

**General**

The 2000 series solenoid valves have been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors. They have been designed to be easily assembled into groups or manifolds and include integral electrical connection to facilitate simple and speedy integration into a control system. The series comprises a range of products classified according to type, size and performance. There are three main sizes, 10mm., 18 mm. and 26 mm., with each size further divided into 3 types "LINE ", " FLAT " and " VDMA " or "BASE".

The 10mm. and 18 mm. 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections. Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

**Construction characteristics**

	2100	2400	2600
Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafluorethylene)		
Connection plates	Technopolymer	Zincalloy	Die-cast aluminium
Operators	Technopolymer		
Spool	Aluminium 2011		
Piston seals	Oil resistant nitrile rubber - NBR		
Spool seals	Oil resistant nitrile rubber - HNBR		
Springs	Stainless steel AISI 302		
Piston	Aluminium 2011	Technopolymer	

**Use and maintenance**

The average life of the valve exceeds 50.000.000 cycles when used under optimum conditions. Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction. Ensure the valve is used within our recommended criteria for pressure and temperature. In dirty or dusty environments, the exhaust ports should be protected. A seal kit including the spool is available for overhauling the valve. This operation does not require a skilled worker, although a particular care should be taken when reassembling the valve.

**Ordering codes for miniature solenoid valves**

**Series 2100**

The 10 mm. miniature solenoid valve with 0,7 mm. orifice has been selected for piloting this series of valves (see Series 300). This results in low response times and reduced power consumption. The valve can be supplied with the coil upward or downward depending on the application.

Codes are as follows:

**Coil upward code**

- 01 = miniature sol. 12 VDC 90°conn. with led
- 21 = miniature sol. 12 VDC line conn. with led
- 02 = miniature sol. 24 VDC 90°conn. with led
- 22 = miniature sol. 24 VDC line conn. with led

**Coil downward code**

- 11 = miniature sol. 12 VDC 90° conn. with led
- 31 = miniature sol. 12 VDC line conn. with led
- 12 = miniature sol. 24 VDC 90°conn. with led
- 32 = miniature sol. 24 VDC line conn. with led
- 91 = miniature sol. 12 VDC for integral electrical connections
- 92 = miniature sol. 24 VDC for integral electrical connections

**Series 2400/2600**

The 15 mm miniature solenoid valve with 1,1 mm. orifice has been selected for piloting this series of valves (see Series 300). This results in low response times and reduced power consumption. The valve can be supplied with the coil upward or downward depending on the application.

Codes are as follows :

**Coil upward code**

- 01 = miniature sol. 12 VDC
- 02 = miniature sol. 24 VDC
- 05 = miniature sol. 24 VAC
- 06 = miniature sol. 110 VAC
- 07 = miniature sol. 220 VAC

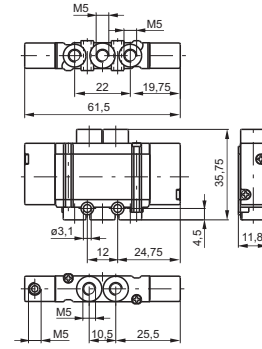
**Coil downward code**

- 11 = miniature sol. 12 VDC
- 12 = miniature sol. 24 VDC
- 15 = miniature sol. 24 VAC
- 16 = miniature sol. 110 VAC
- 17 = miniature sol. 220 VAC

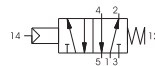
Miniature solenoid homologated are available (see Series 300).

**Pneumatic - Spring**

Ordering code
<b>2115.52.00.19</b>



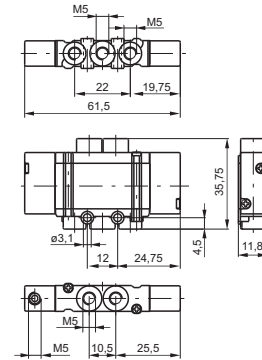
Weight gr. 30  
Minimum piloting pressure 2 bar



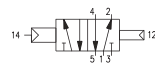
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5	M5

**Pneumatic - Differential**

Ordering code
<b>2115.52.00.16</b>



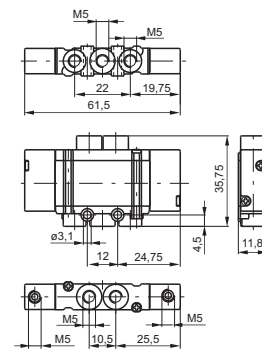
Weight gr. 28  
Minimum piloting pressure 2 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5	M5

**Pneumatic - Pneumatic**

Ordering code
<b>2115.52.00.18</b>



Weight gr. 30  
Minimum piloting pressure 2 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5	M5



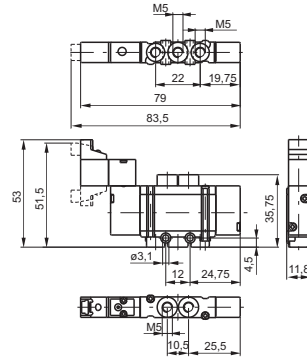
**Miniature solenoid - Spring / Miniature solenoid - Differential**

