

# Electrically operated valves

Series BM-02, 3/2-way and 2 x 3/2-way

G1/4 • 920 to 1090 NI/min (0.935 to 1.001 Cv)



## Order code

BM-02-310-HNR-462

### Series and function

BM = Standard

### Manual override

HNT = non-detented  
manual override

HNR = detented  
manual override

### Coil options

Standard voltage	Plug socket upward	Plug socket downward	M12 connections-upward
12 V DC, 1 W	461	431	
24 V DC, 1 W	462	432	N62
24 V AC, 3 VA	452	422	
115 V AC, 3 VA	456	426	
230 V AC, 3 VA	457	427	

The requested plug socket must be purchased separately.  
Plug sockets see page 4.283.

### Design, function and technical data

Spool valve actuated by an electrical signal. Please specify required control voltage when ordering.

### 3/2-way valve



Order number	BM-02-310-HN	BM-02-312-HN
Please complete according to order code.		
Function	3/2-way NC	3/2-way NO
Connection	G1/4	
Nominal size	8 mm	
Flow rate	1090 NI/min (1.001 Cv)	920 NI/min (0.935 Cv)
Pressure range	2 ... 8 bar (29 ... 116 psi)	
Control pressure	Control pressure is identical to main pressure range	
Response time at 6 bar	on 19 ms off 23 ms	on 25 ms off 23 ms
Temperature range	- 5 °C ... + 60 °C (+ 23 °F ... + 140 °F)	
Materials	Body: Al (anodized) and PA-GF, Seals: NBR and PU, Inner parts: Al, brass and POM	
Medium	Compressed air in accordance with ISO 8573-1:2010, Class 7:2:4 – and free of aggressive additives.	
Degree of protection	IP 65 according to EN 60529	
Weight	0.150 kg (0.331 lb.)	

### 2 x 3/2-way valve



Order number	BM-02-310/2-HN	BM-02-312/2-HN	BM-02-314/2-HN
Please complete according to order code.			
Function	2 x 3/2-way NC	2 x 3/2-way NO	2 x 3/2-way NO/NC
Connection	G1/4		
Nominal size	7 mm		
Flow rate	1050 NI/min (1.067 Cv)	1030 NI/min (1.047 Cv)	NC 1050 NI/min, NO 920 NI/min (NC 1.067 Cv, NO 0.935 Cv)
Pressure range	2 ... 8 bar (29 ... 116 psi)		
Control pressure	Control pressure is identical to main pressure range		
Response time at 6 bar	on 22 ms off 24 ms		
Temperature range	- 5 °C ... + 60 °C (+ 23 °F ... + 140 °F)		
Materials	Body: Al (anodized) and PA-GF, Seals: NBR and PU, Inner parts: Al, brass and POM		
Medium	Compressed air in accordance with ISO 8573-1:2010, Class 7:2:4 – and free of aggressive additives.		
Degree of protection	IP 65 according to EN 60529		
Weight	0.250 kg (0.551 lb.)		

# Electrically operated valves

Series BM-02 (BME-02), 5/2-way and 5/3-way

G1/4 • 1300 to 1700 NI/min (1.321 to 1.728 Cv)



## Order code

BM-02-510-HNR-462


## Coil options

### Series and function

BM = Standard  
BME = Valves with external pilot supply

### Manual override

HNT = non-detented manual override  
HNR = detented manual override

Standard voltage	Plug socket upward	Plug socket downward	M12 connections-upward
12 V DC, 1 W	461	431	N62 
24 V DC, 1 W	462	432	
24 V AC, 3 VA	452	422	
115 V AC, 3 VA	456	426	
230 V AC, 3 VA	457	427	

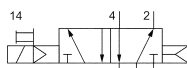
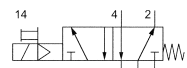
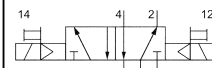
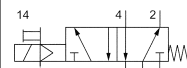
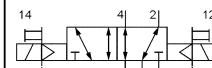
The requested plug socket must be purchased separately.  
Plug sockets see page 4.283.

