

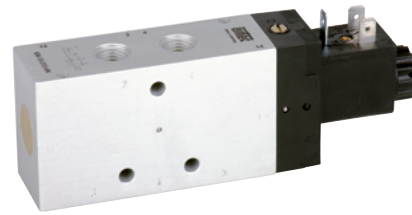
## Series M-04

Page 4-03



## Series KM-10

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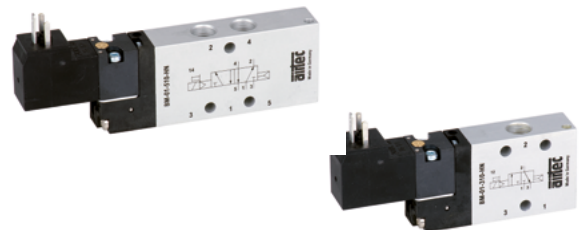
## Series M-05

Page 4-07



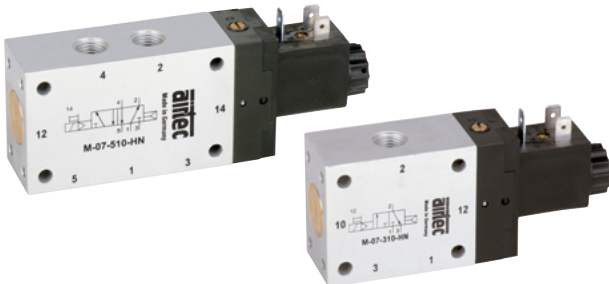
## Series BM-01

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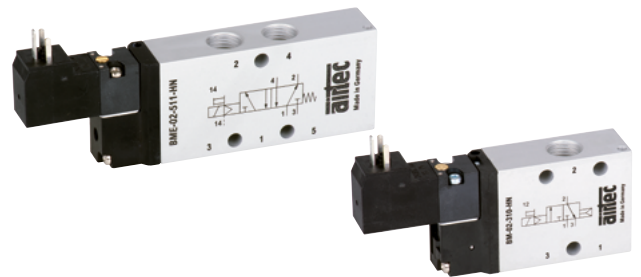
## Series M-07

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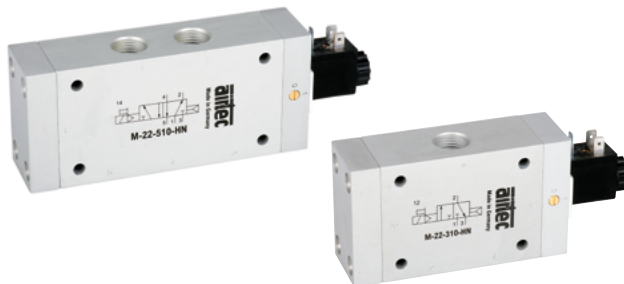
## Series BM-02

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## Series M-22

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## Series M-20

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## Series KM-09

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## Series MS-18

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## Table of contents

### Series MS-20

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### Series MF-04

[www.airtec.de](http://www.airtec.de)



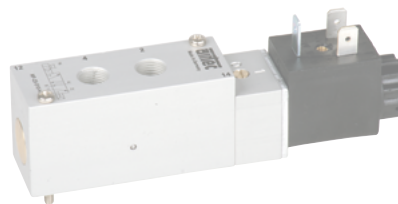
### Series MC-20

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### Series MF-05/ MF-25

[www.airtec.de](http://www.airtec.de)



### Accessories

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### Series MF-07

[www.airtec.de](http://www.airtec.de)



### Spare parts

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### Series MC-07

[www.airtec.de](http://www.airtec.de)



### Technical information

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## Technical details

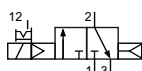
Connection	G1/8
Nominal size	4 mm
Temperature range	-10°C ... +70°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, steel and plastic
Protection	IP 65 according to EN 60529
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)



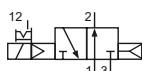
4

Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

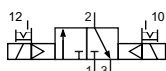
## 3/2-way valves



M-04-310-HN-xxx  
3/2-way, single solenoid, air spring return, NC



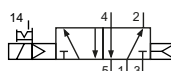
MO-04-310-HN-xxx  
3/2-way, single solenoid, air spring return, NO



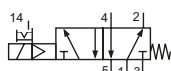
M-04-320-HN-xxx  
3/2-way, double solenoid

Please complete: xxx = electrical option

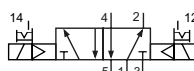
## 5/2- and 5/3-way valves



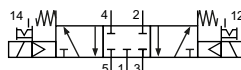
M-04-510-HN-xxx  
5/2-way, single solenoid, air spring return



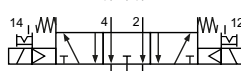
M-04-511-HN-xxx  
5/2-way, single solenoid, mechanical spring return



M-04-520-HN-xxx  
5/2-way, double solenoid



M-04-530-HN-xxx  
5/3-way, center position closed



M-04-533-HN-xxx  
5/3-way, center position exhausted

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Manual override on same side of ports	
				2 or 2 and 4	1, 3 or 1, 3 and 5
12 V DC	4.2 W		Form B industrial norm	-441	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-461	-431
24 V DC	4.2 W		Form B industrial norm	-442	-412
24 V DC	4.2 W		M 12	-O42	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-462	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O62	-O32
24 V AC	7/4 VA		Form B industrial norm	-452	-422
115 V AC	7/4 VA		Form B industrial norm	-456	-426
230 V AC	7/4 VA		Form B industrial norm	-457	-427

\*1 Plug socket not included, suitable plug sockets see page 4-14.

## Series M-04

### Technical data

Model-no.:	M-04-310	MO-04-310	M-04-320	M-04-510	M-04-511	M-04-520	M-04-530	M-04-533
Operating pressure* (bar)	2 ... 10	2 ... 10	2.5 ... 10	2,5 ... 10	3 ... 10	2,5 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	2 ... 10	2 ... 10	2.5 ... 10	2,5 ... 10	3 ... 10	2,5 ... 10	3 ... 10	3 ... 10
Flow rate (NI/min)	360	360	360	360	360	360	360	360
Response time (ms) at 6 bar	on: 13 off: 16	on: 13 off: 16	on: 12 off: 12	on: 12 off: 14	on: 13 off: 16	on: 12 off: 12	on: 15 off: 22	on: 15 off: 22
Weight (kg)	0.185	0.185	0.315	0.210	0.220	0.335	0.335	0.335

\* max. 8 bar at 2.2 W and 2.5 W

### Accessories



Plug sockets: page 4-40

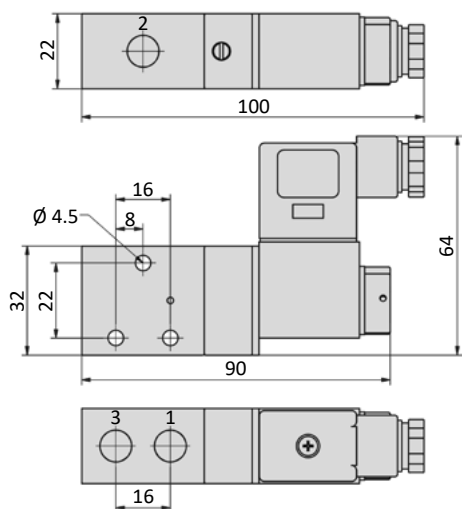


Manifolds: page 4-06



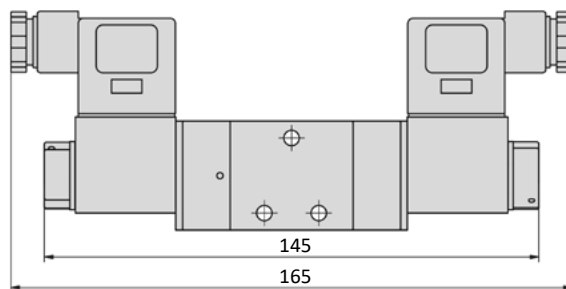
## Dimensions

### M-04-310-HN, MO-04-310-HN\*

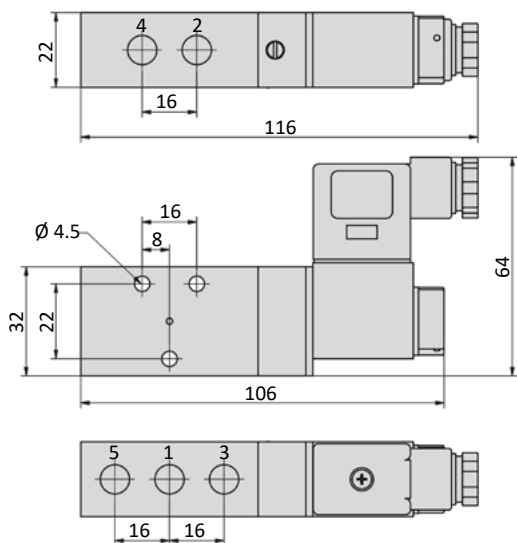


\*For the NO version MO-04 the ports 1 and 3 are inverted.

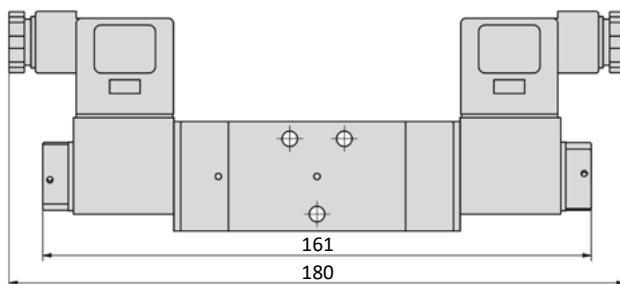
### M-04-320-HN



### M-04-510-HN, M-04-511-HN



### M-04-520-HN, M-04-53x-HN



- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhausts

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

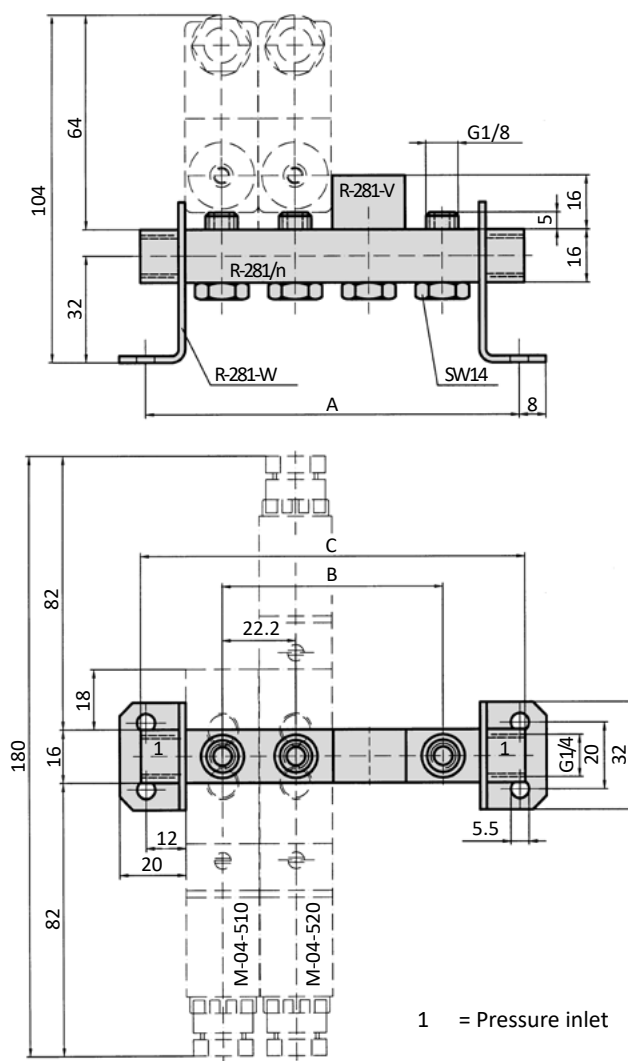
## Series M-04

### General information

The R-281/n manifold is suitable for the M-04 valve series. As well available are blind plates R-281-V for blank stations and mounting brackets R-281-W (pair). Hollow bolts and gaskets are included.



### Dimensions



Model-no.:	A	B	C	Weight (kg)
R-281/2	68.4	22.2	72	0.053
R-281/3	90.6	44.4	94	0.074
R-281/4	112.8	66.6	116	0.095
R-281/5	135	88.8	138	0.116
R-281/6	157.2	111	160	0.137
R-281/8	201.6	155.5	204	0.179
R-281/10	246	199.8	248	0.222

## Technical details

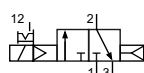
Connection	G1/8
Nominal size	6 mm
Temperature range	-10°C ... +70°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, steel and plastic
Protection	IP 65 according to EN 60529
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)



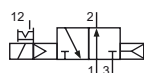
4

Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

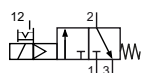
## 3/2-way valves



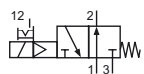
M-05-310-HN-xxx  
3/2-way, single solenoid, air spring return, NC



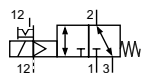
MO-05-310-HN-xxx  
3/2-way, single solenoid, air spring return, NO



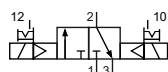
M-05-311-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NC



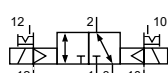
MO-05-311-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NO



ME-05-311-HN-xxx  
3/2-way, single solenoid, external pilot pressure, mechanical spring return



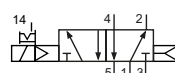
M-05-320-HN-xxx  
3/2-way, double solenoid



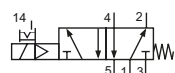
ME-05-320-HN-xxx  
3/2-way, double solenoid, external pilot pressure

Please complete: xxx = electrical option

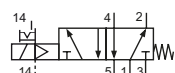
## 5/2- and 5/3-way valves



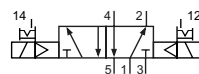
M-05-510-HN-xxx  
5/2-way, single solenoid, air spring return



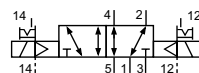
M-05-511-HN-xxx  
5/2-way, single solenoid, mechanical spring return



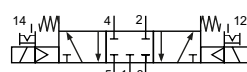
ME-05-511-HN-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



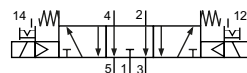
M-05-520-HN-xxx  
5/2-way, double solenoid



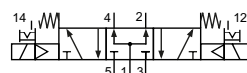
ME-05-520-HN-xxx  
5/2-way, double solenoid, external pilot pressure



M-05-530-HN-xxx  
5/3-way, center position closed



M-05-533-HN-xxx  
5/3-way, center position exhausted



M-05-534-HN-xxx  
5/3-way, center position pressurized

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Manual override on same side of ports	
				2 or 2 and 4	1, 3 or 1, 3 and 5
12 V DC	4.2 W		Form B industrial norm	-441	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-461	-431
24 V DC	4.2 W		Form B industrial norm	-442	-412
24 V DC	4.2 W		M 12	-O42	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-462	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O62	-O32
24 V AC	7/4 VA		Form B industrial norm	-452	-422
115 V AC	7/4 VA		Form B industrial norm	-456	-426
230 V AC	7/4 VA		Form B industrial norm	-457	-427

\*1 Plug socket not included, suitable plug sockets see page 4-40.