Ordering code

**2115.52.00.P.V**

**P** PILOTING  
39 = Solenoid - Spring  
36 = Solenoid - Differential

**V** COIL VOLTAGE  
01 = 12 VDC 90° conn. with led  
21 = 12 VDC line conn. with led  
02 = 24 VDC 90° conn. with led  
22 = 24 VDC line conn. with led  
11 = 12 VDC 90° conn. with led downward  
31 = 12 VDC line conn. with led downward  
12 = 24 VDC 90° conn. with led downward  
32 = 24 VDC line conn. with led downward



Weight gr. 42  
Minimum working pressure 2 bar



Weight gr. 40  
Minimum operating pressure 2 bar

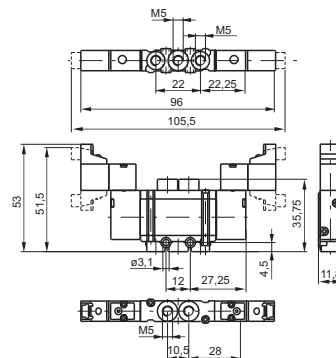
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not		7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Miniature solenoid - Miniature solenoid**

Ordering code

**2115.52.00.35.V**

**V** COIL VOLTAGE  
01 = 12 VDC 90° conn. With led  
21 = 12 VDC line conn. with led  
02 = 24 VDC 90° conn. with led  
22 = 24 VDC line conn. with led  
11 = 12 VDC 90° conn. with led downward  
31 = 12 VDC line conn. with led downward  
12 = 24 VDC 90° conn. with led  
12 = 24 VDC 90° conn. whit led  
32 = 24 VDC line conn. with led downward



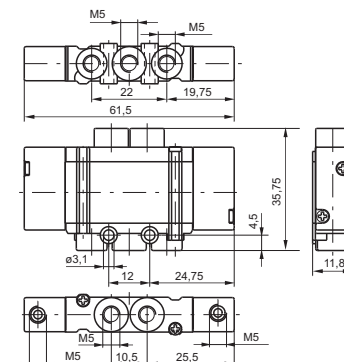
Weight gr. 52  
Minimum working pressure 2 bar



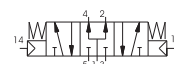
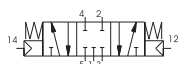
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not		7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Pneumatic - Pneumatic**

Ordering code	
<b>2115.53.F.18</b>	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	



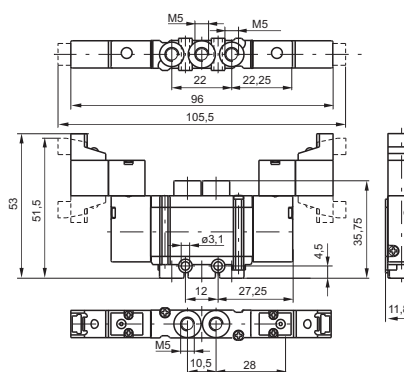
Weight gr. 32  
Minimum working pressure 2,5 bar



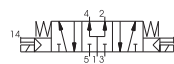
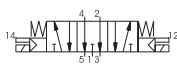
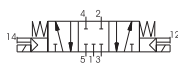
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min	mm 2,5

**Miniature solenoid - Miniature solenoid**

Ordering code	
<b>2115.53.F.35.V</b>	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	
COIL VOLTAGE	
01=12 VDC 90° conn. with led	
21=12 VDC line conn. with led	
02=24 VDC 90° conn. with led	
22=24 VDC line conn. with led	
V 11=12 VDC conn.90° led	
11=12 VDC 90° conn. whit led	
31=12 VDC line conn. with led downward	
12=24 VDC 90° conn. with led downward	
32=24 VDC line conn. with led downward	



Weight gr. 54  
Minimum working pressure 2,5 bar



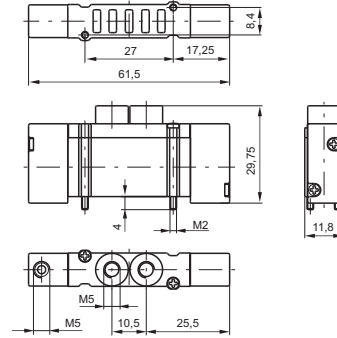
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min	mm 2,5

2

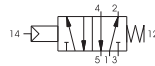
**Pneumatic - Spring**

Ordering code

**2135.52.00.19**



Weight gr. 32  
Minimum piloting pressure 2 bar

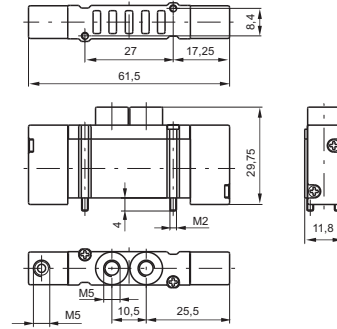


Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (Nl/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not		7 bar	Min. -5°C	Max. +50°C	250 Nl/min	mm 2,5

