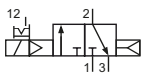


**Technical details**

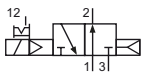
<b>Connection</b>	BM-01: G1/8 BM-02: G1/4
<b>Nominal size</b>	BM-01: 5 mm BM-02: 7 mm
<b>Temperature range</b>	-10°C ... +60°C
<b>Medium</b>	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Alternatively the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
<b>Materials</b>	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, steel and plastic
<b>Protection</b>	IP 65 according to EN 60529



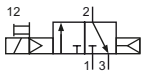
Electrically operated spool valve. The manual override is non-detent (HNT) or detent (HNR) and is operated by bolt or screw driver.

**3/2-way-valves**


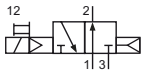
BM-01-310-HNR-xxx  
BM-02-310-HNR-xxx  
3/2-way, single solenoid, air spring return, NC



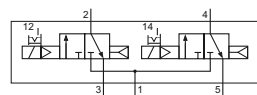
BM-01-312-HNR-xxx  
BM-02-312-HNR-xxx  
3/2-way, single solenoid, air spring return, NO



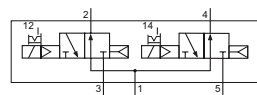
BM-01-310-HNT-xxx  
BM-02-310-HNT-xxx  
3/2-way, single solenoid, air spring return, NC



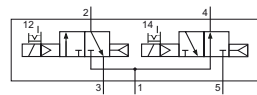
BM-01-312-HNT-xxx  
BM-02-312-HNT-xxx  
3/2-way, single solenoid, air spring return, NO

**2 x 3/2-way-valves**


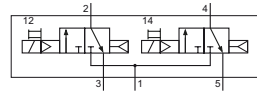
BM-01-310/2-HNR-xxx  
BM-02-310/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, NC



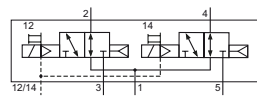
BM-01-312/2-HNR-xxx  
BM-02-312/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, NO



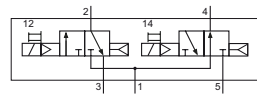
BM-01-314/2-HNR-xxx  
BM-02-314/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, 1 x NC, 1 x NO



BM-01-310/2-HNT-xxx  
BM-02-310/2-HNT-xxx  
2 x 3/2-way, single solenoid, air spring return, NC



BM-01-312/2-HNT-xxx  
BM-02-312/2-HNT-xxx  
2 x 3/2-way, single solenoid, air spring return, NO



BM-01-314/2-HNT-xxx  
BM-02-314/2-HNT-xxx  
2 x 3/2-way, single solenoid, air spring return, 1 x NC, 1 x NO

Please complete: xxx = electrical option

**Electrical options**

Nominal voltage	Power consumption	Specifics	Plug connection*1	-XXX electrical pins on same side of ports	
				2 or 2 and 4	1, 3 or 1, 3 and 5
12 V DC	1 W		Form C	-461	-431
24 V DC	1 W		Form C	-462	-432
24 V DC	1 W		M12	-N62	-
24 V AC	3 VA		Form C	-452	-422
115 V AC	3 VA		Form C	-456	-426
230 V AC	3 VA		Form C	-457	-427

\*1 Plug socket not included, suitable plug sockets see page 09.

## Series BM-01 and BM-02

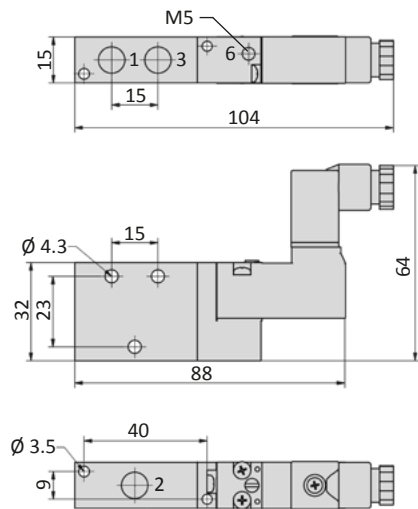
### Technical data

Model-no.:	BM-01-310	BM-01-312	BM-01-310/2	BM-01-312/2	BM-01-314/2
Operating pressure (bar)	2 ... 8	2 ... 8	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	2 ... 8	2 ... 8	2 ... 8
Flow rate (Nl/min)	660	600	650	550	580
Response time (ms) at 6 bar	on: 19 off: 32	on: 16 off: 30	on: 18 off: 34	on: 18 off: 34	on: 18 off: 34
Weight (kg)	0.108	0.110	0.154	0.154	0.154