## Series M-05

### Technical data

Model-no.:	M-05-310	MO-05-310	M-05-311	MO-05-311	ME-05-311	M-05-320	ME-05-320
Operating pressure* (bar)	2 ... 10	2 ... 10	3 ... 10	3 ... 10	0 ... 10	2 ... 10	0 ... 10
Pilot pressure* (bar)	2 ... 10	2 ... 10	3 ... 10	3 ... 10	3 ... 10	2 ... 10	2 ... 10
Flow rate (Nl/min)	750	750	750	750	750	750	750
Response time (ms) at 6 bar	on: 13 off: 16	on: 13 off: 16	on: 13 off: 16	on: 13 off: 16	on: 13 off: 18	on: 12 off: 12	on: 12 off: 12
Weight (kg)	0.255	0.255	0.260	0.260	0.308	0.400	0.426

Model-no.:	M-05-510	M-05-511	ME-05-511	M-05-520	ME-05-520	M-05-530	M-05-533	M-05-534
Operating pressure* (bar)	2 ... 10	3 ... 10	0 ... 10	2 ... 10	0 ... 10	3 ... 8	3 ... 8	3 ... 8
Pilot pressure* (bar)	2 ... 10	3 ... 10	3 ... 10	2 ... 10	2 ... 10	3 ... 8	3 ... 8	3 ... 8
Flow rate (Nl/min)	750	750	750	750	750	650	650	650
Response time (ms) at 6 bar	on: 13 off: 16	on: 13 off: 18	on: 15 off: 19	on: 12 off: 12	on: 12 off: 12	on: 13 off: 18	on: 13 off: 18	on: 13 off: 18
Weight (kg)	0.295	0.300	0.360	0.440	0.470	0.440	0.440	0.440

\* max. 8 bar at 2.2 W and 2.5 W

### Accessories



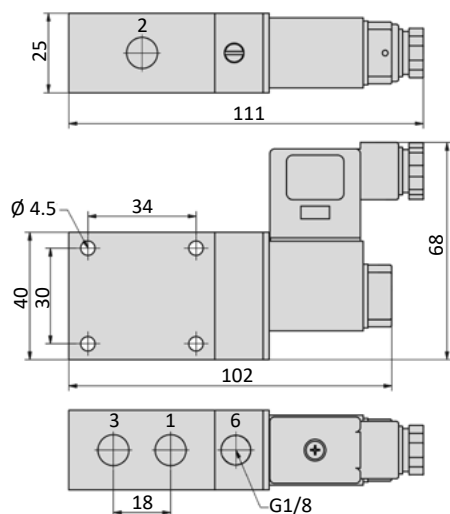
Plug sockets: page 4-40



Manifolds: page 4-10

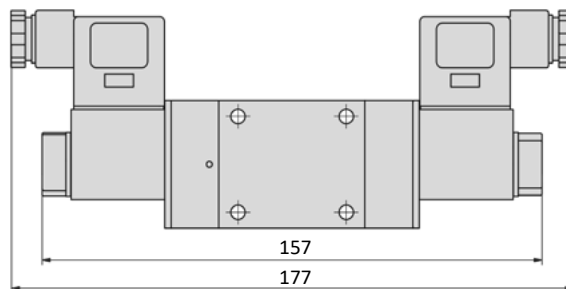
## Dimensions

### M-05-31x-HN, MO-05-31x-HN\*, ME-05-31x-HN

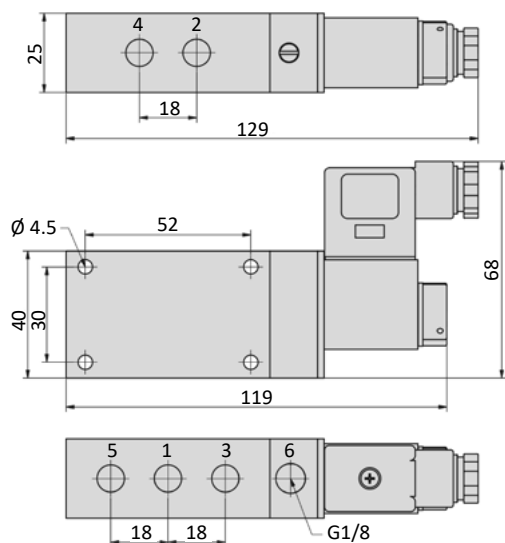


\*For the NO version MO-05 the ports 1 and 3 are inverted.

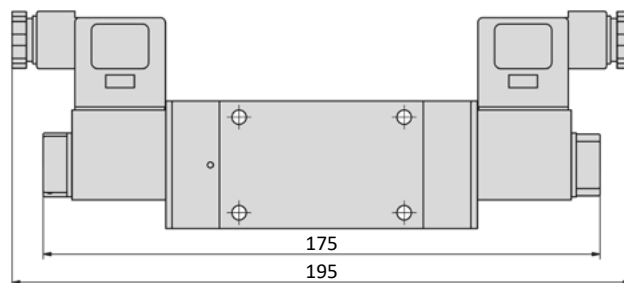
### M-05-320-HN, ME-05-320-HN



### M-05-51x-HN, ME-05-511-HN



### M-05-520-HN, ME-05-520-HN, M-05-53x-HN



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

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Series M-05

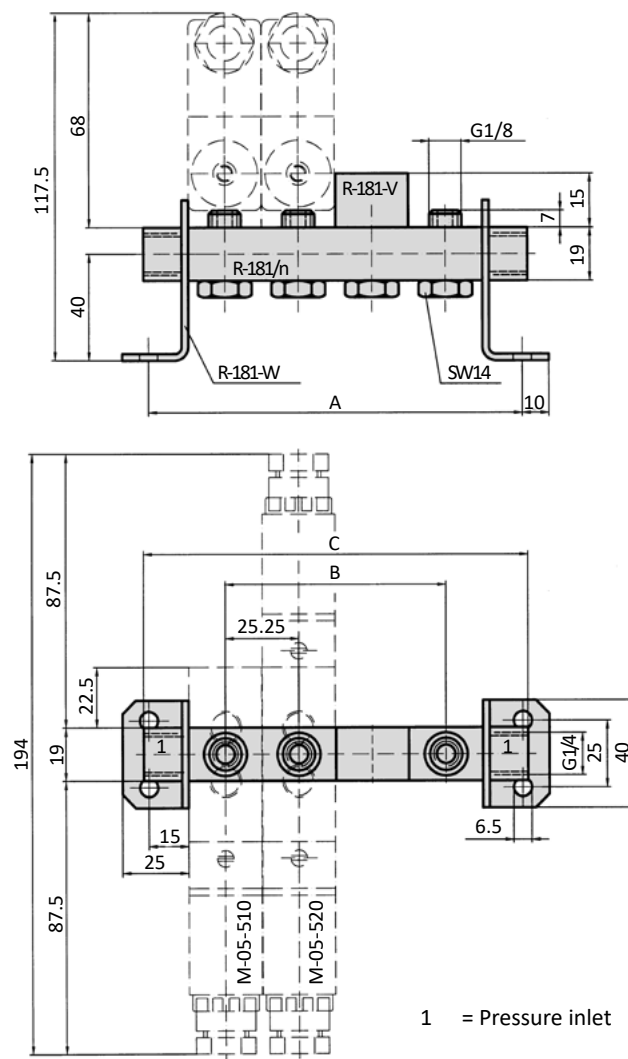
### General information

The R-181/n manifold is suitable for the M-05 valve series. As well available are blind plates R-181-V for blank stations and mounting brackets R-181-W (pair). Hollow bolts and gaskets are included.

The manifold is as well suitable for the pneumatically operated valve series P-05.



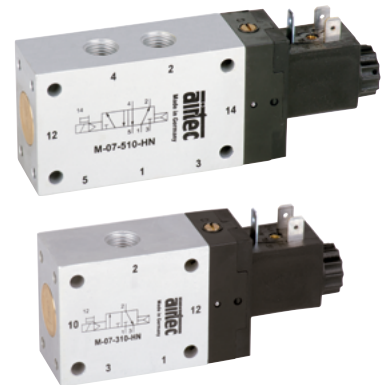
### Dimensions



Model-no.:	A	B	C	Weight (kg)
R-181/2	80.5	25.25	85	0.084
R-181/3	105.75	50.5	110	0.113
R-181/4	131	75.75	135	0.144
R-181/5	156.25	101	160	0.174
R-181/6	181.5	126.25	185	0.215
R-181/8	232	176.75	235	0.266
R-181/10	282.5	227.25	285	0.326
R-181/12	333	277.75	335	0.385

## Technical details

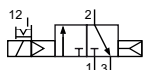
<b>Connection</b>	G1/4
<b>Nominal size</b>	9 mm
<b>Temperature range</b>	-10°C ... +70°C
<b>Medium</b>	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest 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
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)



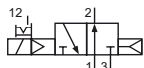
4

Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

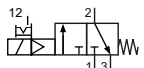
## 3/2-way valves



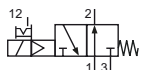
**M-07-310-HN-xxx**  
3/2-way, single solenoid, air spring return, NC



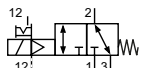
**MO-07-310-HN-xxx**  
3/2-way, single solenoid, air spring return, NO



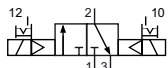
**M-07-311-HN-xxx**  
3/2-way, single solenoid, mechanical spring return, NC



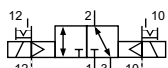
**MO-07-311-HN-xxx**  
3/2-way, single solenoid, mechanical spring return, NO



**ME-07-311-HN-xxx**  
3/2-way, single solenoid, external pilot pressure, mechanical spring return



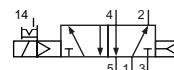
**M-07-320-HN-xxx**  
3/2-way, double solenoid



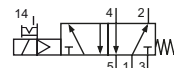
**ME-07-320-HN-xxx**  
3/2-way, double solenoid, external pilot pressure

Please complete: xxx = electrical option

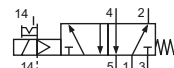
## 5/2- and 5/3-way valves



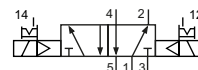
**M-07-510-HN-xxx**  
5/2-way, single solenoid, air spring return



**M-07-511-HN-xxx**  
5/2-way, single solenoid, mechanical spring return



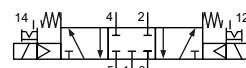
**ME-07-511-HN-xxx**  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



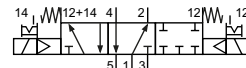
**M-07-520-HN-xxx**  
5/2-way, double solenoid



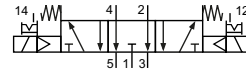
**ME-07-520-HN-xxx**  
5/2-way, double solenoid, external pilot pressure



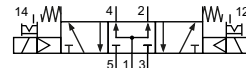
**M-07-530-HN-xxx**  
5/3-way, center position closed



**M-07-532-HN-xxx**  
5/3-way, center position safety



**M-07-533-HN-xxx**  
5/3-way, center position exhausted



**M-07-534-HN-xxx**  
5/3-way, center position pressurized

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Manual override on same side of ports	
				2 or 2 and 4	1, 3 or 1, 3 and 5
12 V DC	4.2 W		Form B industrial norm	-441	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-461	-431
24 V DC	4.2 W		Form B industrial norm	-442	-412
24 V DC	4.2 W		M 12	-042	-012
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-462	-432
24 V DC	2.5 W	max. 8 bar	M 12	-062	-032
24 V AC	7/4 VA		Form B industrial norm	-452	-422
115 V AC	7/4 VA		Form B industrial norm	-456	-426
230 V AC	7/4 VA		Form B industrial norm	-457	-427

\*1 Plug socket not included, suitable plug sockets see page 4-40.



## Series M-07

### Technical data

Model-no.:	M-07-310	MO-07-310	M-07-311	MO-07-311	ME-07-311	M-07-320	ME-07-320
Operating pressure* (bar)	1.5 ... 10	1.5 ... 10	2.5 ... 10	2.5 ... 10	0 ... 10	1.5 ... 10	0 ... 10
Pilot pressure* (bar)	1.5 ... 10	1.5 ... 10	2.5 ... 10	2.5 ... 10	2.5 ... 10	1.5 ... 10	1.5 ... 10
Flow rate (l/min)	1580	1580	1580	1580	1580	1580	1580
Response time (ms) at 6 bar	on: 15 off: 19	on: 15 off: 19	on: 15 off: 19	on: 15 off: 19	on: 15 off: 22	on: 14 off: 14	on: 14 off: 14
Weight (kg)	0.375	0.375	0.380	0.380	0.450	0.520	0.578

Model-no.:	M-07-510	M-07-511	ME-07-511	M-07-520	ME-07-520
Operating pressure* (bar)	1.5 ... 10	2.5 ... 10	0 ... 10	2 ... 10	0 ... 10
Pilot pressure* (bar)	1.5 ... 10	2.5 ... 10	2.5 ... 10	2 ... 10	2 ... 10
Flow rate (l/min)	1580	1580	1580	1580	1580
Response time (ms) at 6 bar	on: 15 off: 19	on: 15 off: 22	on: 15 off: 19	on: 14 off: 14	on: 14 off: 14
Weight (kg)	0.455	0.465	0.530	0.620	0.650

Model-no.:	M-07-530	M-07-532	M-07-533	M-07-534
Operating pressure* (bar)	3 ... 8	3 ... 8	3 ... 8	3 ... 8
Pilot pressure* (bar)	3 ... 8	3 ... 8	3 ... 8	3 ... 8
Flow rate (l/min)	1300	1280	1300	1300
Response time (ms) at 6 bar	on: 15 off: 22	on: 35 off: 42	on: 15 off: 22	on: 15 off: 22
Weight (kg)	0.620	0.620	0.620	0.620

\* max. 8 bar at 2.2 W and 2.5 W

### Accessories



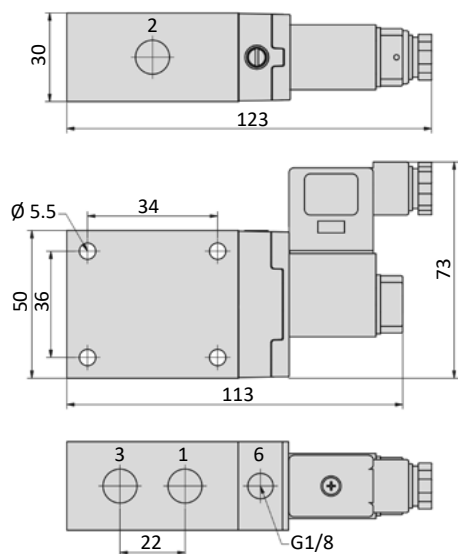
Plug sockets: page 4-40



Manifolds: page 4-14

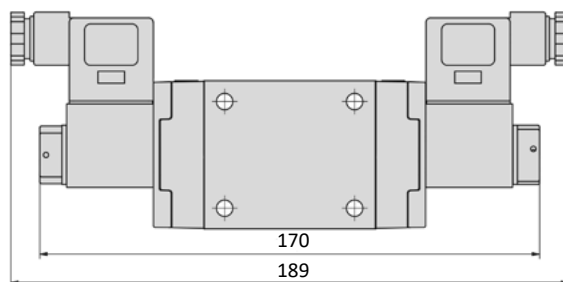
## Dimensions

### M-07-31x-HN, MO-07-31x-HN\*, ME-07-31x-HN



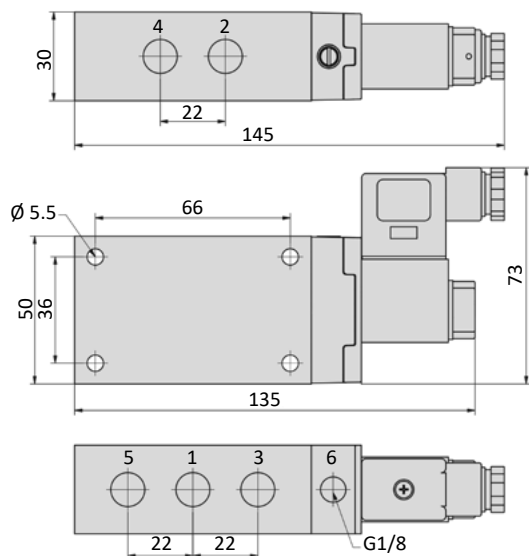
\*For the NO version MO-07 the ports 1 and 3 are inverted.

