

General

These are 2 stage valves actuated electro-pneumatically. A serie 300 directly operated solenoid valve actuates pneumatically the principal power distributor. This integrated system allows configurations of systems requiring very little space. The pilot air is normally taken from the inlet port (autofeed) and the only actuating signal is electric.

The range of the solenoid valves, as far as dimensions and mechanical construction, is similar to series 200. We have therefore solenoid valves G 1/8", G 1/4", G 1/2" and G 1" with identical pneumatic characteristics that are, however, actuated electrically. They have a balanced spool, insensitive to presence or absence of pressure. They are constructed in 3 and 5 way with 1 solenoid (monostable) or 2 solenoids (bistable) and also 5 ways 3 positions with closed centres, open centres and pressured centres.

It should be noted that the autofeed of the electric pilot requires always inlet through port 1 and if a 3 ways normally open configuration is desired, it is necessary to switch the operators.

In the tables showing individual valves, the quick reference tables show the output in NI/min at a inlet pressure of 6 bar and a pressure drop of 1 bar. All information was obtained using standards CETOP RP 50P.

Solenoid valves G 1/8" and G 1/4" can be equipped with microsolenoids as well as standard solenoids and they can be mounted in line or in 90 degrees on distributors. Please note that while the microsolenoid can be mounted in any direction, standard solenoid requires mounting as indicated in the photographs and diagrams.

The order codes pertain only to the solenoid valve with mechanical actuator "M2" or solenoid "S" already assembled (see Series 300, section 1). (M2 coils are not included and have to be ordered separately).

Coils for M2 and solenoids "S"  homologated are available (see 300 Series).

The polyurethane seals are available for oil free operation. In this case, the ordering code becomes :
438...S5 and 478...M2 for G 1/8" - 434...S5 and 474...M2 for G 1/4" 432...S5 for G 1/2"

Important: on this type of valves a temperature higher then 40°C along with water or high humidity are causing a progressive reduction of mechanical characteristics of the seals. This chemical reaction (hydrolysis) duration dependas by the ambient temperature and in some cases the seal becomes brittle and falls to pieces.

The valves equipped with polyurethane seals are not suitable for tropical climate.

Construction characteristics

Body	Anodized aluminium alloy
Operators	Anodized aluminium alloy Polyacetal for spring botton plate G 1/8", G1/4", G 1/2" and aluminium for G 1"
Spools	Hardened nickel plated steel
Seals	Nitrile rubber (NBR) oil resistant Polyurethane compound for oil free applications G 1/8", G 1/4" and G 1/2"
Spacers	Polyacetal (aluminium for G 1")
Spring	Stainless steel or spring steel

Use and maintenance

These valves are a mean life of 10 to 15 millions of cycles depending on application.

Proper lubrication with specified oil reduces dramatically the wear of the seals as well as a good filtration insures long and trouble free operation. Check that the operating conditions are according to the suggested pressure, temperature and so on.

The exhaust ports of the distributor have to be protected in a dusty and dirty environment.

A spare parts kit including the spool complete with seals and actuators are available for overhauling the valve. This simple operation does not require a skilled worker. Although particular case is needed for assembling the valve.

ATTENTION: use hydraulic oil class H for lubrication such as MAGNA GC 32 (Castrol).

Solenoid - Spring

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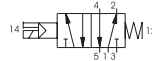
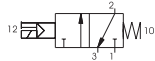
5/2

Solenoid - Spring

	Ordering code 468.1.0.1.M2		
	TYPE 32 = 3 ways 52 = 5 ways		

Weight gr. 240
Minimum working pressure 2,5 bar

Weight gr. 240
Minimum working pressure 2,5 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	540 NI/min	mm 6	G 1/8"

Solenoid - Differential

3/2

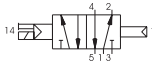
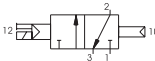
5/2

Solenoid - Differential

	Ordering code 468.1.0.12.M2		
	TYPE 32 = 3 ways 52 = 5 ways		

Weight gr. 280
Minimum working pressure 2,5 bar

Weight gr. 320
Minimum working pressure 2,5 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	540 NI/min	mm 6	G 1/8"

Solenoid - Solenoid

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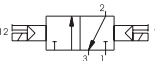
5/2

Solenoid - Solenoid

	Ordering code 468.1.0.0.M2		
	TYPE 32 = 3 ways 52 = 5 ways		

Weight gr. 370
Minimum working pressure 2 bar


Weight gr. 410
Minimum working pressure 2 bar

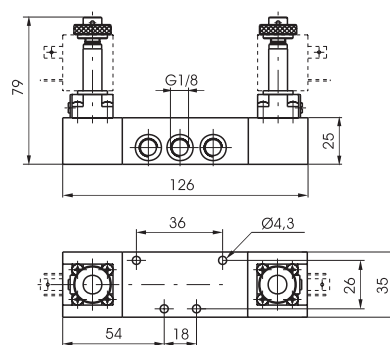


Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	540 NI/min	mm 6	G 1/8"

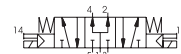
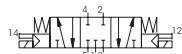
Solenoid - Solenoid

5/3

Ordering code	
468.53.1.0.0.M2	
FUNCTION	
31 = Closed centres 32 = Open centres 33 = Pressured centres	



Weight gr. 420
Minimum working pressure 3 bar




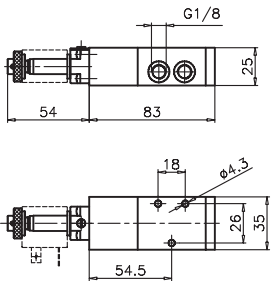
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	410 NI/min	mm 6	G 1/8"


Solenoid - Spring


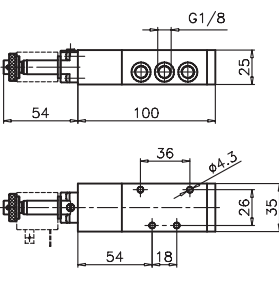
3/2

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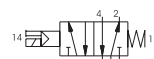
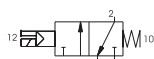
Solenoid - Spring

Ordering code	
468/1.1.0.1.M2	
TYPE	
32 = 3 ways 52 = 5 ways	

Weight gr. 240
Minimum working pressure 2,5 bar



Weight gr. 280
Minimum working pressure 2,5 bar


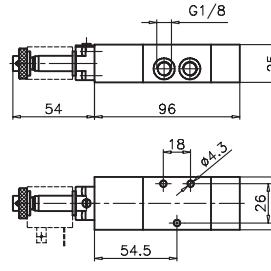
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	540 NI/min	mm 6	G 1/8"


Solenoid - Differential


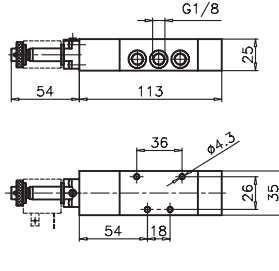
3/2

5/2

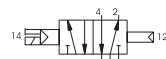
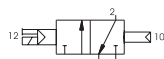
Solenoid - Differential