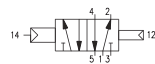
**Pneumatic - Differential**

Ordering code

**2135.52.00.16**



Weight gr. 30  
Minimum piloting pressure 2 bar

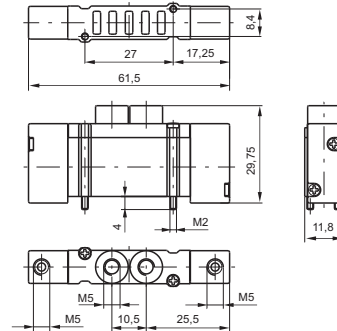


Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (Nl/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not		7 bar	Min. -5°C	Max. +50°C	250 Nl/min	mm 2,5

**Pneumatic - Pneumatic**

Ordering code

**2135.52.00.18**



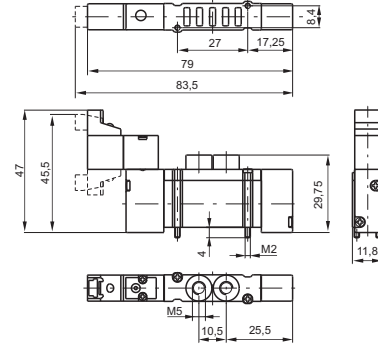
Weight gr. 32  
Minimum piloting pressure 2,5 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (Nl/min)	Orifice size (mm)	Working ports size
	Filtered and lubricated air or not		7 bar	Min. -5°C	Max. +50°C	250 Nl/min	mm 2,5

**Miniature solenoid - Spring / Miniature solenoid - Differential**

Ordering code
<b>2135.52.00.P.V</b>
PILOTING
P = Solenoid - Spring
36 = Solenoid - Differential
COIL VOLTAGE
01=12 VDC 90°conn. with led
21=12 VDC line conn. with led
02=24 VDC 90°conn. with led
22=24 VDC line conn. with led
11=12 VDC 90°conn. with led downward
V = 31=12 VDC line conn. with led downward
12=24 VDC 90° conn. with led downward
32=24 VDC line conn. with led downward
91=12 VDC for integral electrical connections downward
92=24 VDC for integral electrical connections downward



Weight gr. 38  
Minimum working pressure 2 bar

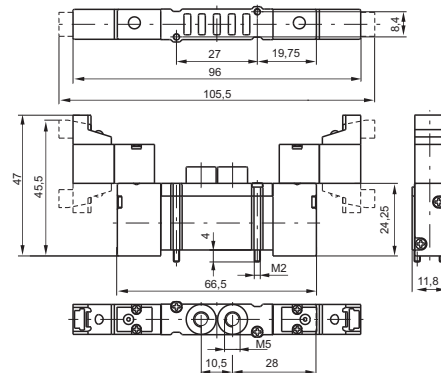


Weight gr. 36  
Minimum operating pressure 2 bar

Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (Nl/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 Nl/min	mm 2,5

**Miniature solenoid - Miniature solenoid**

Ordering code
<b>2135.52.00.35.V</b>
COIL VOLTAGE
01=12 VDC 90°conn. with led
21=12 VDC line conn. with led
02=24 VDC 90°conn. with led
22=24 VDC line conn. with led
11=12 VDC 90°conn. with led downward
V = 31=12 VDC line conn. with led downward
12=24 VDC 90°conn. with led downward
32=24 VDC line conn. with led downward
91=12 VDC for integral electrical connections downward
92=24 VDC for integral electrical connections downward



Weight gr. 50  
Minimum working pressure 1,5 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (Nl/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 Nl/min	mm 2,5

2

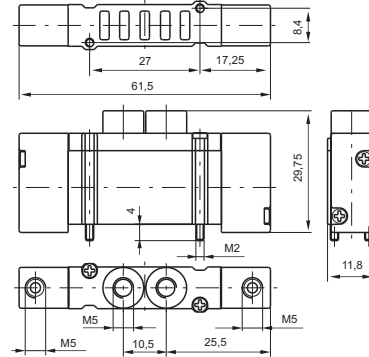
**Pneumatic - Pneumatic**

Ordering code

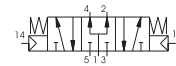
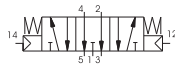
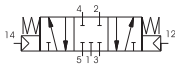
**2135.53.F.18**