### M-07-320-HN, ME-07-320-HN

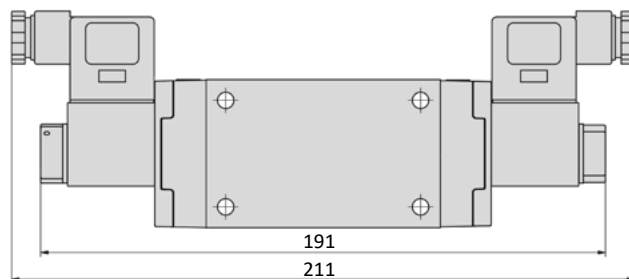


4

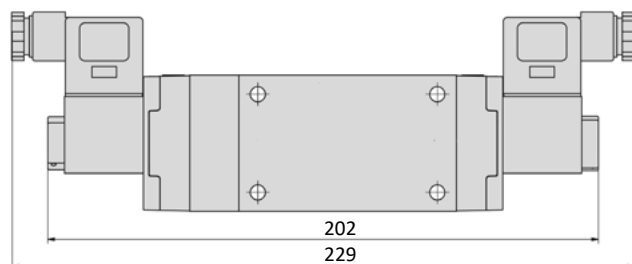
### M-07-51x-HN, ME-07-511-HN



### M-07-520-HN, ME-07-520-HN, M-07-53x-HN



### M-07-532-HN



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

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Series M-07

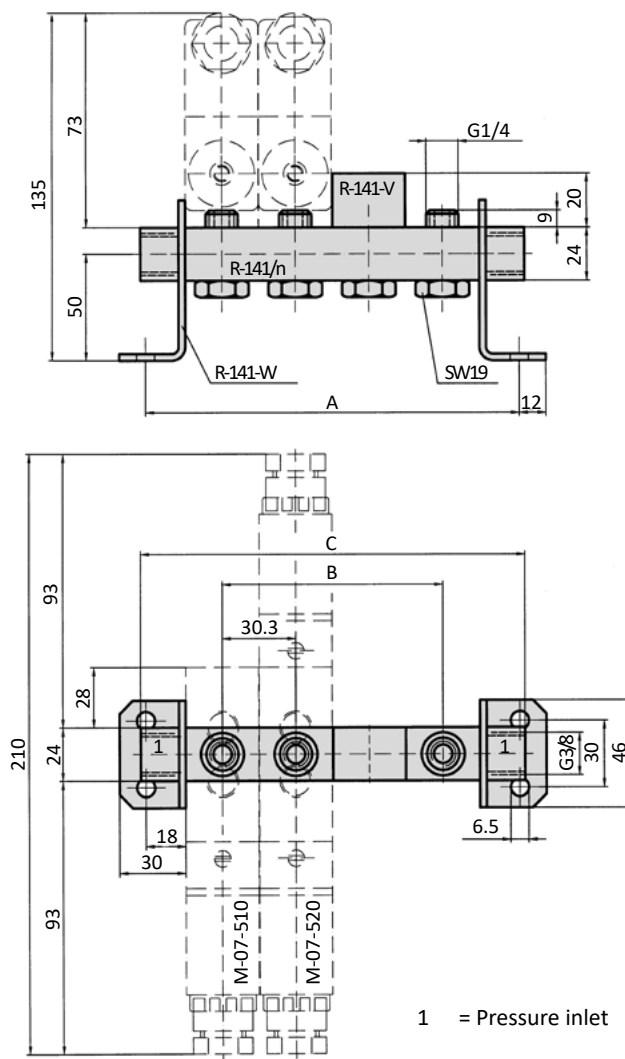
### General information

The R-141/n manifold is suitable for the M-07 valve series. As well available are blind plates R-141-V for blank stations and mounting brackets R-141-W (pair). Hollow bolts and gaskets are included.

The manifold is as well suitable for the pneumatically operated valve series P-07.



### Dimensions



Model-no.:	A	B	C	Weight (kg)
R-141/2	96.6	30.3	100	0.165
R-141/3	126.9	60.6	130	0.227
R-141/4	157.2	90.9	160	0.287
R-141/5	187.5	121.2	190	0.349
R-141/6	217.8	151.5	220	0.412
R-141/8	248.1	181.8	250	0.473
R-141/12	399.6	333.3	400	0.781

## Technical details

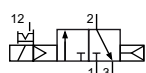
Connection	G1/2
Nominal size	14 mm
Temperature range	-10°C ... +70°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Body: Al (anodized), seals: NBR, inner parts: Al, steel and plastic
Protection	IP 65 according to EN 60529
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)



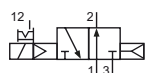
4

Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

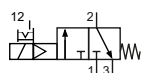
## 3/2-way valves



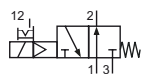
M-22-310-HN-xxx  
3/2-way, single solenoid, air spring return, NC



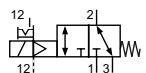
MO-22-310-HN-xxx  
3/2-way, single solenoid, air spring return, NO



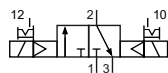
M-22-311-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NC



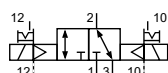
MO-22-311-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NO



ME-22-311-HN-xxx  
3/2-way, single solenoid, external pilot pressure, mechanical spring return

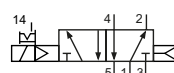


M-22-320-HN-xxx  
3/2-way, double solenoid

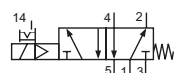


ME-22-320-HN-xxx  
3/2-way, double solenoid, external pilot pressure

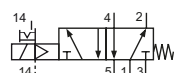
## 5/2- and 5/3-way valves



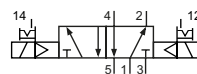
M-22-510-HN-xxx  
5/2-way, single solenoid, air spring return



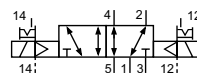
M-22-511-HN-xxx  
5/2-way, single solenoid, mechanical spring return



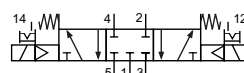
ME-22-511-HN-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



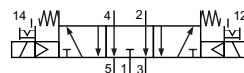
M-22-520-HN-xxx  
5/2-way, double solenoid



ME-22-520-HN-xxx  
5/2-way, double solenoid, external pilot pressure



M-22-530-HN-xxx  
5/3-way, center position closed



M-22-533-HN-xxx  
5/3-way, center position exhausted

Please complete: xxx = electrical option

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx
12 V DC	4.2 W		Form B industrial norm	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-431
24 V DC	4.2 W		Form B industrial norm	-412
24 V DC	4.2 W		M 12	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O32
24 V AC	7/4 VA		Form B industrial norm	-422
115 V AC	7/4 VA		Form B industrial norm	-426
230 V AC	7/4 VA		Form B industrial norm	-427

\*1 Plug socket not included, suitable plug sockets see page 4-40.

## Series M-22

### Technical data

Model-no.:	M-22-310	MO-22-310	M-22-311	MO-22-311	ME-22-311	M-22-320	ME-22-320
Operating pressure* (bar)	1 ... 10	1 ... 10	2 ... 10	2 ... 10	0 ... 10	1 ... 10	0 ... 10
Pilot pressure* (bar)	1 ... 10	1 ... 10	2 ... 10	2 ... 10	2 ... 10	1 ... 10	1 ... 10
Flow rate (NI/min)	3300	3300	3300	3300	3300	3300	3300
Response time (ms) at 6 bar	on: 30 off: 58	on: 30 off: 58	on: 28 off: 68	on: 28 off: 68	on: 28 off: 68	on: 20 off: 20	on: 20 off: 20
Weight (kg)	0.910	0.910	0.965	0.965	0.965	0.984	0.984

Model-no.:	M-22-510	M-22-511	ME-22-511	M-22-520	ME-22-520	M-22-530	M-22-533
Operating pressure* (bar)	1 ... 10	2 ... 10	0 ... 10	1 ... 10	0 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	1 ... 10	2 ... 10	2 ... 10	1 ... 10	1 ... 10	3 ... 10	3 ... 10
Flow rate (NI/min)	3300	3300	3300	3300	3300	3300	3300
Response time (ms) at 6 bar	on: 30 off: 59	on: 20 off: 80	on: 20 off: 80	on: 22 off: 22	on: 22 off: 22	on: 30 off: 50	on: 30 off: 50
Weight (kg)	1.150	1.180	1.160	1.260	1.260	1.250	1.250

\* max. 8 bar at 2.2 W and 2.5 W

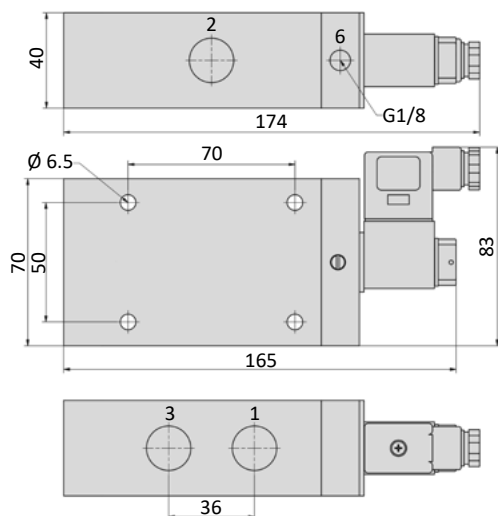
### Accessories



Plug sockets: page 4-40

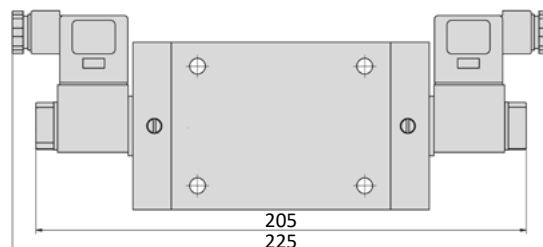
## Dimensions

### M-22-31x-HN, MO-22-31x-HN\*, ME-22-31x-HN

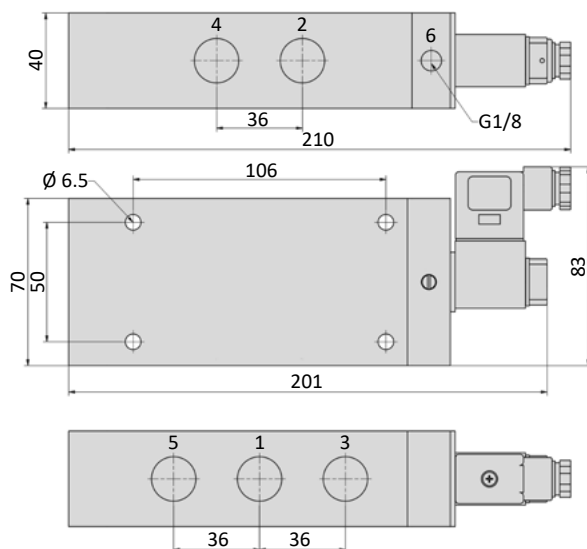


\*For the NO version MO-22 the ports 1 and 3 are inverted.

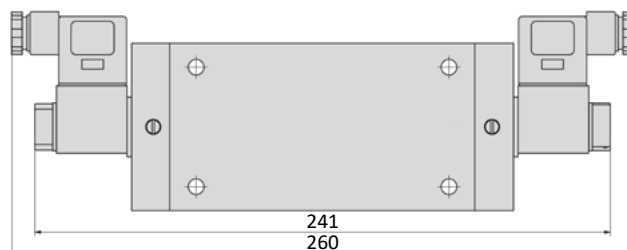
### M-22-320-HN, ME-22-320-HN



### M-22-51x-HN, ME-22-511-HN



### M-22-520-HN, ME-22-520-HN, M-22-53x-HN




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

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

# Series KM-09 and KM-10



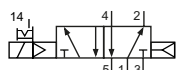
## Technical details

<b>Connection</b>	KM-09: G1/8 KM-10: G1/4
<b>Nominal size</b>	KM-09: 6 mm KM-10: 9 mm
<b>Temperature range</b>	-10°C ... +70°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. Differing 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, stainless steel and brass
<b>Protection</b>	IP 65 according to EN 60529
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)

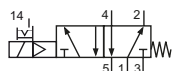


Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

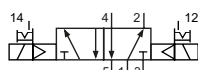
## 5/2-way valves



KM-09-510-HN-xxx  
KM-10-510-HN-xxx  
5/2-way, single solenoid, air spring return

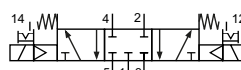


KM-09-511-HN-xxx  
KM-10-511-HN-xxx  
5/2-way, single solenoid, mechanical spring return

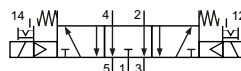


KM-09-520-HN-xxx  
KM-10-520-HN-xxx  
5/2-way, double solenoid

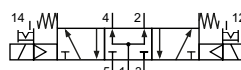
## 5/3-way valves



KM-09-530-HN-xxx  
KM-10-530-HN-xxx  
5/3-way, center position closed



KM-09-533-HN-xxx  
KM-10-533-HN-xxx  
5/3-way, center position exhausted



KM-09-534-HN-xxx  
KM-10-534-HN-xxx  
5/3-way, center position pressurized

Please complete: xxx = electrical option

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Manual override on same side of ports	
				2 and 4	1, 3 and 5
12 V DC	4.2 W		Form B industrial norm	-441	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-461	-431
24 V DC	4.2 W		Form B industrial norm	-442	-412
24 V DC	4.2 W		M 12	-O42	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-462	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O62	-O32
24 V AC	7/4 VA		Form B industrial norm	-452	-422
115 V AC	7/4 VA		Form B industrial norm	-456	-426
230 V AC	7/4 VA		Form B industrial norm	-457	-427

\*1 Plug socket not included, suitable plug sockets see page 4-40.