Ordering code	
468/1.1.0.12.M2	
TYPE	
32 = 3 ways 52 = 5 ways	

Weight gr. 280
Minimum working pressure 2,5 bar



Weight gr. 320
Minimum working pressure 2,5 bar

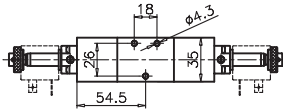
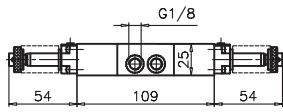
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	540 NI/min	mm 6	G 1/8"

Solenoid - Solenoid

3/2

5/2

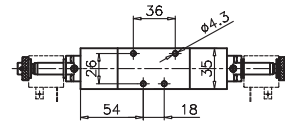
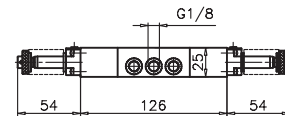
Solenoid - Solenoid



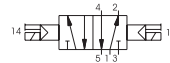
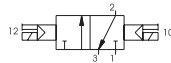
Ordering code

468/1.1.32.0.0.M2

TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 370
Minimum working pressure 2 bar



Weight gr. 410
Minimum working pressure 2 bar

Operational characteristics

Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	540 NI/min	mm 6	G 1/8"

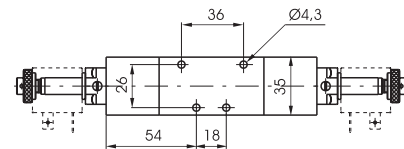
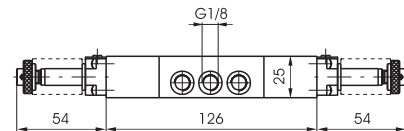
Solenoid - Solenoid

5/3

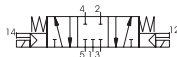
Ordering code

468/1.53.33.0.0.M2

FUNCTION
31 = Closed centres
32 = Open centres
33 = Pressured centres



Weight gr. 420
Minimum working pressure 3 bar



Operational characteristics

Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	410 NI/min	mm 6	G 1/8"

Solenoid - Spring	3/2	5/2	Solenoid - Spring			
	Ordering code 464.0.0.1.M2					
	TYPE 32 = 3 ways 52 = 5 ways					
Weight gr. 530 Minimum working pressure 2,5 bar			Weight gr. 625 Minimum working pressure 2,5 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1360 NI/min	mm 8	G 1/4"

Solenoid - Differential	3/2	5/2	Solenoid - Differential			
	Ordering code 464.0.0.12.M2					
	TYPE 32 = 3 ways 52 = 5 ways					
Weight gr. 650 Minimum working pressure 2,5 bar			Weight gr. 740 Minimum working pressure 2,5 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1360 NI/min	mm 8	G 1/4"

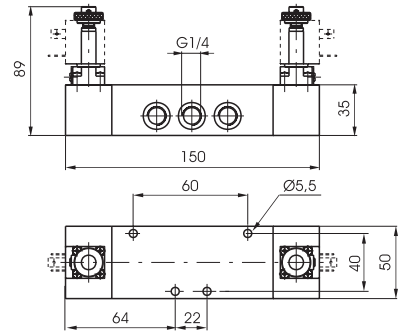
Solenoid - Solenoid	3/2	5/2	Solenoid - Solenoid			
	Ordering code 464.0.0.0.M2					
	TYPE 32 = 3 ways 52 = 5 ways					
Weight gr. 730 Minimum working pressure 2 bar			Weight gr. 820 Minimum working pressure 2 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1360 NI/min	mm 8	G 1/4"



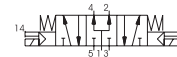
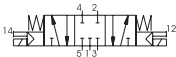
Solenoid - Solenoid

5/3

Ordering code
464.53.0.0.M2
FUNCTION
31 = Closed centres
32 = Open centres
33 = Pressured centres



Weight gr. 820
Minimum working pressure 3 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1280 NI/min	mm 8	G 1/4"

Solenoid - Spring

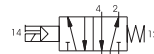
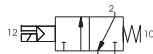
3/2

5/2

Solenoid - Spring

	<p>Ordering code</p> <p>464/1.0.0.1.M2</p> <p>TYPE</p> <p>32 = 3 ways</p> <p>52 = 5 ways</p>	

Weight gr. 530
Minimum working pressure 2,5 bar



Weight gr. 625
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1360 NI/min	mm 8	G 1/4"

Solenoid - Differential

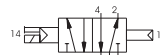
3/2

5/2

Solenoid - Differential

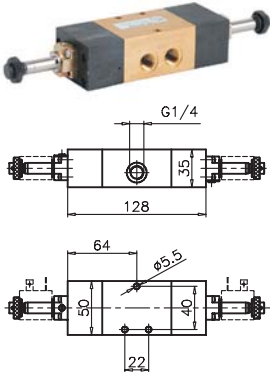
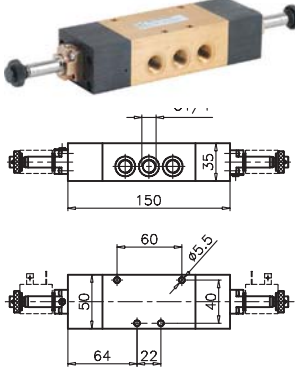
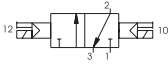
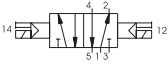
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Weight gr. 650
Minimum working pressure 2,5 bar


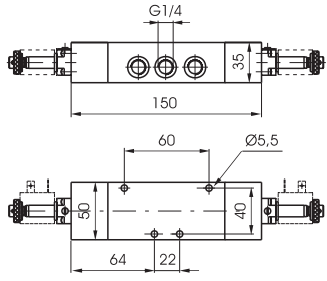
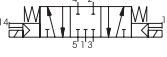
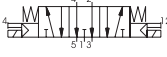
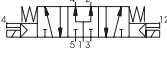


Weight gr. 740
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1360 NI/min	mm 8	G 1/4"

Solenoid - Solenoid		3/2	5/2	Solenoid - Solenoid			
 <p>Weight gr. 730 Minimum working pressure 2 bar</p>		<p>Ordering code 464/1.32.0.0.M2</p> <p>TYPE 32 = 3 ways 52 = 5 ways</p>		 <p>Weight gr. 820 Minimum working pressure 2 bar</p>			
							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1360 NI/min	mm 8	G 1/4"



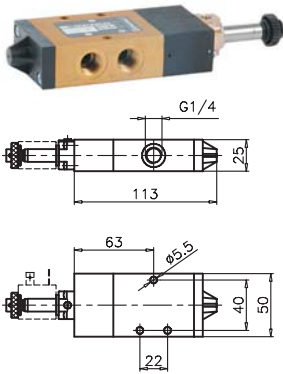
Solenoid - Solenoid						5/3	
<p>Ordering code 464/1.53.F.0.0.M2</p> <p>FUNCTION F 31 = Closed centres 32 = Open centres 33 = Pressured centres</p>							
							
<p>Weight gr. 820 Minimum working pressure 3 bar</p>   							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1280 NI/min	mm 8	G 1/4"

