Solenoid valves
Series 400

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, insentive 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.

If 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 Nl/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 inticated 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" c UL us homologated are available (see page 1.26 - 1.27).

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 an 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.

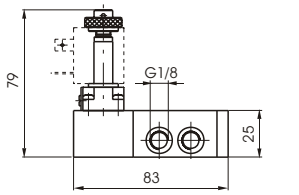
ATTENTION: use hydraulic oil class H for lubrication such as MAGNA GC 32 (Castrol).

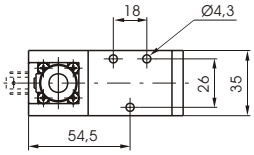
Solenoid Spring

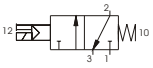
Ordering code

468.32.0.1.M2

3/2



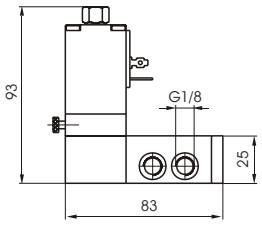


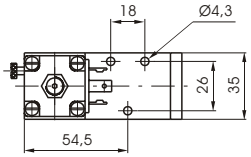


Weight gr. 240

428.32.0.1.S*
S* = solenoid code
(see page 1.23)

3/2





Minimum operating pressure 2,5 bar

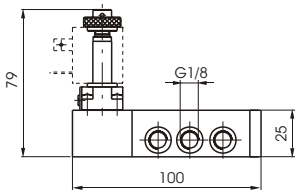
Weight gr. 400

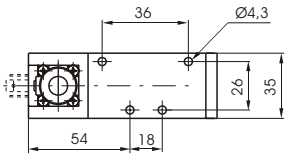
Solenoid Spring

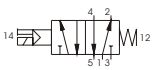
Ordering code

468.52.0.1.M2

5/2



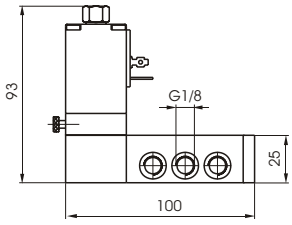


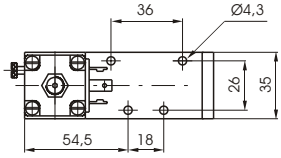


Weight gr. 280

428.52.0.1.S*
S* = solenoid code
(see page 1.23)

5/2





Minimum operating pressure 2,5 bar

Weight gr. 430

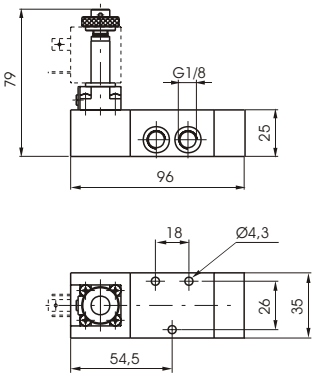
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	540 Nl/min	6 mm	G 1/8"

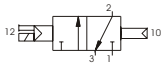
Solenoid Differential

3/2

Ordering code

468.32.0.12.M2

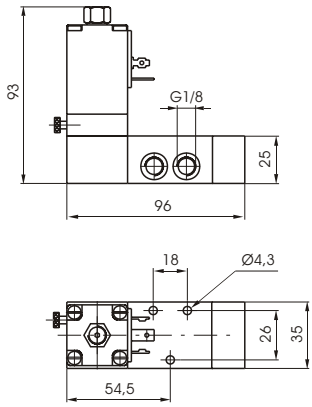




Weight gr. 280

3/2

428.32.0.12.S*
S* = solenoid code
(see page 1.23)



Minimum operating pressure 2,5 bar

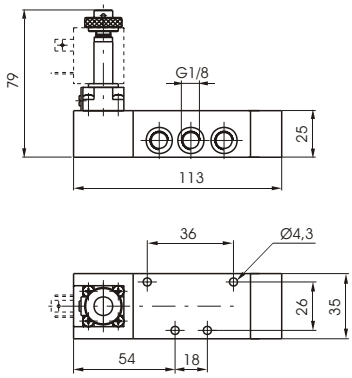
Weight gr. 450

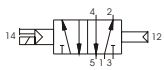
Solenoid Differential

5/2

Ordering code

468.52.0.12.M2

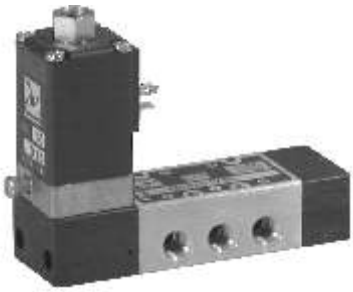


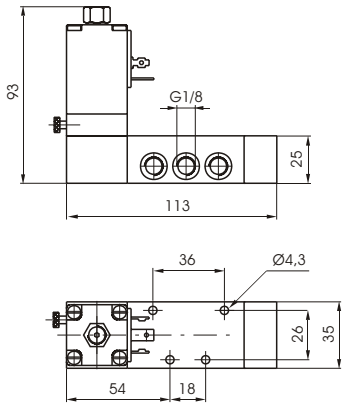


Weight gr. 320

5/2

428.52.0.12.S*
S* = solenoid code
(see page 1.23)





Minimum operating pressure 2,5 bar

Weight gr. 480

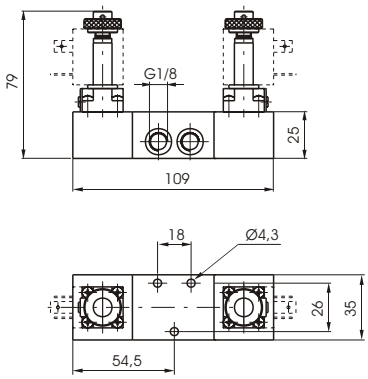
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	540 Nl/min	6 mm	G 1/8"

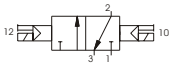
Solenoid
Solenoid

3/2

Ordering code

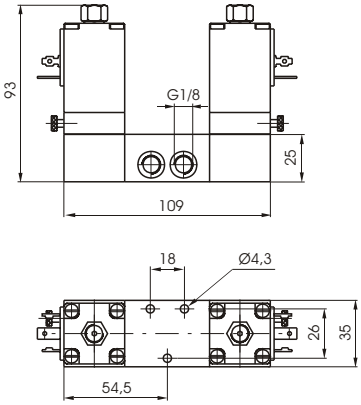
468.32.0.0.M2





Weight gr. 370

3/2



428.32.0.0.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2 bar

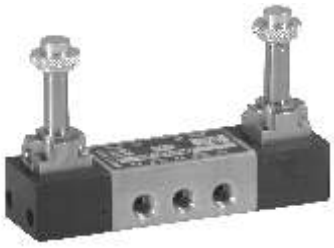
Weight gr. 1030

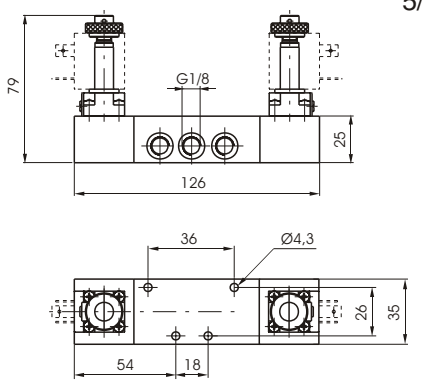
Solenoid
Solenoid

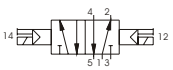
5/2

Ordering code

468.52.0.0.M2

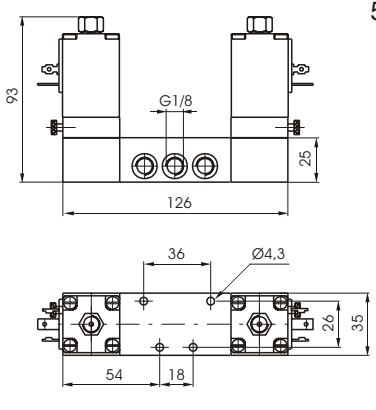






Weight gr. 410

5/2



428.52.0.0.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2 bar

Weight gr. 730

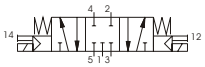
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	540 Nl/min	6 mm.	G 1/8"

Solenoid
Solenoid

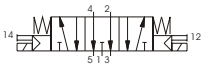
5/3

Ordering code

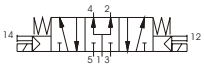
468.53.31.0.0.M2
Closed centres

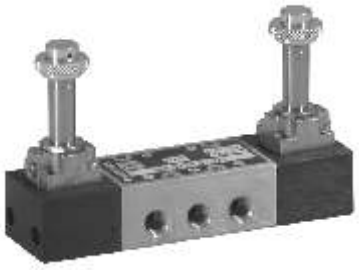


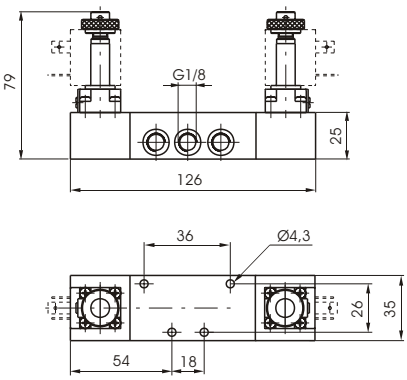
468.53.32.0.0.M2
Open centres



468.53.33.0.0.M2
Pressured centres







Minimum operating pressure 2,5 bar

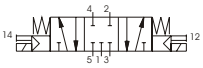
Weight gr. 420

Solenoid
Solenoid

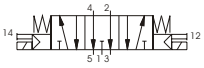
5/3

Ordering code

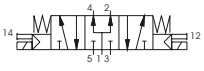
428.53.31.0.0.S*
Closed centres



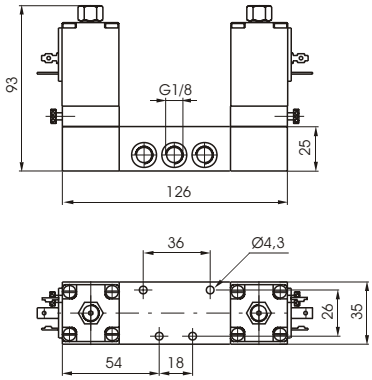
428.53.32.0.0.S*
Open centres



428.53.33.0.0.S*
Pressured centres



S* = solenoid code
(see page 1.23)