FUNCTION

- F** 31 = Closed centres
- 32 = Open centres
- 33 = Pressured centres



Weight gr. 28  
Minimum working pressure 2 bar



For dimension "A" see ordering code

Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min	mm 2,5

**Miniature solenoid - Miniature solenoid**

Ordering code

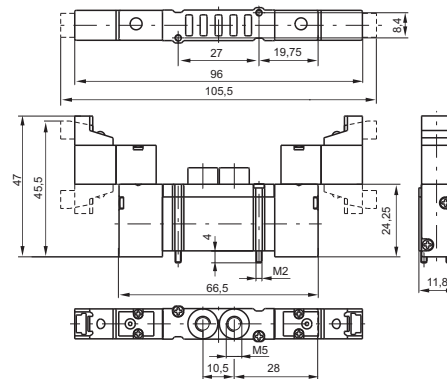
**2135.53.F.35.V**

FUNCTION

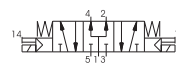
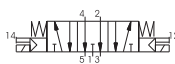
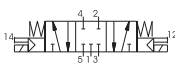
- F** 31 = Closed centres
- 32 = Open centres
- 33 = Pressured centres

COIL VOLTAGE

- 01=12 VDC 90°conn. with led
- 21=12 VDC line conn. with led
- 02=24 VDC 90°conn. with led
- 22=24 VDC line conn. with led
- 11=12 VDC 90°conn. with led downward
- V** 31=12 VDC line conn. with led downward
- 12=24 VDC 90° conn. with led downward
- 32=24 VDC line conn. with led downward
- 91=12 VDC for integral electrical connections downward
- 92=24 VDC for integral electrical connections downward



Weight gr. 52  
Minimum operating pressure 2,5 bar

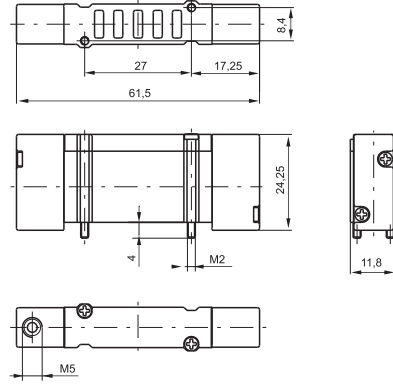


For dimension "A" see ordering code

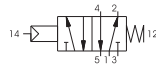
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)	Working ports size
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min	mm 2,5

**Pneumatic - Spring**

Ordering code
<b>2141.52.00.19</b>



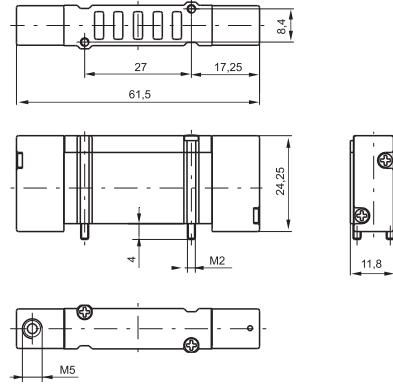
Weight gr. 24  
Minimum piloting pressure 2 bar



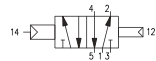
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Pneumatic - Differential**

Ordering code
<b>2141.52.00.16</b>



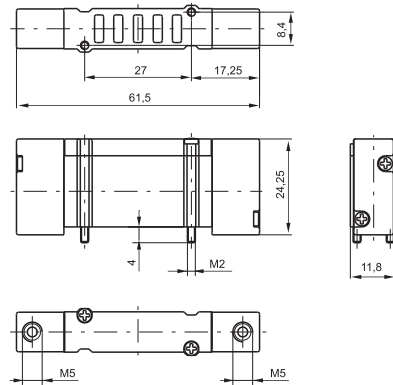
Weight gr. 22  
Minimum piloting pressure 2 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Pneumatic - Pneumatic**

Ordering code
<b>2141.52.00.18</b>



Weight gr. 26  
Minimum piloting pressure 1,5 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with $\Delta p=1$ (NI/min)	Orifice size (mm)
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

2



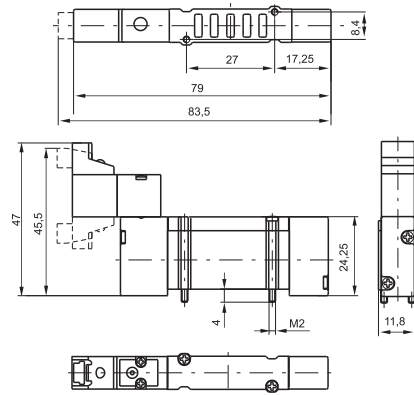
**Miniature solenoid - Spring / Miniature solenoid - Differential**

Ordering code

**2141.52.00.P.V**

**P** PILOTING  
39 = Solenoid - Spring  
36 = Solenoid - Differential

**V** COIL VOLTAGE  
01 = 12 VDC 90° conn. with led  
21 = 12 VDC line conn. with led  
02 = 24 VDC 90° conn. with led  
22 = 24 VDC line conn. with led  
11 = 12 VDC 90° conn. with led downward  
31 = 12 VDC line conn. with led downward  
12 = 24 VDC 90° conn. with led downward  
32 = 24 VDC line conn. with led downward  
91 = 12 VDC for integral electrical connections downward  
92 = 24 VDC for integral electrical connections downward