Solenoid - Spring

3/2

5/2

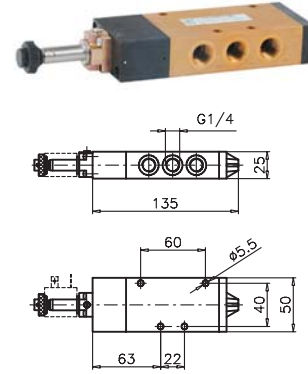
Solenoid - Spring



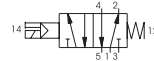
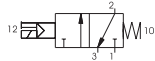
Ordering code

414/2.0.0.1.M2

TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 380
Minimum working pressure 2,5 bar



Weight gr. 440
Minimum working pressure 2,5 bar

Operational characteristics

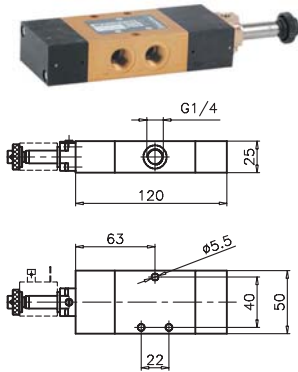
Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1030 NI/min	mm 7	G 1/4"

Solenoid - Differential

3/2

5/2

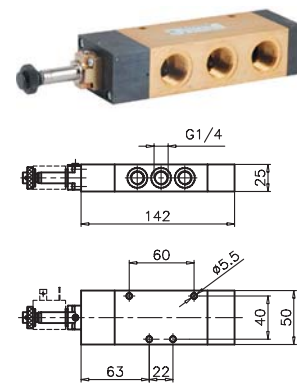
Solenoid - Differential



Ordering code

414/2.0.0.12.M2

TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 450
Minimum working pressure 2,5 bar



Weight gr. 510
Minimum working pressure 2,5 bar

Operational characteristics

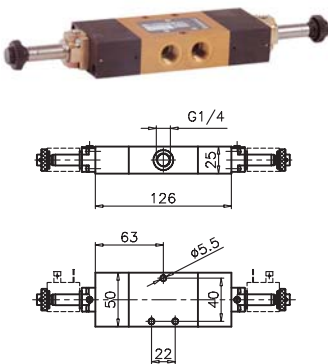
Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1030 NI/min	mm 7	G 1/4"

Solenoid - Solenoid

3/2

5/2

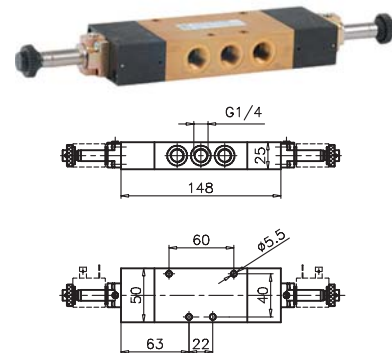
Solenoid - Solenoid



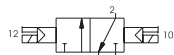
Ordering code

414/2.0.0.0.M2

TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 530
Minimum working pressure 2 bar



Weight gr. 590
Minimum working pressure 2 bar

Operational characteristics


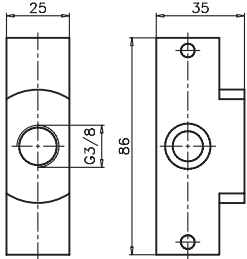
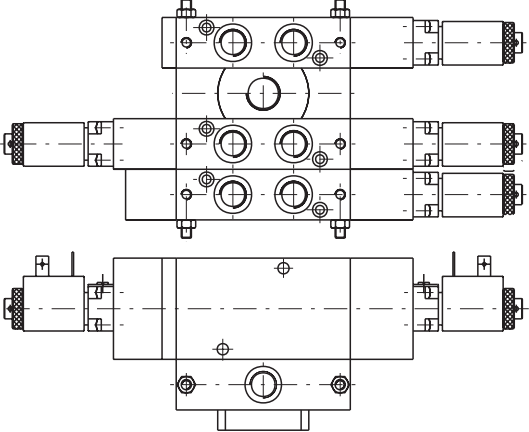
Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	1030 NI/min	mm 7	G 1/4"

Modular base for gang mounting

Ordering code	 	
414.00		
Weight gr. 120		

2

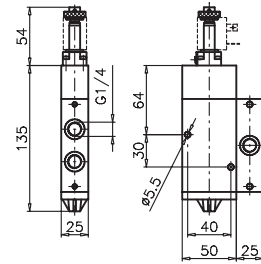
Base for supplementary feed

Ordering code	  	
414.01		
Weight gr. 160		
Example for an arrangement using a supplementary feed base		
Weight gr. 160	Example for an arrangement using a supplementary feed base	

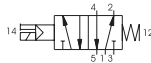
Solenoid - Spring

5/2

Ordering code
414/3.52.0.1.M2



Weight gr. 440
Minimum working pressure 2,5 bar

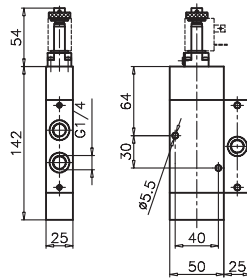


Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"

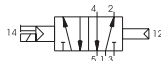
Solenoid - Differential

5/2

Ordering code
414/3.52.0.12.M2



Weight gr. 510
Minimum working pressure 2,5 bar

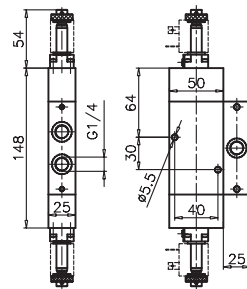


Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"

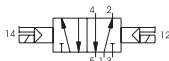
Solenoid - Solenoid

5/2

Ordering code
414/3.52.0.0.M2



Weight gr. 590
Minimum working pressure 2,5 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"

Solenoid - Spring		3/2	5/2	Solenoid - Spring			
 		Ordering code 514/N.0.0.1.M2 TYPE 32 = 3 ways 52 = 5 ways		 			
Weight gr. 390 Minimum working pressure 2,5 bar							
Weight gr. 450 Minimum working pressure 2,5 bar							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"



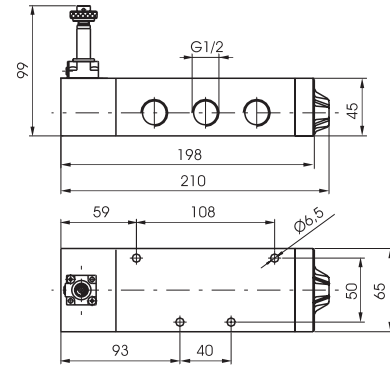
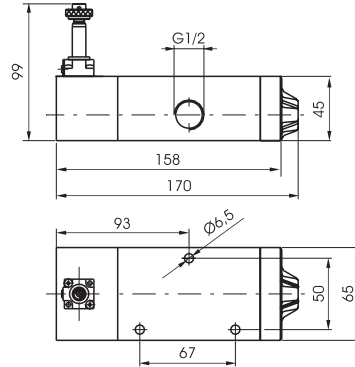
Solenoid - Differential		3/2	5/2	Solenoid - Differential			
 		Ordering code 514/N.0.0.12.M2 TYPE 32 = 3 ways 52 = 5 ways		 			
Weight gr. 390 Minimum working pressure 2,5 bar							
Weight gr. 450 Minimum working pressure 2,5 bar							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"