## Design, function and technical data

Spool valve actuated by an electrical signal. Please specify required control voltage when ordering.

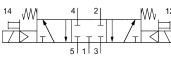
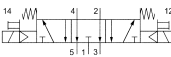
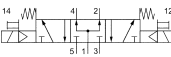
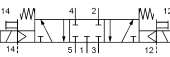
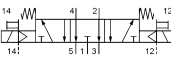
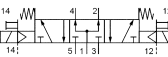
### 5/2-way valve



Order number	BM-02-510-HN	BM-02-511-HN	BM-02-520-HN	BME-02-511-HN	BME-02-520-HN
Please complete according to order code.					
Function	5/2-way single solenoid air spring return	5/2-way single solenoid spring return	5/2-way double solenoid	5/2-way single solenoid ext. pilot supply	5/2-way double solenoid ext. pilot supply
Connection	G1/4				
Nominal size	7 mm				
Flow rate	1700 NI/min (1.728 Cv)	1600 NI/min (1.626 Cv)	1540 NI/min (1.565 Cv)	1600 NI/min (1.626 Cv)	1540 NI/min (1.565 Cv)
Pressure range	2 ... 8 bar (29 ... 116 psi)		2 ... 8 bar (29 ... 116 psi)	- 0,95 ... 8 bar (- 14 ... + 116 psi)	
Control pressure	Control pressure is identical to main pressure range			3 ... 8 bar (43.5 ... 116 psi)	2 ... 8 bar (29 ... 116 psi)
Response time at 6 bar	on 23 ms off 33 ms	on 13 ms off 35 ms	11 ms	on 13 ms off 35 ms	11 ms
Temperature range	- 5 °C ... + 60 °C (+ 23 °F ... + 140 °F)				
Materials	Body: Al (anodized) and PA-GF, Seals: NBR and PU, Inner parts: Al, brass and POM				
Medium	Compressed air in accordance with ISO 8573-1:2010, Class 7:2:4 – and free of aggressive additives.				
Degree of protection	IP 65 according to EN 60529				
Weight	0.220 kg (0.485 lb.)		0.270 kg (0.595 lb.)	0.220 kg (0.485 lb.)	0.270 kg (0.595 lb.)

### 5/3-way valve



Order number	BM-02-530-HN	BM-02-533-HN	BM-02-534-HN	BME-02-530-HN	BME-02-533-HN	BME-02-534-HN
Please complete according to order code.						
Function	5/3-way center position closed	5/3-way center position exhausted	5/3-way center position pressurized	5/3-way center position closed ext. pilot supply	5/3-way center position exhausted ext. pilot supply	5/3-way center position pressurized ext. pilot supply
Connection	G1/4					
Nominal size	7 mm					
Flow rate	1300 NI/min (1.321 Cv)	1470 NI/min (1.494 Cv)	1660 NI/min (1.687 Cv)	1300 NI/min (1.321 Cv)	1470 NI/min (1.494 Cv)	1660 NI/min (1.687 Cv)
Pressure range	3 ... 8 bar (43.5 ... 116 psi)			- 0,95 ... 8 bar (- 14 ... + 116 psi)		
Control pressure	Control pressure is identical to main pressure range			3 ... 8 bar (43.5 ... 116 psi)		
Response time at 6 bar	on 20 ms off 26 ms	on 26 ms off 28 ms	on 26 ms off 33 ms	on 20 ms off 26 ms	on 26 ms off 28 ms	on 26 ms off 33 ms
Temperature range	- 5 °C ... + 60 °C (+ 23 °F ... + 140 °F)					
Materials	Body: Al (anodized) and PA-GF, Seals: NBR and PU, Inner parts: Al, brass and POM					
Medium	Compressed air in accordance with ISO 8573-1:2010, Class 7:2:4 – and free of aggressive additives.					
Degree of protection	IP 65 according to EN 60529					
Weight	0.260 kg (0.573 lb.)					