Weight gr. 38  
Minimum working pressure 2 bar



Weight gr. 36  
Minimum working pressure 2 bar

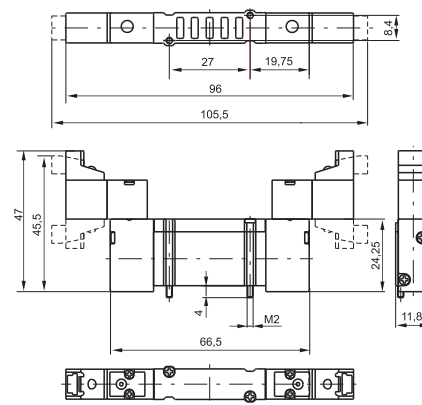
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Miniature solenoid - Miniature solenoid**

Ordering code

**2141.52.00.35.V**

**V** COIL VOLTAGE  
01 = 12 VDC 90° conn. with led  
21 = 12 VDC line conn. with led  
02 = 24 VDC 90° conn. with led  
22 = 24 VDC line conn. with led  
11 = 12 VDC 90° conn. with led downward  
31 = 12 VDC line conn. with led downward  
12 = 24 VDC 90° conn. with led downward  
32 = 24 VDC line conn. with led downward  
91 = 12 VDC for integral electrical connections downward  
92 = 24 VDC for integral electrical connections downward



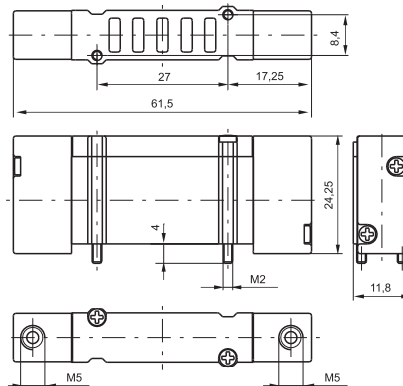
Weight gr. 48  
Minimum working pressure 1,5 bar



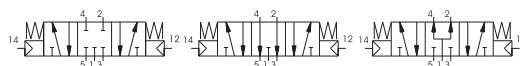
Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)
	Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	250 NI/min	mm 2,5

**Pneumatic - Pneumatic**

Ordering code	
<b>2141.53.F.18</b>	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	



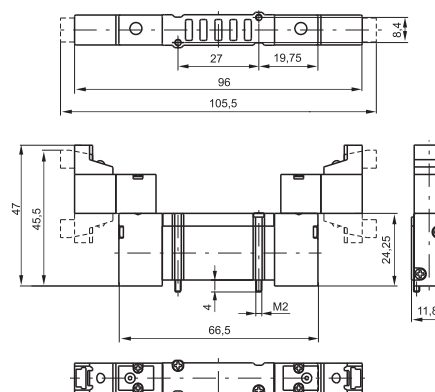
Weight gr. 28  
Minimum working pressure 2 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min

**Miniature solenoid - Miniature solenoid**

Ordering code	
<b>2141.53.F.35.V</b>	
FUNCTION	
F 31 = Closed centres	
32 = Open centres	
33 = Pressured centres	
COIL VOLTAGE	
01=12 VDC 90°conn. with led	
21=12 VDC line conn. with led	
02=24 VDC 90°conn. with led	
22=24 VDC line conn. with led	
11=12 VDC 90°conn. with led downward	
V 31=12 VDC line conn. with led downward	
12=24 VDC 90° conn. with led downward	
32=24 VDC line conn. with led downward	
91=12 VDC for integral electrical connections downward	
92=24 VDC for integral electrical connections downward	



Weight gr. 52  
Minimum working pressure 2,5 bar



Operational characteristic	Fluid	Max working pressure (bar)	Temperature °C		Flow rate at 6 bar with Δp=1 (NI/min)	Orifice size (mm)
		Filtered and lubricated air or not	7 bar	Min. -5°C	Max. +50°C	180 NI/min