Solenoid - Solenoid		3/2	5/2	Solenoid - Solenoid			
 		Ordering code 514/N.0.0.0.M2 TYPE 32 = 3 ways 52 = 5 ways		 			
Weight gr. 390 Minimum working pressure 2,5 bar							
Weight gr. 450 Minimum working pressure 2,5 bar							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	1030 NI/min	mm 7	G 1/4"

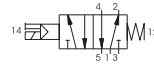
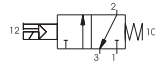
Solenoid - Spring

3/2

Ordering code
452.1.0.1.M2
TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 1152
Minimum working pressure 2,5 bar



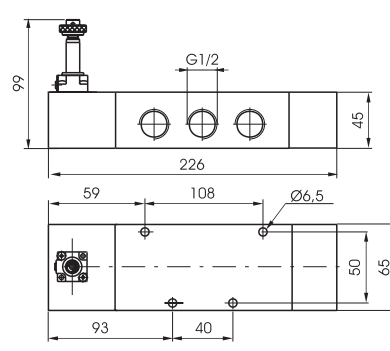
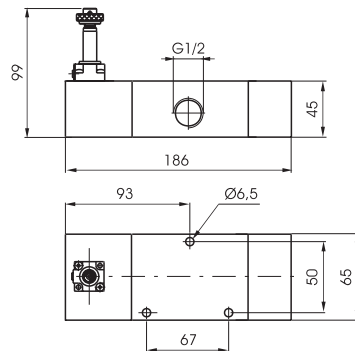
Weight gr. 1422
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3500 NI/min	mm 15	G 1/2"

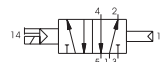
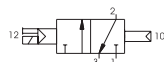
Solenoid - Differential

3/2

Ordering code
452.1.0.12.M2
TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 1422
Minimum working pressure 2,5 bar



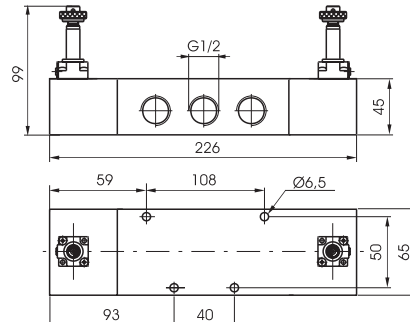
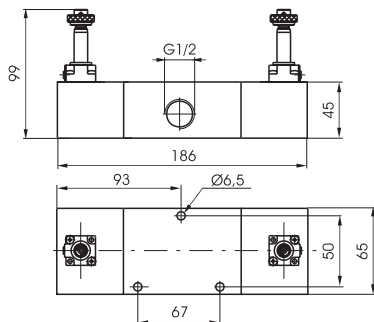
Weight gr. 1692
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3500 NI/min	mm 15	G 1/2"

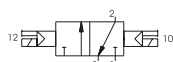
Solenoid - Solenoid

3/2

Ordering code	
452.0.0.0.M2	
TYPE	
32 = 3 ways	
52 = 5 ways	



Weight gr. 1474
Minimum working pressure 2 bar



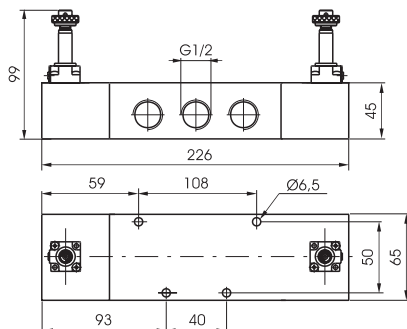
Weight gr. 1744
Minimum working pressure 2 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3500 NI/min	mm 15	G 1/2"

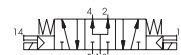
Solenoid - Solenoid

5/3

Ordering code	
452.53.0.0.M2	
FUNCTION	
31 = Closed centres	
32 = Open centres	
33 = Pressured centres	



Weight gr. 1744
Minimum working pressure 3 bar



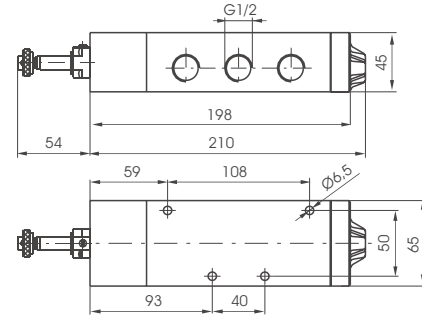
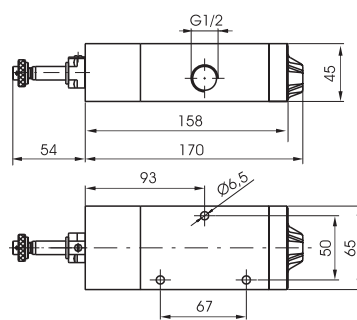
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3000 NI/min	mm 15	G 1/2"

2

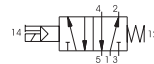
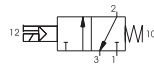
Solenoid - Spring

3/2

Ordering code
452/1.0.0.1.M2
TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 1330
Minimum working pressure 2,5 bar



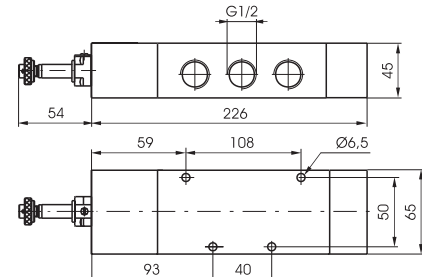
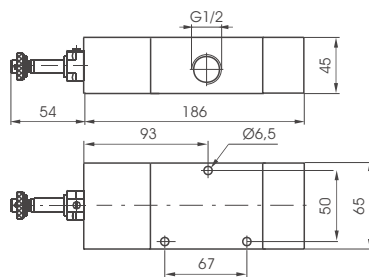
Weight gr. 1600
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3500 NI/min	mm 15	G 1/2"

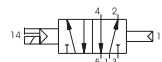
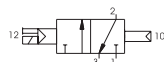
Solenoid - Differential

3/2

Ordering code
452/1.0.0.12.M2
TYPE
32 = 3 ways
52 = 5 ways



Weight gr. 1600
Minimum working pressure 2,5 bar



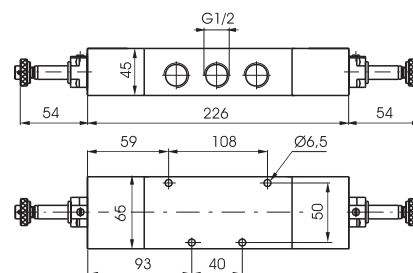
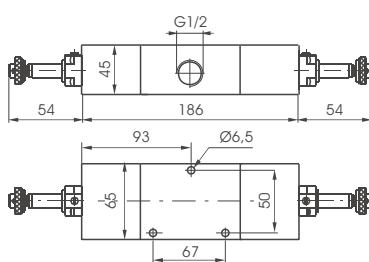
Weight gr. 1870
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	3500 NI/min	mm 15	G 1/2"