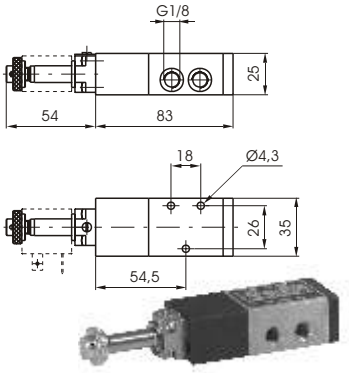


Minimum operating pressure 2,5 bar

Weight gr. 740

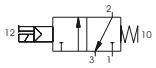
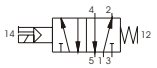
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	410 Nl/min	6 mm.	G 1/8"

3/2



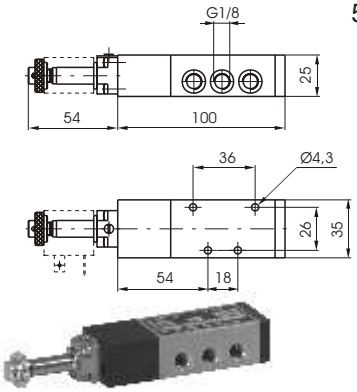
Solenoid
Spring

Ordering code

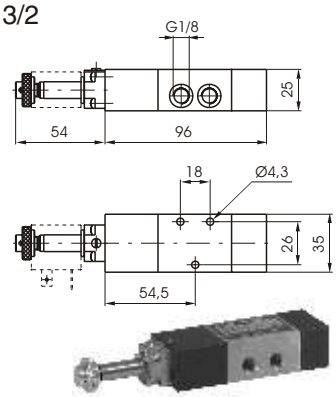
468/1.32.0.1.M2	468/1.52.0.1.M2
	
Weight gr. 240	Weight gr. 280

Minimum operating pressure 2,5 bar

5/2

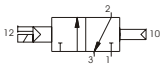
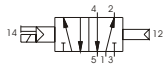


3/2



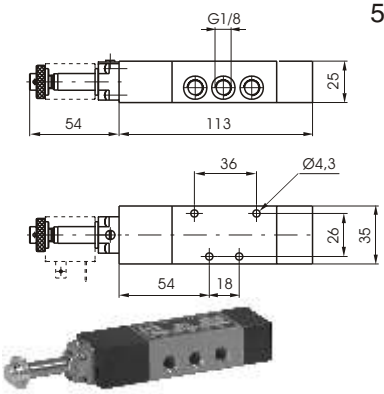
Solenoid
Differential

Ordering code

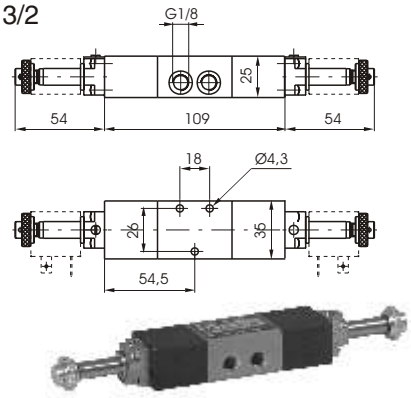
468/1.32.0.12.M2	468/1.52.0.12.M2
	
Weight gr. 280	Weight gr. 320

Minimum operating pressure 2,5 bar

5/2

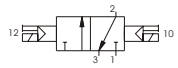
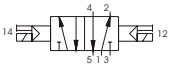


3/2



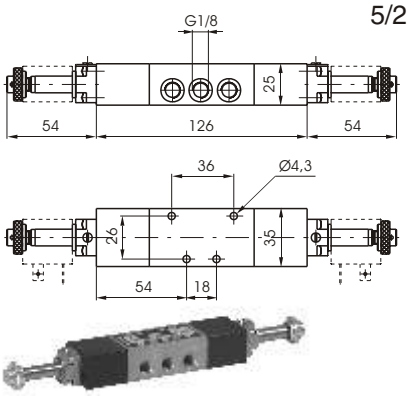
Solenoid
Solenoid

Ordering code

468/1.32.0.0.M2	468/1.52.0.0.M2
	
Weight gr. 370	Weight gr. 410

Minimum operating pressure 2 bar

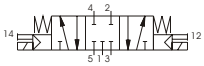
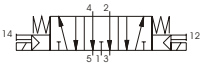
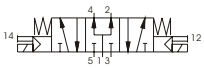
5/2



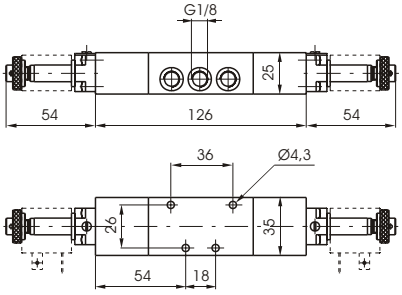
Solenoid
Solenoid

Ordering code

5/3

Closed centres	**468/1.53.31.0.0.M2** 
Open centres	**468/1.53.32.0.0.M2** 
Pressured centres	**468/1.53.33.0.0.M2** 

Weight gr. 420
Minimum operating pressure 3 bar



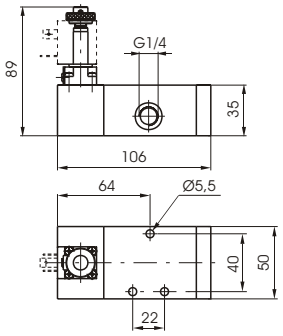
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	540 Nl/min (3/2-5/2) 410 Nl/(5/3)	6 mm	G 1/8"

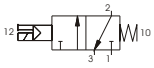
Solenoid Spring

Ordering code

464.32.0.1.M2

3/2

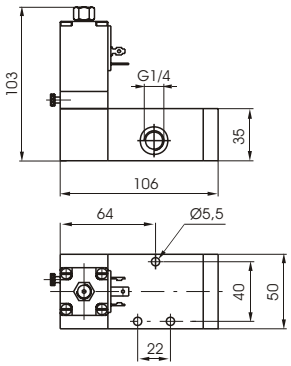




Weight gr. 530

424.32.0.1.S*
S* = solenoid code
(see page 1.23)

3/2



Minimum operating pressure 2,5 bar

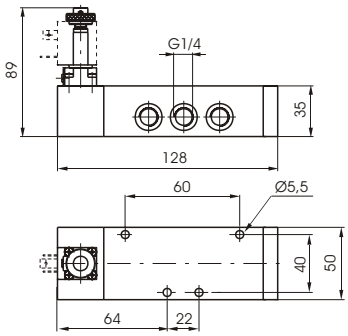
Weight gr. 680

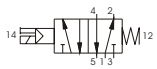
Solenoid Spring

Ordering code

464.52.0.1.M2

5/2

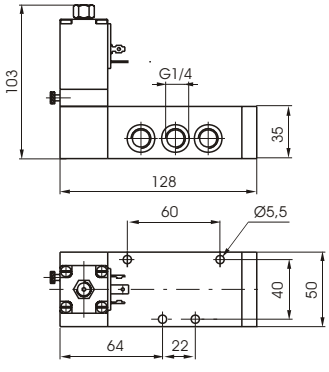




Weight gr. 625

424.52.0.1.S*
S* = solenoid code
(see page 1.23)

5/2



Minimum operating pressure 2,5 bar

Weight gr. 770

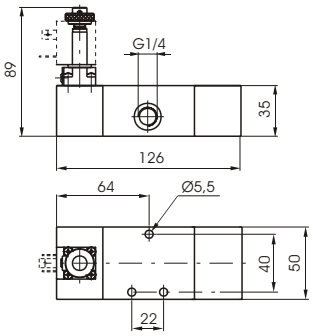
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1360 Nl/min	6 mm	G 1/4"