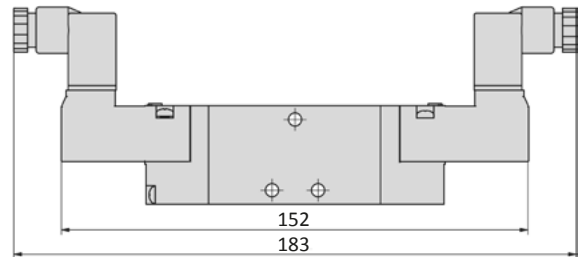
Model-no.:	BM-02-310	BM-02-312	BM-02-310/2	BM-02-312/2	BM-02-314/2
Operating pressure (bar)	2 ... 8	2 ... 8	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	2 ... 8	2 ... 8	2 ... 8
Flow rate (Nl/min)	1090	920	1050	1030	NC: 1050. NO: 920
Response time (ms) at 6 bar	on: 19 off: 23	on: 25 off: 27	on: 22 off: 24	on: 22 off: 24	on: 22 off: 24
Weight (kg)	0.150	0.150	0.250	0.250	0.250

Dimensions

BM-01-31x-HNx

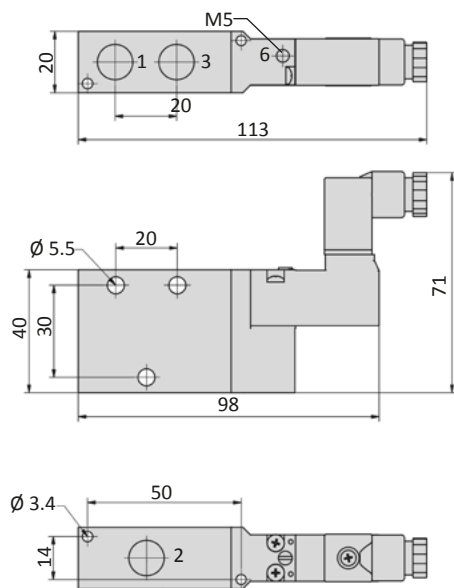


BM-01-31x/2-HNx

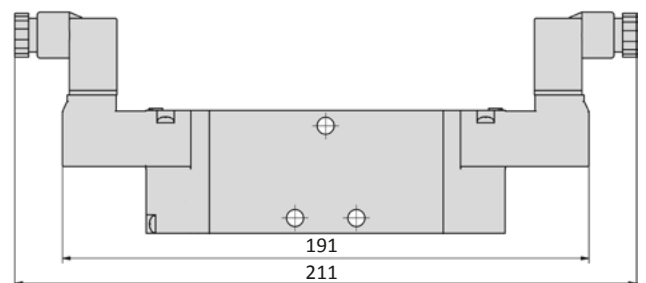


4

BM-02-31x-HNx



BM-02-31x/2-HNx



- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhausts
- 6 = pilot air exhaust (only at BM-valves)
- 6 = external pilot pressure supply (only at BME-valves)

Plug socket (not included in scope of delivery) can be repositioned by 180°.

# Series BM-01 and BM-02



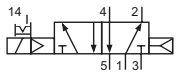
## Technical details

<b>Connection</b>	BM-01: G1/8 BM-02: G1/4
<b>Nominal size</b>	BM-01: 5 mm BM-02: 7 mm
<b>Temperature range</b>	-10°C ... +60°C
<b>Medium</b>	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Alternatively the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
<b>Materials</b>	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, steel and plastic
<b>Protection</b>	IP 65 according to EN 60529

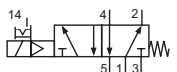


Electrically operated spool valve. The manual override is non-detent or detent and is operated by bolt or screw driver.

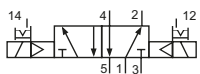
### 5/2-way-valves



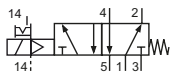
BM-01-510-HNR-xxx  
BM-02-510-HNR-xxx  
5/2-way, single solenoid, air spring return



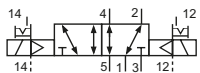
BM-01-511-HNR-xxx  
BM-02-511-HNR-xxx  
5/2-way, single solenoid, mechanical spring return



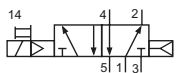
BM-01-520-HNR-xxx  
BM-02-520-HNR-xxx  
5/2-way, double solenoid



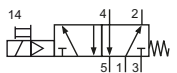
BME-01-511-HNR-xxx  
BME-02-511-HNR-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



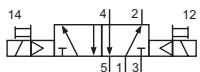
BME-01-520-HNR-xxx  
BME-02-520-HNR-xxx  
5/2-way, double solenoid, external pilot pressure



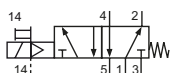
BM-01-510-HNT-xxx  
BM-02-510-HNT-xxx  
5/2-way, single solenoid, air spring return



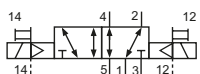
BM-01-511-HNT-xxx  
BM-02-511-HNT-xxx  
5/2-way, single solenoid, mechanical spring return