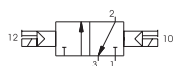
Solenoid - Solenoid

3/2

Ordering code	
452/1.1.0.0.M2	
TYPE	
1 32 = 3 ways	
52 = 5 ways	



Weight gr. 1830
Minimum working pressure 2 bar



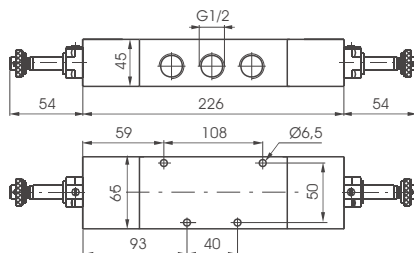
Weight gr. 2100
Minimum working pressure 2 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	3500 NI/min	mm 15	G 1/2"

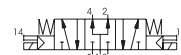
Solenoid - Solenoid

5/3

Ordering code	
452/1.53.0.0.M2	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	



Weight gr. 2100
Minimum working pressure 3 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature	Flow rate at 6 bar with Δp=1	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C Max. +50°C	3000 NI/min	mm 15	G 1/2"

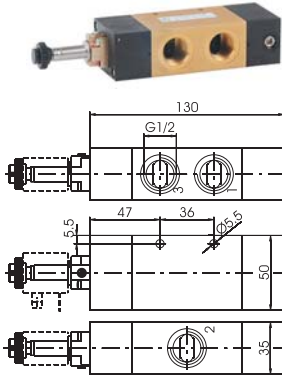


Solenoid - Spring

3/2

5/2

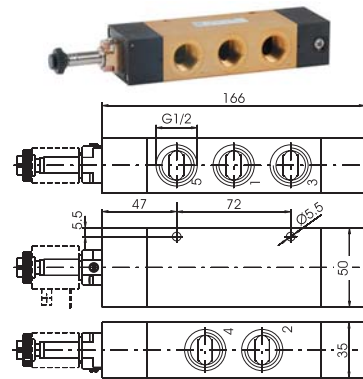
Solenoid - Spring



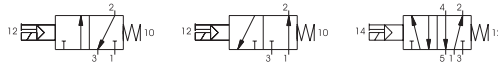
Ordering code

412/2T.0.1.V

- TYPE
- T 32 = 3 ways
- 52 = 5 ways
- C.M2 = 3 ways norm. closed
- A.M2 = 3 ways norm. open
- .M2 = 5 ways



Minimum working pressure 2,5 bar



Minimum working pressure 2,5 bar

Operational characteristics

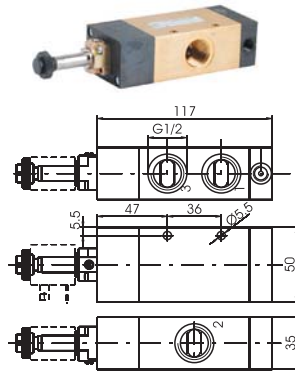
Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	Pilot port size
Filtered and lubricated air or non	10 bar	Min. -5°C	Max. +50°C	3600 NI/min	mm 15	G 1/2"	G 1/8"

Solenoid - Differential external

3/2

5/2

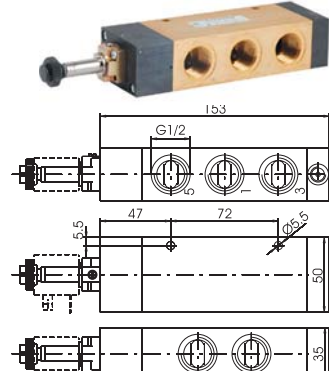
Solenoid - Differential external



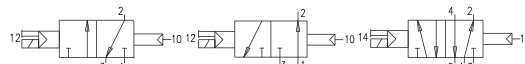
Ordering code

412/2T.0.12.V

- TYPE
- T 32 = 3 ways
- 52 = 5 ways
- C.M2 = 3 ways norm. closed
- A.M2 = 3 ways norm. open
- .M2 = 5 ways



Minimum working pressure 2,5 bar



Minimum working pressure 2,5 bar

Operational characteristics

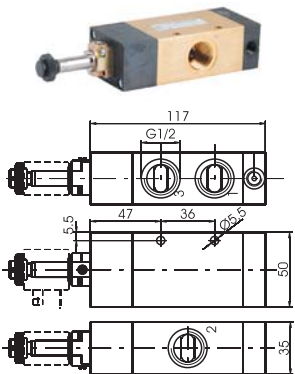
Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	Pilot port size
Filtered and lubricated air or non	10 bar	Min. -5°C	Max. +50°C	3600 NI/min	mm 15	G 1/2"	G 1/8"

Pneumatic - Differential self aligned

3/2

5/2

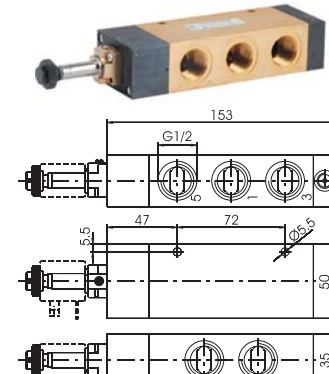
Pneumatic - Differential self aligned



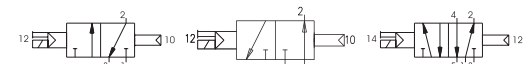
Ordering code

412/2T.0.12/1.V

- TYPE
- T 32 = 3 ways
- 52 = 5 ways
- C.M2 = 3 ways norm. closed
- A.M2 = 3 ways norm. open
- .M2 = 5 ways



Minimum working pressure 2,5 bar

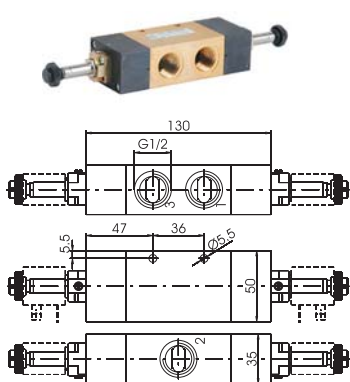
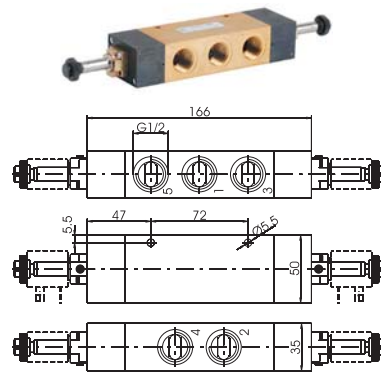
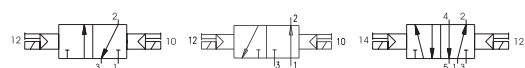