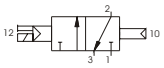
Solenoid Differential

3/2

Ordering code

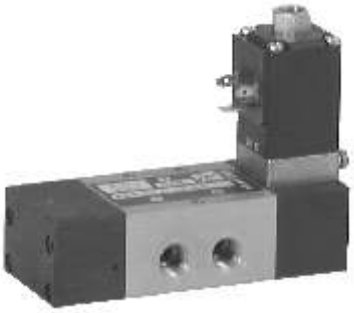
464.32.0.12.M2

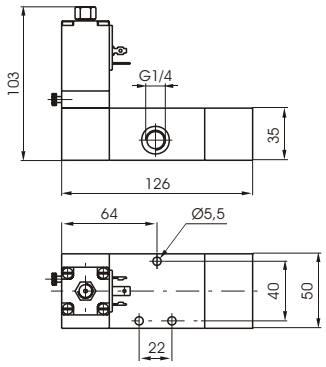




Weight gr. 650

3/2





424.32.0.12.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2,5 bar

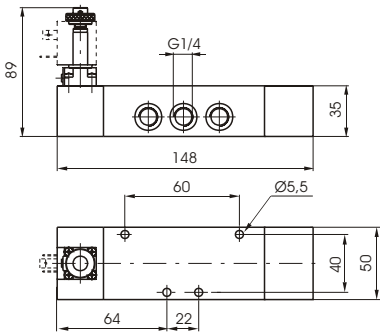
Weight gr. 800

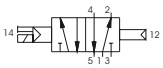
Solenoid Differential

5/2

Ordering code

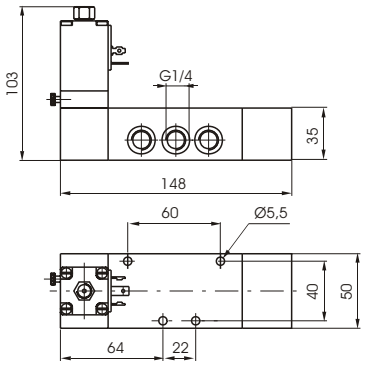
464.52.0.12.M2





Weight gr. 740

5/2



424.52.0.12.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2,5 bar

Weight gr. 890

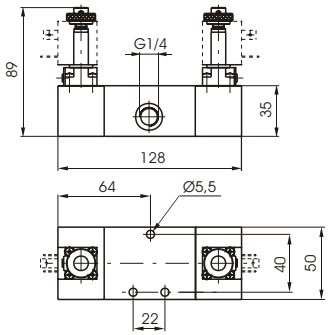
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1360 Nl/min	8 mm.	G 1/4"

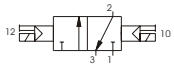
Solenoid
Solenoid

3/2

Ordering code

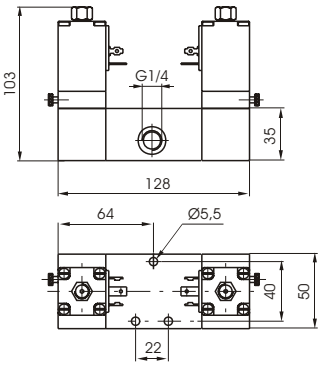
464.32.0.0.M2





Weight gr. 730

3/2



424.32.0.0.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2 bar

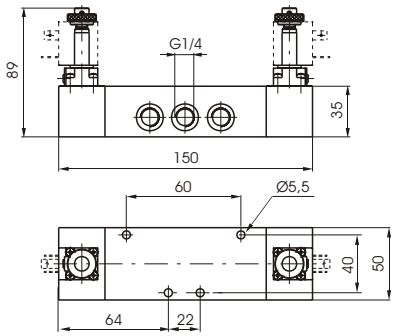
Weight gr. 1030

Solenoid
Solenoid

5/2

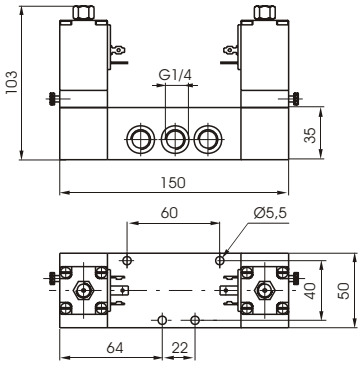
Ordering code

464.52.0.0.M2



Weight gr. 820

5/2



424.52.0.0.S*
S* = solenoid code
(see page 1.23)

Minimum operating pressure 2 bar

Weight gr. 1140

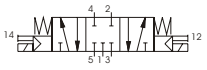
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1360 Nl/min	8 mm	G 1/4"

Solenoid
Solenoid

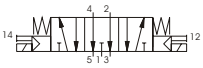
5/3

Ordering code

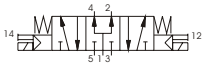
464.53.31.0.0.M2
Closed centres

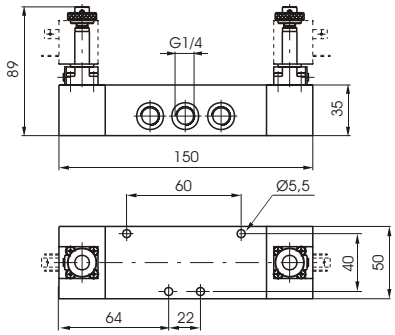


464.53.32.0.0.M2
Open centres



464.53.33.0.0.M2
Pressured centres





Minimum operating pressure 3 bar

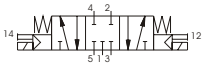
Weight gr. 820

Solenoid
Solenoid

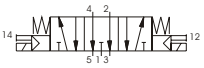
5/3

Ordering code

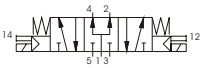
424.53.31.0.0.S*
Closed centres



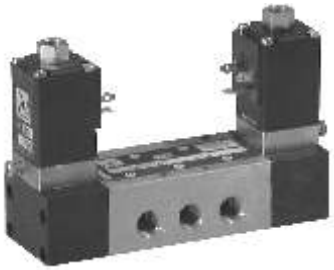
424.53.32.0.0.S*
Open centres

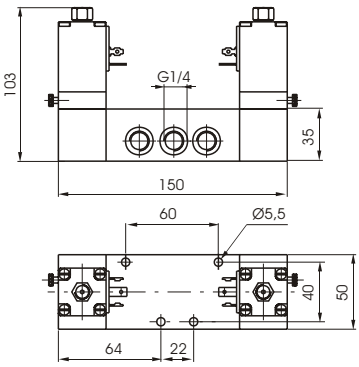


424.53.33.0.0.S*
Pressured centres



S* = solenoid code
(see page 1.23)



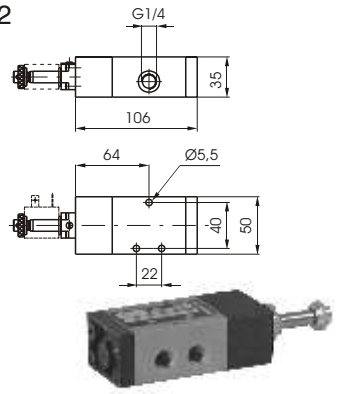


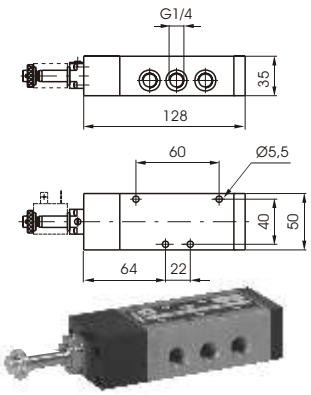
Minimum operating pressure 3 bar

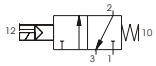
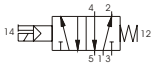
Weight gr. 1140

Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1280 Nl/min	8 mm	G 1/4"

3/2 — Solenoid Spring — 5/2

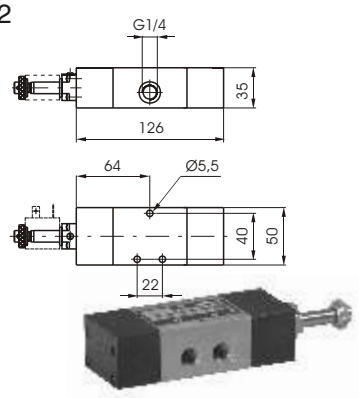


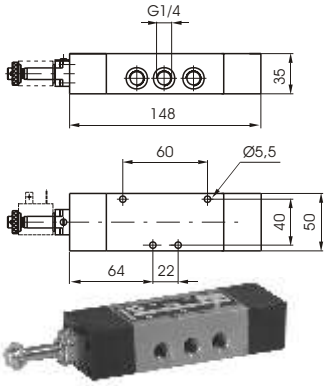


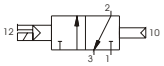
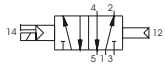
Ordering code	
464/1.32.0.1.M2	**464/1.52.0.1.M2**
	
Weight gr. 530	Weight gr. 625

Minimum operating pressure 2,5 bar

3/2 — Solenoid Differential — 5/2

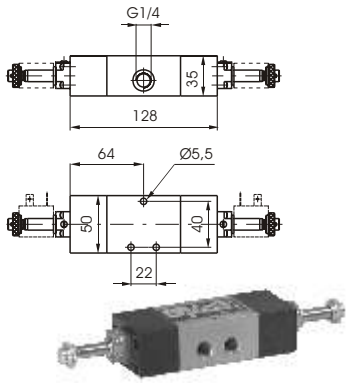


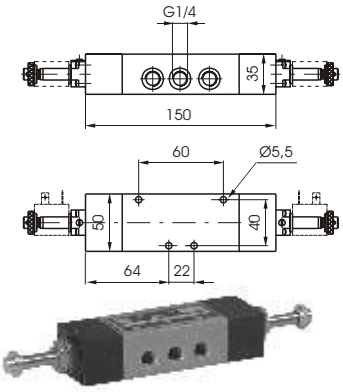


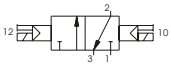
Ordering code	
464/1.32.0.12.M2	**464/1.52.0.12.M2**
	
