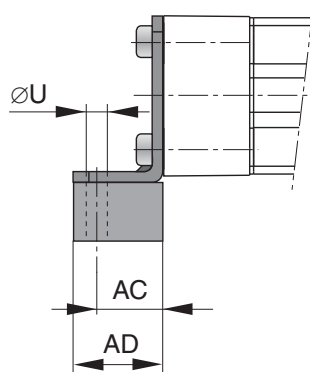
bore	part number
16	<b>21137</b>
25	<b>21139</b>
32	<b>21141</b>

∅	AE	AF	CL
16	55	42	29
25	69	49	29.5
32	90	65	9



bore	part number
16	<b>21136</b>
25	<b>21138</b>
32	<b>21140</b>

∅	AE	AF	CL
16	43	30	17
25	57	37	17.5
32	69	44	17



Materials: foot mounting in galvanized steel, support in anodized aluminium.  
Order codes refer to a foot mounting couple.

∅	E	∅U	AB	AC	AD	DG
16	18	3.6	18	10	14	26
25	27	5.8	27	16	22	39
32	36	6.6	36	18	26	50



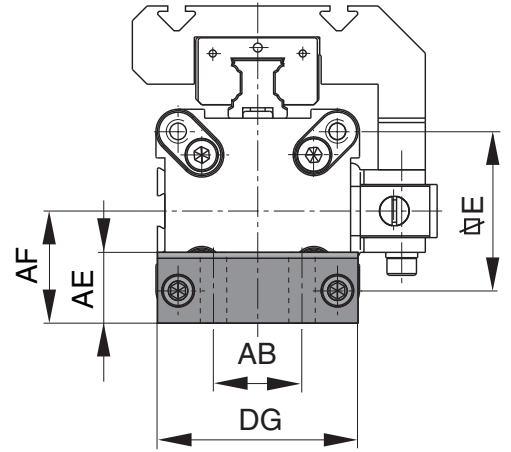
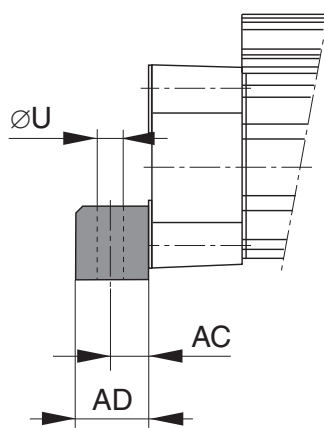
# Mounting elements for rodless cylinders OPL-KF



end cap foot mounting (anodized aluminium)

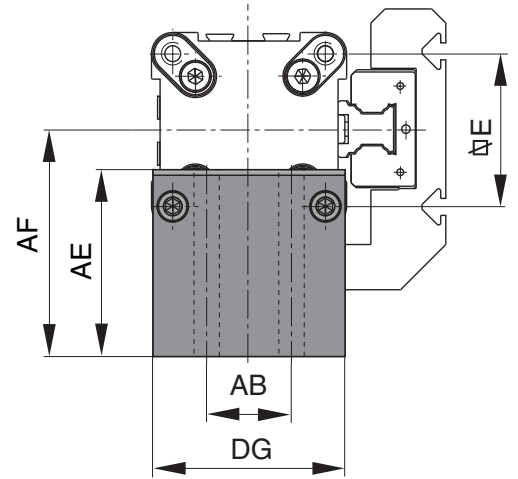
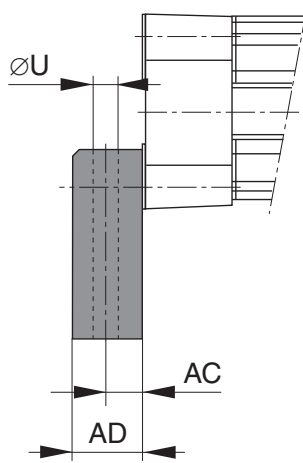
bore	part number
40	<b>4010</b>
50	<b>5010</b>

∅	AE	AF
40	24	38
50	30	48



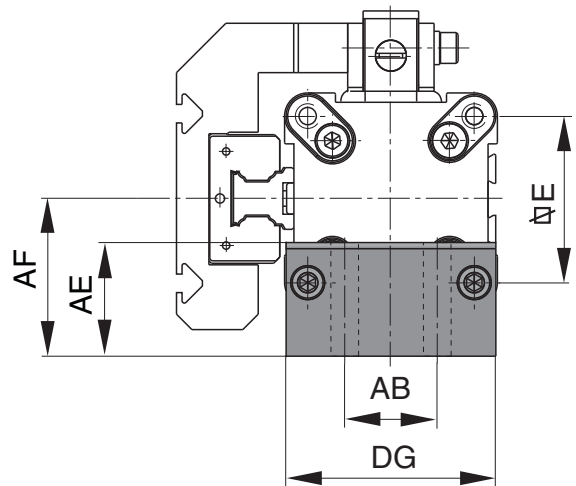
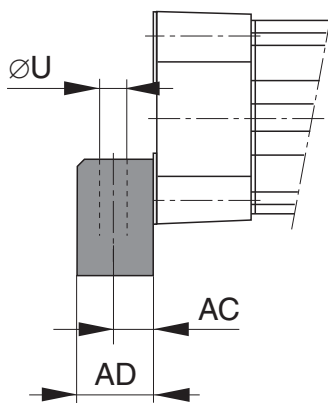
bore	part number
40	<b>20340</b>
50	<b>20350</b>

∅	AE	AF
40	56	70
50	54	72



bore	part number
40	<b>20338</b>
50	<b>20349</b>

∅	AE	AF
40	37	51
50	39	57



Material: anodized aluminium  
Order codes refer to a foot mounting couple.

∅	E	∅U	AB	AC	AD	DG
40	54	9	30	12.5	24	68
50	70	9	40	12.5	24	86



# Mounting elements for rodless cylinders OPL-KF

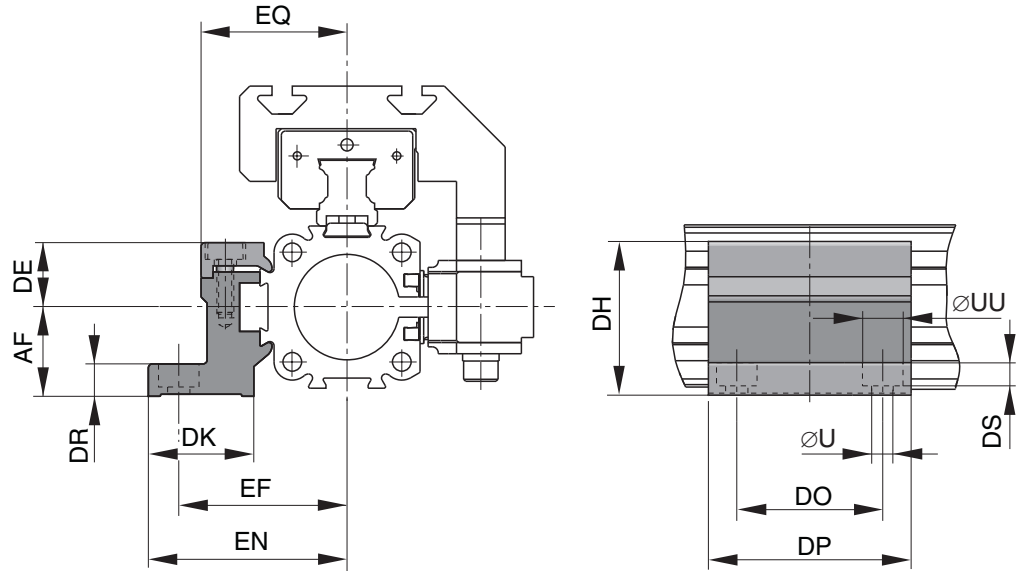


mid support

bore	part number
16	<b>21130</b>
25	<b>21131</b>
32	<b>21132</b>
40	<b>21133</b>
50	<b>21134</b>

∅	AF	DR
16	15	6
25	22	8
32	30	10
40	38	10
50	48	10

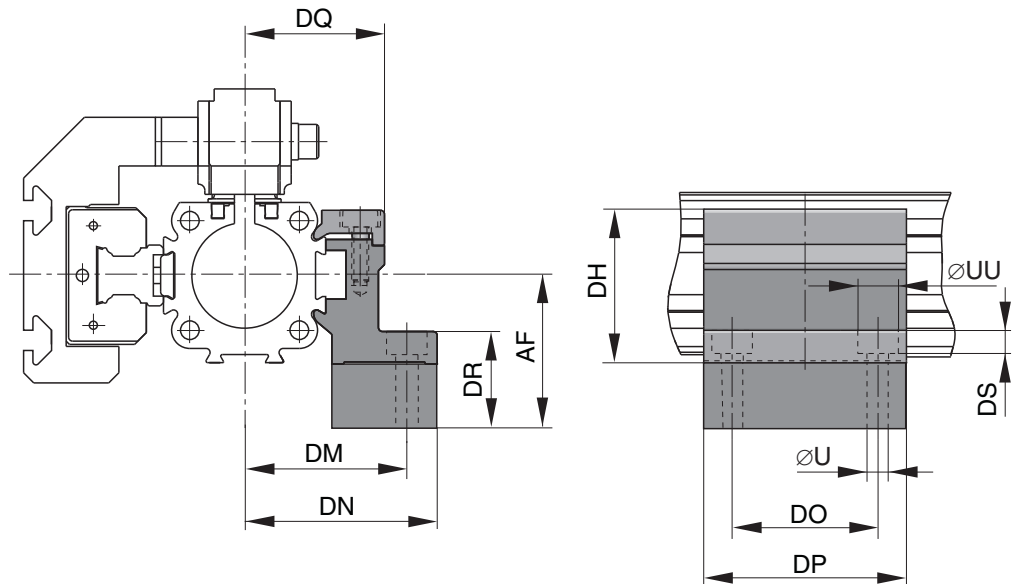
Mounting from above or below using through-screws



bore	part number
16	<b>21142</b>
25	<b>21143</b>
32	<b>21144</b>
40	<b>21145</b>
50	<b>21146</b>