Minimum working pressure 2,5 bar

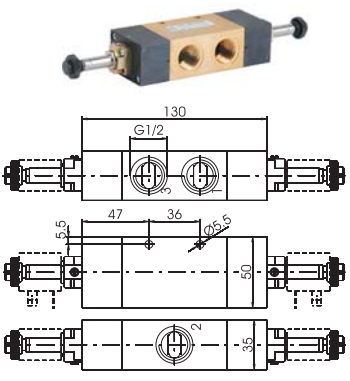
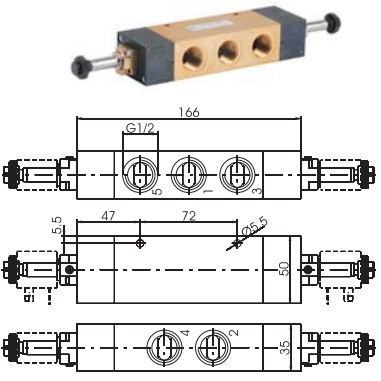

Operational characteristics

Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	Pilot port size
Filtered and lubricated air or non	10 bar	Min. -5°C	Max. +50°C	3600 NI/min	mm 15	G 1/2"	G 1/8"



Solenoid - Solenoid		3/2	5/2	Solenoid - Solenoid				
		Ordering code						
		412/2.0.0.M2						
Minimum working pressure 2 bar 		TYPE		Minimum working pressure 2 bar				
		32 = 3 ways 52 = 5 ways						
		C.M2 = 0.						
		A.M2 = 0. 1.M2 = 0.						
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	Pilot port size
	Filtered and lubricated air or non	10 bar	Min. -5°C	Max. +50°C	3600 NI/min	mm 15	G 1/2"	G 1/8"

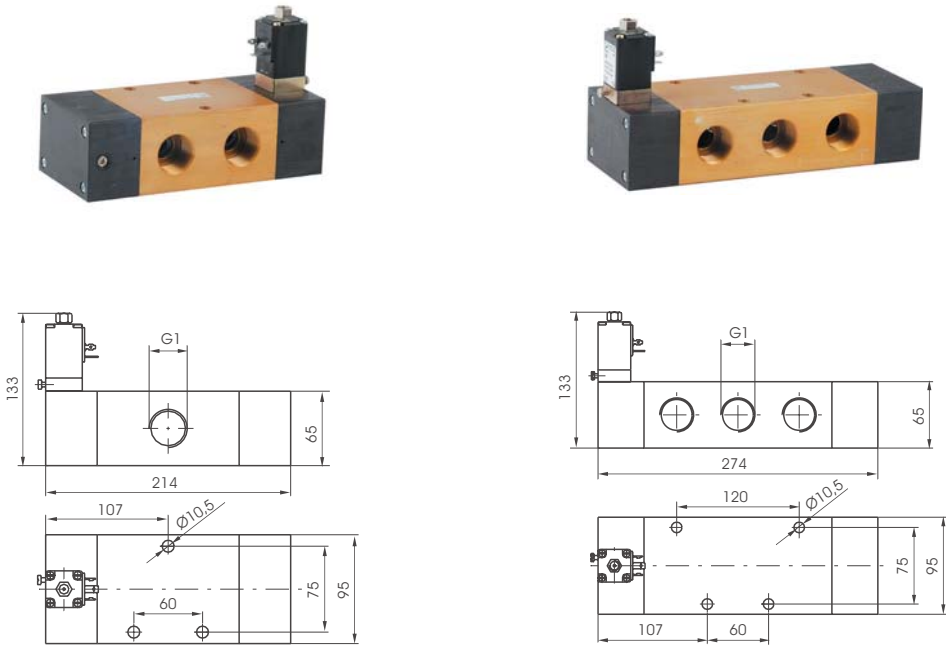
2

Solenoid - Solenoid		5/3		Solenoid - Solenoid				
		Ordering code						
		412/2.53.0.0.M2						
Minimum working pressure 3 bar 		FUNCTION		Minimum working pressure 3 bar				
		F 31 = Closed centres 32 = Open centres 33 = Pressured centres						
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	Pilot port size
	Filtered and lubricated air or non	10 bar	Min. -5°C	Max. +50°C	3300 NI/min	mm 15	G 1/2"	G 1/8"

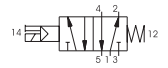
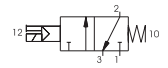
Solenoid - Spring

3/2

Ordering code	
411.T.0.1.S	
T	TYPE
	32 = 3 ways 52 = 5 ways
S	SOLENOID CODE
	S* = (see pag. 2.26)



Weight gr. 3400
Minimum working pressure 2,5 bar



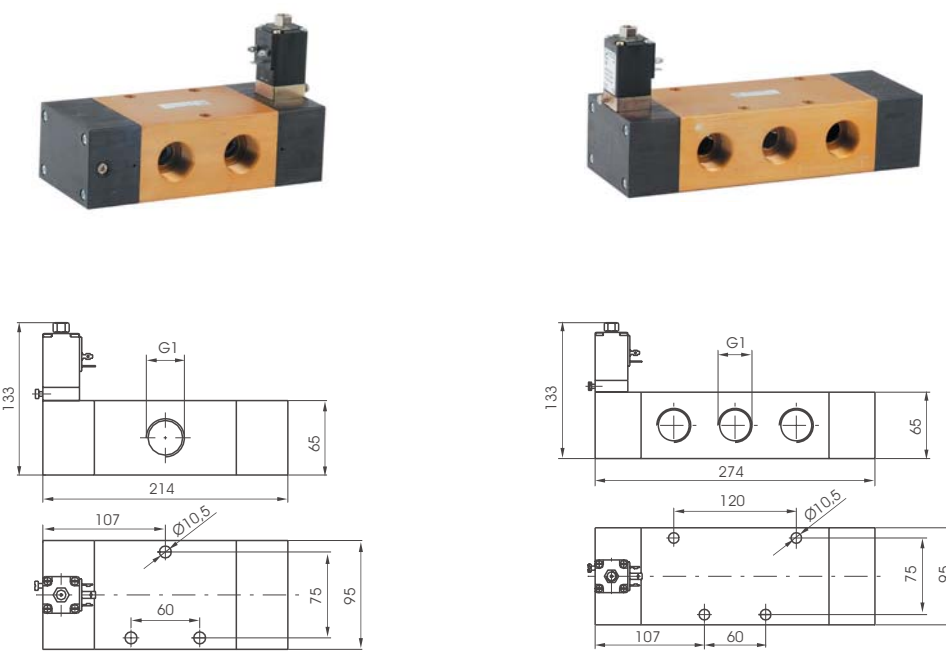
Weight gr. 4300
Minimum working pressure 2,5 bar

Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
		Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	6500 NI/min	mm 20

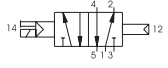
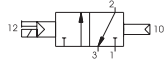
Solenoid - Differential

3/2

Ordering code	
411.T.0.12.S	
T	TYPE
	32 = 3 ways 52 = 5 ways
S	SOLENOID CODE
	S* = (see pag. 2.26)