BM-01-520-HNT-xxx  
BM-02-520-HNT-xxx  
5/2-way, double solenoid



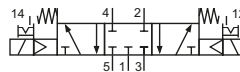
BME-01-511-HNT-xxx  
BME-02-511-HNT-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



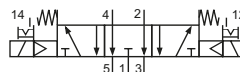
BME-01-520-HNT-xxx  
BME-02-520-HNT-xxx  
5/2-way, double solenoid, external pilot pressure

Please complete: xxx = electrical option

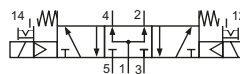
### 5/3-way-valves



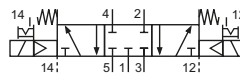
BM-01-530-HNR-xxx  
BM-02-530-HNR-xxx  
5/3-way, center position closed



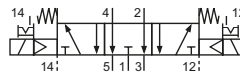
BM-01-533-HNR-xxx  
BM-02-533-HNR-xxx  
5/3-way, center position exhausted



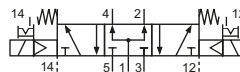
BM-01-534-HNR-xxx  
BM-02-534-HNR-xxx  
5/3-way, center position pressurized



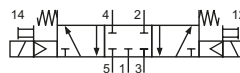
BME-01-530-HNR-xxx  
BME-02-530-HNR-xxx  
5/3-way, center position closed, external pilot pressure



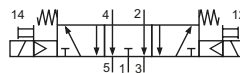
BME-01-533-HNR-xxx  
BME-02-533-HNR-xxx  
5/3-way, center position exhausted, external pilot pressure



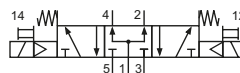
BME-01-534-HNR-xxx  
BME-02-534-HNR-xxx  
5/3-way, center position pressurized, external pilot pressure



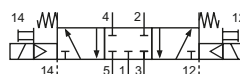
BM-01-530-HNT-xxx  
BM-02-530-HNT-xxx  
5/3-way, center position closed



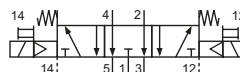
BM-01-533-HNT-xxx  
BM-02-533-HNT-xxx  
5/3-way, center position exhausted



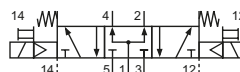
BM-01-534-HNT-xxx  
BM-02-534-HNT-xxx  
5/3-way, center position pressurized



BME-01-530-HNT-xxx  
BME-02-530-HNT-xxx  
5/3-way, center position closed, external pilot pressure



BME-01-533-HNT-xxx  
BME-02-533-HNT-xxx  
5/3-way, center position exhausted, external pilot pressure



BME-01-534-HNT-xxx  
BME-02-534-HNT-xxx  
5/3-way, center position pressurized, external pilot pressure

**Electrical options**

Nominal voltage	Power consumption	Specifics	Plug connection*1	-XXX electrical pins on same side of ports	
				2 and 4	1, 3 and 5
12 V DC	1 W		Form C	-461	-431
24 V DC	1 W		Form C	-462	-432
24 V DC	1 W		M12	-N62	-
24 V AC	3 VA		Form C	-452	-422
115 V AC	3 VA		Form C	-456	-426
230 V AC	3 VA		Form C	-457	-427

\*1 Plug socket not included. suitable plug sockets see page 09.

**Technical data**

Model-no.:	BM-01-510	BM-01-511	BM-01-520	BME-01-511	BME-01-520
Operating pressure (bar)	2 ... 8	3 ... 8	2 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	2 ... 8	3 ... 8	2 ... 8	3 ... 8	2 ... 8
Flow rate (NI/min)	780	800	790	800	790
Response time (ms) at 6 bar	on: 17 off: 32	on: 15 off: 35	on: 13 off: 33	on: 15 off: 35	on: 13 off: 33
Weight (kg)	0.118	0.120	0.156	0.126	0.168

Model-no.:	BM-01-530	BM-01-533	BM-01-534	BME-01-530	BME-01-533	BME-01-534
Operating pressure (bar)	3 ... 8	3 ... 8	3 ... 8	-0.95 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	690	670	1030	690	670	1030
Response time (ms) at 6 bar	on: 17 off: 17	on: 16 off: 43	on: 17 off: 49	on: 17 off: 17	on: 16 off: 43	on: 17 off: 49
Weight (kg)	0.154	0.154	0.154	0.166	0.166	0.166