## Series KM-09 and KM-10

### Technical data

Model-no.:	KM-09-510	KM-09-511	KM-09-520	KM-09-530	KM-09-533	KM-09-534
Operating pressure* (bar)	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10
Flow rate (NI/min)	950	810	950	680	680	680
Response time (ms) at 6 bar	on: 15 off: 16	on: 13 off: 28	on: 15 off: 15	on: 14 off: 16	on: 14 off: 16	on: 14 off: 16
Weight (kg)	0.230	0.231	0.330	0.330	0.330	0.330

Model-no.:	KM-10-510	KM-10-511	KM-10-520	KM-10-530	KM-10-533	KM-10-534
Operating pressure* (bar)	2.5 ... 10	2.5 ... 10	2.5 ... 10	3 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	2.5 ... 10	2.5 ... 10	2.5 ... 10	3 ... 10	3 ... 10	3 ... 10
Flow rate (NI/min)	2100	1800	2100	1500	1500	1500
Response time (ms) at 6 bar	on: 18 off: 19	on: 16 off: 27	on: 18 off: 18	on: 16 off: 22	on: 16 off: 22	on: 16 off: 22
Weight (kg)	0.470	0.470	0.630	0.630	0.630	0.630

\* max. 8 bar at 2.2 W and 2.5 W

4

### Accessories



Plug sockets: page 4-40



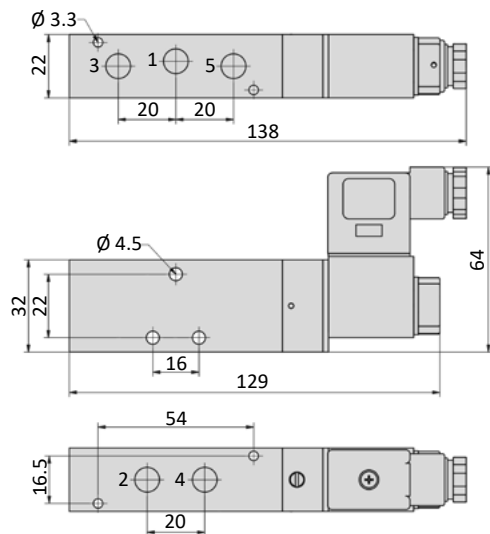
Manifolds and accessories: page 4-21



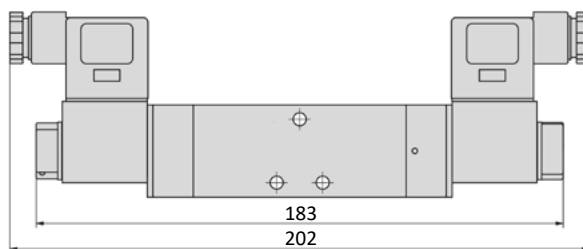
## Series KM-09 and KM-10

### Dimensions

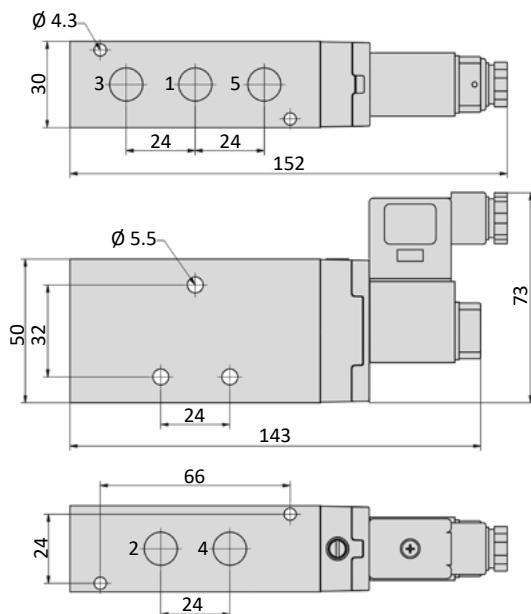
#### KM-09-51x-HN



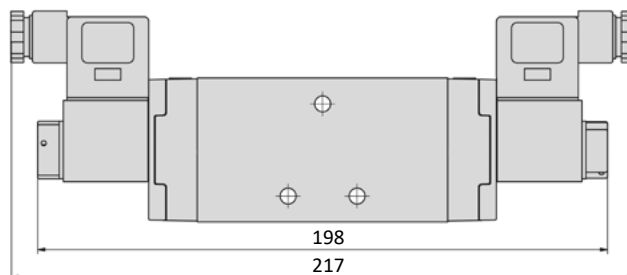
#### KM-09-520-HN, KM-09-53x-HN



#### KM-10-51x-HN



#### KM-10-520-HN, KM-10-53x-HN



- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhausts

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Series KM-09 and KM-10

### General information

The RF-09/n and RF-10/n manifolds are suitable for the KM-09 and KM-10 valve series. This is a modular system and extendable.

The RF-09 and RF-10 can be combined into one manifold with different valve sizes.

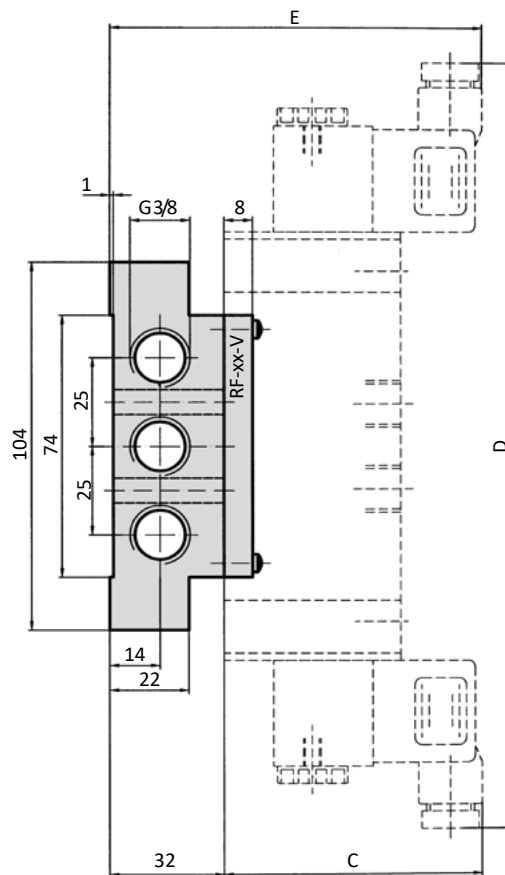
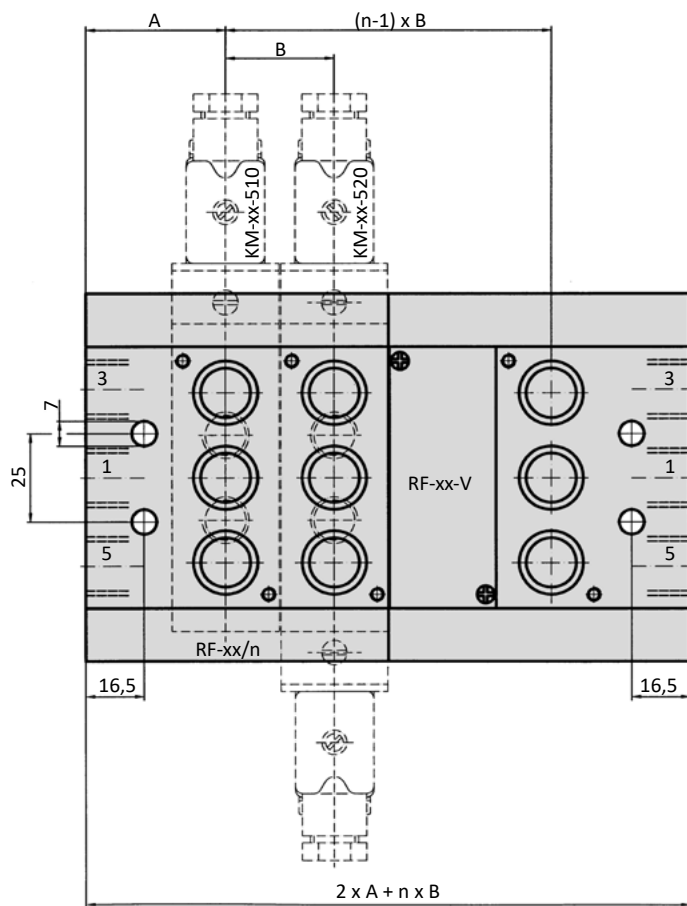
Blind plates RF-09-V and RF-10-V are available for blank stations.

All mounting screws and o-rings are included.



4

### Dimensions



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

Model-no.:	A	B	C	D	E
RF-09/n	35.25	22.5	64	202	96
RF-10/n	39.25	30.5	73	217	105

Model-no.:	n	1	2	3	4	5	6	7	8
Weight (kg)	RF-09/n	0.415	0.550	0.680	0.810	0.990	1.060	1.190	1.320
	RF-10/n	0.470	0.660	0.850	1.040	1.250	1.380	1.570	1.760

Model-no.:	n	9	10	11	12	13	14	15	16
Weight (kg)	RF-09/n	1.500	1.565	1.700	1.830	2.010	2.075	2.210	2.340
	RF-10/n	1.970	2.100	2.290	2.480	2.690	2.820	3.010	3.200

# Series BM-01 and BM-02



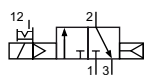
## Technical details

<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. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
<b>Materials</b>	Body: Al (anodized), plastic, seals: NBR, FKM and PU, inner parts: Al, steel and plastic
<b>Protection</b>	IP 65 according to EN 60529

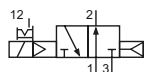


Electrically operated spool valve. The manual override is non-detent (HNT) or detent (HNR) and is operated by bolt or screwdriver.

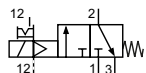
## 3/2-way valves



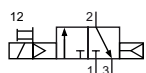
BM-01-310-HNR-xxx  
BM-02-310-HNR-xxx  
3/2-way, single solenoid, air spring return, NC



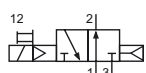
BM-01-312-HNR-xxx  
BM-02-312-HNR-xxx  
3/2-way, single solenoid, air spring return, NO



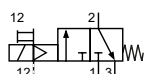
BME-01-311-HNR-xxx  
BME-02-311-HNR-xxx  
3/2-way, single solenoid, external pilot pressure, mechanical spring return



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

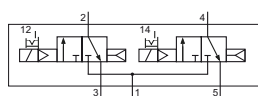


BM-01-312-HNT-xxx  
BM-02-312-HNT-xxx  
3/2-way, single solenoid, air spring return, NO

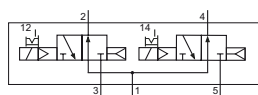


BME-01-311-HNT-xxx  
BME-02-311-HNT-xxx  
3/2-way, single solenoid, external pilot pressure, mechanical spring return

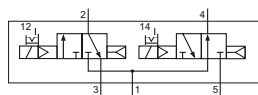
## 2 x 3/2-way valves



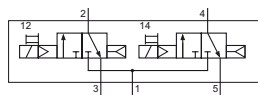
BM-01-310/2-HNR-xxx  
BM-02-310/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, NC



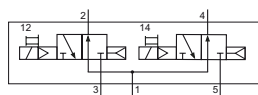
BM-01-312/2-HNR-xxx  
BM-02-312/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, NO



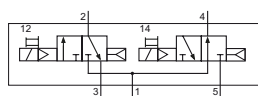
BM-01-314/2-HNR-xxx  
BM-02-314/2-HNR-xxx  
2 x 3/2-way, single solenoid, air spring return, 1 x NC, 1 x NO



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 <sup>*1</sup>	-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

<sup>\*1</sup> Plug socket not included, suitable plug sockets see page 4-41.

## Series BM-01 and BM-02

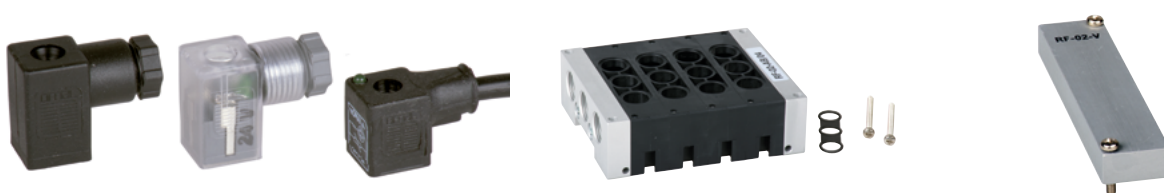
### Technical data

Model-no.:	BM-01-310	BM-01-312	BME-01-311	BM-01-310/2	BM-01-312/2	BM-01-314/2
Operating pressure (bar)	2 ... 8	2 ... 8	-0,95 ... 8	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	3 ... 8	2 ... 8	2 ... 8	2 ... 8
Flow rate (NI/min)	660	600	660	650	550	580
Response time (ms) at 6 bar	on: 19 off: 32	on: 16 off: 30	on: 15 off: 35	on: 18 off: 34	on: 18 off: 34	on: 18 off: 34
Weight (kg)	0,108	0,110	0,115	0,154	0,154	0,154

Model-no.:	BM-02-310	BM-02-312	BME-02-311	BM-02-310/2	BM-02-312/2	BM-02-314/2
Operating pressure (bar)	2 ... 8	2 ... 8	-0,95 ... 8	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	3 ... 8	2 ... 8	2 ... 8	2 ... 8
Flow rate (NI/min)	1090	920	1050	1050	1030	NC: 1050, NO: 920
Response time (ms) at 6 bar	on: 19 off: 23	on: 25 off: 27	on: 15 off: 27	on: 22 off: 24	on: 22 off: 24	on: 22 off: 24
Weight (kg)	0,150	0,150	0,150	0,250	0,250	0,250