Weight gr. 650	Weight gr. 740

Minimum operating pressure 2,5 bar

3/2 — Solenoid Solenoid — 5/2

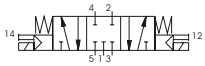
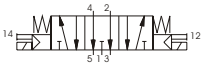
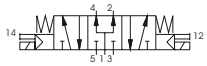


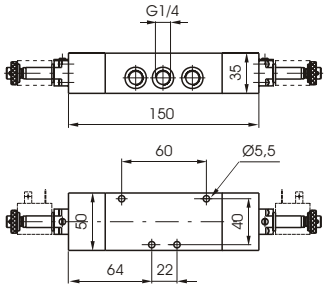


Ordering code	
464/1.32.0.0.M2	**464/1.52.0.0.M2**
	
Weight gr. 730	Weight gr. 820

Minimum operating pressure 2 bar

Microsolenoid Microsolenoid — 5/3

Ordering code	
Closed centres	**464/1.53.31.0.0.M2**
	
Open centres	**464/1.53.32.0.0.M2**
	
Pressured centres	**464/1.53.33.0.0.M2**
	

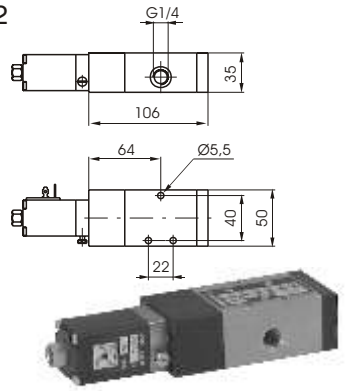


Weight gr. 820

Minimum operating pressure 3 bar

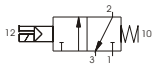
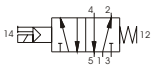
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1360 Nl/min (3/2-5/2) 1280 Nl/min (5/3)	8 mm	G 1/4"

3/2



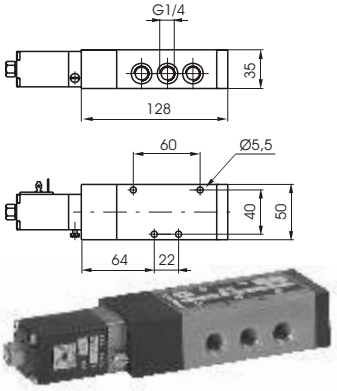
Solenoid
Spring

Ordering code

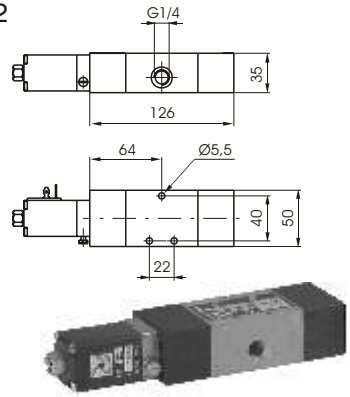
424/1.32.0.1.S*	**424/1.52.0.1.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 680	Weight gr. 770

Minimum operating pressure 2,5 bar

5/2

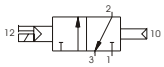
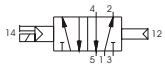


3/2



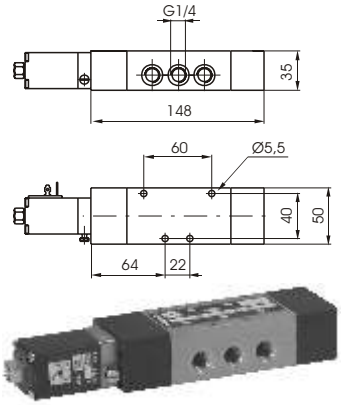
Solenoid
Differential

Ordering code

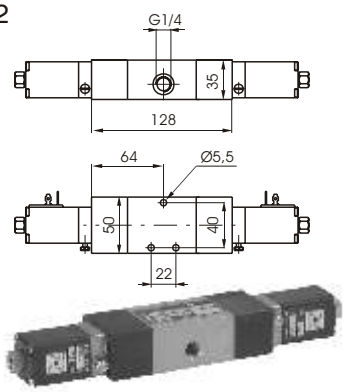
424/1.32.0.12.S*	**424/1.52.0.12.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 800	Weight gr. 890

Minimum operating pressure 2,5 bar

5/2

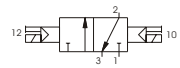
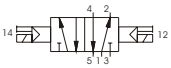


3/2



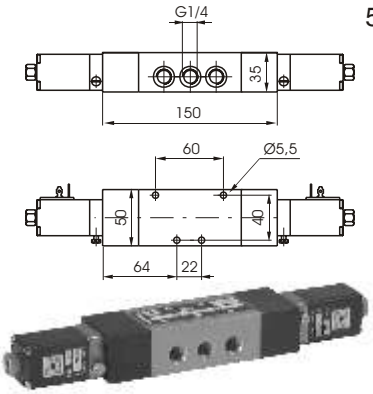
Solenoid
Solenoid

Ordering code

424/1.32.0.0.S*	**424/1.52.0.0.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 1030	Weight gr. 1140

Minimum operating pressure 2 bar

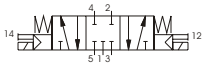
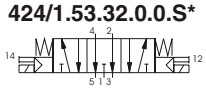
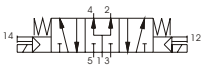
5/2



5/3

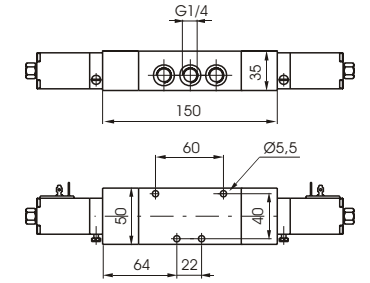
Solenoid
Solenoid

Ordering code

Closed centres	**424/1.53.31.0.0.S***
	
Open centres	**424/1.53.32.0.0.S***
	
Pressured centres	**424/1.53.33.0.0.S***
	

S* = solenoid code
(see page 1.23)

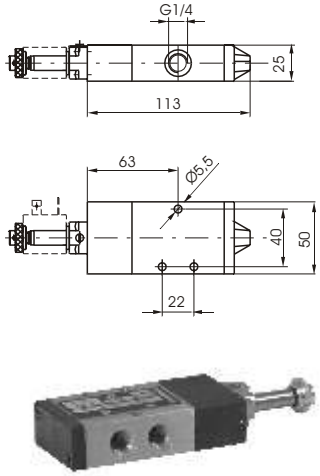
Weight gr. 1140
Minimum operating pressure 3 bar



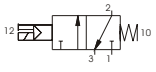
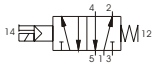
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1350 Nl/min (3/2-5/2) 1280 Nl/min (5/3)	8 mm	G 1/4"

Solenoid Spring

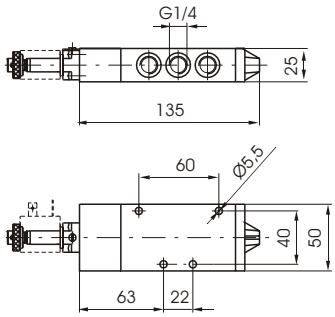
3/2



Ordering code

414/2.32.0.1.M2	414/2.52.0.1.M2
	
Weight gr. 380	Weight gr. 440

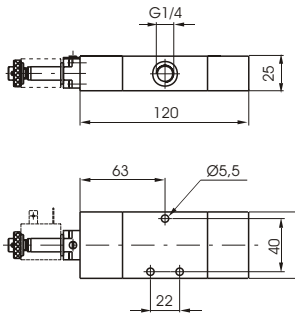
5/2



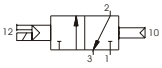
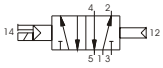
Minimum operating pressure 2,5 bar

Solenoid Differential

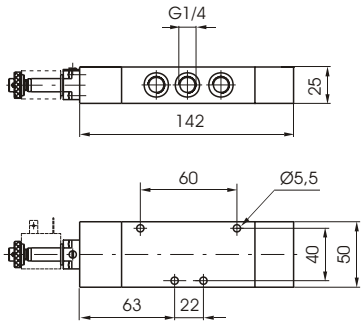
3/2



Ordering code

414/2.32.0.12.M2	414/2.52.0.12.M2
	
Weight gr.450	Weight gr. 510

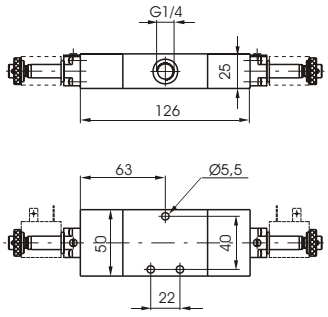
5/2



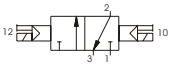
Minimum operating pressure 2,5 bar

Solenoid Solenoid

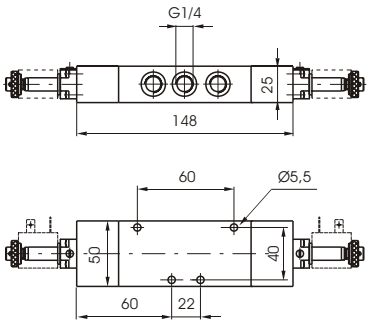
3/2



Ordering code

414/2.32.0.0.M2	414/2.52.0.0.M2
	
Weight gr. 530	Weight gr. 590

5/2

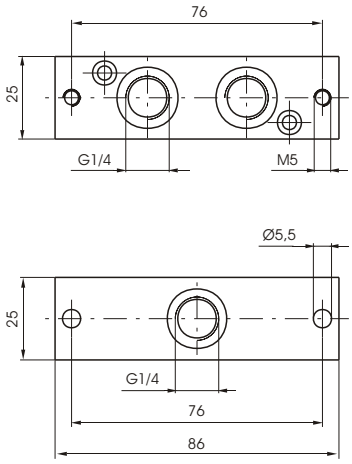


Minimum operating pressure 2 bar

Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1030 Nl/min	7 mm	G 1/4"