∅	AF	DR
16	30	21
25	37	23
32	44	24
40	51	23
50	57	19

Mounting from above or below using through-screws



∅	∅U	∅UU	DE	DH	DK	DM	DN	DO	DP	DQ	DS	EF	EN	EQ		
16	3.4	6	14.2	29.2	24	32	36.4	18	30	27	3.4	32	36.4	27		
25	5.5	10	16	38	26	40	47.5	36	50	34.5	5.7	41.5	49	36		
32	5.5	10	16	46	27	46	54.5	36	60	40.5	5.7	48.5	57	43		
40	7	-	23	61	34	53	60	45	60	45	-	56	63	48		
50	7	-	23	71	34	59	67	45	60	52	-	64	72	57		

# Mounting elements for rodless cylinders OPL-KF

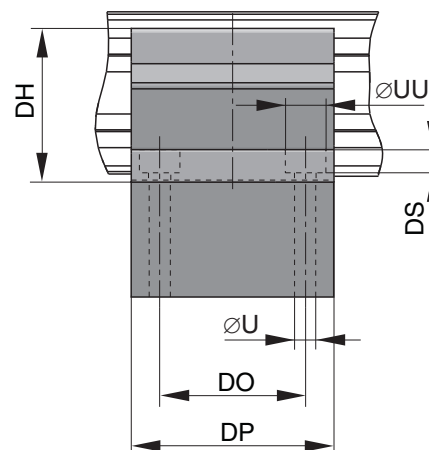
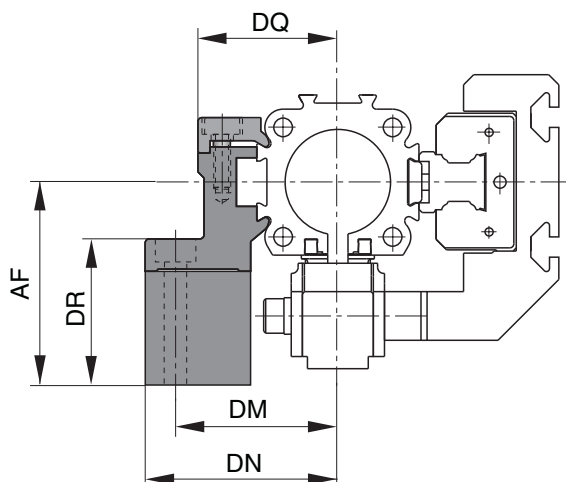


mid support

bore	part number
25	<b>21148</b>
32	<b>21151</b>
40	<b>21150</b>
50	<b>21149</b>

∅	AF	DR
25	49	35
32	65	45
40	70	42
50	72	34

Mounting from above or below using through-screws



Material: anodized aluminium  
For more information about installation, refer to page 529.



∅	∅U	∅UU	DE	DH	DK	DM	DN	DO	DP	DQ	DS	EF	EN	EQ		
16	3.4	6	14.2	29.2	24	32	36.4	18	30	27	3.4	32	36.4	27		
25	5.5	10	16	38	26	40	47.5	36	50	34.5	5.7	41.5	49	36		
32	5.5	10	16	46	27	46	54.5	36	60	40.5	5.7	48.5	57	43		
40	7	-	23	61	34	53	60	45	60	45	-	56	63	48		
50	7	-	23	71	34	59	67	45	60	52	-	64	72	57		

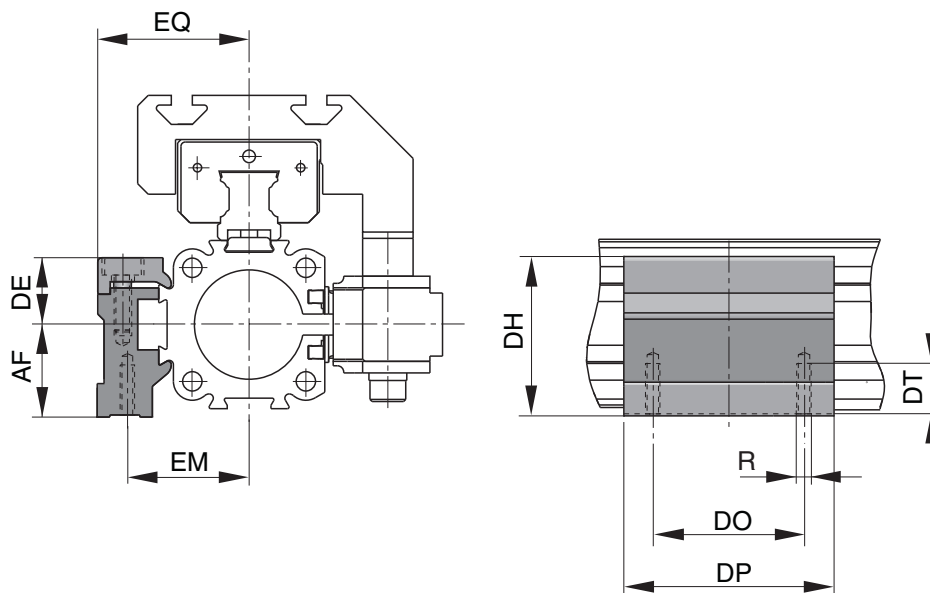
# Mounting elements for rodless cylinders OPL-KF



mid support

bore	part number
16	<b>21125</b>
25	<b>21126</b>
32	<b>21127</b>
40	<b>21128</b>
50	<b>21129</b>

Mounting from below using two threads



6

This element can be mounted also on the underside of the cylinder. In this case its distance from the center of the cylinder is different.

For more information about installation, refer to page 529.



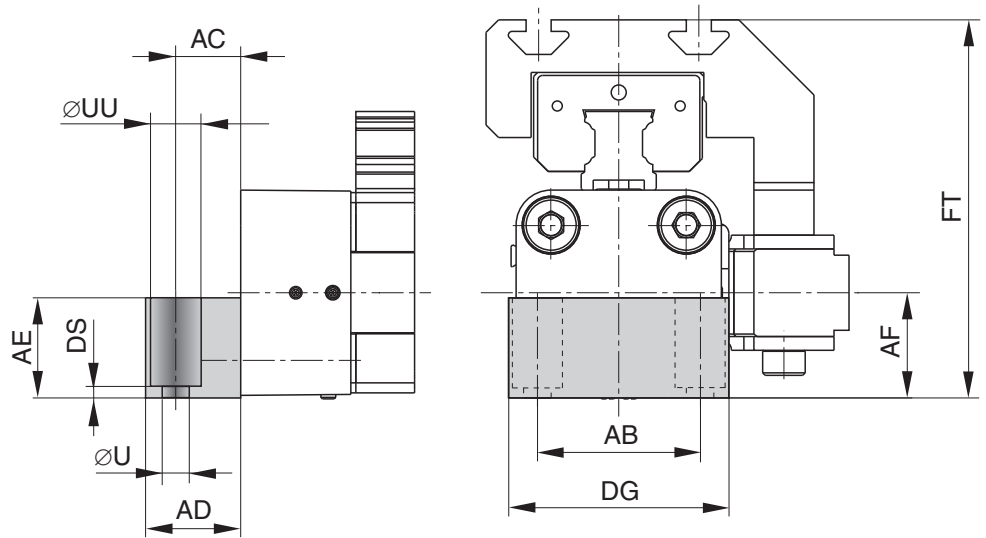
∅	R	AF	DE	DH	DO	DP	DT	EM	EQ						
16	M3	15	14.2	29.2	18	30	6.5	20	27						
25	M5	22	16	38	36	50	10	28.5	36						
32	M5	30	16	46	36	60	10	35.5	43						
40	M6	38	23	61	45	60	11	38	48						
50	M6	48	23	71	45	60	11	45	57						

# Mounting elements for rodless cylinders OPL-KF



end cap foot mounting for cylinder interchangeability

bore	part number
25	<b>21107</b>
32	<b>21108</b>
40	<b>21109</b>
50	<b>21110</b>



Material: anodized aluminium.

Order codes refer to a foot mounting couple.

If the end cap foot mounting is assembled with the cylinder oriented as shown in the drawing, the cylinder is interchangeable with the most part of cylinders in the European market.