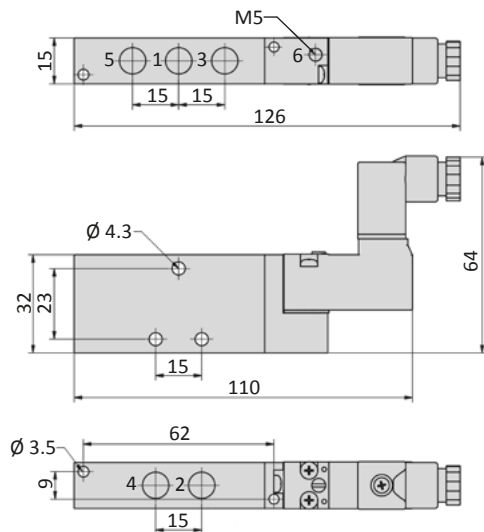
Model-no.:	BM-02-510	BM-02-511	BM-02-520	BME-02-511	BME-02-520
Operating pressure (bar)	2 ... 8	3 ... 8	2 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	2 ... 8	3 ... 8	2 ... 8	3 ... 8	2 ... 8
Flow rate (NI/min)	1700	1600	1540	1600	1540
Response time (ms) at 6 bar	on: 23 off: 33	on: 13 off: 35	on: 11 off: 11	on: 13 off: 35	on: 11 off: 11
Weight (kg)	0.220	0.220	0.270	0.220	0.270

Model-no.:	BM-02-530	BM-02-533	BM-02-534	BME-02-530	BME-02-533	BME-02-534
Operating pressure (bar)	3 ... 8	3 ... 8	3 ... 8	-0.95 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	1300	1470	1660	1300	1470	1660
Response time (ms) at 6 bar	on: 20 off: 26	on: 26 off: 28	on: 26 off: 33	on: 20 off: 26	on: 26 off: 28	on: 26 off: 33
Weight (kg)	0.260	0.260	0.260	0.260	0.260	0.260

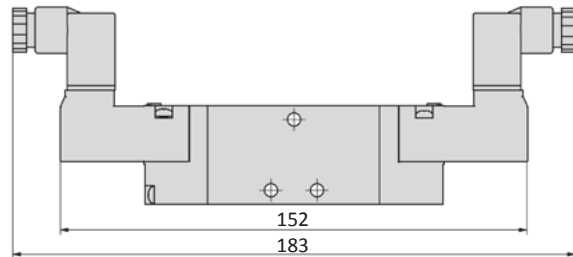
## Series BM-01 and BM-02

### Dimensions

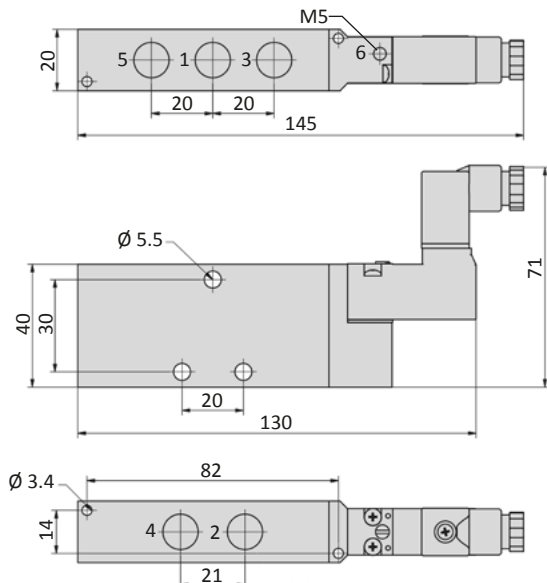
#### BM-01-51x-HNx, BME-01-51x-HNx



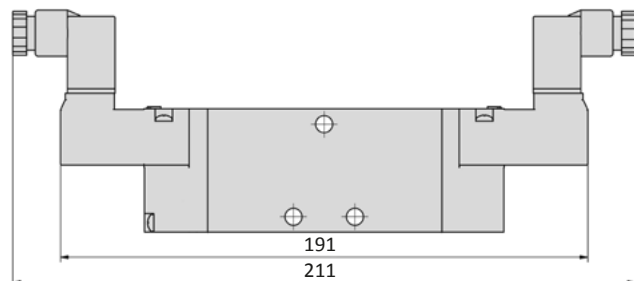
#### BM-01-520-HNx, BME-01-520-HNx, BM-01-53x-HNx, BME-01-53x-HNx



#### BM-02-51x-HNx, BME-02-51x-HNx



#### BM-02-520-HNx, BME-02-520-HNx, BM-02-53x-HNx, BME-02-53x-HNx

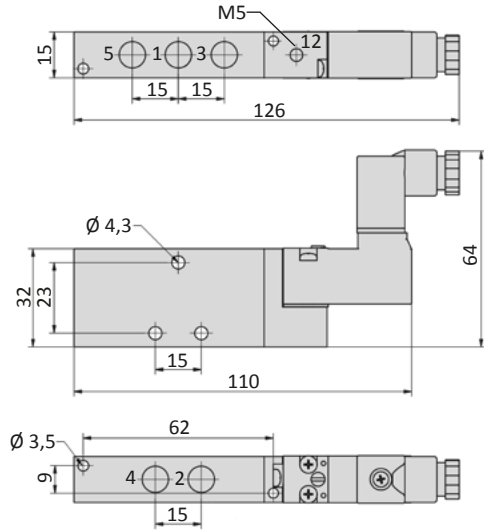


- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhausts
- 6 = pilot air exhaust