# Electrically operated valves

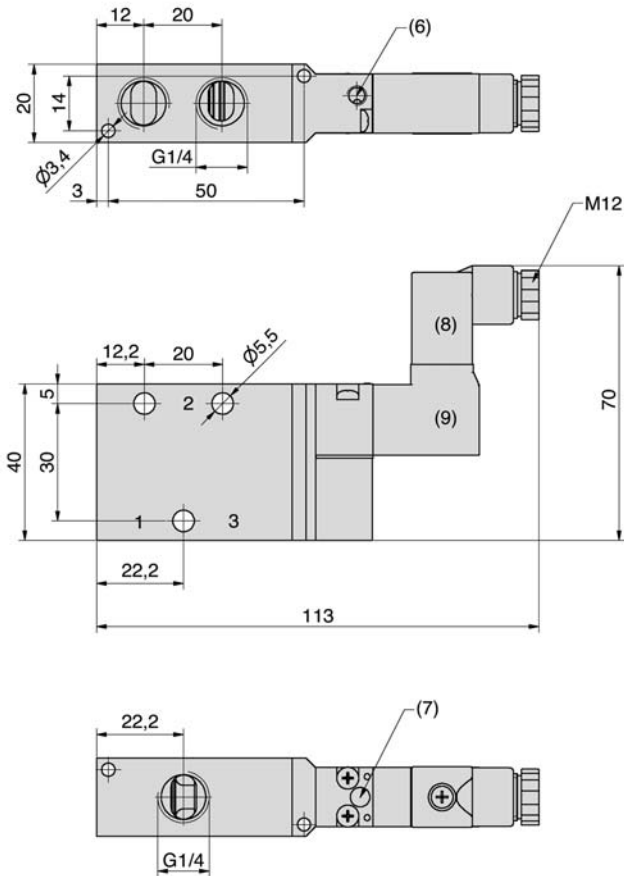
Series BM-02, 3/2-, 2 x 3/2-, 5/2- and 5/3-way  
G1/4 • 920 to 1700 NI/min (0.762 to 1.728 Cv)