Modular base for gang mounting

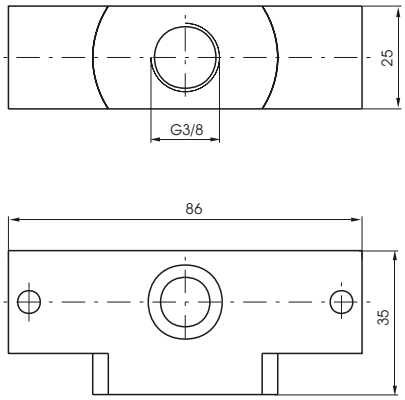
Ordering code
414.00



Weight gr. 120

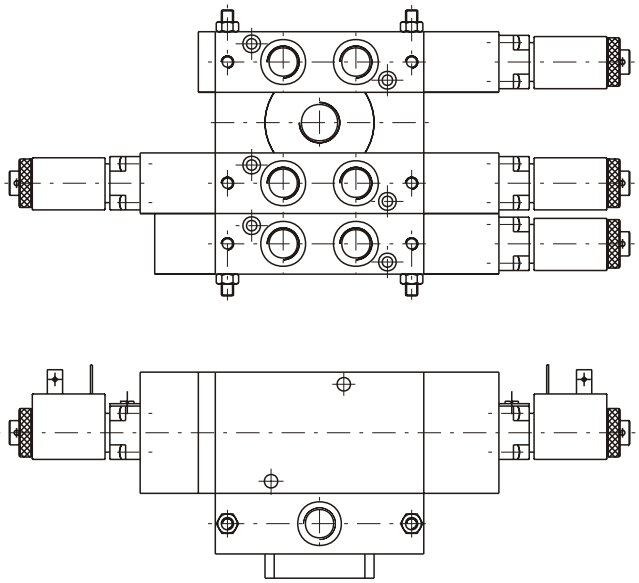
Base for supplementary feed

Ordering code
414.01



Weight gr. 160

Example for an arrangement using a supplementary feed base

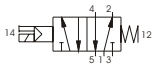


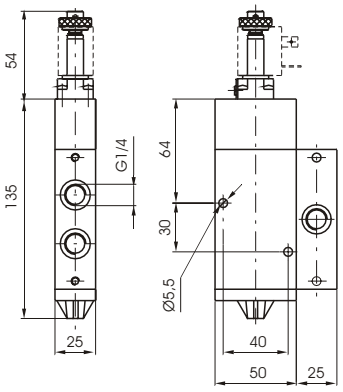
5/2

Solenoid
Spring

Ordering code

414/3.52.0.1.M2





Minimum operating pressure 2,5 bar

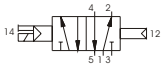
Weight gr. 440

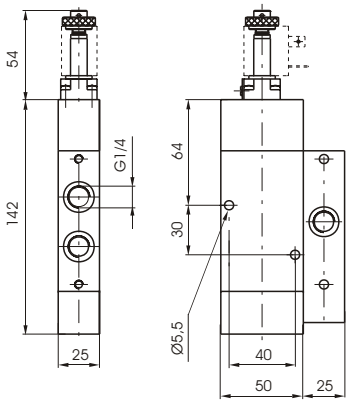
5/2

Solenoid
Differential

Ordering code

414/3.52.0.12.M2





Minimum operating pressure 2,5 bar

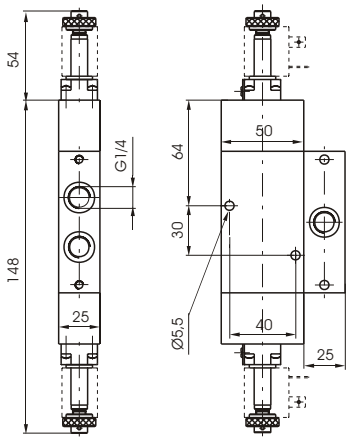
Weight gr. 510

5/2

Solenoid
Spring

Ordering code

414/3.52.0.0.M2



Minimum operating pressure 2 bar

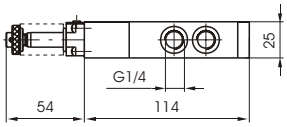
Weight gr. 590

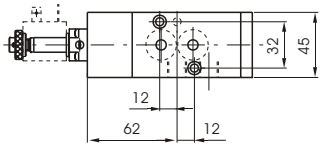
	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
Operational characteristics	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1030 Nl/min	7 mm	G 1/4"

3/2

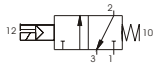
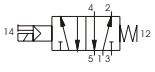
Solenoid
Spring

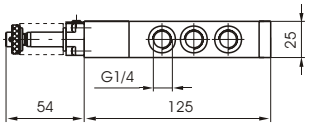
5/2

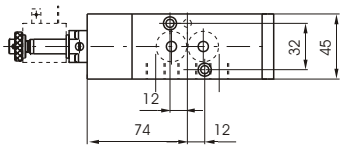




Ordering code

514/N.32.0.1.M2	514/N.52.0.1.M2
	
Weight gr. 390	Weight gr. 450



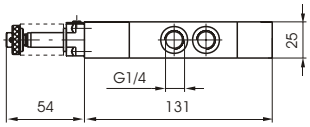


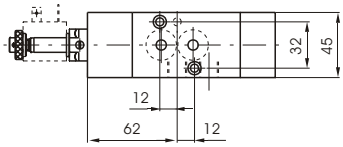
Minimum operating pressure 2,5 bar

3/2

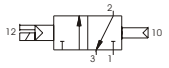
Solenoid
Differential

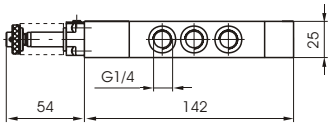
5/2

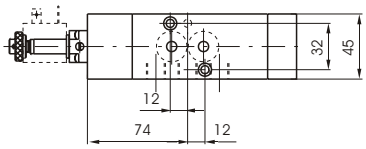




Ordering code

514/N.32.0.12.M2	514/N.52.0.12.M2
	
Weight gr. 460	Weight gr. 520



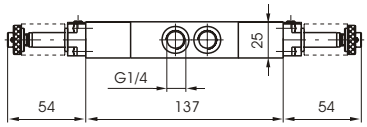


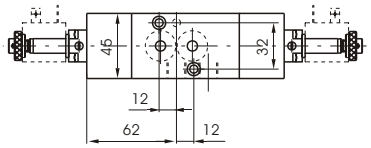
Minimum operating pressure 2,5 bar

3/2

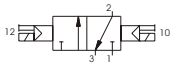
Solenoid
Solenoid

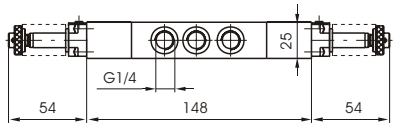
5/2

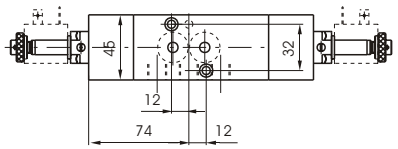




Ordering code

514/N.32.0.0.M2	514/N.52.0.0.M2
	
Weight gr. 540	Weight gr. 600



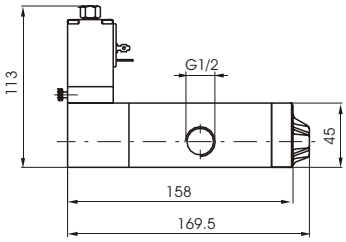


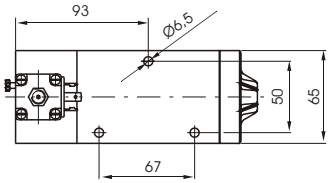
Minimun operating pressure 2 bar

Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	1030 Nl/min	7 mm	G 1/4"

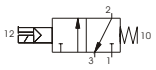
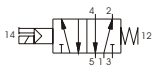
Solenoid Spring

3/2

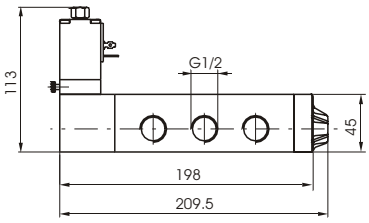


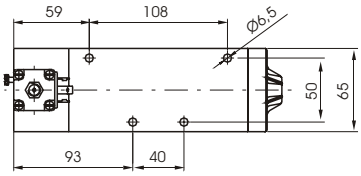


Ordering code

412.32.0.1.S*	412.52.0.1.S*
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 1330	Weight gr. 1600