### Accessories



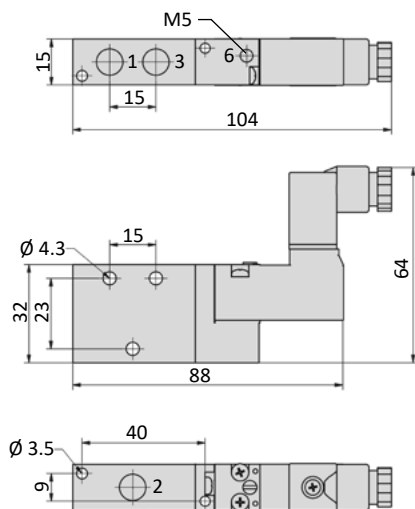
Plug sockets: page 4-41

Manifolds and accessories: page 4-30

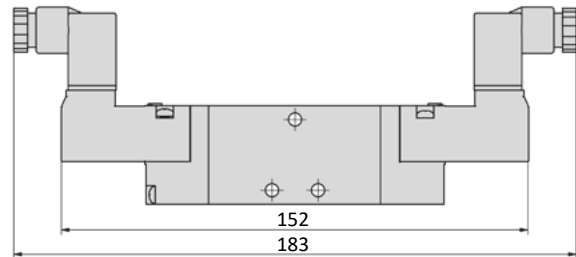
## Series BM-01 and BM-02

### Dimensions

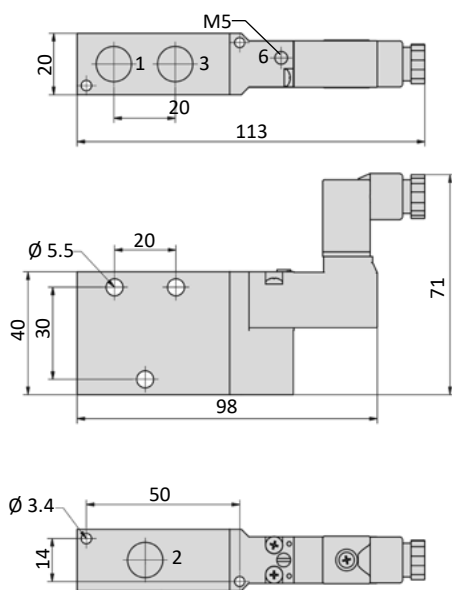
#### BM-01-31x-HNx



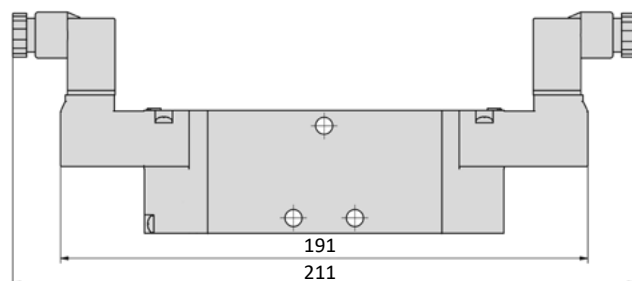
#### BM-01-31x/2-HNx



#### BM-02-31x-HNx



#### BM-02-31x/2-HNx

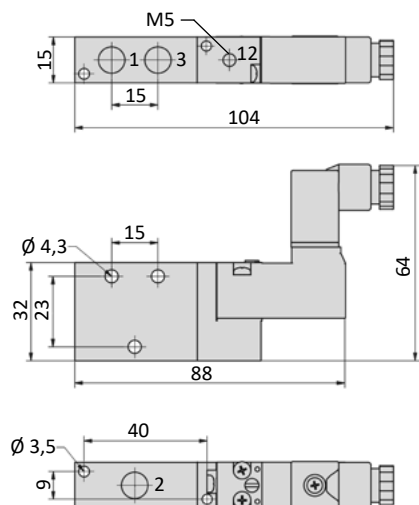


- 1 = pressure inlet
- 2,4 = outlets
- 3,5 = exhausts
- 6 = pilot air exhaust (only at BM-valves)
- 6 = external pilot pressure supply (only at BME-valves)

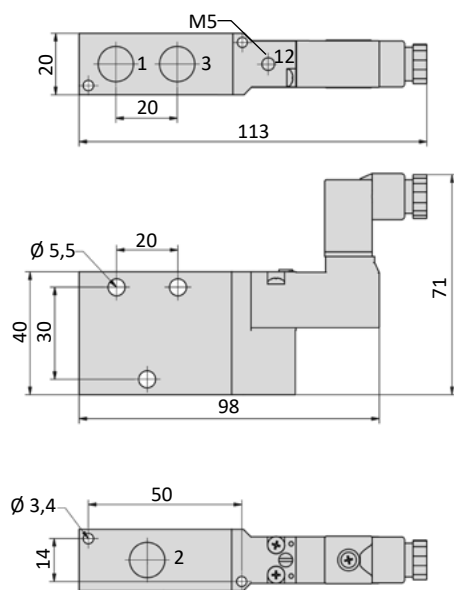
Plug socket (not included in scope of delivery) can be repositioned by 180°.

## Dimensions

### BME-01-311-HNx



### BME-02-311-HNx



- 1 = pressure inlet
- 2 = outlets
- 3 = exhausts
- 12 = external pilot pressure supply

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



# Series BM-01 and BM-02



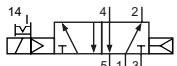
## Technical details

<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. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
<b>Materials</b>	Body: Al (anodized), plastic, seals: NBR, FKM and PU, inner parts: Al, steel and plastic
<b>Protection</b>	IP 65 according to EN 60529

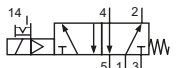


Electrically operated spool valve. The manual override is non-detent or detent and is operated by bolt or screwdriver.

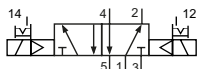
## 5/2-way valves



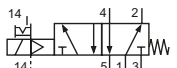
BM-01-510-HNR-xxx  
BM-02-510-HNR-xxx  
5/2-way, single solenoid, air spring return



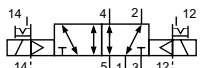
BM-01-511-HNR-xxx  
BM-02-511-HNR-xxx  
5/2-way, single solenoid, mechanical spring return



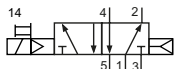
BM-01-520-HNR-xxx  
BM-02-520-HNR-xxx  
5/2-way, double solenoid



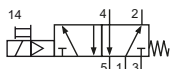
BME-01-511-HNR-xxx  
BME-02-511-HNR-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



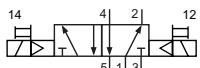
BME-01-520-HNR-xxx  
BME-02-520-HNR-xxx  
5/2-way, double solenoid, external pilot pressure



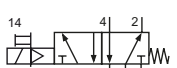
BM-01-510-HNT-xxx  
BM-02-510-HNT-xxx  
5/2-way, single solenoid, air spring return



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



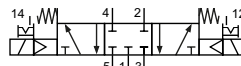
BME-01-511-HNT-xxx  
BME-02-511-HNT-xxx  
5/2-way, single solenoid, external pilot pressure, mechanical spring return



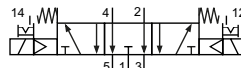
BME-01-520-HNT-xxx  
BME-02-520-HNT-xxx  
5/2-way, double solenoid, external pilot pressure

Please complete: xxx = electrical option

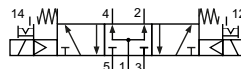
## 5/3-way valves



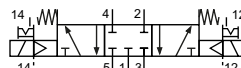
BM-01-530-HNR-xxx  
BM-02-530-HNR-xxx  
5/3-way, center position closed



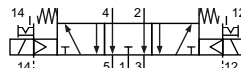
BM-01-533-HNR-xxx  
BM-02-533-HNR-xxx  
5/3-way, center position exhausted



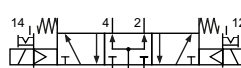
BM-01-534-HNR-xxx  
BM-02-534-HNR-xxx  
5/3-way, center position pressurized



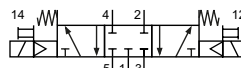
BME-01-530-HNR-xxx  
BME-02-530-HNR-xxx  
5/3-way, center position closed, external pilot pressure



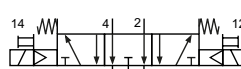
BME-01-533-HNR-xxx  
BME-02-533-HNR-xxx  
5/3-way, center position exhausted, external pilot pressure



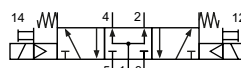
BME-01-534-HNR-xxx  
BME-02-534-HNR-xxx  
5/3-way, center position pressurized, external pilot pressure



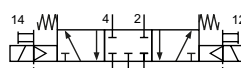
BM-01-530-HNT-xxx  
BM-02-530-HNT-xxx  
5/3-way, center position closed



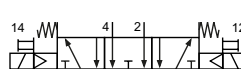
BM-01-533-HNT-xxx  
BM-02-533-HNT-xxx  
5/3-way, center position exhausted



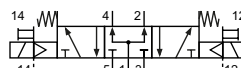
BM-01-534-HNT-xxx  
BM-02-534-HNT-xxx  
5/3-way, center position pressurized



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

## Series BM-01 and BM-02

### Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection* <sup>1</sup>	-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

\*<sup>1</sup> Plug socket not included. suitable plug sockets see page 4-41.

4

### 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: 13	on: 15 off: 35	on: 13 off: 13
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

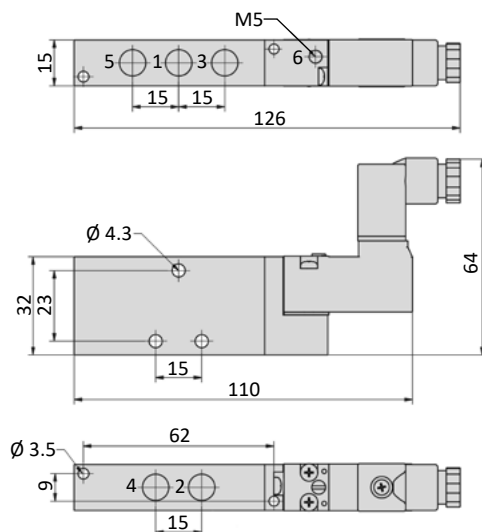
Model-no.:	BM-02-530	BM-02-533	BM-02-534	BME-02-530	BME-02-533	BME-02-534
Operating pressure (bar)	3 ... 8	3 ... 8	3 ... 8	-0.95 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	1300	1470	1660	1300	1470	1660
Response time (ms) at 6 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

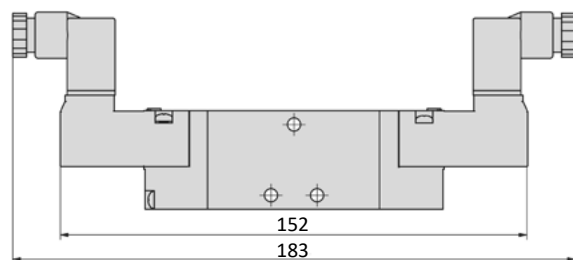


### Dimensions

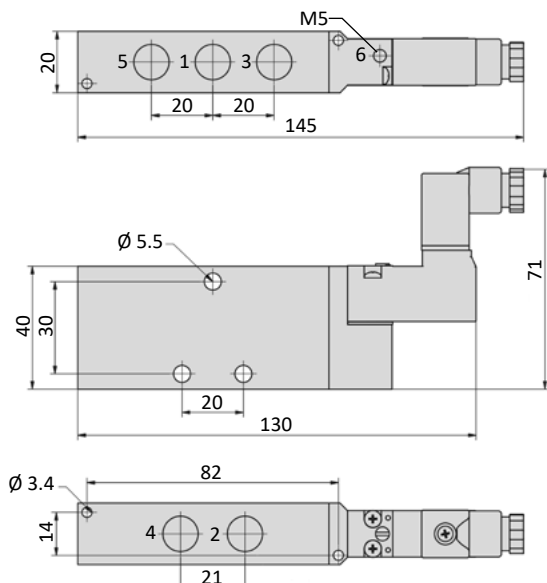
#### BM-01-51x-HNx, BME-01-51x-HNx



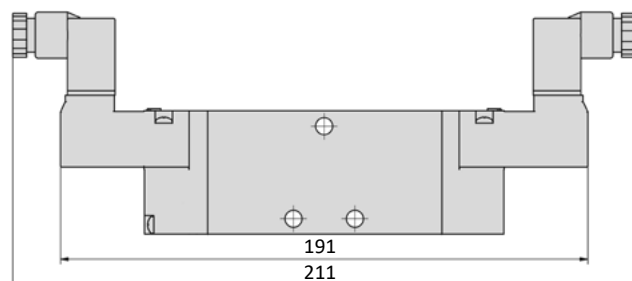
#### BM-01-520-HNx, BME-01-520-HNx, BM-01-53x-HNx, BME-01-53x-HNx