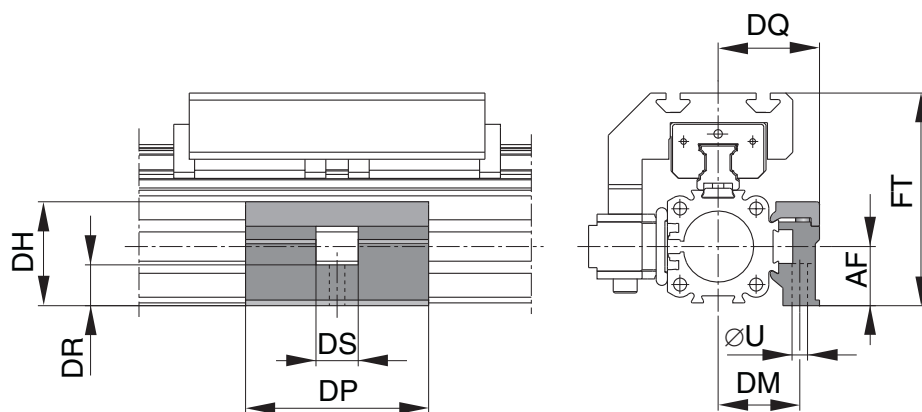
ø	øU	AB	AC	AD	AE	AF	DG	DS	FT	øUU						
25	5.5	32.5	13	19	20	21	44	2	75.5	10						
32	6.6	38	17	24	24	27	52	3	87.5	11						
40	6.6	45	17.5	24	24	35	68	2	104.5	11						
50	9	65	25	35	35	48	86	6	138.5	15						

# Mounting elements for rodless cylinders OPL-KF

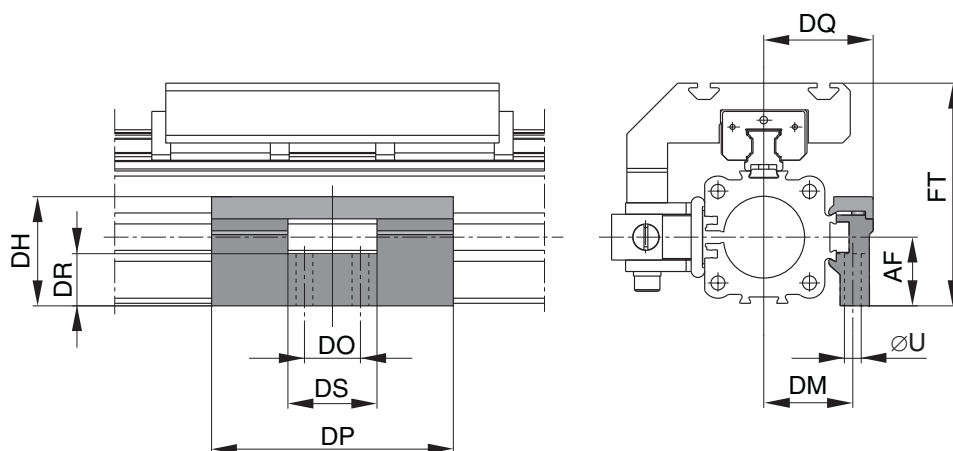


mid support for cylinder interchangeability

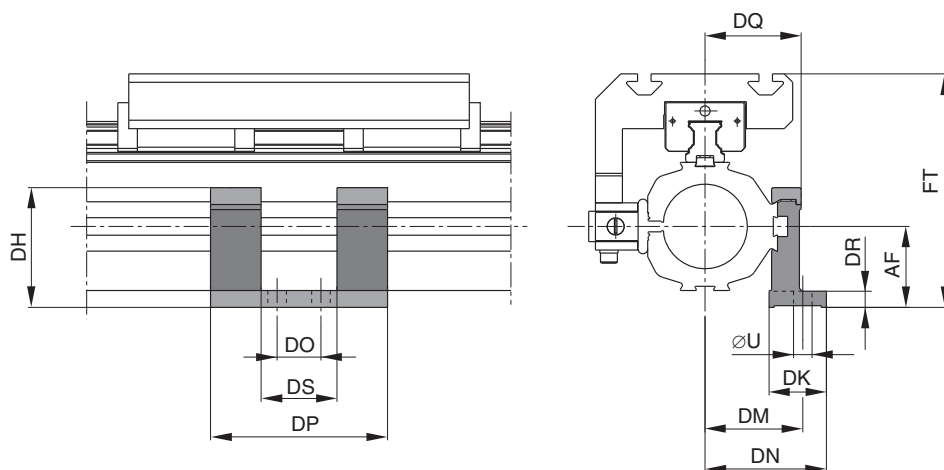
bore	part number
25	<b>21119</b>



bore	part number
32	<b>21120</b>
40	<b>21121</b>



bore	part number
50	<b>21122</b>



Material: anodized aluminium

If the mid support is assembled with the cylinder oriented as shown in the drawing, the cylinder is interchangeable with the most part of cylinders in the European market.

For more information about installation, refer to page 529.

ø	øU	AF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	FT				
25	5.5	21	36.9	-	29	-	-	65	36	14.5	15	75.5				
32	6.6	27	42.9	-	35	-	22	95	43	20.5	35	87.5				
40	6.6	35	58	-	40	-	22	95	48	28.5	35	104.5				
50	11	48	71	34	58	72	26	105	57	10	45	138.5				



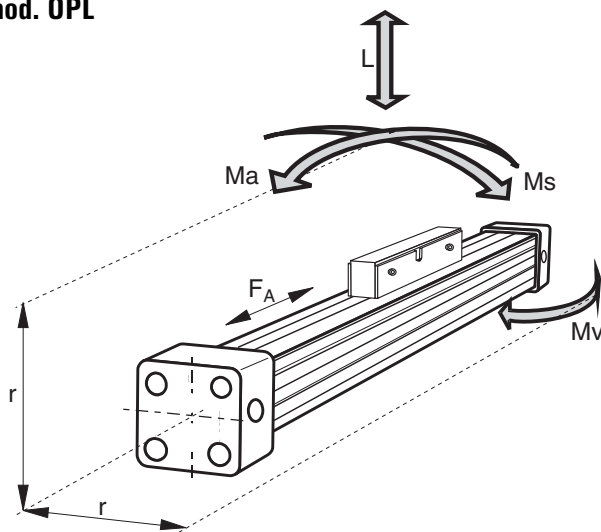
## SIZING OF RODLESS CYLINDERS

To choose appropriate size and type, it is necessary to consider the following elements:

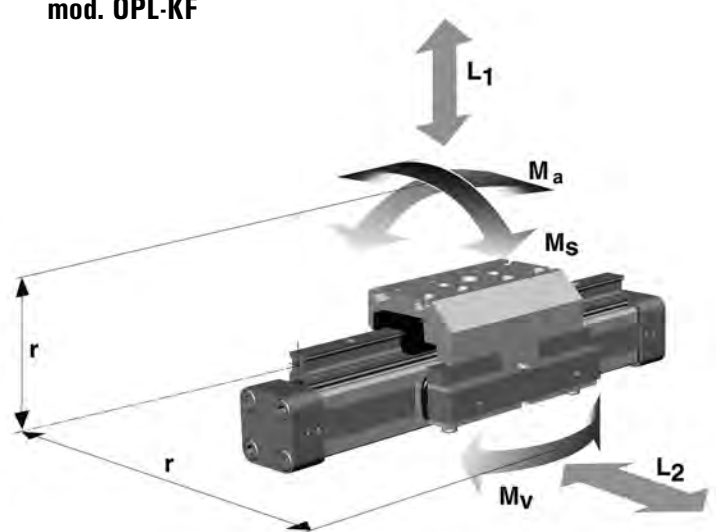
1. Loads, forces and moments
2. Combined load
3. End-stroke pneumatic cushioning
4. Allowable unsupported length - placing of mid supports

## LOADS, FORCES AND MOMENTS

mod. OPL



mod. OPL-KF



$$M = F \cdot r$$

Bending moments are calculated from the center of the cylinder or guide rail (radius  $r$ ), and  $F$  indicates the force.

Cylinder choice and its sizing are selected considering:

- permissible loads, forces and moments;
- performance of the pneumatic end cushions. A fundamental aspect to evaluate is the mass to be cushioned and the piston speed at start of cushioning (unless external cushioning is used, e.g. hydraulic shock absorbers).

The following table gives the maximum values for light, shock-free operation, which must not be exceeded.

Load and moment data refer to a speed of 0.2 m/s for series OPL, and to the speed indicated in the table for series OPL-KF.

The theoretical values of action force are the same both for series OPL and OPL-KF.

To achieve a fully controlled movement and good force margins, we recommend to utilize 50% of the theoretical action forces.

model	bore	theoretical action force at 6 bar (87 PSI) [N]	real action force at 6 bar (87 PSI) [N]	maximum load [N]	maximum moment [Nm]		
		F	F <sub>a</sub>	L	M <sub>a</sub>	M <sub>s</sub>	M <sub>v</sub>
<b>OPL</b>	16	120	78	120	4	0.3	0.5
	25	295	250	300	15	1	3
	32	483	420	450	30	2	5
	40	754	640	750	60	4	8
	50	1178	1000	1200	115	7	15
	63	1870	1550	1650	200	8	24
	80	3016	2600	2400	360	16	48

model	bore	maximum speed [m/s]	maximum load [N]		maximum moment [Nm]		
		v	L <sub>1</sub>	L <sub>2</sub>	M <sub>a</sub>	M <sub>s</sub>	M <sub>v</sub>
<b>OPL-KF</b>	16	3	1000	1000	25	12	25
	25	5	3100	3100	90	35	90
	32	5	3100	3100	133	44	133
	40	3	7100	4000	346	119	346
	50	5	7500	4000	480	170	480

## STROKE LENGTH

The stroke length of OPL cylinders can be chosen up to 5500 mm; for OPL-KF type the maximum stroke is 3700 mm. Longer strokes on request.