Weight gr. 3400
Minimum working pressure 2,5 bar

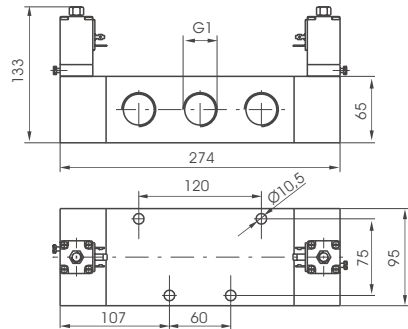
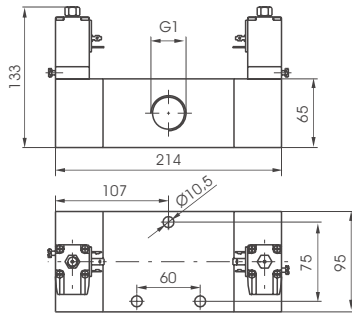


Weight gr. 4300
Minimum working pressure 2,5 bar

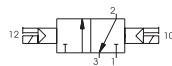
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
		Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	6500 NI/min	mm 20

3/2

Solenoid - Solenoid	
Ordering code	
411.T.0.0.S	
TYPE	
T 32 = 3 ways	
52 = 5 ways	
SOLENOID CODE	
S S* = (see pag. 2.26)	



Weight gr. 3700
Minimum working pressure 2 bar



Weight gr. 4600
Minimum working pressure 2 bar

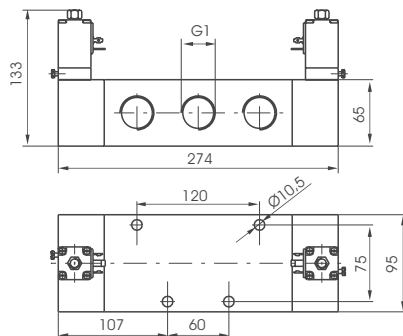
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
		Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	6500 NI/min	mm 20

2

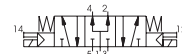
Solenoid - Solenoid

5/3

Solenoid - Solenoid	
Ordering code	
411.53.F.0.0.S	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	
SOLENOID CODE	
S S* = (see pag. 2.26)	



Weight gr. 4700
Minimum working pressure 3 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
		Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	6500 NI/min	mm 20

General

These solenoid valves are supplied in two series with G 1/8" and G 1/4" connections (both with G 1/8" exhaust connections). Each series is available in 3 or 5 ways version with 1 coil (monostable), spring or pneumatic return, with 2 coils (bistable) and in 5 ways 3 positions version with closed, open and pressured centres.

The gang mounted solenoid valves are available with the traditional manifold obtained from bored square bar of series 600 and with the extruded aluminium base allowing a unic inlet port conveying the exhausts. The base is also prearranged to be fixed on DIN 46277/3 guide.

The solenoid valves are supplied complete with coil (see Series 300, section 1) so that the tension has to be added to the solenoid valve code:

M11 = Coil 24 V D.C. (rating power 3.8 watt)

M56 = Coil 24 V 50/60 HZ (starting power 9 VA, rating power 6 VA)

M57 = Coil 110 V 50/60 HZ (starting power 9 VA, rating power 6 VA)

M58 = Coil 220 V 50/60 HZ (starting power 9 VA, rating power 6 VA)

The polyurethane seals are available for oil free operation. In this case, the ordering code becomes:

488... becomes **488...P** for G 1/8" and **484...** becomes **484...P** for G 1/4"

Important: on this type of valves a temperature higher then 40°C along with water or high humidity are causing a progressive reduction of mechanical characteristics of the seals. This chemical reaction (hydrolysis) duration depends by the ambient temperature and in some cases the seal becomes brittle and falls to pieces.

The valves equipped with polyurethane seals are not suitable for tropical climate.


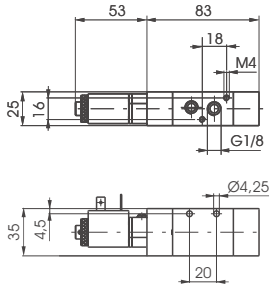

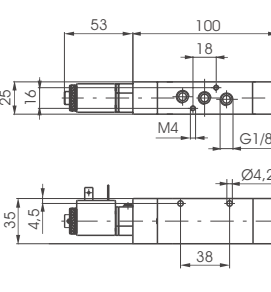
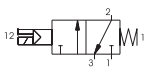
Construction characteristics


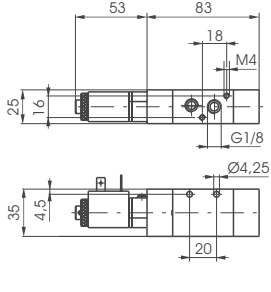

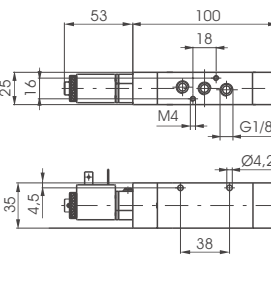
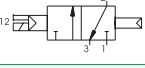
Body	Aluminium alloy 2011
Actuators	Technopolymer
Spool	Nickel plated steel
Piston seals	Nitrile rubber (NBR) oil resistant
Seals	Nitrile rubber (NBR) oil resistant or in alternative Polyurethane compound for oil free application
Spacers	Technopolymer
Springs	Stainless steel AISI 302
Pistons	Technopolymer

Use and maintenance

These solenoid valves have a mean life of 15 millions of cycles if utilized in standard conditions. Proper lubrication reduces dramatically the wear of the seals and a good filtration prevents the build-up of dirt and consequent malfunctioning of the solenoid valve. Make sure that the conditions of use comply with the pressure and temperature suggested. The exhaust port 3 and 5 have to be protected in a dusty and dirty environment. A spare parts kit including the spool and seals is available for overhauling the valve. This simple operation does not require a skilled worker.


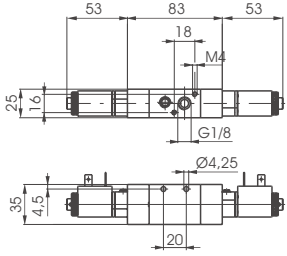

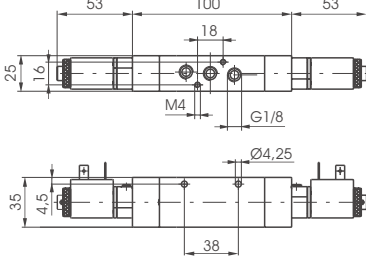
ATTENTION: use hydraulic oil class H such as MAGNA GC 32 (CASTROL).