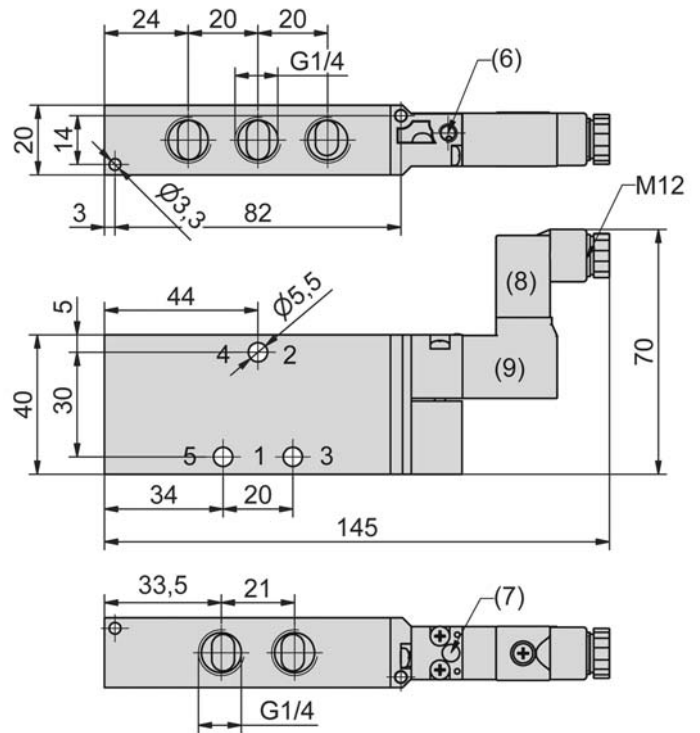
## BM-02-310-HN, BM-02-312-HN



**Note:**  
Plug socket(s) not included in scope of delivery.



## BM-02-510-HN, BM-02-511-HN



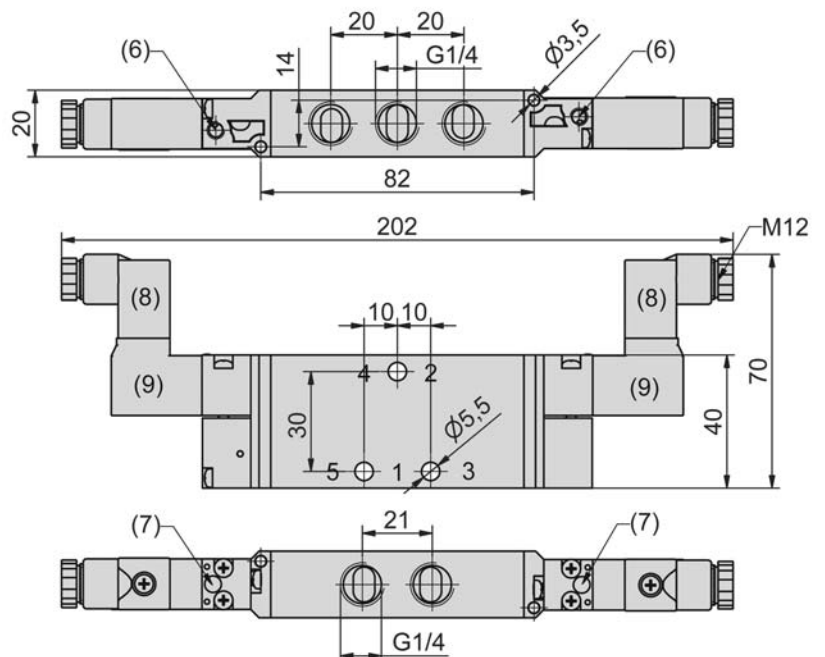
- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (6) = Pilot air exhaust, M5
- (7) = Manual override, detented or non-detented
- (8) = plug socket can be repositioned by 180°
- (9) = Solenoid, pins for plug socket connection upward or downward

## BM-02-310/2-HN, BM-02-312/2-HN, BM-02-314/2-HN, BM-02-520-HN, BM-02-530-HN, BM-02-533-HN, BM-02-534-HN



**Note:**  
Plug socket(s) not included in scope of delivery.

- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (6) = Pilot air exhaust, M5
- (7) = Manual override, detented or non-detented
- (8) = plug socket can be repositioned by 180°
- (9) = Solenoid, pins for plug socket connection upward or downward



# Electrically operated valves

Series BM-02 (BME-02), 5/2-way and 5/3-way with ext. pilot supply  
G1/4 • 1300 to 1660 NI/min (1.321 to 1.687 Cv)