## TOLERANCES

total length of cylinder barrel	cylinder bore						
	16	25	32	40	50	63	80
0 ... 1000 mm	+1.8 -0	+1.8 -0	+1.8 -0	+1.8 -0	+1.8 -0	+1.8 -0	+1.9 -0
1001 ... 2000 mm	+1.9 -0	+1.9 -0	+1.9 -0	+1.9 -0	+1.9 -0	+1.9 -0	+2 -0
2001 ... 4000 mm	+2.1 -0	+2.1 -0	+2.1 -0	+2.1 -0	+2.1 -0	+2.1 -0	+2.2 -0
4001 ... 6000 mm	+2.3 -0	+2.3 -0	+2.3 -0	+2.3 -0	+2.3 -0	+2.3 -0	+2.4 -0
> 6000 mm	+2.8 -0	+2.8 -0	+2.8 -0	+2.8 -0	+2.8 -0	+2.8 -0	+2.9 -0

## COMBIMATE LOADINGS

The maximum allowable loads and moments can be found in the tables above. Before using the cylinder, the following inequation must be fulfilled replacing the corresponding values of loading and moments. The tables show the maximum loads and moments for a light and shock-free operation, which must never be exceeded. The mass of the carriage has to be added to the total moving mass.

$$\frac{L_1}{L_1(\max)} + \frac{L_2}{L_2(\max)} + \frac{M_a}{M_a(\max)} + \frac{M_s}{M_s(\max)} + \frac{M_v}{M_v(\max)} \leq 1$$

## Cylinder weight

type	bore	cylinder weight - stroke 0	additional weight per 100 mm of stroke	carriage weight*
<b>OPL</b>	16	0.25 kg	0.1 kg	-
	25	0.74 kg	0.197 kg	-
	32	1.62 kg	0.354 kg	-
	40	2.10 kg	0.415 kg	-
	50	3.74 kg	0.566 kg	-
	63	6.12 kg	0.925 kg	-
	80	12.42 kg	1.262 kg	-
<b>OPL-KF</b>	16	0.558 kg	0.21 kg	0.228 kg
	25	1.522 kg	0.369 kg	0.607 kg
	32	2.673 kg	0.526 kg	0.896 kg
	40	4.167 kg	0.701 kg	1.531 kg
	50	7.328 kg	0.936 kg	2.760 kg

\* Carriage weight must be added to the load weight to calculate forces and moments and to estimate the end-stroke pneumatic cushioning (see diagram).

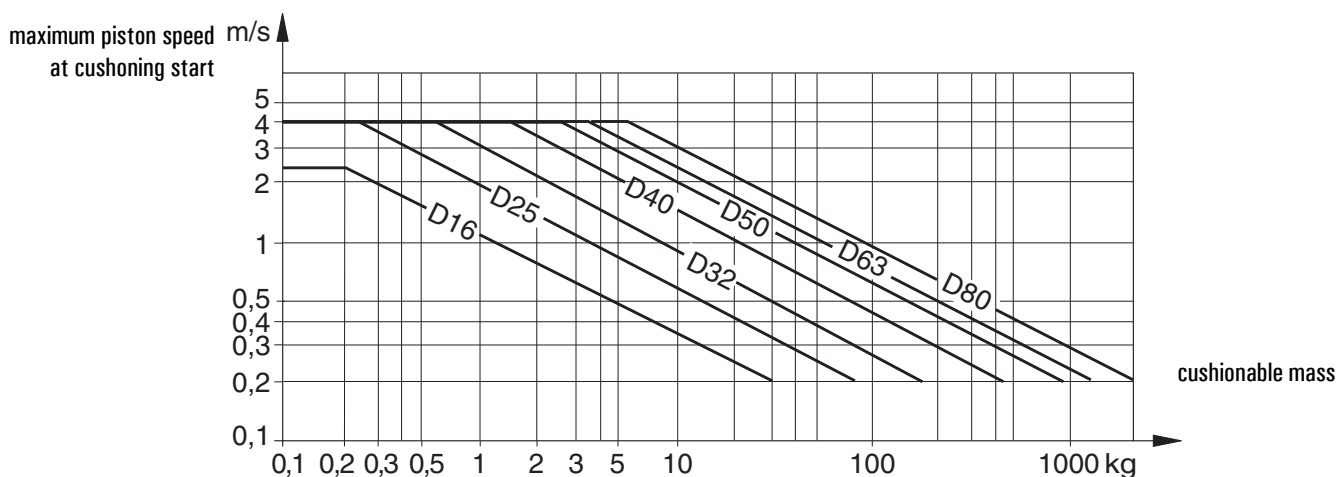
## END-STROKE PNEUMATIC CUSHIONING

Calculate your expected moving mass (the mass of the carriage has to be added to the total moving mass) and find the maximum permissible speed at start of cushioning.

Alternatively, take your desired speed and expected mass and find the cylinder size required. Please note that piston speed at start of cushioning is typically ca. 50% higher than the average speed, and this higher speed determines the choice of cylinder. If the permitted limit values are exceeded, additional shock absorbers should be fitted in the area of the centre of mass.

## Cushion length

bore	cushion length
16	11 mm
25	17 mm
32	20 mm
40	27 mm
50	30 mm
63	32 mm
80	39 mm

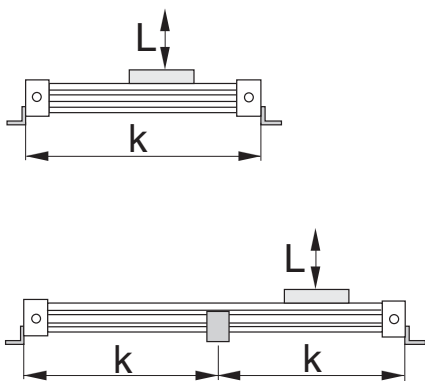


## MID-SECTION SUPPORTS

To avoid excessive bending and oscillation of the cylinder, mid-section supports have to be collocated at specific distances. The diagrams show the maximum possible length (not the stroke!), depending on the load, without mid-section support and between two supports. Bending up to max. 0.5 mm is permissible between supports. The mid-section supports are clamped onto the cylinder profile and they can also help to support axial forces. Anyway, for speeds  $v > 0.5$  m/s the free distance should not be more than 1 meter.

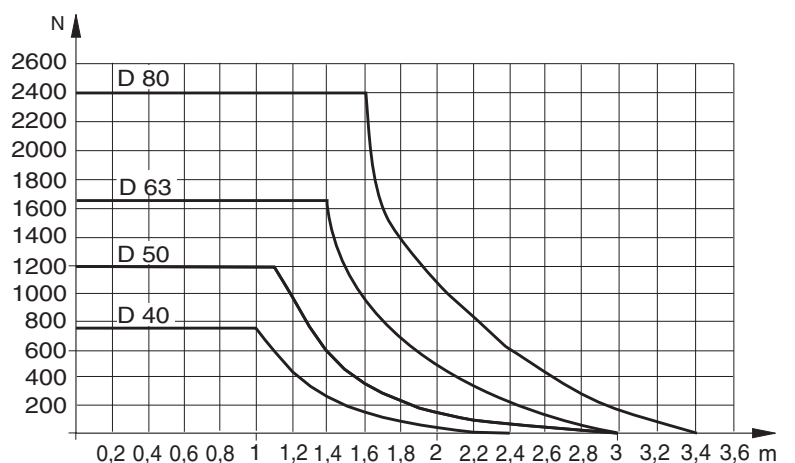
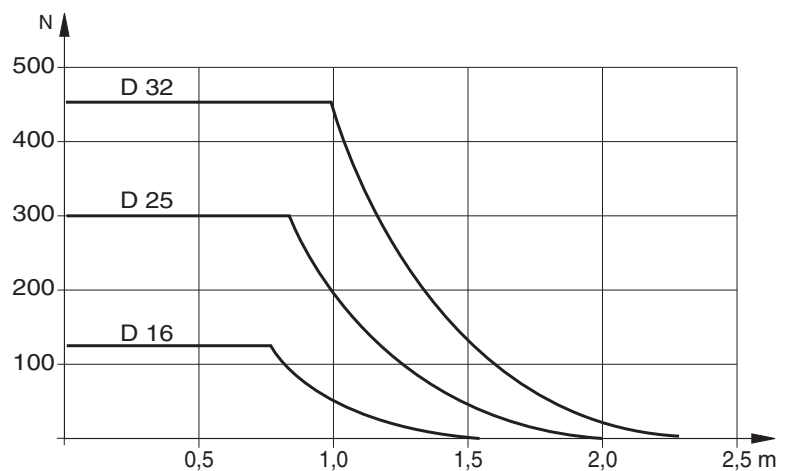
For the series OPL-KF two graphics are given: one should be used if the cylinder is positioned according to drawing 1, the other one if the cylinder is positioned according to drawing 2.

For types and dimensions of mid-section supports see previous pages.



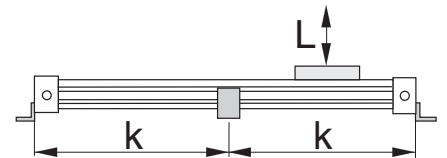
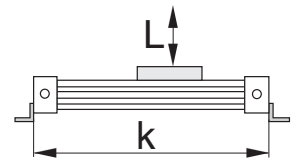
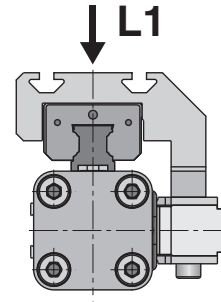
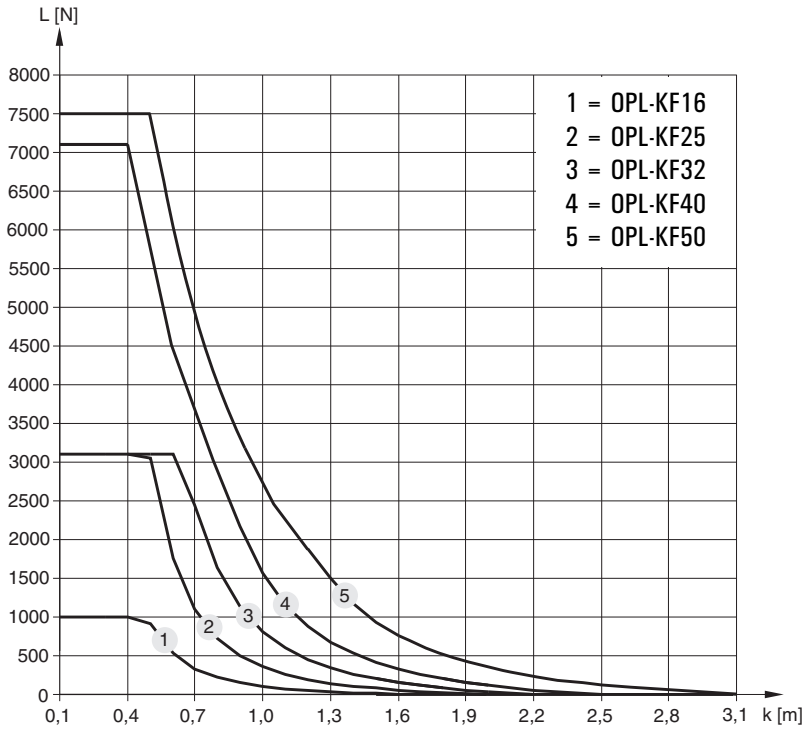
$k$  = maximum allowable distance between mountings and/or mid-section supports, related to a given load ( $L$ ).