**Modular base for "BASE" version**

Ordering code

**2140.01**

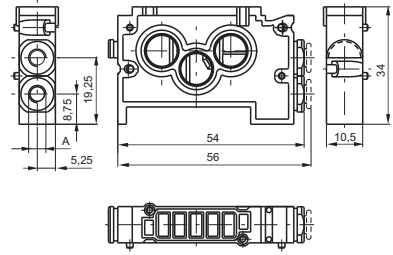
TYPE

0 = modular BASE without cartridges

**T** 4 = modular BASE c/w with 4mm tube cartridges

5 = modular BASE c/w with M5 cartridges

Weight gr. 22

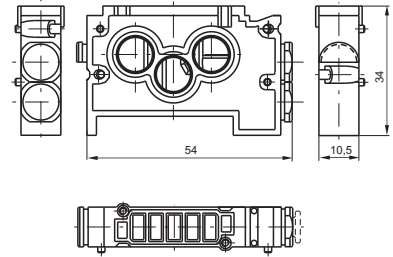


**Modular base for "FLAT" version**

Ordering code

**2130.01**

Weight gr. 28

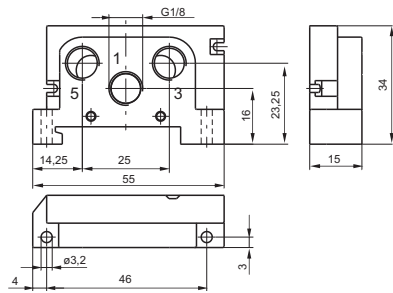


**Right inlet base**

Ordering code

**2140.02**

Weight gr. 18

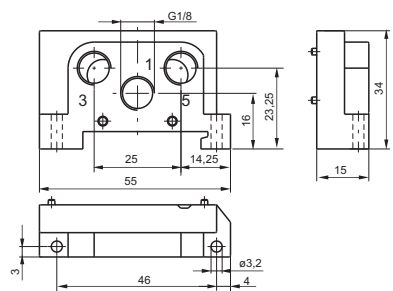


**Left inlet base**

Ordering code

**2140.03**

Weight gr. 18

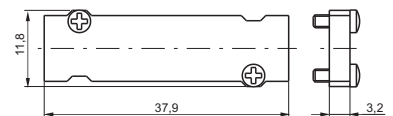


**Closing plate**

Ordering code

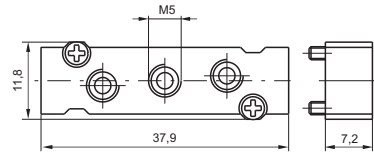
**2130.00**

Weight gr. 7



**Intermediate air intake**

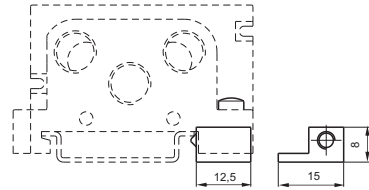
Ordering code
<b>2130.10</b>



Weight gr. 12  
to be assembled of a valve

**DIN rail adapter**

Ordering code
<b>2130.16</b>



Weight gr. 6

**Modular base cartridge**

Ordering code
<b>2100.①</b>
TYPE
031M = 4mm tube cartridges
① 033M = M5 cartridges
034M = M7x1 cartridges
035M = lock cartridges
036M = 6mm tube cartridges



Weight gr. 5

**Diaphragm plug**

Ordering code
<b>2130.17</b>

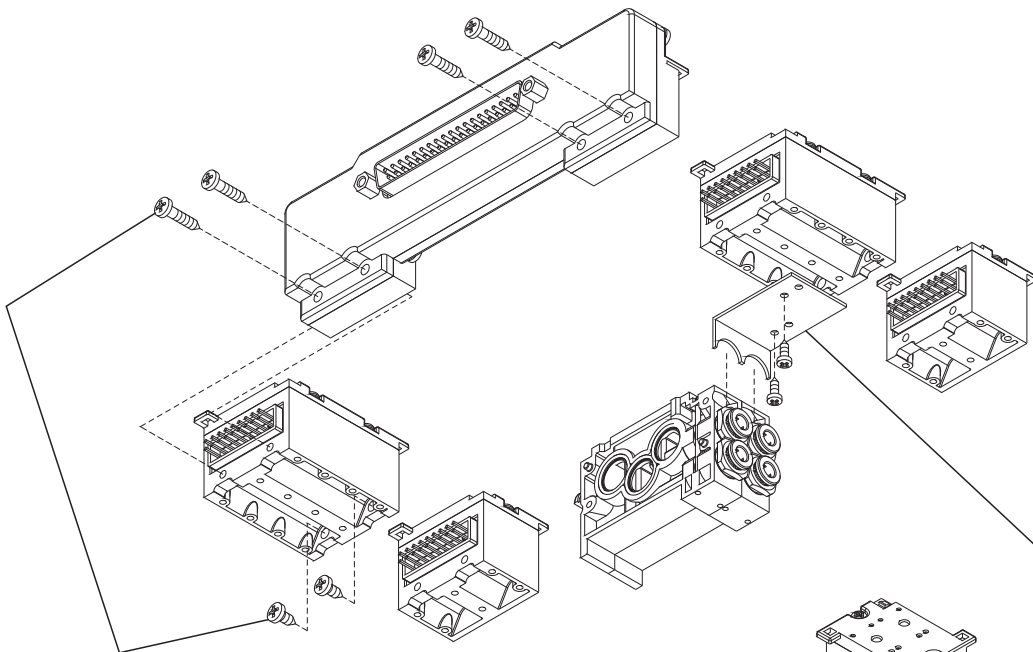


Weight gr. 6

The integral electrical design for the series 2400 valve is extremely flexible, allowing the production of pre-wired solenoid valve manifolds, the configuration of which can be determined at the point of assembly. The 24 VDC, 12 VDC (equivalent PNP) modules are available with 2 or 4 positions. The system assembled is designed for an IP40 - IP65 protection.