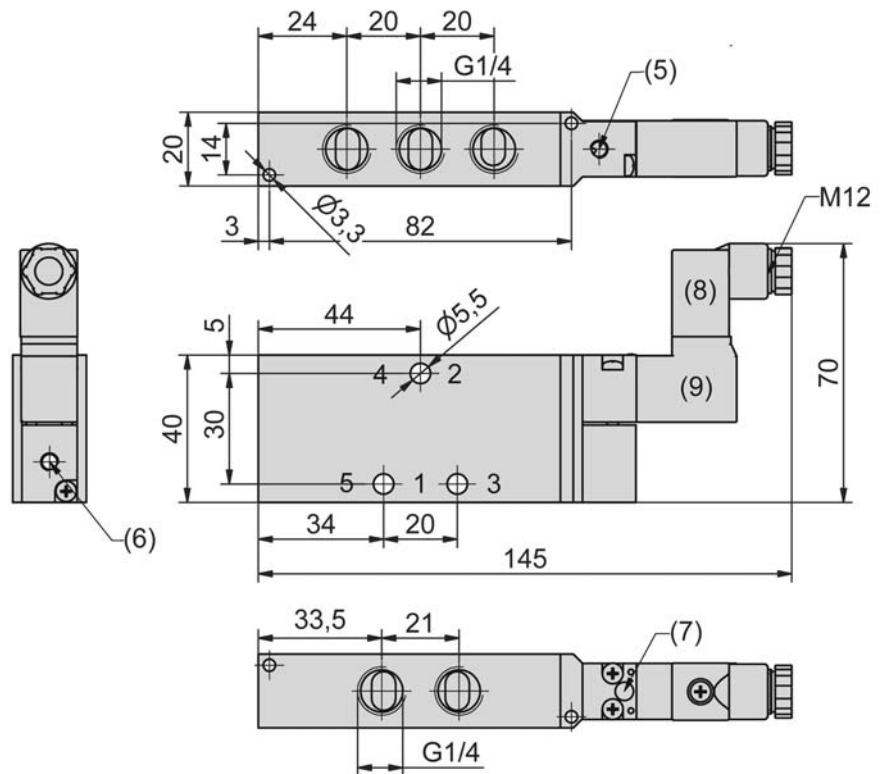
## BME-02-511-HN



**Note:**

Plug socket(s) not included in scope of delivery.

- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (5) = ext. pilot supply, M5
- (6) = Pilot air exhaust, M5
- (7) = Manual override, detented or non-detented
- (8) = plug socket can be repositioned by 180°
- (9) = Solenoid, pins for plug socket connection upward or downward



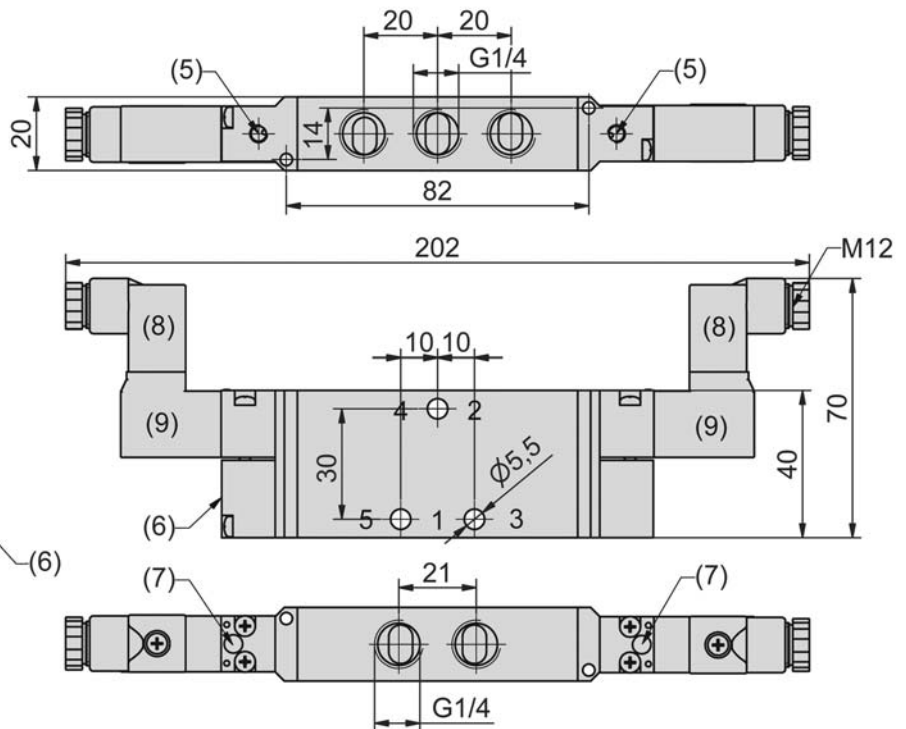
## BME-02-520-HN, BME-02-530-HN, BME-02-533-HN, BME-02-534-HN



**Note:**

Plug socket(s) not included in scope of delivery.