#### 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°.

### Accessories

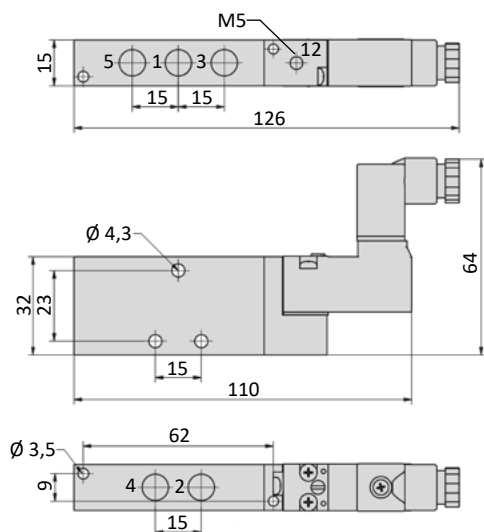


Plug sockets: page 4-41

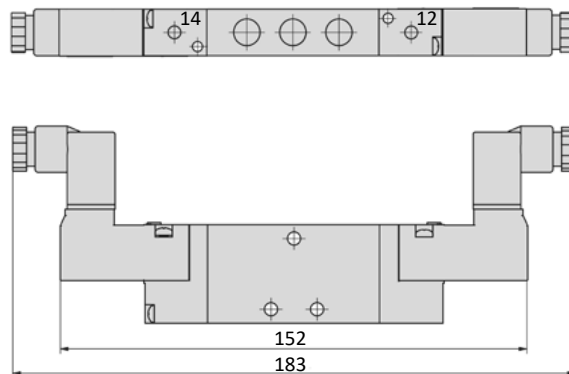
Manifolds and accessories: page 4-30

## Dimensions

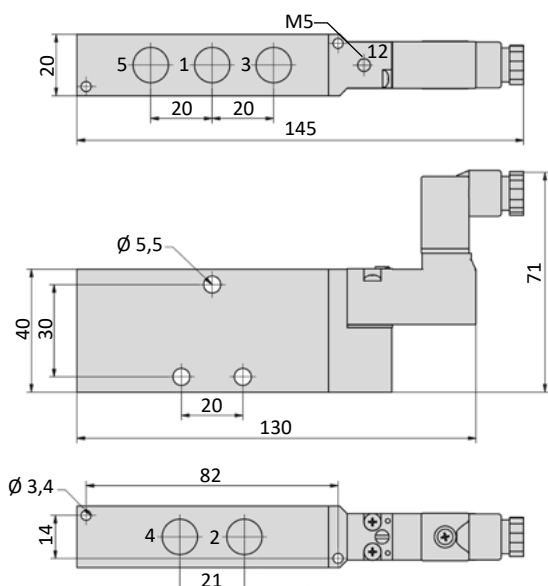
### BME-01-51x-HNx



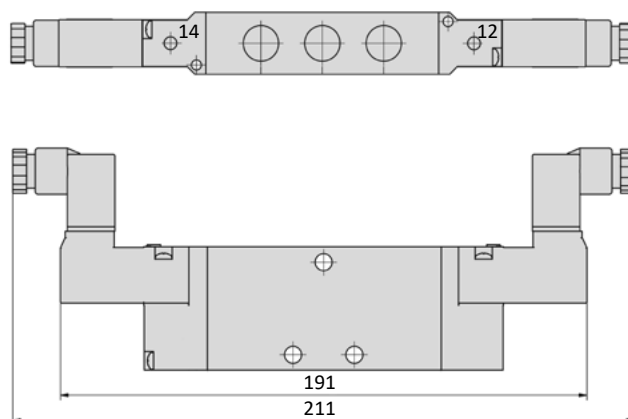
### BME-01-520-HNx, BME-01-53x-HNx



### BME-02-51x-HNx



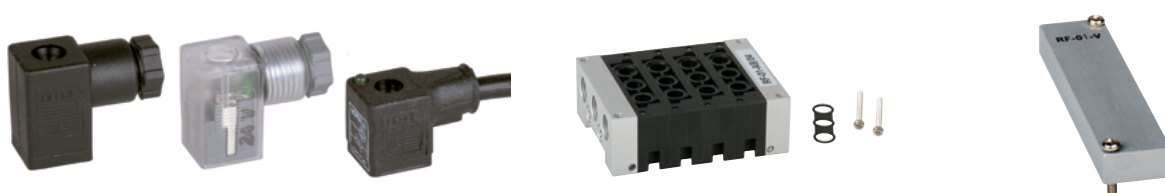
### BME-02-520-HNx, BME-02-53x-HNx



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

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

## Accessories



Plug sockets: page 4-41

Manifolds and accessories: page 4-30

## Series BM-01 and BM-02

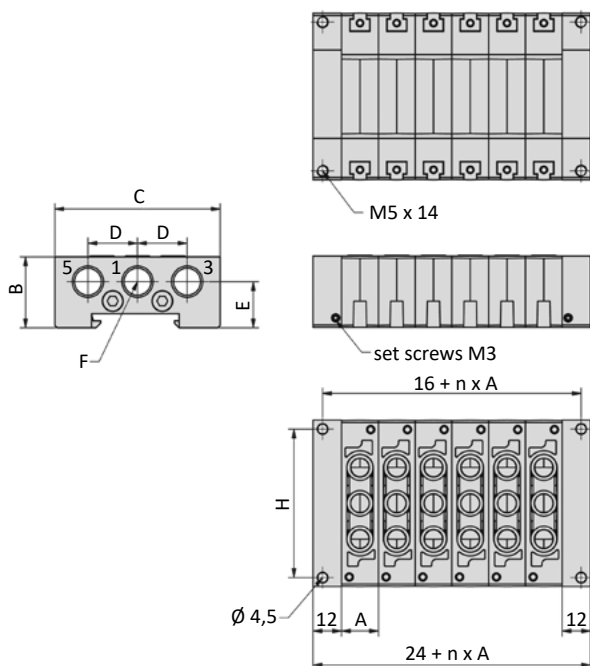
### General information

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. Blind plates RF-01-V and RF-02-V are available. All mounting screws and gaskets are included.

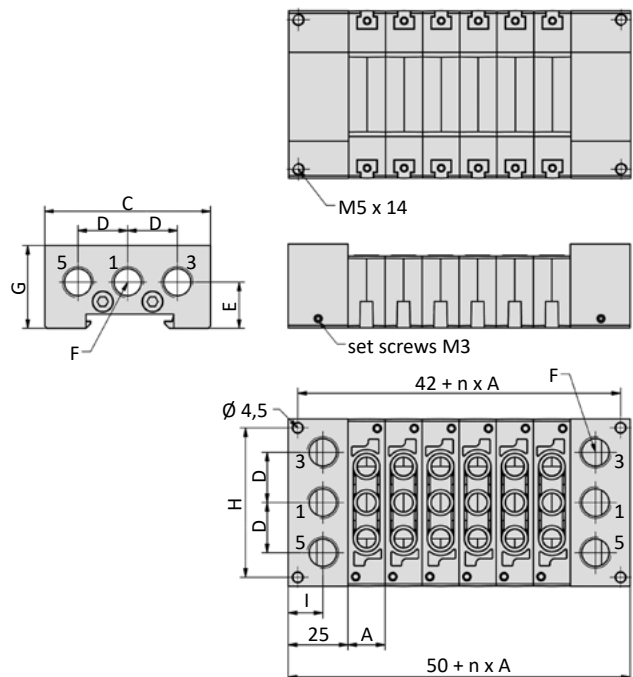


### Dimensions

#### 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

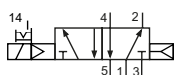
## Technical details

<b>Connection</b>	M5
<b>Nominal size</b>	3 mm
<b>Temperature range</b>	-10°C ... +70°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. Differing 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

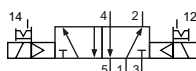


Electrically operated spool valve. The manual override is detent and is operated by screwdriver.

## 5/2-way valves

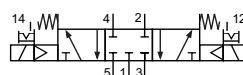


M-20-510-HN-xxx  
5/2-way, single solenoid, air spring return

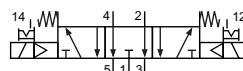


M-20-520-HN-xxx  
5/2-way, double solenoid

## 5/3-way valves



M-20-530-HN-xxx  
5/3-way, center position closed



M-20-533-HN-xxx  
5/3-way, center position exhausted

Please complete: xxx = electrical option

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx
12 V DC	2 W		Form C industrial norm	-411
24 V DC	2 W		Form C industrial norm	-412

\*1 Plug socket not included, suitable plug sockets see page 4-41.

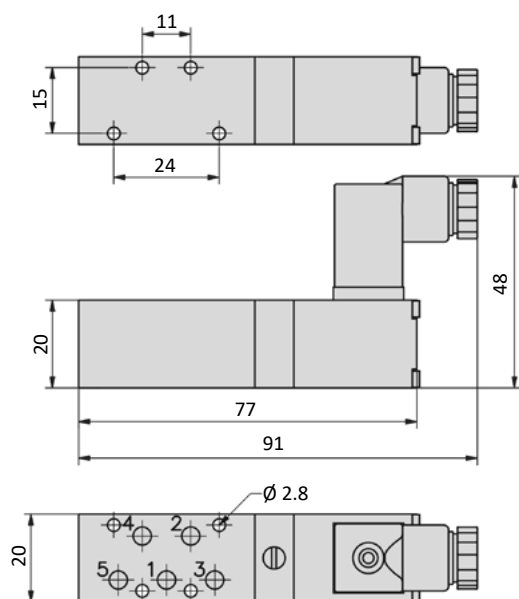
## Series M-20

### Technical data

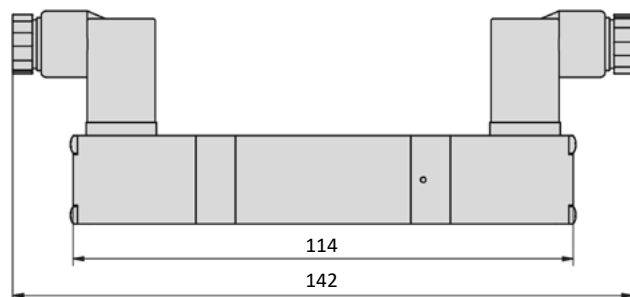
Model-no.:	M-20-510	M-20-520	M-20-530	M-20-533
Operating pressure (bar)	2.5 ... 8	2.5 ... 8	3 ... 8	3 ... 8
Pilot pressure (bar)	2.5 ... 8	2.5 ... 8	3 ... 8	3 ... 8
Flow rate (l/min)	220	220	220	220
Response time (ms) at 6 bar	on: 12 off: 12	on: 11 off: 11	on: 15 off: 22	on: 15 off: 22
Weight (kg)	0.098	0.156	0.162	0.162

### Dimensions

#### M-20-510-HN



#### M-20-520-HN, M-20-53x-HN



- 1 = pressure inlet  
2,4 = outlets  
3,5 = exhausts

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil and manual override can be repositioned by 4 x 90°.

### Accessories



Plug sockets: page 4-41



## Technical details

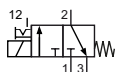
<b>Connection</b>	G1/8
<b>Nominal size</b>	1.4 mm
<b>Temperature range</b>	-10°C ... +70°C
<b>Medium</b>	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest 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
	Valves in accordance with 2014/34/EU (ATEX) available. (Chapter 13)



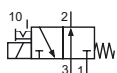
4

Electrically operated poppet valve. The manual override is detent and is operated by screwdriver.

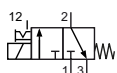
## 3/2-way valves



MS-18-310-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NC



MSO-18-310-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NO



MS-18-310/n-HN-xxx  
3/2-way, single solenoid, mechanical spring return, NC

Please complete: xxx = electrical option  
n = number of stations ( 2 to 6 )

## Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx
12 V DC	4.2 W		Form B industrial norm	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-431
24 V DC	4.2 W		Form B industrial norm	-412
24 V DC	4.2 W		M 12	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O32
24 V AC	7/4 VA	max. 7 bar for MSO-18	Form B industrial norm	-422
24 V AC	12.5/8.5 VA	up to 10 bar for MSO-18	Form B industrial norm	-322
115 V AC	7/4 VA	max. 7 bar for MSO-18	Form B industrial norm	-426
115 V AC	12.5/8.5 VA	up to 10 bar for MSO-18	Form B industrial norm	-326
230 V AC	7/4 VA	max. 7 bar for MSO-18	Form B industrial norm	-427
230 V AC	12.5/8.5 VA	up to 10 bar for MSO-18	Form B industrial norm	-327

\*1 Plug socket not included. suitable plug sockets see page 4-40.

## Series MS-18

### Technical data

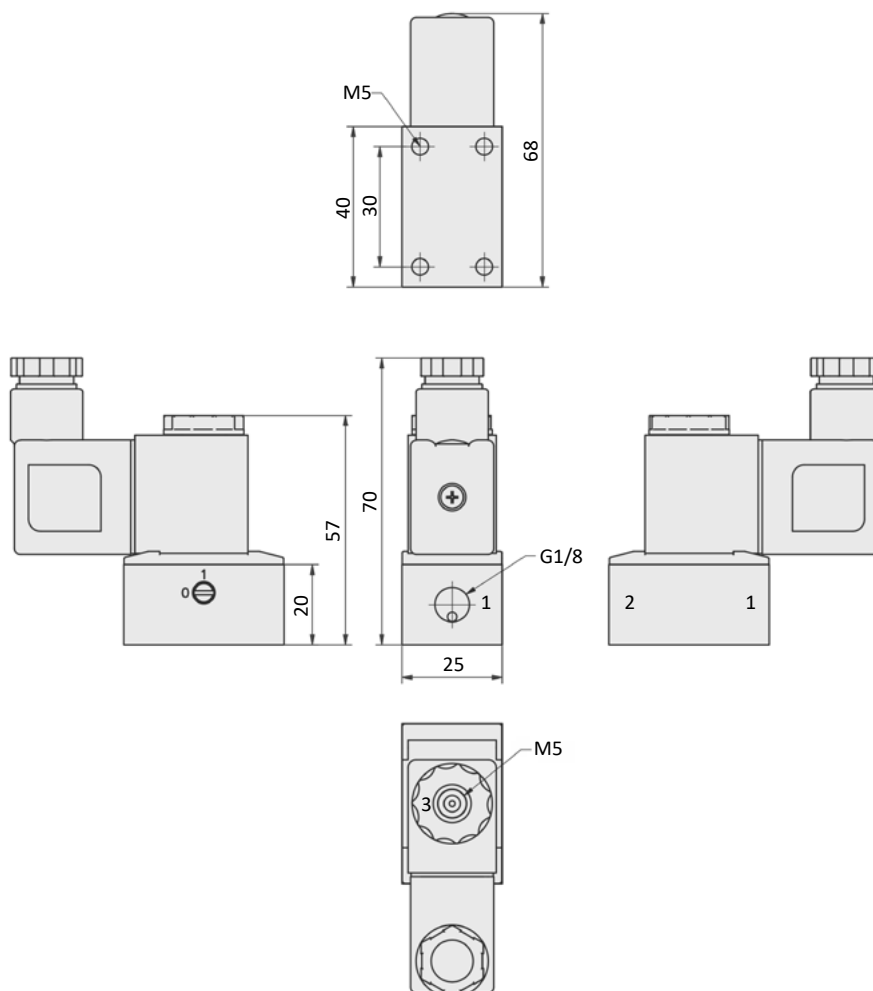
Model-no.:	MS-18-310	MSO-18-310	MS-18-310/n
Pressure range* (bar)	- 0.95 ... 10	- 0.95 ... 10**	- 0.95 ... 10
Flow rate (NI/min)	56	56	56
Response time (ms) at 6 bar	on: 10 off: 12	on: 10 off: 12	on: 10 off: 12
Weight (kg)	0.150	0.150	0.150 + 0.140 * n

\* max. 8 bar at 2.2 W and 2.5 W

\*\* for AC and coil 7/4 VA max. 7 bar.