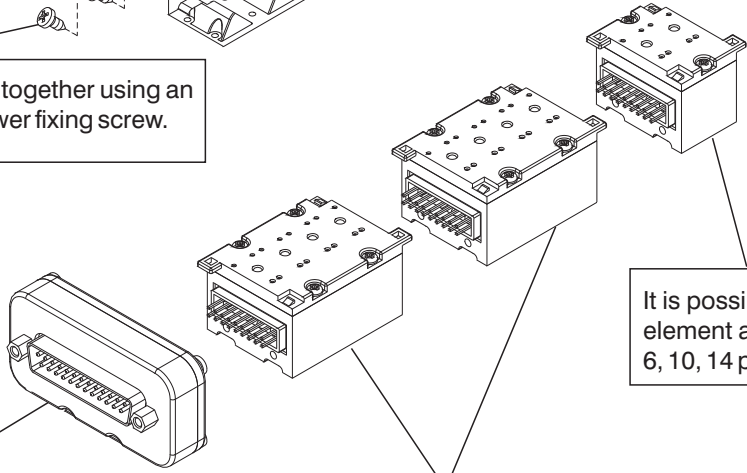
Coil type 91 or 92 is required for the multipin electrical connection (see valve ordering codes).

2

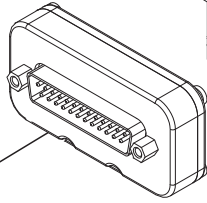


Support plates are supplied to mount the electrical connection elements to the manifold modules. Individual valves can still be removed from the manifold even after assembly is complete. One support plate is required per element.

The elements connect together using an upper coupling and lower fixing screw.

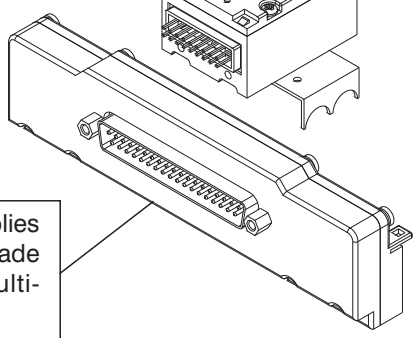


It is possible to use the 2 position element as the first terminal on 2, 6, 10, 14 position assemblies.



On single solenoid assemblies electrical connection is made using an SUB-D 25 multi-connector.

Up to 16 valves can be operated by using 4x4 position elements.





On double solenoid assemblies electrical connection is made using a SUB-D 37 multi-connector.

4 positions module	Ordering code	2 positions module
	<p><b>2100.P.T</b></p> <p>PLACES</p> <p><b>P</b> 04 = 4 Places 02 = 2 Places</p> <p>TYPE</p> <p>00 = left IP40-PNP 02 = left IP40-PNP with protection diode 10 = left IP65-PNP 12 = left IP65-PNP with protection diode</p> <p><b>T</b> 01 = right IP40-PNP 03 = right IP40-PNP with protection diode 11 = right IP65-PNP 13 = right IP65-PNP with protection diode</p>	

2

Front connector IP65 - 37 poles	Ordering code	Front connector IP65 - 25 poles	Ordering code
	<p><b>2100.37.10</b></p>		<p><b>2100.25.10</b></p>