3/2 Solenoid - Spring		Ordering code		Solenoid - Spring				
 		488.T.0.1.S		 				
							TYPE	
							T 32 = 3 ways 52 = 5 ways	
							S TENSION CODE * = (see pag 2.26)	
Weight gr. 220 Minimum working pressure 2,5 bar				Weight gr. 260 Minimum working pressure 2,5 bar				
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8"	

3/2 Solenoid - Differential		Ordering code		Solenoid - Differential				
 		488.T.0.12.S		 				
							TYPE	
							T 32 = 3 ways 52 = 5 ways	
							S TENSION CODE * = (see pag 2.26)	
Weight gr. 220 Minimum working pressure 2,5 bar				Weight gr. 260 Minimum working pressure 2,5 bar				
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size	
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8"	

2

2

3/2	Solenoid - solenoid	Ordering code	Solenoid - solenoid	5/2
 		488.T.0.0.S		
		TYPE		
		T	32 = 3 ways 52 = 5 ways	
		S	TENSION CODE * = (see pag 2.26)	
		 		

Weight gr. 320
Minimum working pressure 2 bar



Weight gr. 360
Minimum working pressure 2 bar

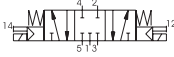
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8"

Solenoid - solenoid



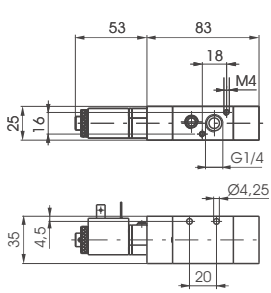
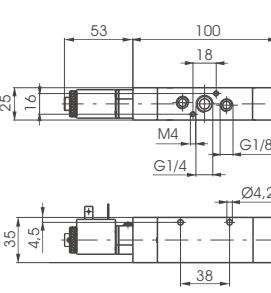
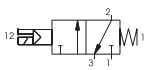
5/3

Ordering code						
488.53.F.0.0.[1s]						
FUNCTION						
F	31 = Closed centres 32 = Open centres 33 = Pressured centres					
S	TENSION CODE * = (see pag 2.26) S = Tension code					
						



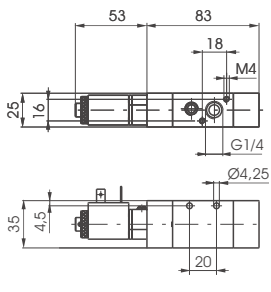
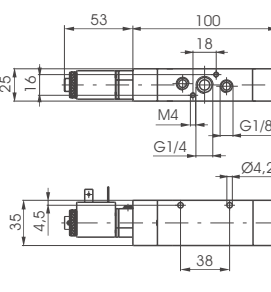
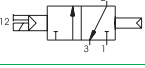
Weight gr. 400
Minimum working pressure 3 bar



Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	410 NI/min	mm 6	G 1/8"

3/2 Solenoid - Spring		Ordering code	Solenoid - Spring				
		484.T.0.1.S					
							TYPE T 32 = 3 ways 52 = 5 ways S TENSION CODE * = (see pag 2.26)
							
Weight gr. 220 Minimum working pressure 2,5 bar				Weight gr. 260 Minimum working pressure 2,5 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8" - G 1/4"



3/2 Solenoid - Differential		Ordering code	Solenoid - Differential				
		484.T.0.12.S					
							TYPE T 32 = 3 ways 52 = 5 ways S TENSION CODE * = (see pag 2.26)
							
Weight gr. 220 Minimum working pressure 2,5 bar				Weight gr. 260 Minimum working pressure 2,5 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8" - G 1/4"

3/2 Solenoid - solenoid		Ordering code		Solenoid - solenoid			5/2		
		484.T.0.0.S							
								TYPE	
								TENSION CODE	
								* = (see pag 2.26)	
Weight gr. 320 Minimum working pressure 2 bar						Weight gr. 360 Minimum working pressure 2 bar			
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size		
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	620 NI/min	mm 6	G 1/8" - G 1/4"		

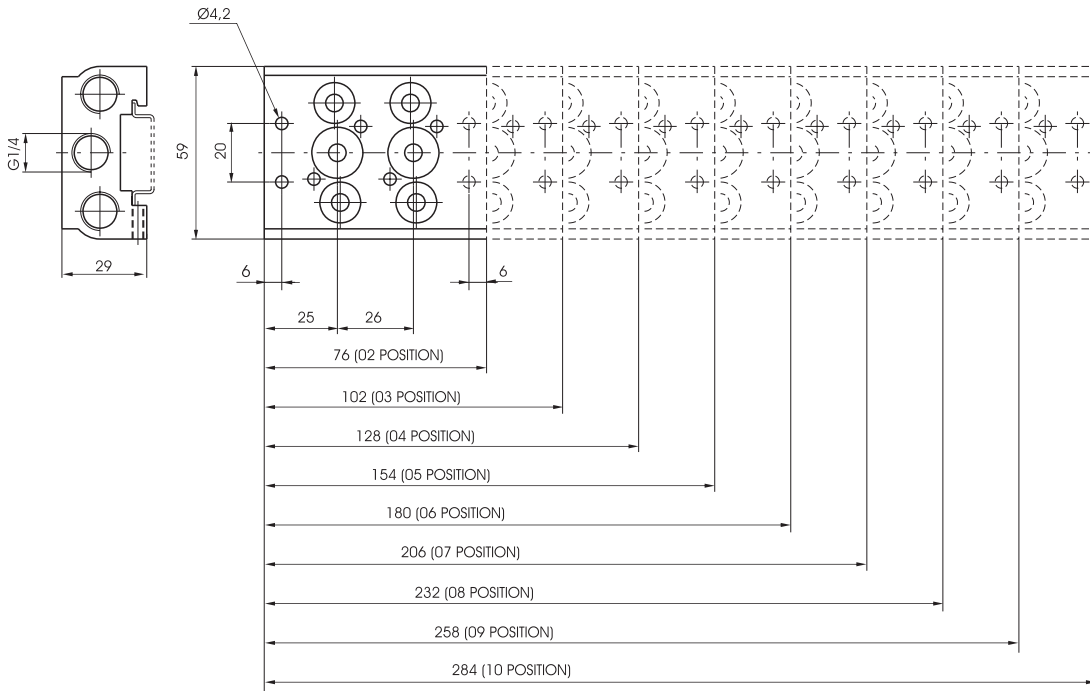
Solenoid - solenoid		5/3					
Ordering code							
484.53.F.0.0.S							
FUNCTION							
TENSION CODE							
F 31 = Closed centres 32 = Open centres 33 = Pressured centres S * = (see pag 2.26) S = Codice Solenoide							
Weight gr. 400 Minimum working pressure 3 bar							
Operational characteristics	Fluid	Max working pressure	Operating Temperature		Flow rate at 6 bar with $\Delta p=1$	Orifice size	Working port size
	Filtered and lubricated air	10 bar	Min. -5°C	Max. +50°C	410 NI/min	mm 6	G 1/8" - G 1/4"

Ordering code

488.P

POSITION

02 = nr. 2 pos. (220 gr)
03 = nr. 3 pos. (290 gr)
04 = nr. 4 pos. (360 gr)
P 05 = nr. 5 pos. (430 gr)
06 = nr. 6 pos. (500 gr)
07 = nr. 7 pos. (570 gr)
08 = nr. 8 pos. (640 gr)
09 = nr. 9 pos. (710 gr)
10 = nr. 10 pos. (780 gr)



2

Closing plate

Ordering code

488.00