5/2

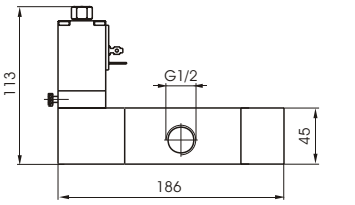


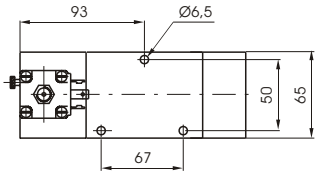


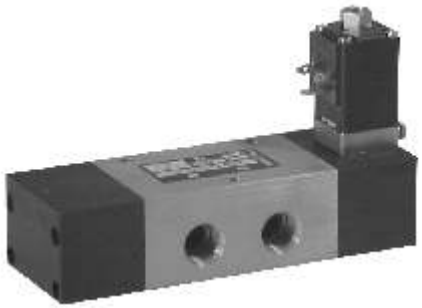
Minimum operating pressure 2,5 bar

Solenoid Differential

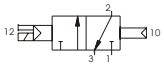
3/2



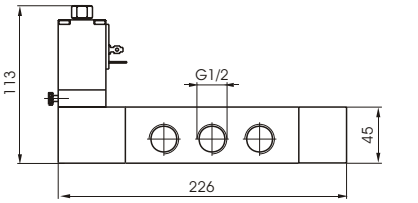


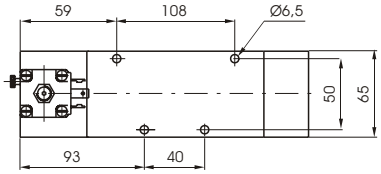


Ordering code

412.32.0.12.S*	412.52.0.12.S*
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 1600	Weight gr. 1870

5/2





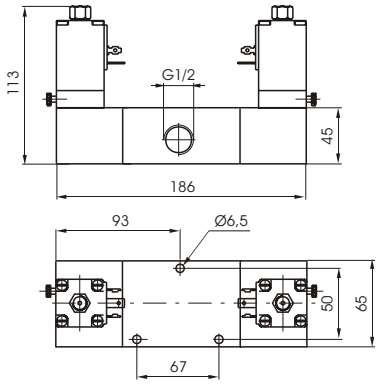
Minimum operating pressure 2,5 bar

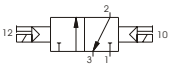
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	3500 Nl/min	15 mm	G 1/2"

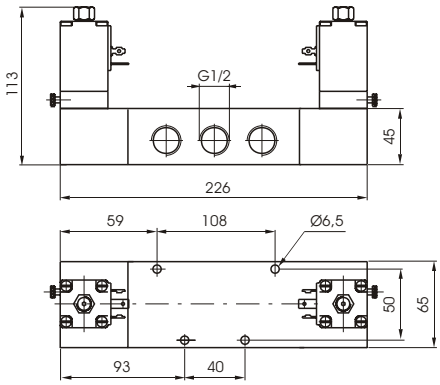
3/2

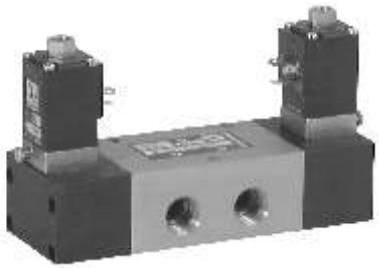
Solenoid
Solenoid

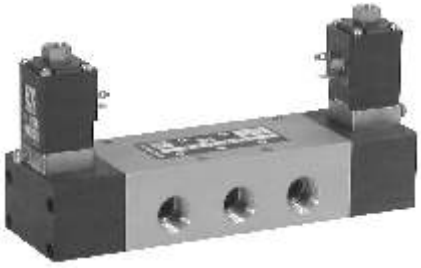
5/2



Ordering code	
412.32.0.0.S*	**412.52.0.0.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 1830	Weight gr. 2100







Minimum operating pressure 2 bar

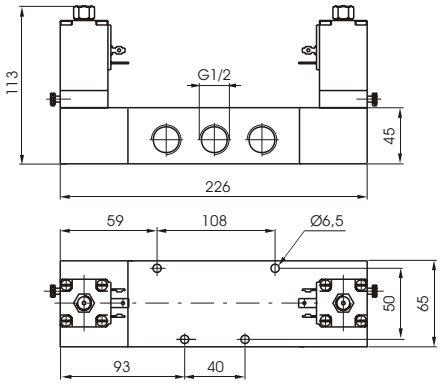
5/3

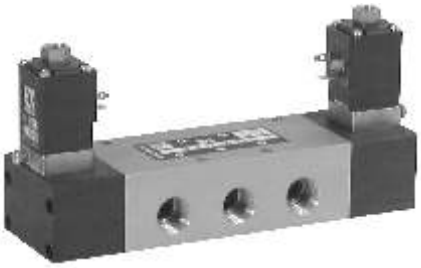
Solenoid
Solenoid

Ordering code	
Closed centres	**412.53.31.0.0.S***
Open centres	**412.53.32.0.0.S***
Pressured centres	**412.53.33.0.0.S***

S* = solenoid code (see page 1.23)

Weight gr. 2100





Minimum operating pressure 3 bar

Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	3500 Nl/min (3/2-5/2) 3000 Nl/min (5/3)	15 mm	G 1/2"

3/2

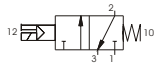
Solenoid
Spring

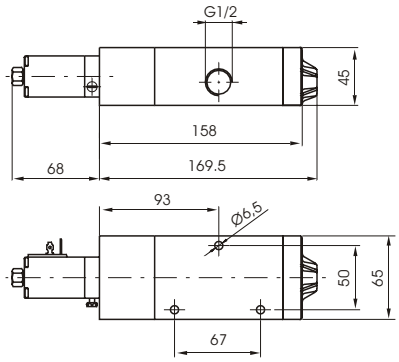
5/2

Ordering code

412/1.32.0.1.S*

S* = solenoid code
(see page 1.23)

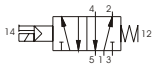


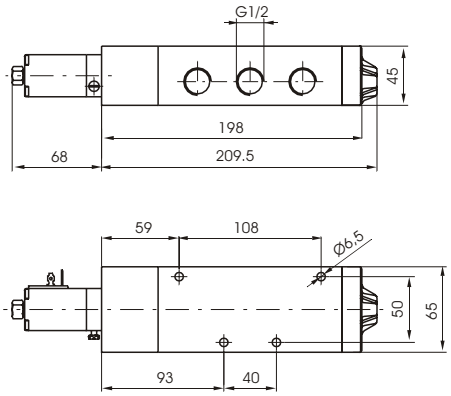


Weight gr. 1330

412/1.52.0.1.S*

S* = solenoid code
(see page 1.23)





Weight gr. 1600

Minimum operating pressure 2,5 bar

3/2

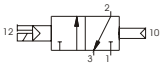
Solenoid
Differential

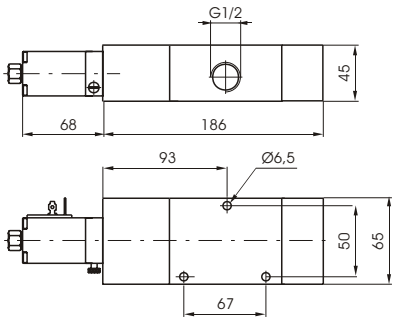
5/2

Ordering code

412/1.32.0.12.S*

S* = solenoid code
(see page 1.23)

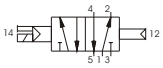


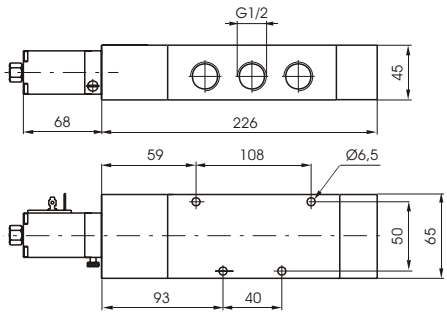


Weight gr. 1600

412/1.52.0.12.S*

S* = solenoid code
(see page 1.23)





Weight gr. 1870

Minimum operating pressure 2,5 bar

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

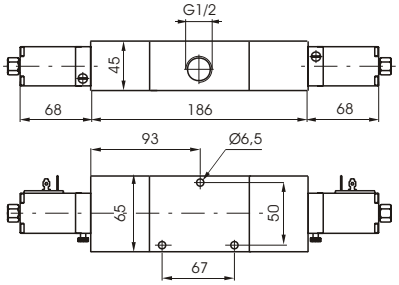
3

3/2

Solenoid
Solenoid

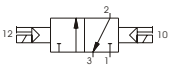
5/2

Ordering code



412/1.32.0.0.S*

S* = solenoid code
(see page 1.23)

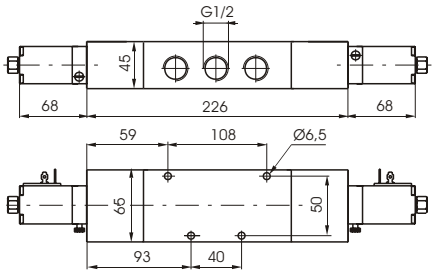


Weight gr. 1830

412/1.52.0.0.S*

S* = solenoid code
(see page 1.23)