### Dimensions

#### MS-18-310-HN

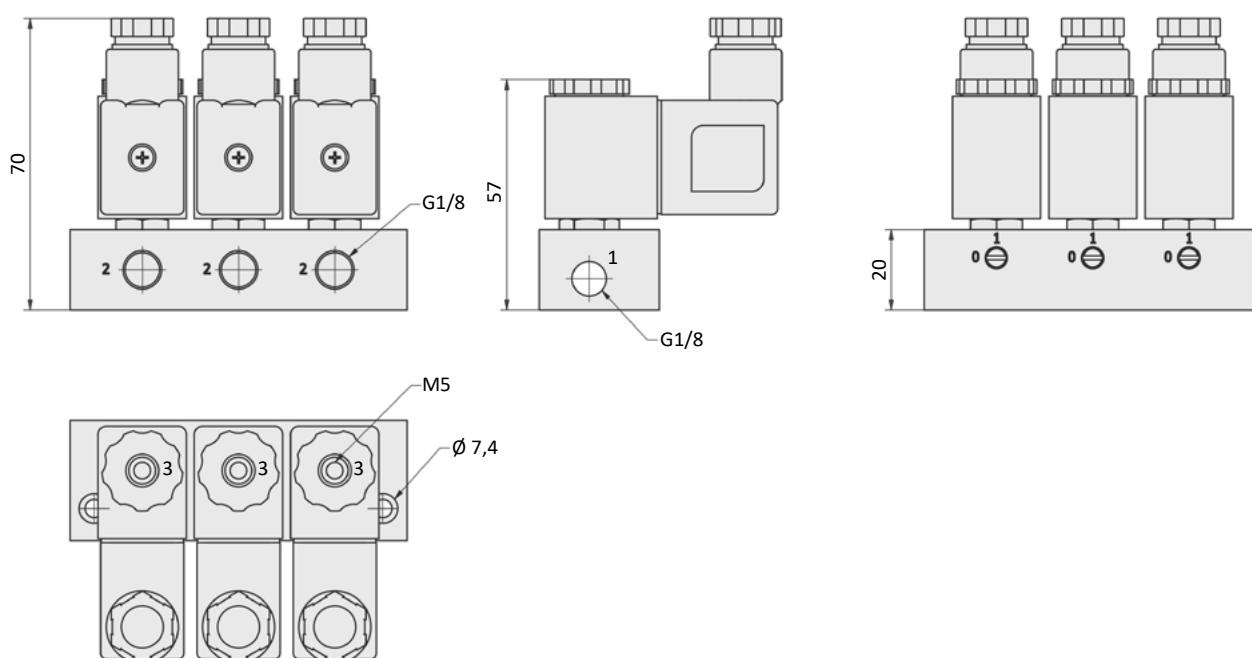
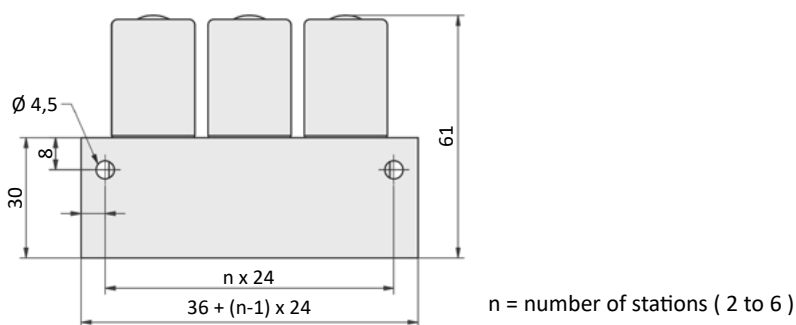


- 1 = pressure inlet ( outlet by MSO )
- 2 = outlet
- 3 = exhaust ( pressure inlet by MSO )

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Dimensions

### MS-18-310/n-HN



- 1 = pressure inlet ( outlet by MSO )
- 2 = outlet
- 3 = exhaust ( pressure inlet by MSO )

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

## Accessories



Plug sockets: page 4-40

## Series MS-20

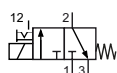
### Technical details

<b>Connection</b>	M5
<b>Nominal size</b>	1.2 mm
<b>Temperature range</b>	-10°C ... +70°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. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
<b>Materials</b>	Body: Al (anodized), seals: NBR, inner parts: Al, steel and plastic
<b>Protection</b>	IP 65 according to EN 60529

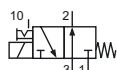


Electrically operated poppet valve. The manual override is detent and is operated by screwdriver.

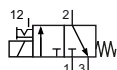
### 3/2-way-valves



MS-20-310-HN-xxx  
3/2-way, single solenoid, mechanical  
spring return, NC



MSO-20-310-HN-xxx  
3/2-way, single solenoid, mechanical  
spring return, NO



MS-20-310/n-HN-xxx  
3/2-way, single solenoid, mechanical  
spring return, NC

Please complete: xxx = electrical option  
n = number of stations ( 2 to 6 )

### Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection <sup>*1</sup>	-xxx
12 V DC	2 W		Form C industrial norm	-411
24 V DC	2 W		Form C industrial norm	-412

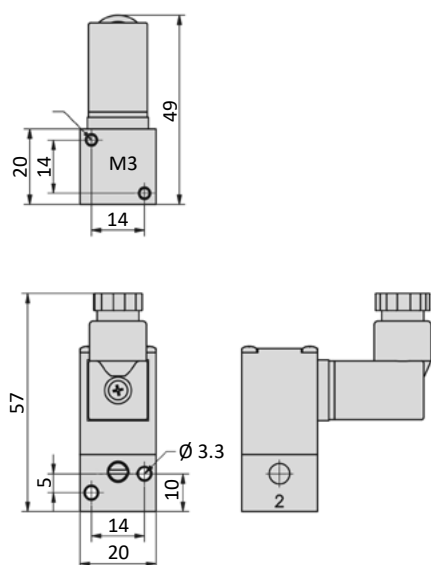
<sup>\*1</sup> Plug socket not included, suitable plug sockets see page 4-41.

## Technical data

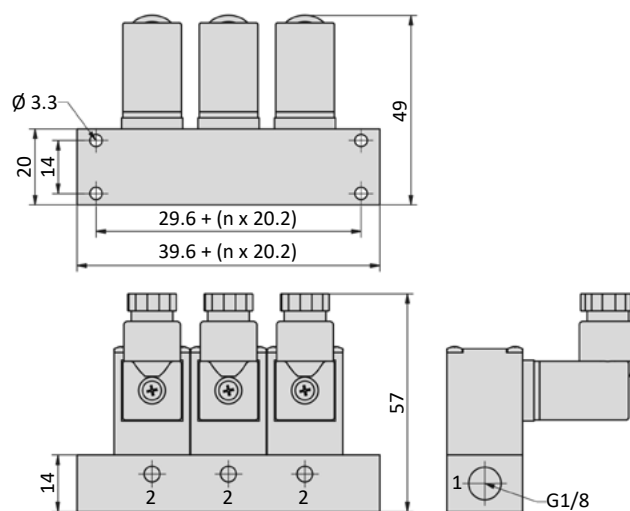
Model-no.:	MS-20-310	MSO-20-310	MS-20-310/n
Pressure range (bar)	-0.95 ... 8	-0.95 ... 8	-0.95 ... 8
Pilot pressure (bar)	-	-	-
Flow rate (NI/min)	38	38	38
Response time (ms) at 6 bar	on: 8 off: 8	on: 8 off: 8	on: 8 off: 8
Weight (kg)	0.064	0.064	0.01 + 0.066 x n

## Dimensions

### MS-20-310-HN, MSO-20-310-HN



### MS-20-310/n-HN



n = number of stations ( 2 to 6 )

- 1 = pressure inlet ( outlet by MSO )
- 2 = outlet
- 3 = exhaust ( pressure inlet by MSO )

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Accessories



Plug sockets: page 4-41

## Series MC-20 and MD-20

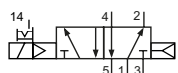
### Technical details

<b>Connection</b>	Sub-base mounting
<b>Nominal size</b>	3 mm
<b>Temperature range</b>	-10°C ... +70°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. Differing 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

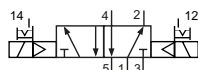


Electrically operated spool valve. The manual override is detent and is operated by screwdriver. Gaskets and screws are part of delivery.

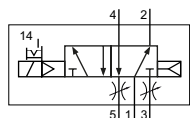
### 5/2-way valves



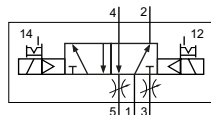
MC-20-510-HN-xxx  
5/2-way, single solenoid, air spring return



MC-20-520-HN-xxx  
5/2-way, double solenoid



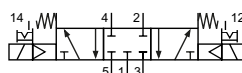
MD-20-510-HN-xxx  
5/2-way, single solenoid, air spring return, with exhaust throttles



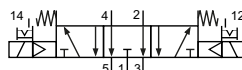
MD-20-520-HN-xxx  
5/2-way, double solenoid, with exhaust throttles

Please complete:    xxx = electrical option

### 5/3-way valves



MC-20-530-HN-xxx  
5/3-way, center position closed



MC-20-533-HN-xxx  
5/3-way, center position exhausted

### Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Plug connections	
				opposite 1,2,3,4,5	at 1,2,3,4,5
12 V DC	1 W		Form C industrial norm	-411	-441
24 V DC	1 W		Form C industrial norm	-412	-442

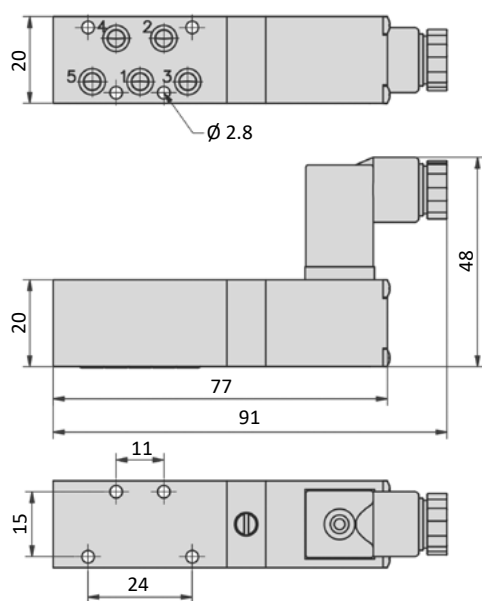
\*1 Plug socket not included, suitable plug sockets see page 4-41.

## Technical data

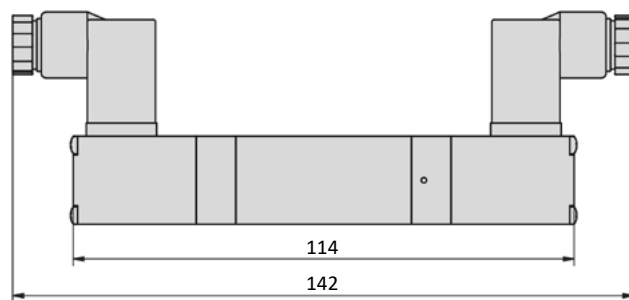
Model-no.:	MC-20-510 MD-20-510	MC-20-520 MD-20-520	MC-20-530	MC-20-533
Operating pressure (bar)	2.5 ... 8	2.5 ... 8	3 ... 8	3 ... 8
Pilot pressure (bar)	2.5 ... 8	2.5 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	220	220	220	220
Response time (ms) at 6 bar	on: 12 off: 12	on: 11 off: 11	on: 15 off: 22	on: 15 off: 22
Weight (kg)	0.100	0.156	0.162	0.162

## Dimensions

### MC-20-510-HN



### MC-20-520-HN, MC-20-53x-HN



- 1 = pressure inlet  
2,4 = outlets  
3,5 = exhausts

Plug socket (not included in scope of delivery) can be repositioned by 180°.  
Solenoid coil can be repositioned by 4 x 90°.

## Accessories



Plug sockets: page 4-41

## Plug sockets

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

Overall width	27 mm
Contact distance	18 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a profile gasket
For use with series	no standard



Model-no.:	28-ST-03	28-ST-11-112
Voltage (AC/DC)	0 - 250 V	24 V
Status indicator	no	yes
Protective circuit	no	yes (varistor)
Connecting cable	without	without
Wire cross section	max. 1.5 mm <sup>2</sup>	max. 1.5 mm <sup>2</sup>
Ø Connecting cable	6 - 8 mm	6 - 8 mm

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

Overall width	22 mm
Contact distance	10 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	no standard



Model-no.:	28-ST-01-G
Voltage (AC/DC)	0 - 250 V
Status indicator	no
Protective circuit	no
Connecting cable	without
Wire cross section	max. 1.5 mm <sup>2</sup>
Ø Connecting cable	6 - 8 mm

### Form B industrial norm

Overall width	22 mm
Contact distance	11 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	M-04, M-05, M-07, M-22, KM-09, KM-10, MS-18, KN-05, MN-06, MI-01, MI-02, MI-03



Model-no.:	28-ST-01	28-ST-04-112	28-ST-04-127	28-ST-06-112	28-ST-06-127	28-ST-06-K3-112*	28-ST-06-K3-127*
Voltage (AC/DC)	0 - 250 V	10 - 50 V	70 - 250 V	24 V	230 V	24 V	230 V
Status indicator	no	yes	yes	yes	yes	yes	yes
Protective circuit	no	no	no	yes (varistor)	yes (varistor)	yes (varistor)	yes (varistor)
Connecting cable	without	without	without	without	without	3 m	3 m
Wire cross section	max. 1.5 mm <sup>2</sup>	max. 1.5 mm <sup>2</sup>	max. 1.5 mm <sup>2</sup>	max. 1.5 mm <sup>2</sup>	max. 1.5 mm <sup>2</sup>	3 x 0.75 mm <sup>2</sup>	3 x 0.75 mm <sup>2</sup>
Ø Connecting cable	6 - 8 mm	6 - 8 mm	6 - 8 mm	6 - 8 mm	6 - 8 mm		

\* These plug sockets are fitted with integrated flat gaskets.



## Form C according to DIN EN 175301-803

Overall width	15 mm
Contact distance	8 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	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 *
Voltage (AC/DC)	0 - 250 V	10 - 50 V	70 - 250 V	24 V	230 V	24 V
Status indicator	no	yes	yes	yes	yes	yes
Protective circuit	no	no	no	yes (varistor)	yes (varistor)	yes (varistor)
Connecting cable	without	without	without	without	without	3 m
Wire cross section	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>
Ø Connecting cable	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	

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



## Form C industrial norm

Overall width	15 mm
Contact distance	9.4 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	M-20, MC-20, MD-20, MS-20



Model-no.:	28-ST-02-01	28-ST-09-112	28-ST-09-127	28-ST-10-112	28-ST-10-127	28-ST-10-K3-112 *
Voltage (AC/DC)	0 - 250 V	10 - 50 V	70 - 250 V	24 V	230 V	24 V
Status indicator	no	yes	yes	yes	yes	yes
Protective circuit	no	no	no	yes (varistor)	yes (varistor)	yes (varistor)
Connecting cable	without	without	without	without	without	3 m
Wire cross section	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>
Ø Connecting cable	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	4 - 6 mm	

Model-no.:	28-ST-02-2-05	28-ST-02-2-07
Voltage (AC/DC)	24 V	24 V
Status indicator	yes	yes
Protective circuit	yes (varistor)	yes (varistor)
Connection	M8	M12

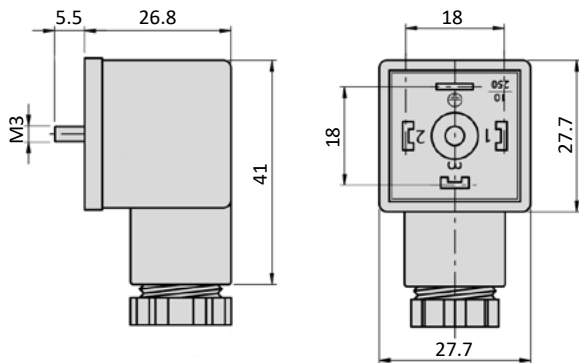


\* These plug sockets are fitted with integrated flat gaskets.