- 1 = pressure inlet
- 2, 4 = outlets
- 3, 5 = exhausts
- (5) = ext. pilot supply, M5
- (6) = Pilot air exhaust, M5
- (7) = Manual override, detented or non-detented



- (8) = plug socket can be repositioned by 180°
- (9) = Solenoid, pins for plug socket connection upward or downward

# Accessories for electrically operated valves

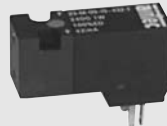
Series BM-02 and BME-02



## Solenoid



Solenoid with pins for plug socket connection on the same side as manual override (upward).  
**23-M-09-19-...**  
page 4.281



Solenoid with pins for plug socket connection on the opposite side of the manual override (downward).  
**23-M-09-19-...**  
page 4.281

## Plug sockets



Standard plug socket  
**28-ST-02-1**  
page 4.283

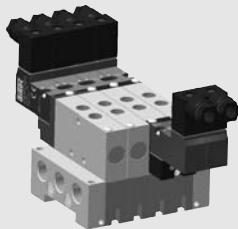


Plug socket with LED  
**28-ST-09-1-...**  
page 4.283

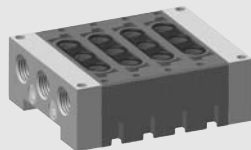


Plug socket with LED and circuit protection  
**28-ST-10-1-...**  
page 4.283

## Manifolds



Manifold will be delivered completely assembled with valves if requested.



Manifold with n/stations. Ports on the side.  
**RF-02-AB/n**



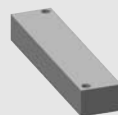
Manifold with n/stations. Ports on the side and the top.  
**RF-02-CD/n**



Manifold with n/stations. Ports on both sides and top.  
**RF-02-AD/n**



One station element.  
**RF-02-Z**



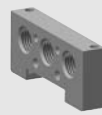
Blind plate for blank valve station.  
**RF-02-V**



Adapter plate for additional air supply and exhaust.  
**RF-02-PE**



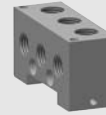
End plate A with side ports.  
**RF-02-EA**



End plate B with side ports.  
**RF-02-EB**



End plate C with side and top ports.  
**RF-02-EC**



End plate D with side and top ports.  
**RF-02-ED**

**Additional single elements:** **RF-02-ZE** "Add-on" element to add one valve station.  
**RF-02-DT** Seal plate for two different pressures.