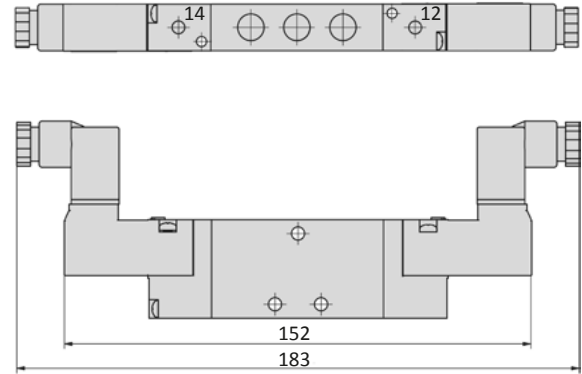
Plug socket (not included in scope of delivery) can be repositioned by 180°.

**Dimensions**

**BME-01-51x-HNx**

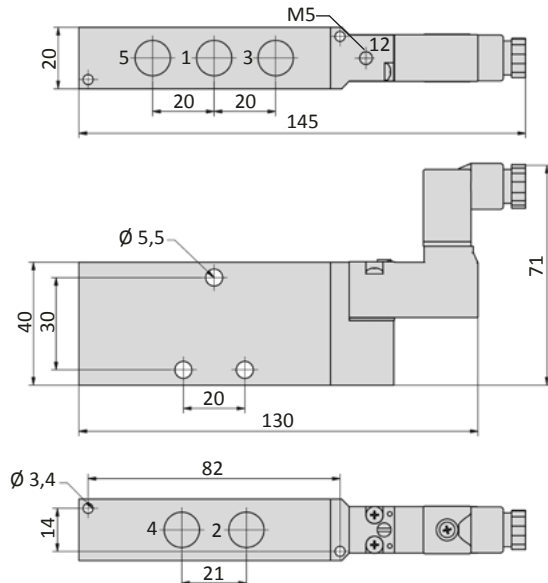


**BME-01-520-HNx, BME-01-53x-HNx**

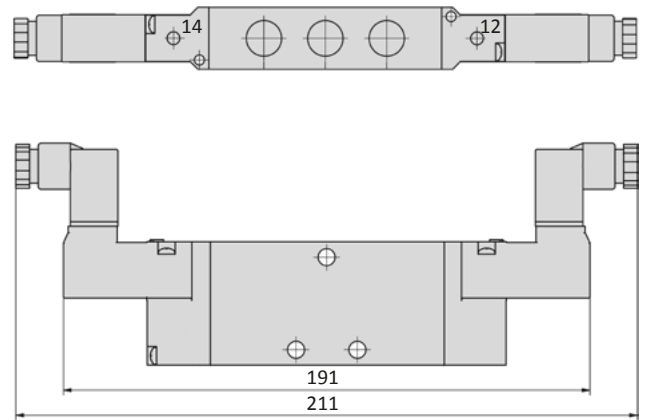


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**BME-02-51x-HNx**



**BME-02-520-HNx, BME-02-53x-HNx**



- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhaust
- 12,14 = external pilot pressure supply

Plug socket (not included in scope of delivery) can be repositioned by 180°.

## Series BM-01 and BM-02

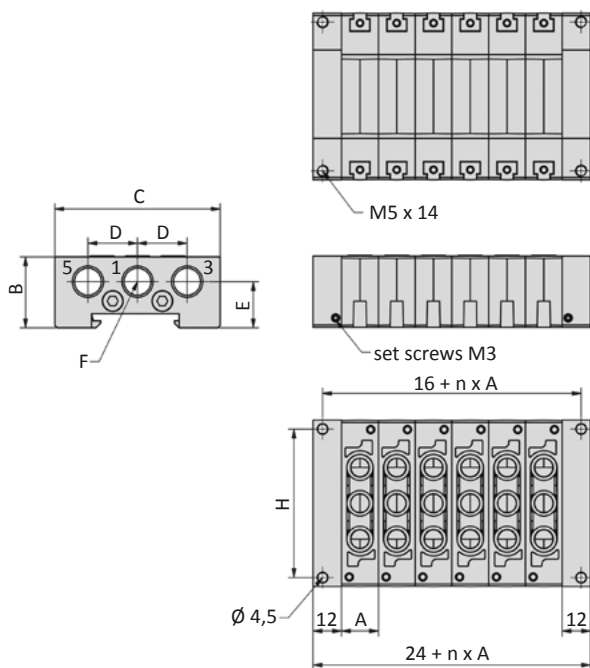
### General information

The RF-01-xx/n and RF-02-xx/n manifolds are suitable for the BM-01 and BM-02 valve series. The system is modular and can be extended up to 12 stations. Blanking plates RF-01-V and RF-02-V are available. All mounting screws and gaskets are included.