## OPL SERIES

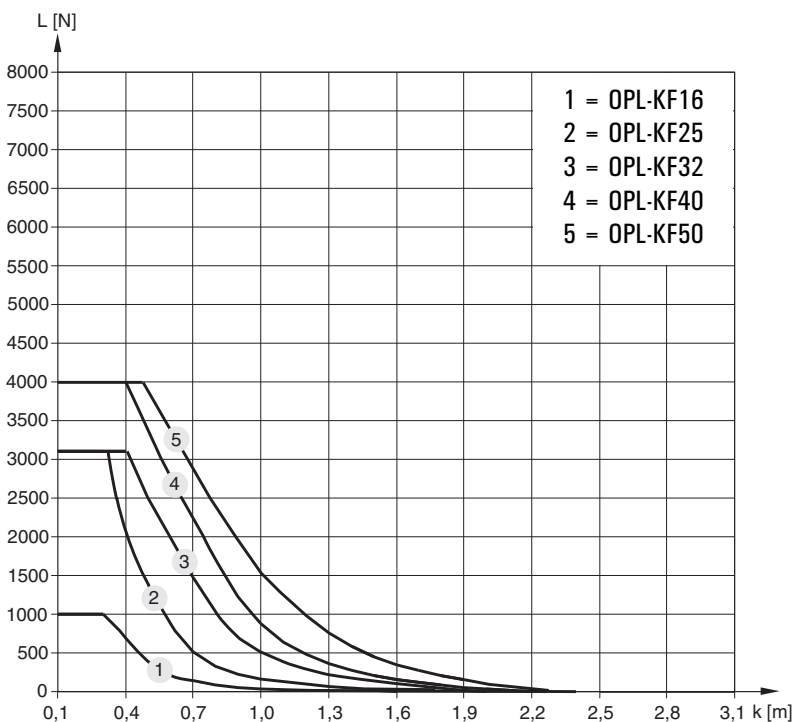


## MID-SECTION SUPPORTS OPL-KF SERIES

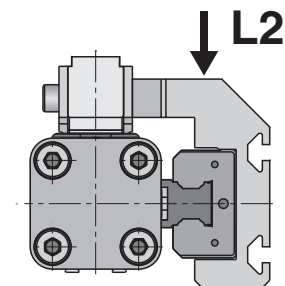
### CARRIAGE IN UN POSITION



### CARRIAGE IN SIDE POSITION



k = maximum allowable distance between mountings and/or mid-section supports, related to a given load (L).



## Materials

Cylinder profile, piston: anodized aluminium

End caps: aluminium

Seals: NBR

Guide rings: plastic material

Slide shoes: plastic material

Sealing bands: corrosion resistant steel

Screws, nuts: galvanized steel

Mountings: galvanized steel and aluminium

External guide rail                      Guideway: hardened steel

## Corrosive environments

Stainless steel screws can be supplied as option (not for version OPL-KF).

## Ambient temperature range

Standard version: - 10°C ... + 80°C

## Supply air treatment

Operating pressure: max 8 bar (116 PSI)

Medium: 50µ filtered and dried compressed air

The cylinders are grease lubricated, additional oil mist lubrication is normally not required. If oil mist lubrication is present, it must be present all the time and never interrupted.

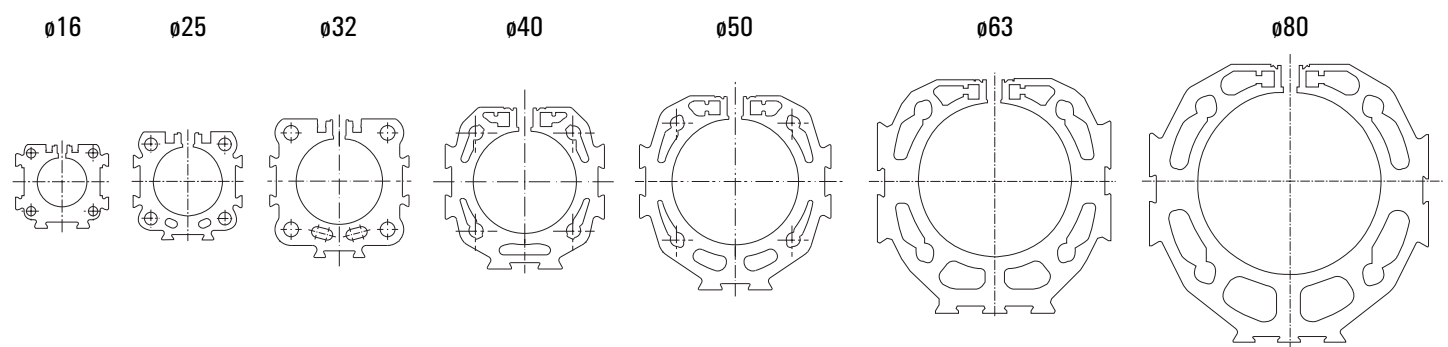
## Maintenance

Lifetime: 6000 km in standard condition and perfect maintenance. After that, the cylinder can be very easily renewed with a service-package which contains all necessary spare parts.

In normal operating environments we recommend to periodically check and, if necessary, re-lubricate the external guide rail of the cylinder (OPL-KF). Sufficient grease must be always present in the carriages; check that a grease film is visible on the running surface of the guide rail.

To prevent contamination such as fluid ingress, avoid direct spraying toward the outer sealing band. The guide way should always be re-lubricated after any cleaning.

## Barrel profile



## Speed related versions

Standard version of the cylinder is designed for piston speeds from 0.2 m/s to 5.0 m/s.

### Slow speed option

Specially formulated grease lubrication facilitates slow, smooth and uniform piston travel in the speed range below 0.2 m/s.

This slow speed version is available on request.

Minimum speed with special grease 0.005 m/s.

### High speed option

For speeds exceeding 5.0 m/s please contact our commercial office.

## Installation instructions

Use the threaded holes in the end caps to install the cylinder.

Check if mid supports are needed. At least one end cap must be secured to prevent axial sliding when mid support is used.

The cylinder can be installed in any position. To prevent contamination such as fluid ingress, the cylinder should be installed with its sealing band facing downwards.

## Start up

The products in this data sheet should not be operated until the machine/application in which they are used has passed necessary inspection according to law regulations.

Important: in case of electric arc welding in the area next to the cylinder or on the machine where the cylinder is installed, the cylinder must be insulated and removed. Otherwise the welding causes permanent damage to the cylinder and the warranty expires.

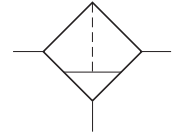


	page
• Filter-water-separators .....	540
• Sub-micro-filters .....	544
• Activated carbon filters .....	552
• Pressure regulators .....	554
• Lubricators .....	557

# G1/4"-G1/2" filter-water-separator



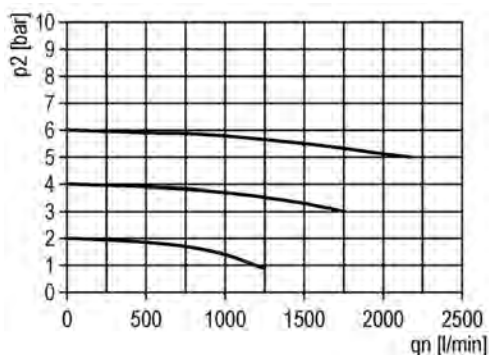
- Cyclone system and filter element
- Moisture separation: 95%
- Semi-automatic moisture exhaust
- Vertical installation; bracket on request
- Bowl protection already mounted



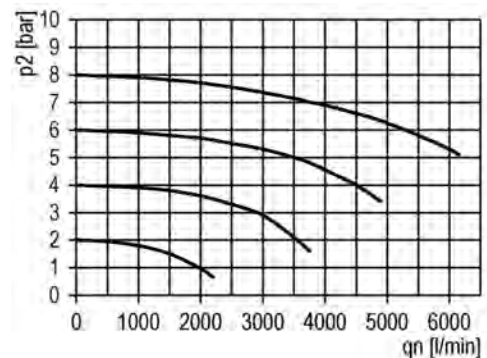
ORDER CODE		FIL 2K-05-S	FIL 4K-05-S
Ports		G1/4"	G1/2"
Moisture exhaust		semi-automatic	semi-automatic
Temperature range		0 ... +50°C (122° F)	0 ... +50°C (122° F)
Weight		0.25 kg	0.4 kg
Operating pressure range	$P_{min}$ $P_{max}$	1.5 bar (21.7 PSI); 0.15 MPa 16 bar (232 PSI); 1.6 MPa	1.5 bar (21.7 PSI); 0.15 MPa 16 bar (232); 1.6 MPa
Maximum flow rate	$Q_{max}$ $p = 6.3 \text{ bar (91.4 PSI)}; \Delta p = 1 \text{ bar (14 PSI)}$	2000 NI/min (2.12 Cv)	3500 NI/min (3.71 Cv)
Filter element		5 $\mu\text{m}$	5 $\mu\text{m}$