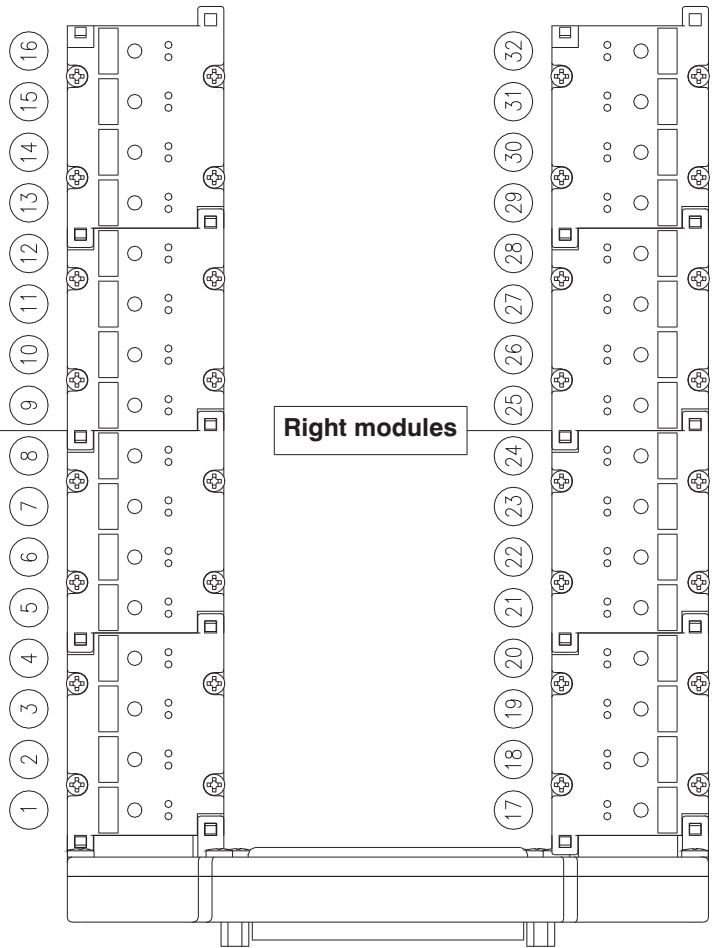
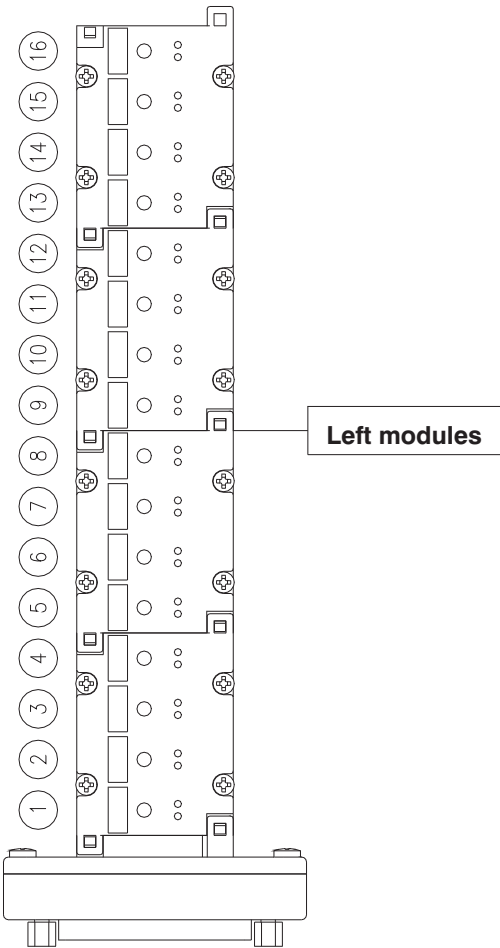
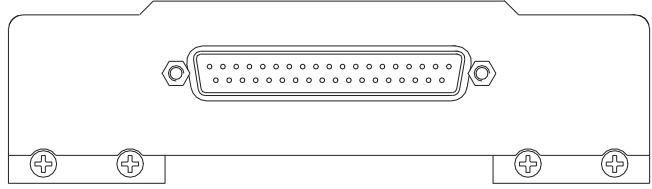
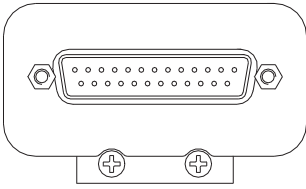
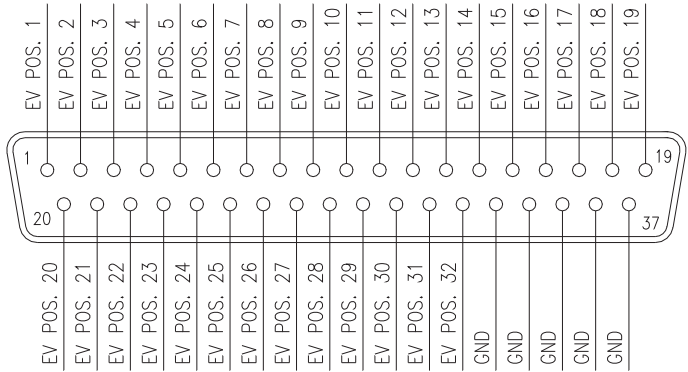
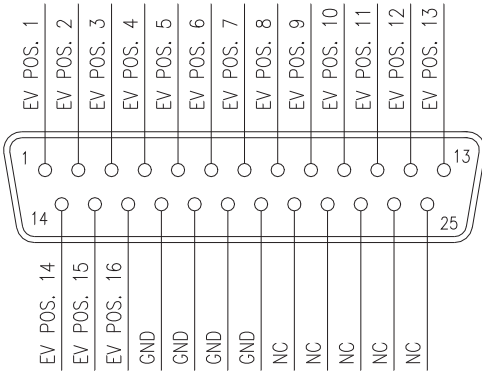
Plug	Ordering code	FLAT support plate	Ordering code
	<p><b>2100.00</b></p>		<p><b>2130.50</b></p>

In line cable complete with connector IP40	Ordering code
	<p><b>2400.T.L.00</b></p>

In line	Ordering code
	<p><b>2400.T.L.C</b></p>

**SUB-D 25 CONTACTS  
CONNECTOR**

**SUB-D 37 CONTACTS  
CONNECTOR**



2