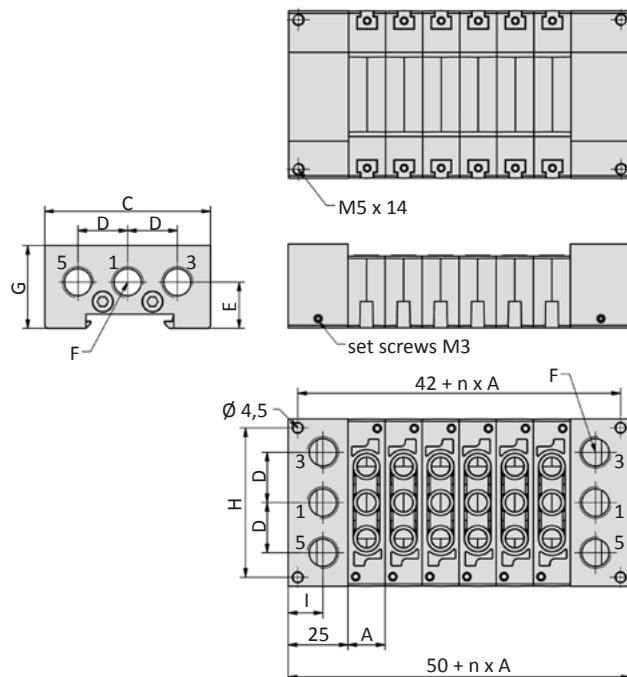


### Dimensions

#### RF-01-AB, RF-02-AB



#### RF-01-CD, RF-02-CD



n = number of stations  
 1 = pressure inlet  
 3,5 = exhausts

Model-no.:	A	B	C	D	E	F	G	H	I
RF-01-xx/n	15.7	30	70	21	19.5	G1/4	35	62.5	14.5
RF-02-xx/n	20.5	32	90	25	20	G3/8	38	82	12.5

Model-no.:	nn	02	03	04	05	06	07	08	09	10	11	12
Weight(kg)	RF-01-AB/nn	0.150	0.190	0.230	0.270	0.310	0.350	0.390	0.430	0.470	0.510	0.550
	RF-02-AB/nn	0.230	0.270	0.310	0.350	0.390	0.430	0.470	0.510	0.550	0.590	0.630

Model-no.:	nn	02	03	04	05	06	07	08	09	10	11	12
Weight(kg)	RF-01-CD/nn	0.300	0.340	0.380	0.420	0.460	0.500	0.540	0.580	0.620	0.660	0.700
	RF-02-CD/nn	0.420	0.460	0.500	0.540	0.580	0.620	0.660	0.700	0.740	0.780	0.820



## Form C according to DIN EN 175301-803

<b>Overall width</b>	15 mm
<b>Contact distance</b>	8 mm
<b>Contacts</b>	2P + E
<b>Protection</b>	IP 65 according to EN 60529 requires a flat gasket
<b>For use with series</b>	BM-01, BM-02



Model-no.:	28-ST-02-1	28-ST-09-1-112	28-ST-09-1-127	28-ST-10-1-112	28-ST-10-1-127	28-ST-10-1-K3-112
<b>Voltage (AC/DC)</b>	0 - 250 V	10 - 50 V	70 - 250 V	24 V	230 V	24 V
<b>Status indicator</b>	no	yes	yes	yes	yes	yes
<b>Protective circuit</b>	no	no	no	yes (Varistor)	yes (Varistor)	yes (Varistor)
<b>Connecting cable</b>	without	without	without	without	without	3 m
<b>Wire cross section</b>	max. 0.75 mm <sup>2</sup>	max. 0.75 mm <sup>2</sup>	max. 0.75 mm <sup>2</sup>	max. 0.75 mm <sup>2</sup>	max. 0.75 mm <sup>2</sup>	3 x 0.5 mm <sup>2</sup>
<b>Ø Connecting cable</b>	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	