## Flow characteristics

G1/4"



G1/2"

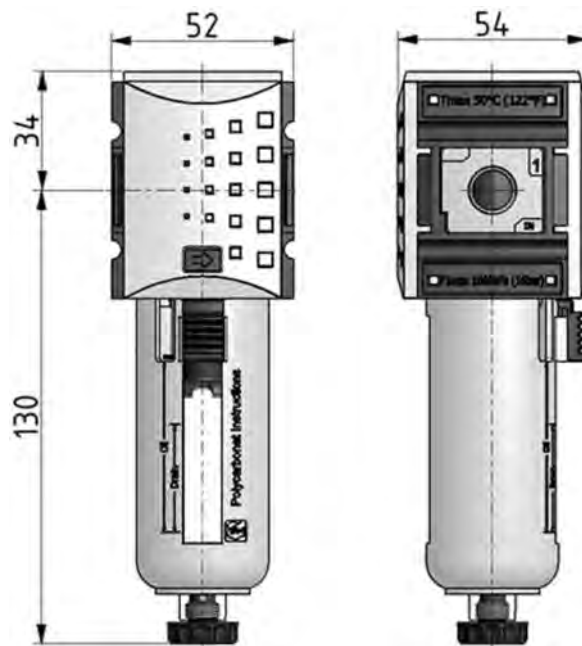




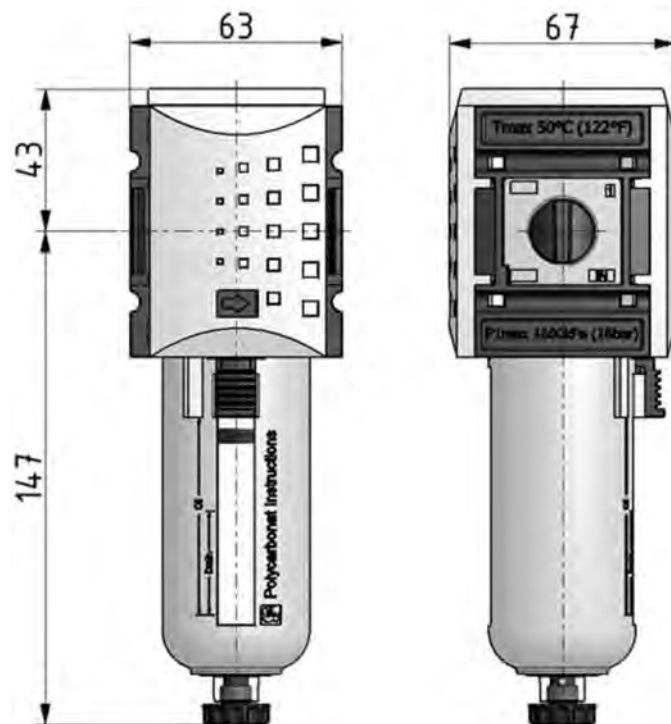
# G1/4"-G1/2" filter-water-separator



## FIL 2K-05-S



## FIL 4K-05-S



### Materials

Body: technopolymer

Seals: NBR

Internal parts: brass and stainless steel

Internal bowl: polycarbonate

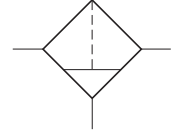
Bowl protection: polyamide

Mounting bracket is bought separately.

# G1/4"-G1/2" sub-micro-filters



- Special filter elements with very high performances
- Degree of filtration: 99.999%
- Residual oil: 0.01 mg/m<sup>3</sup> (input concentration: 3 mg/m<sup>3</sup>)
- Vertical installation
- Bowl protection already mounted



## Materials

Body: technopolymer

Seals: NBR

Internal parts: brass and stainless steel

Internal bowl: polycarbonate

Bowl protection: polyamide

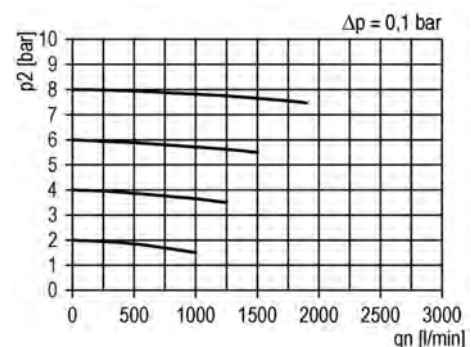
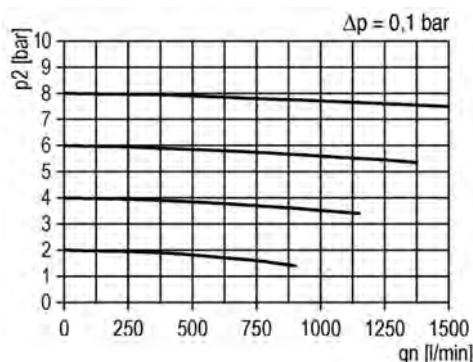
Mounting bracket is bought separately.

ORDER CODE		MFIL 2K-S	MFIL 4K-S
Ports		G1/4"	G1/2"
Temperature range		0 ... +50°C (122° F)	0 ... +50°C (122° F)
Weight		0.29 kg	0.44 kg
Operating pressure range	$P_{min}$ $P_{max}$	1.5 bar (21.7 PSI); 0.15 MPa 16 bar (232 PSI); 1.6 MPa	1.5 bar (21.7 PSI); 0.15 MPa 16 bar (232 PSI); 1.6 MPa
Recommended flow rate $p = 6 \text{ bar (87 PSI) a } 25 \text{ m/s}$	$Q_n$	350 NI/min (0.37 Cv)	450 NI/min (0.48 Cv)
Pressure drop with new filter element		0.1 bar (1.45 PSI)	0.1 bar (1.45 PSI)
Pressure drop with saturated filter element		0.3 bar (4.35 PSI)	0.3 bar (4.35 PSI)

G1/4"

Flow characteristics

G1/2"



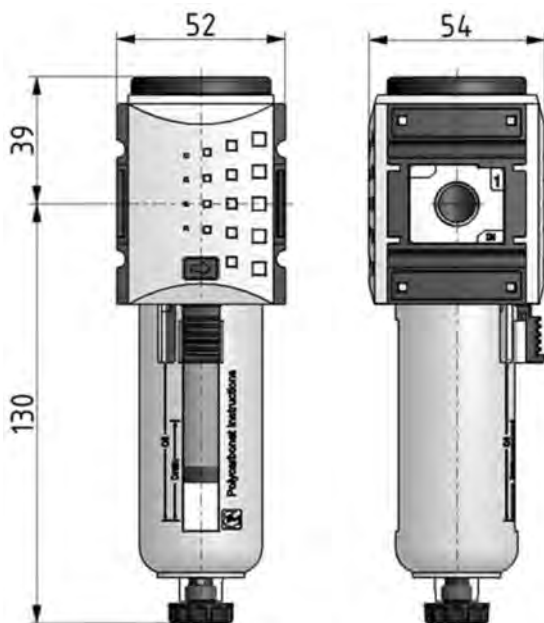
# G1/4"-G1/2" sub-micro-filters



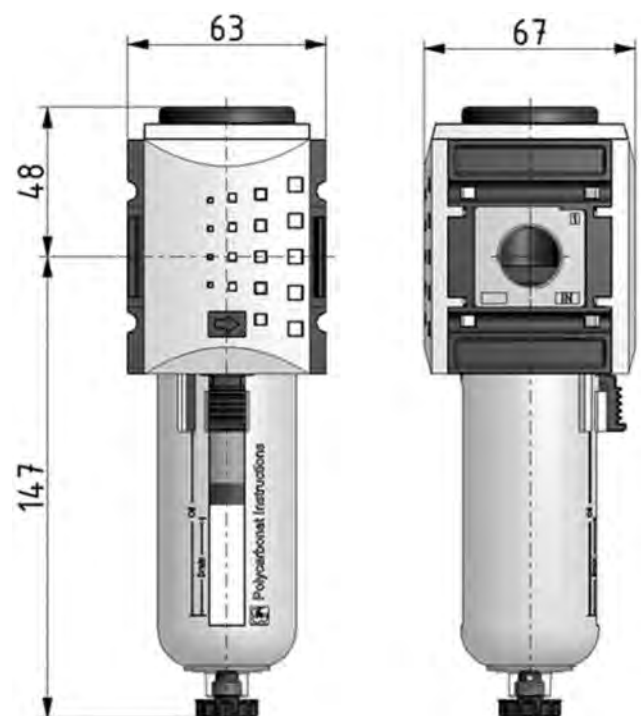
## Installation procedure

To increase the life span of the filter elements, we recommend the installation in the following order: filter with 5  $\mu$ m degree, sub-micro-filter and activated carbon filter.