Weight gr. 2100



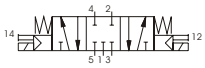
Minimum operating pressure 2 bar

5/3

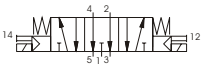
Solenoid
Solenoid

Ordering code

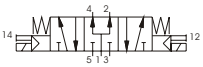
Closed centres **412/1.53.31.0.0.S***



Open centres **412/1.53.32.0.0.S***

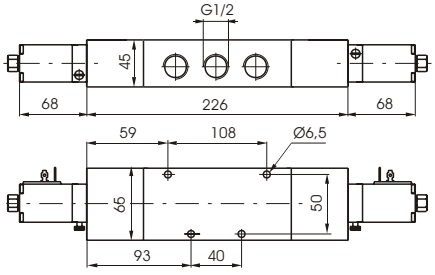


Pressured centres **412/1.53.33.0.0.S***



S* = solenoid code
(see page 1.23)

Weight gr. 2100



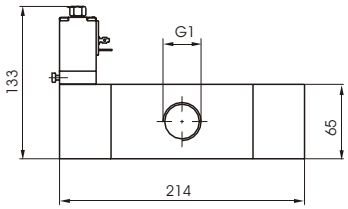
Minimum operating pressure 3 bar

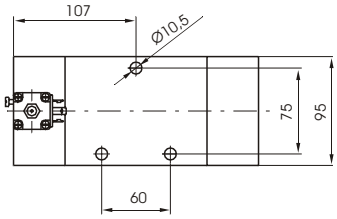
	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
Operational characteristics	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	3500 Nl/min (3/2-5/2) 3000 Nl/min (5/3)	15 mm	G 1/2"

3/2

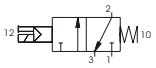
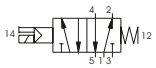
Solenoid
Spring

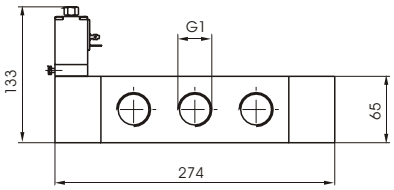
5/2

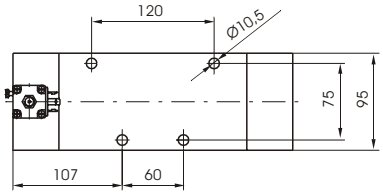




Ordering code

411.32.0.1.S*	**411.52.0.1.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 3400	Weight gr. 4300



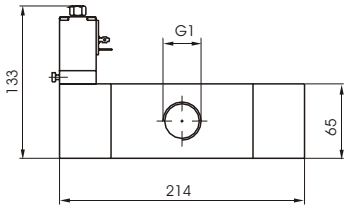


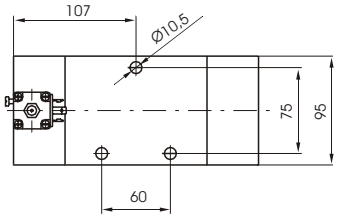
Minimum operating pressure 2,5 bar

3/2

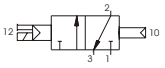
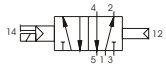
Solenoid
Differential

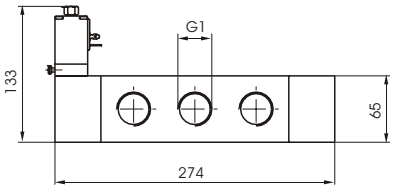
5/2

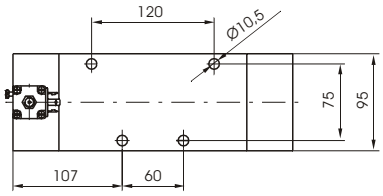




Ordering code

411.32.0.12.S*	**411.52.0.12.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 3400	Weight gr. 4300





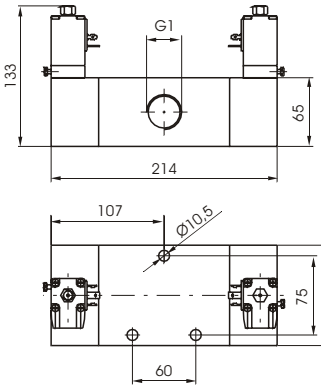
Minimum operating pressure 2,5 bar

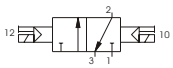
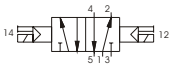
Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	6500 Nl/min	20 mm	G 1"

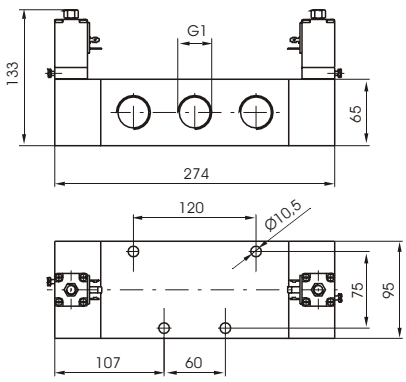
3/2

Solenoid
Solenoid

5/2



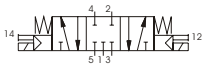
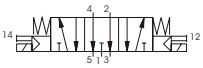
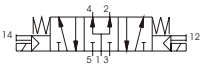
Ordering code	
411.32.0.0.S*	**411.52.0.0.S***
S* = solenoid code (see page 1.23)	S* = solenoid code (see page 1.23)
	
Weight gr. 3700	Weight gr. 4600

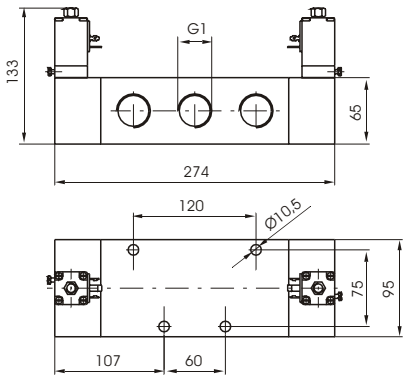


Minimum operating pressure 2 bar

5/3

Solenoid
Solenoid

Ordering code	
Closed centres	**411.53.31.0.0.S*** 
Open centres	**411.53.32.0.0.S*** 
Pressured centres	**411.53.33.0.0.S*** 
	S* = solenoid code (see page 1.23)
	Weight gr. 4700



Minimum operating pressure 3 bar

Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1 bar	Orifice size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	6500 Nl/min	20 mm	G 1"

General

These solenoid valves are supplied in two series with G 1/8" and G 1/4" connections (both with G 1/8" axhaust 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.

3

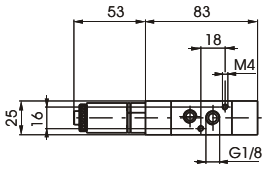
Construction characteristics

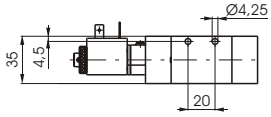
Body	Aluminium alloy 2011
Actuators	Technopolymer
Spool	Nickel plated steel
Piston seals	Nitrile rubber (NBR) oil resistant
Seals	Nitrile rubber (NBR) oil resistant or in alternative Polyurethane compound for oil free application
Spacers	Technopolymer
Springs	Stainless steel AISI 302
Pistons	Technopolymer

Use and maintenance

These solenoid valves have a mean life of 15 milions 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).

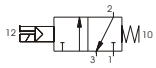
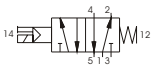
3/2





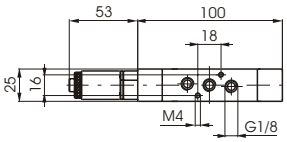
Solenoid spring

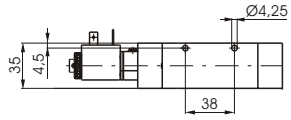
Ordering code

488.32.0.1.*	**488.52.0.1.***
*=Tension code (see page 3.23)	*=Tension code (see page 3.23)
	
Weight gr. 220	Weight gr. 260

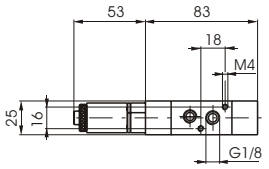
Minimum working pressure 2,5 bar

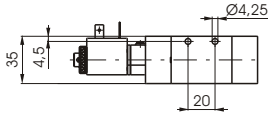
5/2





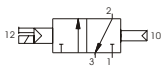
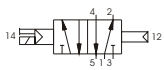
3/2





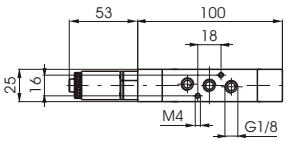
Solenoid differential

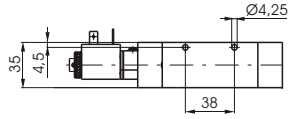
Ordering code

488.32.0.12.*	**488.52.0.12.***
*=Tension code (see page 3.23)	*=Tension code (see page 3.23)
	
Weight gr. 220	Weight gr. 260

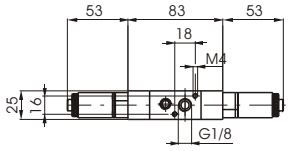
Minimum working pressure 2,5 bar

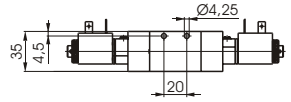
5/2





3/2





Solenoid Solenoid

Ordering code

488.32.0.0.*	**488.52.0.0.***
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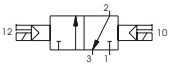
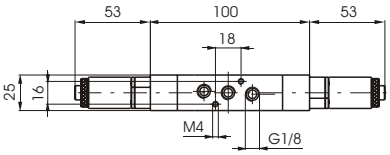
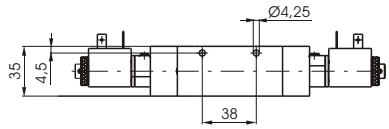
	