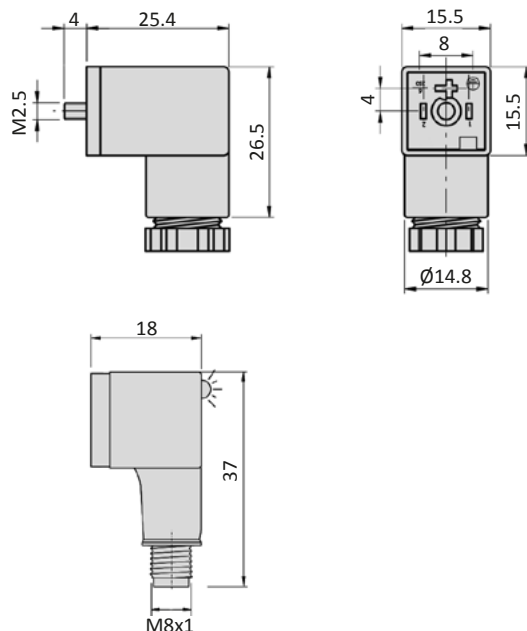
<b>Model-no.:</b>	28-ST-02-1-05
<b>Voltage (AC/DC)</b>	24 V
<b>Status indicator</b>	yes
<b>Protective circuit</b>	yes (Varistor)
<b>Connection</b>	M8



4

## Dimensions

### Form C according to DIN EN 175301-803

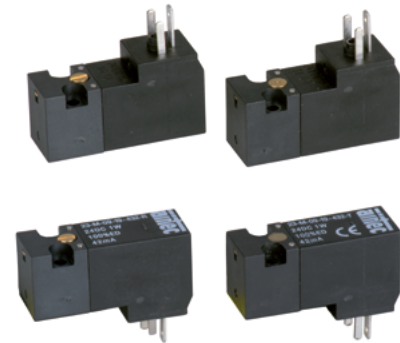


# Pilot valves

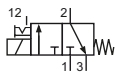
## Plug connection shape C according to DIN EN 175301-803

<b>Overall width</b>	15 mm
<b>Contact distance</b>	8 mm
<b>Contacts</b>	2P + E
<b>Protection</b>	IP 65 according to EN 60529 with connected plug socket
<b>Duty cycle</b>	100 %
<b>Temperature range*</b>	-10°C ... +50°C
<b>Voltage tolerance</b>	± 10 %
<b>For use with series</b>	BM-01, BM-02

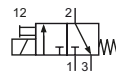
\* The max. applicable operating temperature, depends on the temperature specification of the used valve.



## 3/2-way-valves



23-M-09-19-xxx-R  
3/2-way, single solenoid, mechanical spring return, NC, manual override detent



23-M-09-19-xxx-T  
3/2-way, single solenoid, mechanical spring return, NC, manual override non-detent

Please complete: xxx = electrical option

<b>Model-no.:</b>	23-M-09-19-461-y	23-M-09-19-462-y	23-M-09-19-452-y	23-M-09-19-456-y	23-M-09-19-457-y
<b>Voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption DC</b>	1 W	1 W	-	-	-
<b>Power consumption AC</b>	-	-	3 VA	3 VA	3 VA

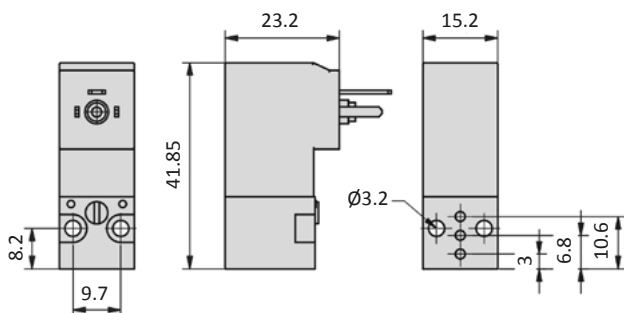
electric connector on side of manual override

<b>Model-no.:</b>	23-M-09-19-431-y	23-M-09-19-432-y	23-M-09-19-422-y	23-M-09-19-426-y	23-M-09-19-427-y
<b>Voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption DC</b>	1 W	1 W	-	-	-
<b>Power consumption AC</b>	-	-	3 VA	3 VA	3 VA

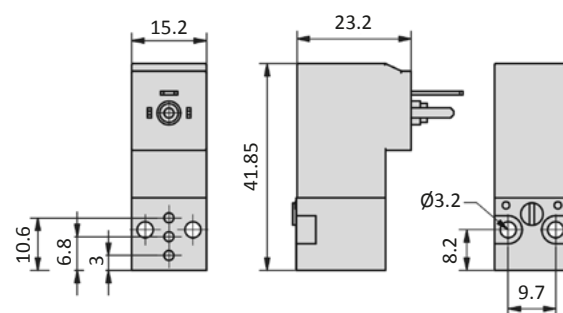
electric connector opposite of manual override  
y = manual override (R = detent, T = non-detent)

## Dimensions

### electric connector on side of manual override



### electric connector opposite side of manual override

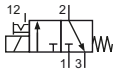


**M12 connection**

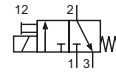
<b>Overall width</b>	15 mm
<b>Contact distance</b>	-
<b>Contacts</b>	M12 plug
<b>Protection</b>	IP 67 according to EN 60529 with connected plug socket
<b>Duty cycle</b>	100 %
<b>Temperature range*</b>	-10°C ... +50°C
<b>Voltage tolerance</b>	± 10 %
<b>For use with series</b>	BM-01, BM-02



\* The max. applicable operating temperature, depends on the temperature specification of the used valve.