**MFIL 2K-S**



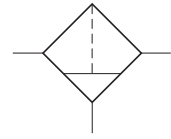
**MFIL 4K-S**



# G1/4"-G1/2" activated carbon filters



- Activated carbon filter elements
- Residual oil: 0.003 p.p.m. in combination with sub-micro-filter
- Vertical installation
- Bowl protection already mounted



## Materials

Body: technopolymer

Seals: NBR

Internal parts: brass and stainless steel

Internal bowl: polycarbonate

Bowl protection: polyamide

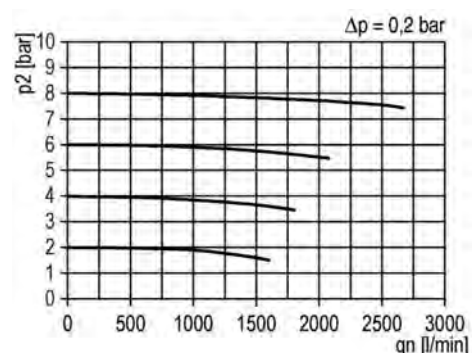
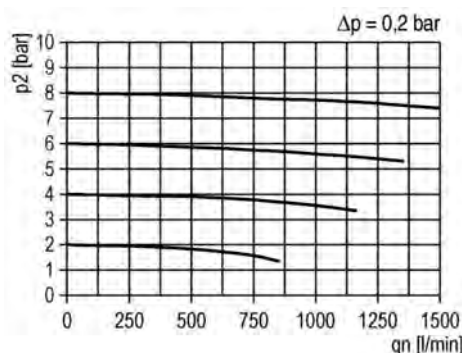
Mounting bracket is bought separately.

ORDER CODE		CFIL 2K-S	CFIL 4K-S
Ports		G1/4"	G1/2"
Temperature range		0 ... +50°C (122° F)	0 ... +50°C (122° F)
Weight		0.26 kg	0.42 kg
Operating pressure range	$P_{min}$ $P_{max}$	0 bar (0 PSI); 0 MPa 16 bar (232 PSI); 1.6 MPa	0 bar (0 PSI); 0 MPa 16 bar (232 PSI); 1.6 MPa
Recommended flow rate $p = 6 \text{ bar (87 PSI) at } 25 \text{ m/s}$	$Q_n$	500 NI/min (0.53 Cv)	1600 NI/min (1.69 Cv)
Pressure drop with new filter element		0.1 bar (1.45 PSI)	0.1 bar (1.45 PSI)
Pressure drop with saturated filter element		0.3 bar (4.35 PSI)	0.3 bar (4.35 PSI)

G1/4"

Flow characteristics

G1/2"



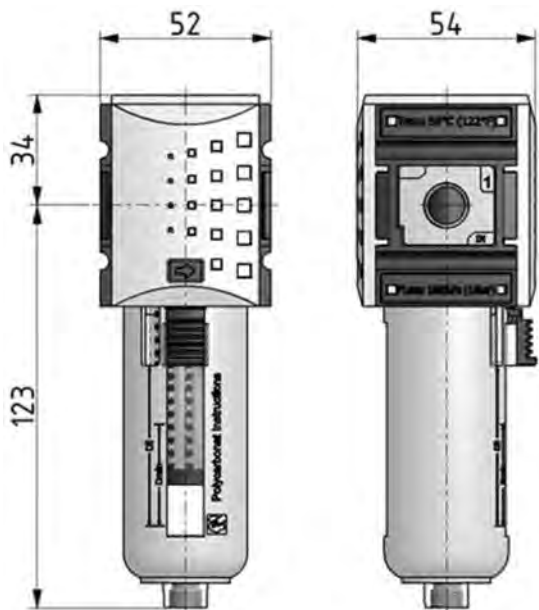
# G1/4"-G1/2" activated carbon filters



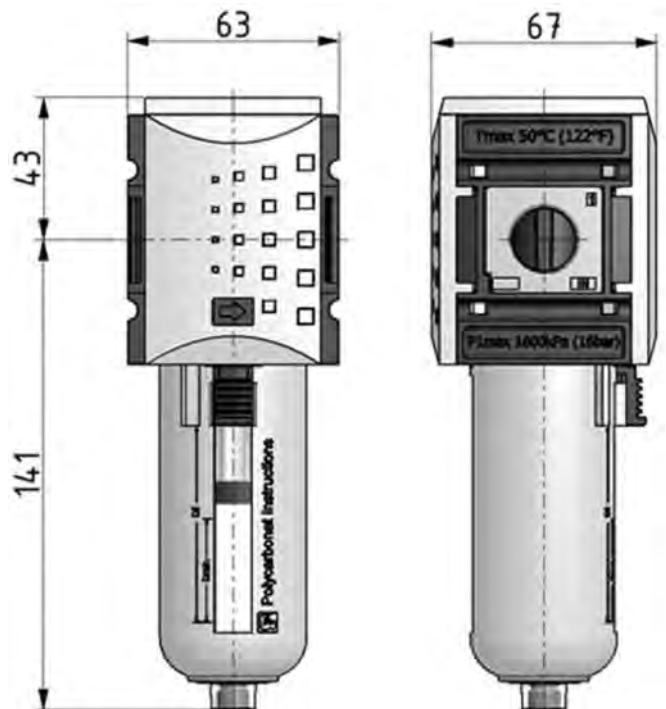
## Installation procedure

To increase the life span of the filter elements, we recommend the installation in the following order: filter with 5  $\mu$ m degree, sub-micro-filter and activated carbon filter.

**CFIL 2K-S**



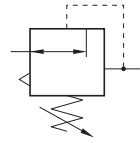
**CFIL 4K-S**



# G1/4"-G1/2" pressure regulator

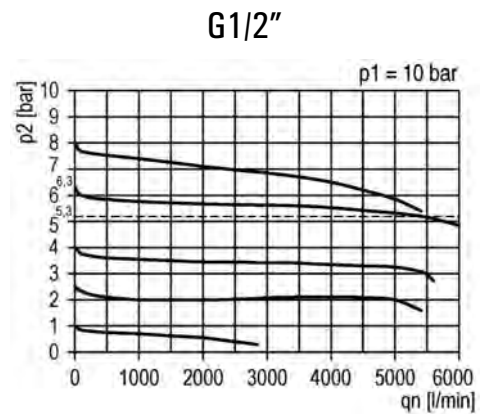
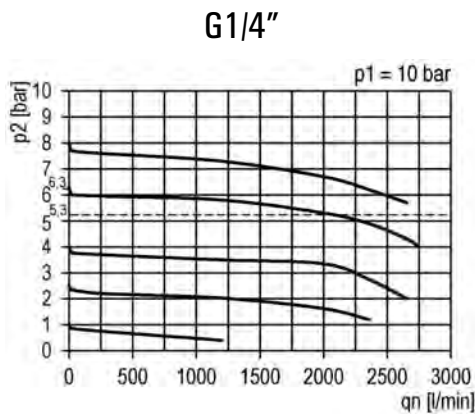


- Riaphragm-type pressure regulator with relieving
- Self-compensated regulation
- In-line or panel mounting; bracket on request

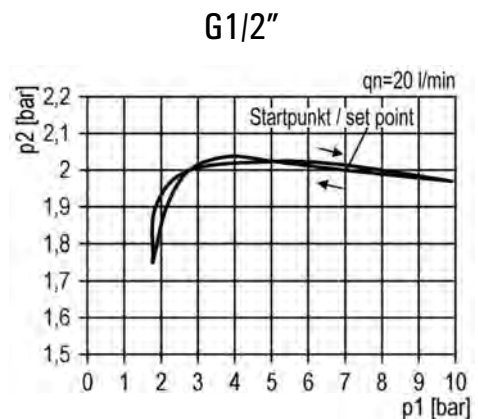
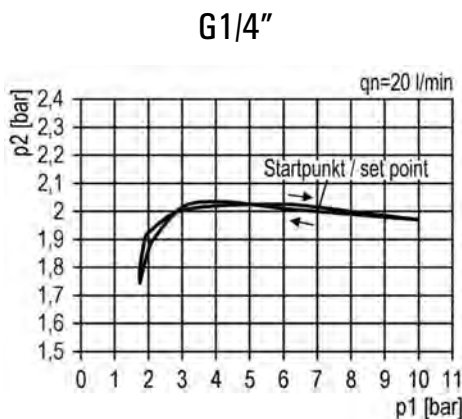


ORDER CODE		REG 2K-08	REG 4K-08
Ports		G1/4"	G1/2"
Temperature range		0 ... +50°C (122° F)	0 ... +50°C (122° F)
Weight		0.3 kg	0.5 kg
Inlet pressure range	$p_{1 \text{ min}}$ $p_{1 \text{ max}}$	0 bar (0 PSI); 0 MPa 16 bar (232 PSI); 1.6 MPa	0 bar (0 PSI); 0 MPa 16 bar (232 PSI); 1.6 MPa
Outlet pressure range	$p_{2 \text{ min}}$ $p_{2 \text{ max}}$	0 bar (0 PSI); 0 MPa 8 bar (116 PSI); 0.8 MPa	0 bar (0 PSI); 0 MPa 8 bar (116 PSI); 0.8 MPa
Maximum flow rate	$q_{\text{max}}$ $p = 6.3 \text{ bar (91.4 PSI)}; \Delta p = 1 \text{ bar (14 PSI)}$	2200 NI/min (2.34 Cv)	5100 NI/min (5.41 Cv)