Weight gr. 320	Weight gr. 360

Minimum working pressure 2 bar

5/2

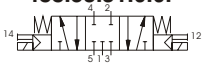




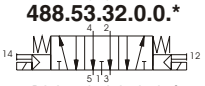
Solenoid Solenoid

Ordering code

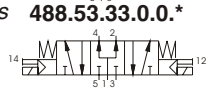
Closed centres **488.53.31.0.0.***



Open centres **488.53.32.0.0.***



Pressured centres **488.53.33.0.0.***

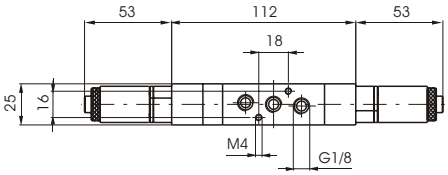


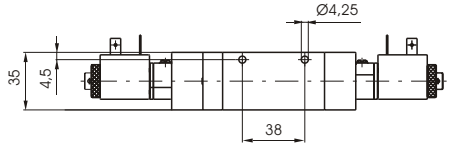
*=Tension code (see page 3.23)

Minimun working pressure 3 bar

Weight gr. 400

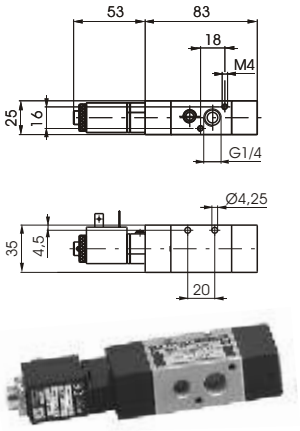
5/3





Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1	ø orificie size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	620 Nl/min (3/2 and 5/2) 410 Nl/min (5/3)	6 mm	G 1/8"

3/2



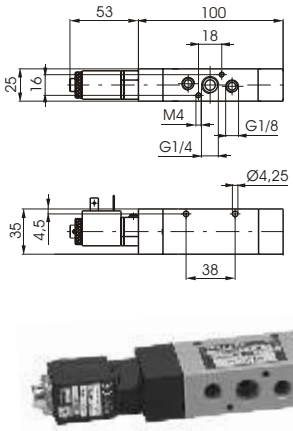
Solenoid spring

Ordering code

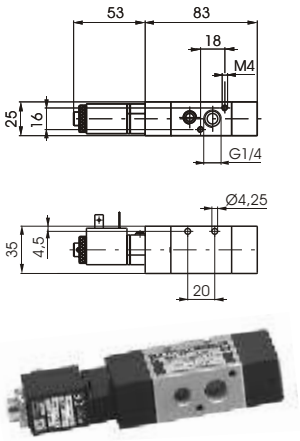
484.32.0.1.*	**484.52.0.1.***
*=Tension code (see page 3.23)	*=Tension code (see page 3.23)
Weight gr. 220	Weight gr. 260

Minimum working pressure 2,5 bar

5/2



3/2



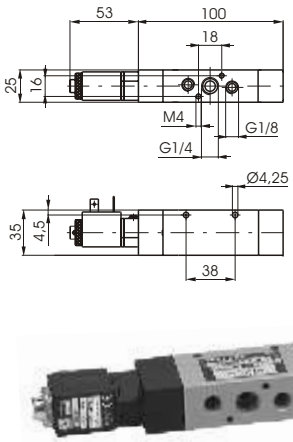
Solenoid differential

Ordering code

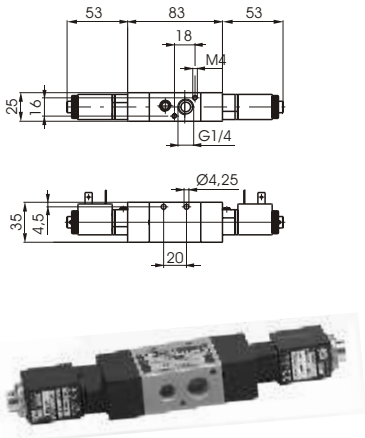
484.32.0.12.*	**484.52.0.12.***
*=Tension code (see page 3.23)	*=Tension code (see page 3.23)
Weight gr. 220	Weight gr. 260

Minimum working pressure 2,5 bar

5/2



3/2



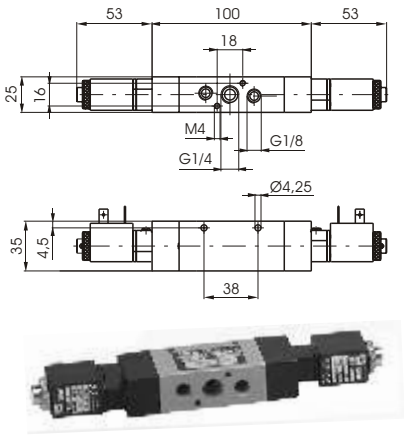
Solenoid Solenoid

Ordering code

484.32.0.0.*	**484.52.0.0.***
*=Tension code (see page 3.23)	*=Tension code (see page 3.23)
Weight gr. 320	Weight gr. 360

Minimum working pressure 2 bar

5/2



Solenoid Solenoid

Ordering code

Closed centres **484.53.31.0.0.***

Open centres **484.53.32.0.0.***

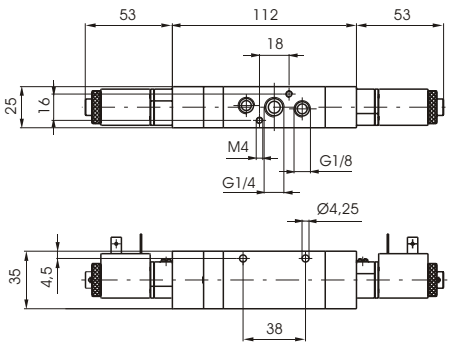
Pressured centres **484.53.33.0.0.***

*=Tension code (see page 3.23)

Minimun working pressure 3 bar

Weight gr. 400

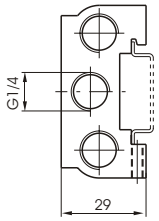
5/3

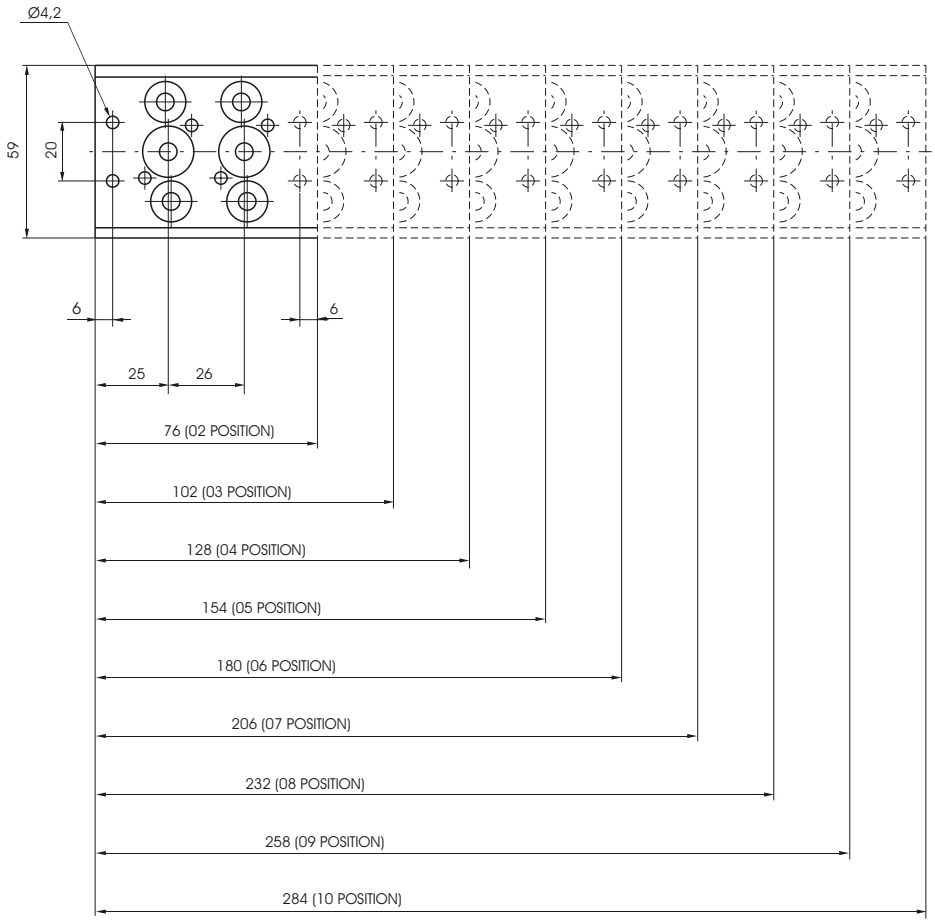


Operational characteristics	Fluid	Max working pressure	Operating temperature		Flow rate at 6 bar with Δp = 1	ø orificie size	Working ports size
	Filtered and lubricated air	10 bar	min. -5°C	max. +50°C	620 Nl/min (3/2 and 5/2) 410 Nl/min (5/3)	6 mm.	G 1/8" - G 1/4"

3

Manifolds





Ordering code

488 . □
n. pos.

n. position	weight gr.
02	220
03	290
04	360
05	430
06	500
07	570
08	640
09	710
10	780

Closing plate

Ordering code
488.00

Weight gr. 25