**4**
**3/2-way-valves**


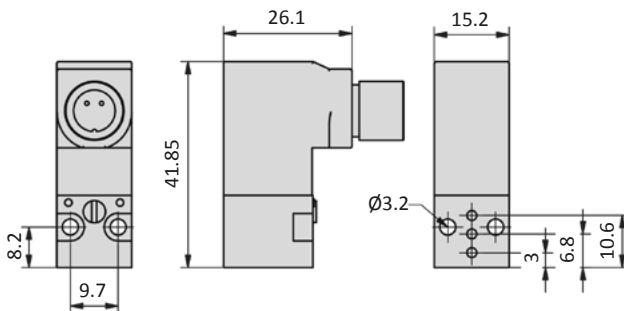
23-M-09-19-xxx-R  
 3/2-way, single solenoid, mechanical spring return, NC, manual override detend



23-M-09-19-xxx-T  
 3/2-way, single solenoid, mechanical spring return, NC, manual override non-detend

Please complete: xxx = electrical option

<b>Model-no.:</b>	23-M-09-19-N42-T	23-M-09-19-N62-R
<b>Voltage</b>	24 V DC	24 V DC
<b>Power consumption DC</b>	2.5 W	1 W
<b>Power consumption AC</b>	-	-
	electric connector on side of manual override	

**Dimensions**
**electric connector on side of manual override**


## Voltage code

- HN * - * * *				
Manual override	Coil and plug options	Coil type	Manual override position on side of	Voltage
HN detent	0 ATEX 2GD, encapsulated with casting compound width 30 mm	23-SP-037	0 without indication ports 1/3/(5)	0 without indication
HNR detent	1 with coil and plug	according to valve	1 DC ports 1/3/(5)	1 12 V
HNT non-detent	2		2 AC ports 1/3/(5)	2 24 V
	3		3 AC ports 1/3/(5)	3 42 V
	4 with coil, without plug	according to valve	4 DC, low power consumption ports 1/3/(5)	4 48 V
	5 without coil	no	5 DC ports 2/(4)	5 110 V
	6 without pilot valve	no	6 AC ports 2/(4)	6 115 V
	7 with coil, with enhanced humidity resistance, without plug	according to valve	7 DC, low power consumption ports 2/(4)	7 230 V
	8 with coil, with enhanced humidity resistance, with plug	according to valve	8 without indication ports 2/(4)	8 240 V
	9 ATEX 2GD, intrinsically safe, with plug width 30 mm	23-SP-038		9
	A ATEX 3GD, without plug, width 30 mm	23-SP-040		A 4 V
	B ATEX 3GD, with plug, width 30 mm	23-SP-040		B 6 V
	C ATEX 3GD, without plug, width 22 mm	23-SP-041		C 8 V
	D			D 61 V
	E ATEX 2GD, encapsulated with casting compound width 22 mm	23-SP-036		E 36 V
	F with coil, with enhanced humidity resistance, without plug, low temperature version	23-SP-060-1		F 9 V
	G			
	H with coil shape B according to DIN EN 175301-803, with plug	23-SP-011-G		
	I with coil shape B according to DIN EN 175301-803, without plug	23-SP-011-G		
	J with coil shape A according to DIN EN 175301-803, without plug (if not standard)	23-SP-016		
	K with coil shape A according to DIN EN 175301-803, with plug (if not standard)	23-SP-016		
	L with coil, with plug with LED and protective circuit	according to valve		
	M with coil, with plug with LED, without protective circuit	according to valve		
	N with coil with M12 connection	according to valve		
	O with coil with M12 connection with LED and protective circuit	according to valve		
	P without connector bridge, without plug			
	Q with coil with with cable	according to valve		
	R with cable up to 1 m length	according to valve		
	S with connector bridge, without plug			
	T			
	U ATEX 2GD, without coil (for coil 23-SP-036)	no		
	V ATEX 2GD, Flame proof enclosures and encapsulated with casting compound	23-SP-045		
	W ATEX 2GD / 3GD, without coil (for coil 23-SP-041 and 23-SP-045)	no		
	X ATEX 3GD, without coil (for coil 23-SP-040 in 230V AC and 115V AC)	no		
	Y ATEX 2GD, without coil (for coil 23-SP-038)	no		
	Z ATEX 2GD / 3GD, without coil (for coil 23-SP-040 in 24V DC and 23-SP-037)	no		

Not all options are suitable for all valve series