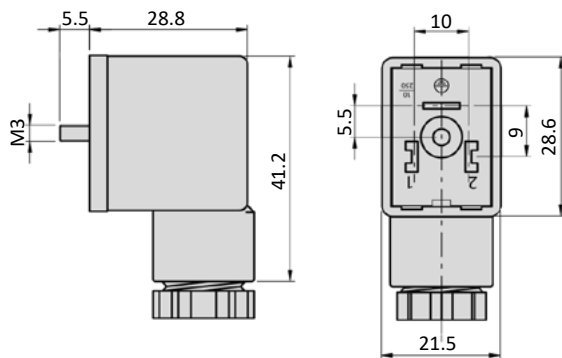
## Plug sockets

### Dimensions

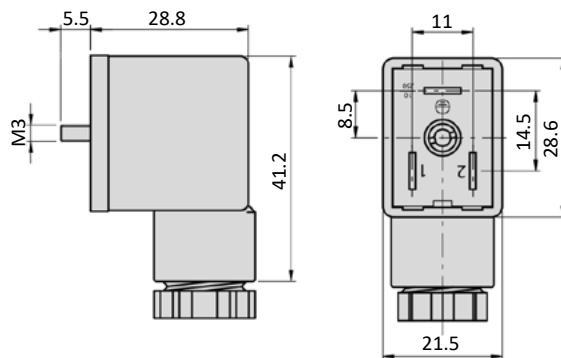
#### Form A according to DIN EN 175301-803



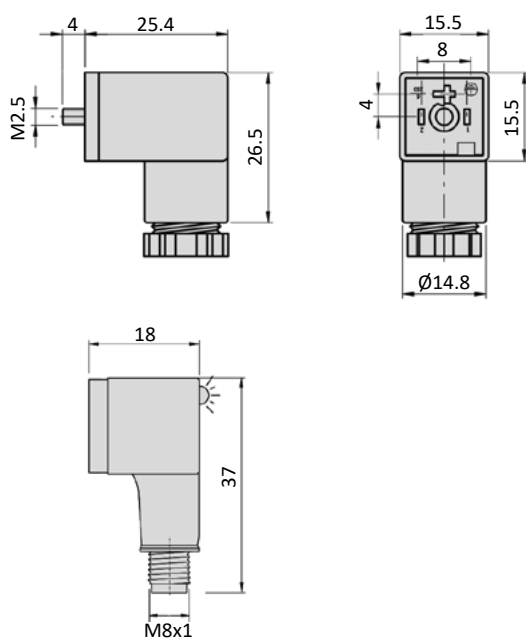
#### Form B according to DIN EN 175301-803



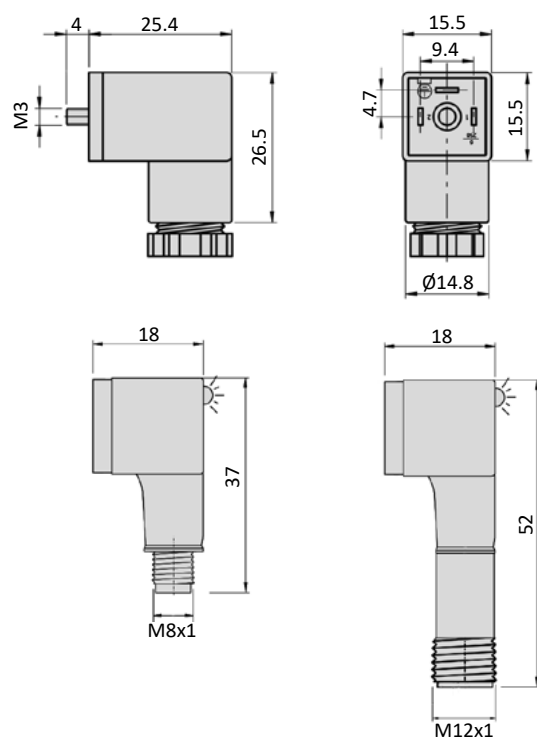
#### Form B industrial norm



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

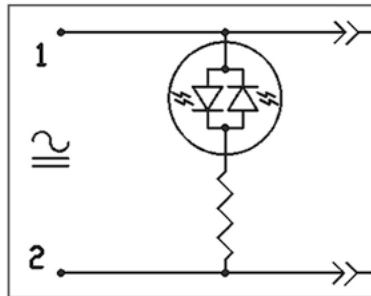


#### Form C industrial norm

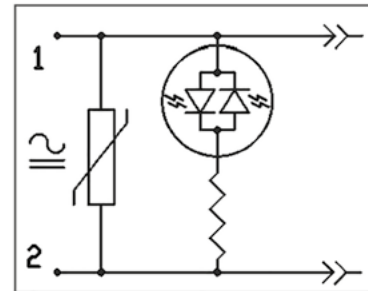


## Electrically circuits

### Status indicator (LED)



### Status indicator (LED) and protective circuit (varistor)



## Solenoid coils

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

Overall width	30 mm
Contact distance	18 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-40°C ... +50°C
Voltage tolerance	± 10 %
For use with series	no standard



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

Model-no.:	23-SP-016-712	23-SP-016-722	23-SP-016-726	23-SP-016-727
Voltage	24 V DC	24 V AC	110/115 V AC	230 V AC/ 110 V DC
Power consumption DC	4.5 W	-	-	5.3 W
Power consumption AC	-	8.0 VA	7.6 VA/ 8.6 VA	7.9 VA
Specifics	enhanced humidity resistance			

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

Overall width	22 mm
Contact distance	10 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-40°C ... +50°C
Voltage tolerance	± 10 %
For use with series	no standard



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

Model-no.:	23-SP-011-G-412	23-SP-011-G-427
Voltage	24 V DC	230 V AC
Power consumption DC	4.2 W	-
Power consumption AC	-	5 VA

## Solenoid coils

### Form B industrial norm

Overall width	22 mm
Contact distance	11 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Voltage tolerance	± 10 %
For use with series	M-04, M-05, M-07, M-22, KM-09, KM-10, MS-18, KN-05, MN-06, MI-01, MI-02, MI-03



4

Model-no.:	23-SP-011-411	23-SP-011-412	23-SP-011-422	23-SP-011-426	23-SP-011-427	23-SP-012-431	23-SP-012-432
Voltage	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC	12 V DC	24 V DC
Power consumption DC	4.2 W	4.2 W	-	-	-	2.2 W	2.2 W
Power consumption AC	-	-	5 VA	5 VA	5 VA	-	-
Temperature range*	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C

Model-no.:	23-SP-011-1-711	23-SP-011-1-712	23-SP-011-1-725	23-SP-011-1-727	23-SP-012-1-732
Voltage	12 V DC	24 V DC	110/115 V AC	230 V AC	24 V DC
Power consumption DC	4.2 W	4.2 W	-	-	3 W
Power consumption AC	-	-	6.0 VA/ 7.6 VA	7.9 VA	-
Temperature range*	-50°C...+80°C	-50°C...+80°C	-20°C...+50°C	-20°C...+50°C	-50°C...+80°C
Specifics	enhanced humidity resistance				

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

### M12 connection

Overall width	22 mm
Contact distance	-
Contacts	2P
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-20°C ... +50°C
Voltage tolerance	± 10 %
For use with series	



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

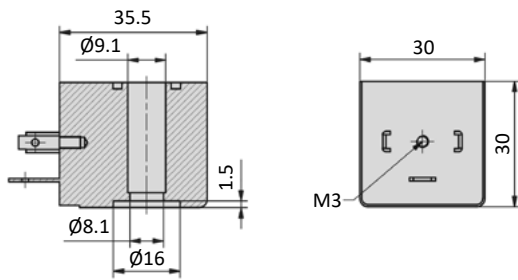
Model-no.:	23-SP-011-5-O12	23-SP-012-5-O32
Voltage	24 V DC	24 V DC
Power consumption DC	4.8 W	2.5 W
Power consumption AC	-	-
Specifics	Mounting on manifold not allowed. With integrated LED and protective circuit.	Min. mounting distance for manifold mounting is 20 mm. With integrated LED and protective circuit.

## Solenoid coils

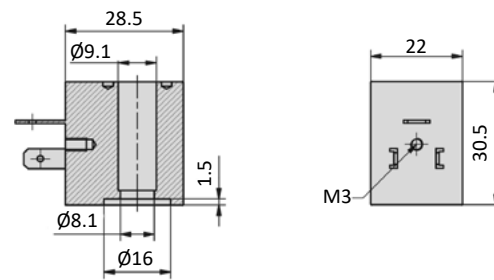


### Dimensions

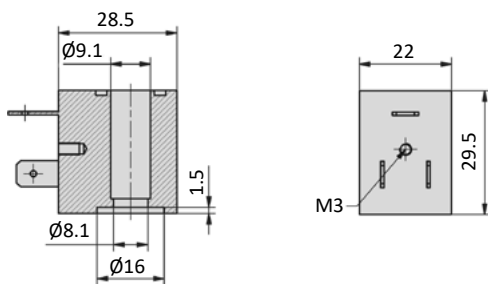
#### Form A according to DIN EN 175301-803



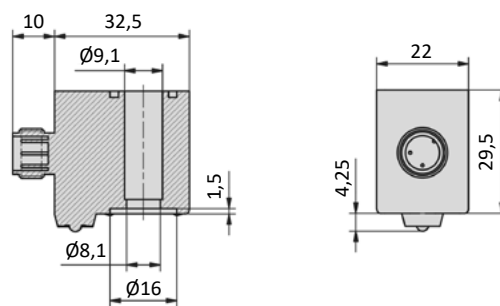
#### Form B according to DIN EN 175301-803



#### Form B industrial norm



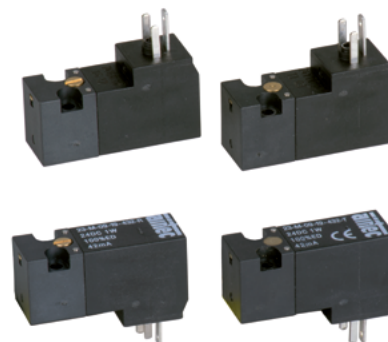
#### M12 connection



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

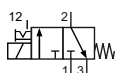
Overall width	15 mm
Contact distance	8 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-10°C ... +50°C
Voltage tolerance	± 10 %
For use with series	BM-01, BM-02

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

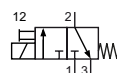


4

## 3/2-way valves



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



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

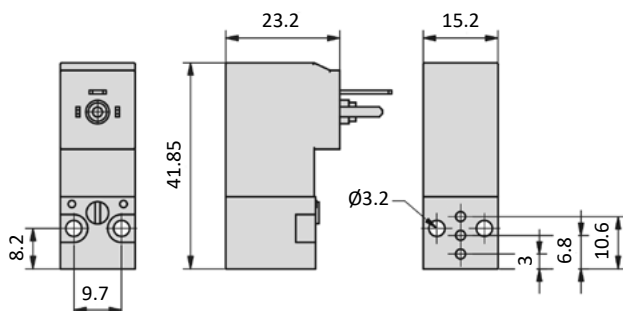
Please complete: xxx = electrical option

Model-no.:	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
Voltage	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
Power consumption DC	1 W	1 W	-	-	-
Power consumption AC	-	-	3 VA	3 VA	3 VA
electric connector on side of manual override					

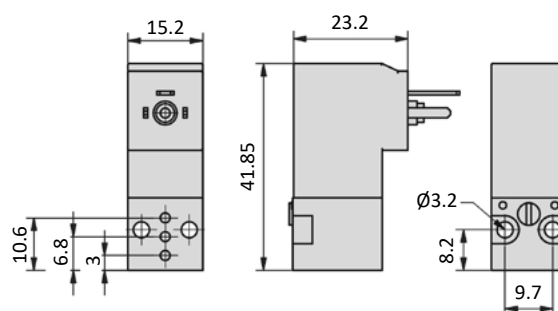
Model-no.:	23-M-09-19-431-y	23-M-09-19-432-y	23-M-09-19-422-y	23-M-09-19-426-y	23-M-09-19-427-y
Voltage	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
Power consumption DC	1 W	1 W	-	-	-
Power consumption AC	-	-	3 VA	3 VA	3 VA
electric connector opposite of manual override y = manual override (R = detent, T = non-detent)					

## Dimensions

### electric connector on side of manual override



### electric connector opposite side of manual override



## Pilot valves

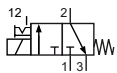
### M12 connection

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

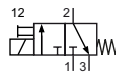


\* The max. applicable operating temperature depends on the temperature specification of the used valve.

### 3/2-way valves



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



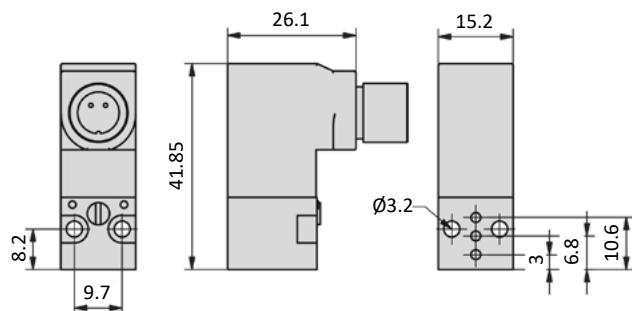
23-M-09-19-xxx-T  
3/2-way, single solenoid, mechanical  
spring return, NC, manual override  
non-detent

Please complete: xxx = electrical option

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

### Dimensions

#### electric connector on side of manual override





- HN * - * * *					
Manual override		Coil and plug options		Manual override position on side of	
		Coil type		Voltage	
HN	detent	0	ATEX 2GD, encapsulated with casting compound width 30 mm	0	without indication
HNR	detent	1	with coil and plug	1	DC ports 1/3/(5)
HNT	non-detent	2		2	AC ports 1/3/(5)
		3	with coil, power consumption different from standard, without plug	3	DC, low power consumption ports 1/3/(5)
		4	with coil, without plug	4	DC ports 2/(4)
		5	without coil	5	AC ports 2/(4)
		6	without pilot valve	6	DC, low power consumption ports 2/(4)
		7	with coil, with enhanced humidity resistance, without plug	7	without indication ports 2/(4)
		8	with coil, with enhanced humidity resistance, with plug		
		9	ATEX 2GD, intrinsically safe, with plug width 30 mm		
		A	ATEX 3GD, without plug, width 30 mm		
		B	ATEX 3GD, with plug, width 30 mm		
		C	ATEX 3GD, without plug, width 22 mm		
		D			
		E			
		F	with coil, with enhanced humidity resistance, without plug, low temperature version		
		G			
		H	with coil shape B according to DIN EN 175301-803, with plug		
		I	with coil shape B according to DIN EN 175301-803, without plug		
		J	with coil shape A according to DIN EN 175301-803, without plug (if not standard)		
		K	with coil shape A according to DIN EN 175301-803, with plug (if not standard)		
		L	with coil, with plug with LED and protective circuit		
		M	with coil, with plug with LED, without protective circuit		
		N	with coil with M12 connection		
		O	with coil with M12 connection with LED and protective circuit		
		P	without connector bridge, without plug		
		Q	with coil with with cable		
		R	with cable up to 1 m length		
		S	with connector bridge, without plug		
		T			
		U	ATEX 2GD, without coil (for coil 23-SP-036)		
		V	ATEX 2GD, Flame proof enclosures and encapsulated with casting compound		
		W	ATEX 2GD / 3GD, without coil (for coil 23-SP-041 and 23-SP-045)		
		X	ATEX 3GD, without coil (for coil 23-SP-040 in 230V AC and 115V AC)		
		Y	ATEX 2GD, without coil (for coil 23-SP-038)		
		Z	ATEX 2GD / 3GD, without coil (for coil 23-SP-040 in 24V DC and 23-SP-037)		

Not all options are suitable for all valve series