Flow characteristics



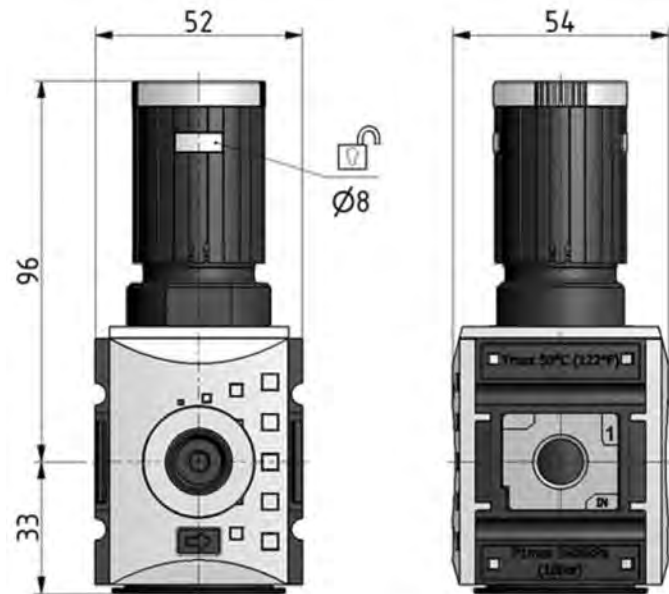
Hysteresis



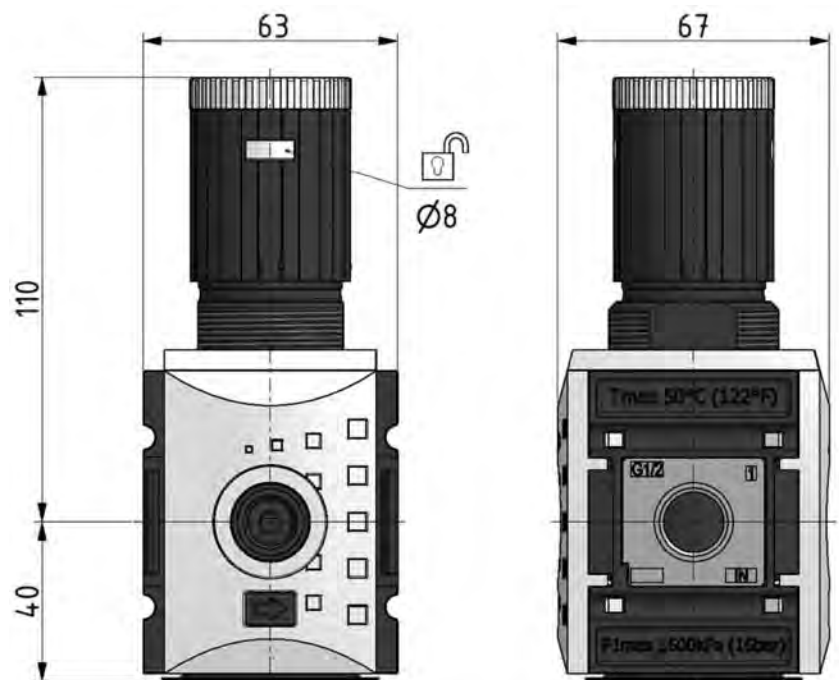
# G1/4"-G1/2" pressure regulator



## REG 2K-08



## REG 4K-08



### Materials

Body: technopolymer

Seals: NBR

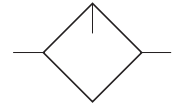
Internal parts: brass and stainless steel

Mounting bracket is bought separately.

# G1/4"-G1/2" lubricator

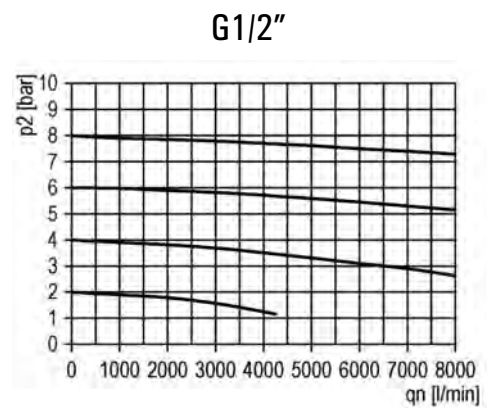
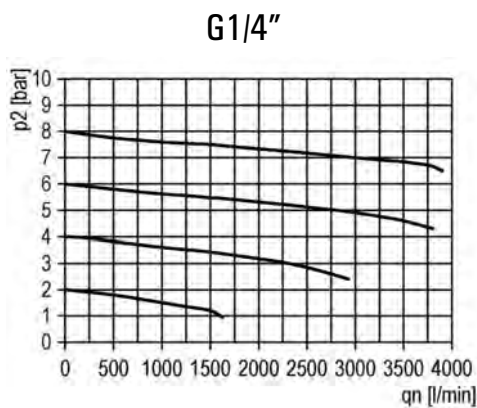


- Oil mist lubricator with flow compensation
- Manual oil refilling, possible also in presence of pressure
- Vertical installation; bracket on request
- Bowl protection already mounted
- Bowl capacity: 40 cm<sup>3</sup> (G1/4"); 80 cm<sup>3</sup> (G1/2")

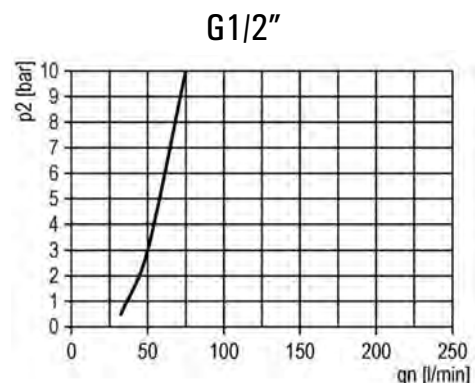
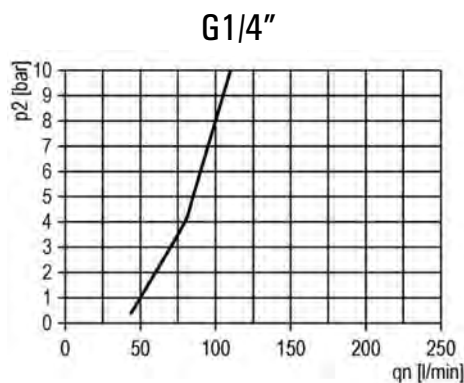


ORDER CODE		LUB 2K-00	LUB 4K-00
Ports		G1/4"	G1/2"
Temperature range		0 ... +50°C (122° F)	0 ... +50°C (122° F)
Weight		0.28 kg	0.42 kg
Operating pressure range	$P_{min}$ $P_{max}$	1.5 bar (21.8 PSI); 0.15 MPa 16 bar (232 PSI); 1.6 MPa	1.5 bar (21.8 PSI); 0.15 MPa 16 bar (232 PSI); 1.6 MPa
Maximum flow rate	$Q_{max}$ $p = 6.3 \text{ bar (91.4 PSI)}; \Delta p = 1 \text{ bar (14 PSI)}$	2800 NI/min (2.97 Cv)	8000 NI/min (8.5 Cv)

Flow characteristics



Oil/air ratio

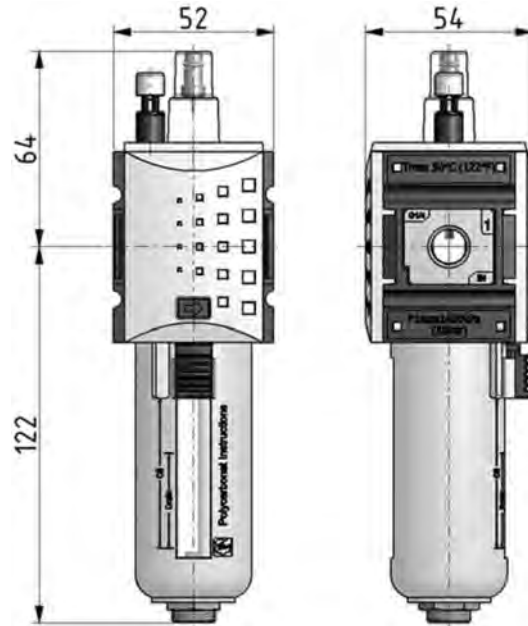




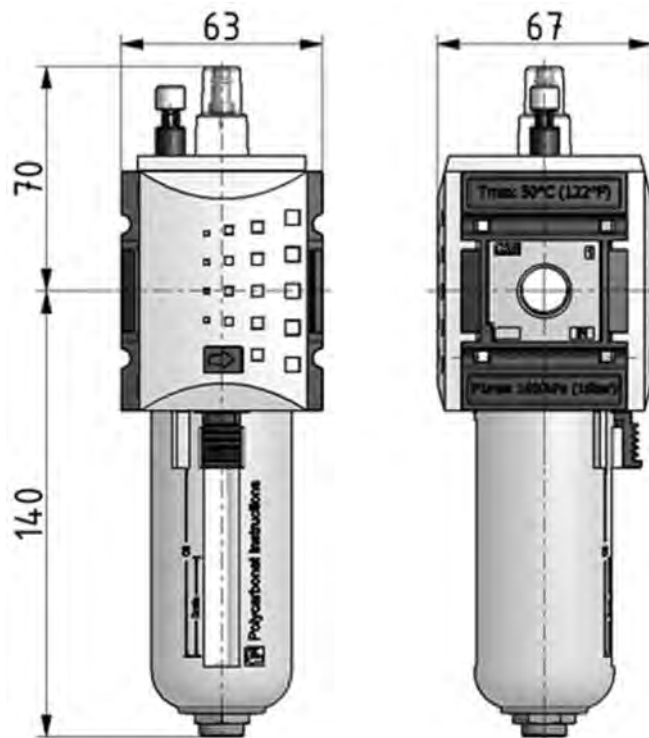
# G1/4"-G1/2" lubricator



## LUB 2K-00



## LUB 4K-00



### Materials

Body: technopolymer

Seals: NBR

Internal parts: brass and stainless steel

Internal bowl: polycarbonate

Bowl protection: polyamide

Mounting bracket is bought separately.



A series of horizontal lines for writing notes, spanning the width of the page.

7