**RE-46-RSV** Check valve for dynamic exhaust pressures.  
**RF-01-M5** Connecting bolt, 1 pair

## User information

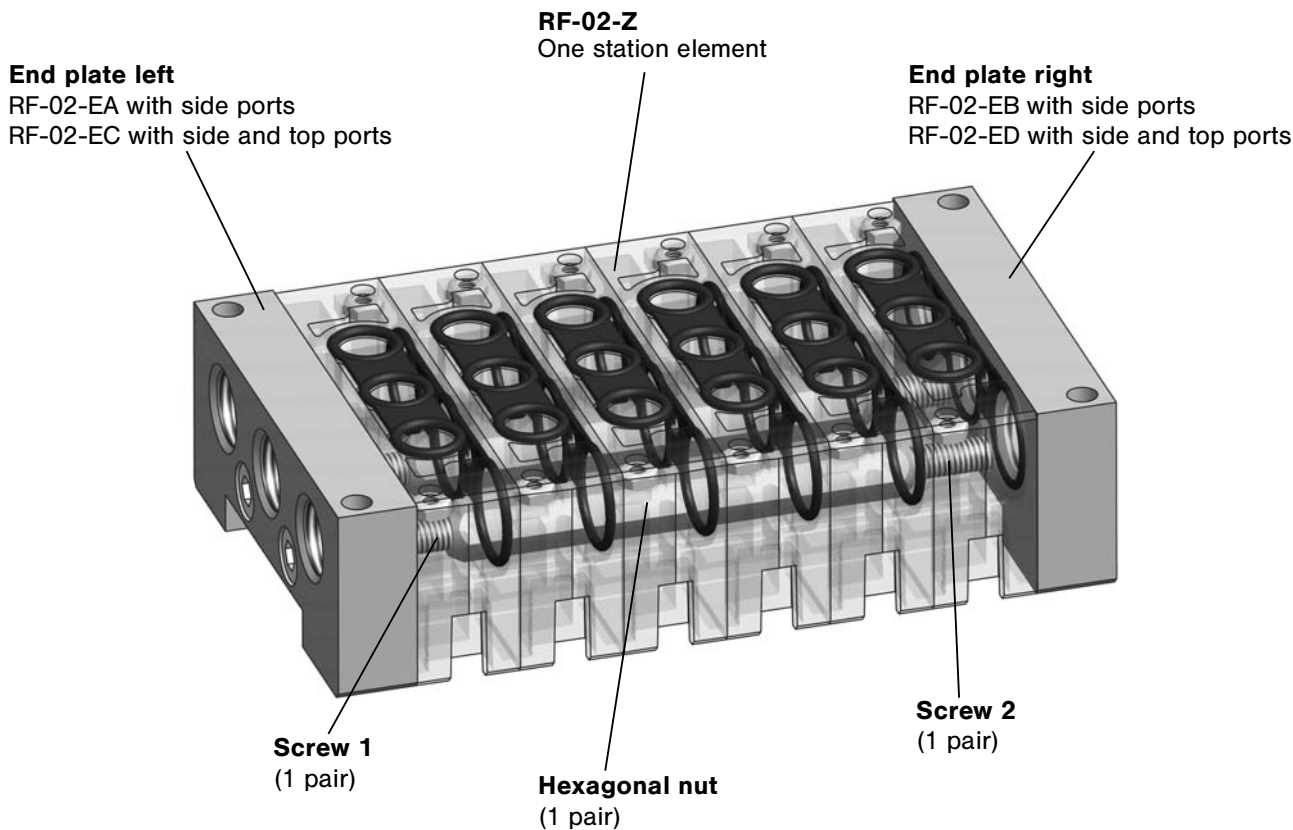
Modular manifold system for valve series BM-02. The assembled manifold consists of one station elements (RF-02-Z) and end plates with common supply and exhaust ports. The end plates contain ports to the side (RF-02-EA, RF-02-EB) or at the top and the side (RF-02-EC, RF-02-ED).

The manifolds are quickly assembled with the 4 screws and a hexagonal nut. Adding or removing stations is possible at any time.

The manifold can be either DIN-rail mounted, screw on by 4 M5 screws or flange mounting via M4 screws.

The necessary seals and screws for valve mounting are included in the scope of delivery.

## Manifold design



### User information

To add stations to the manifold without changing screws and nut, the set RF-02-ZE is available. This contains a one station element, a screw to extend the hexagonal nut and seals and screws for valve mounting.

Order number	Hexagonal nut	Screw 1	Screw 2
RF-02-AB/02	21-R-07-07/05	M5 x 20	M5 x 20
RF-02-AB/03	21-R-07-07/05	M5 x 30	M5 x 30
RF-02-AB/04	21-R-07-07/2	M5 x 20	M5 x 20
RF-02-AB/05	21-R-07-07/2	M5 x 30	M5 x 30
RF-02-AB/06	21-R-07-07/2	M5 x 40	M5 x 40
RF-02-AB/07	21-R-07-07/4	M5 x 20	M5 x 20
RF-02-AB/08	21-R-07-07/4	M5 x 30	M5 x 30
RF-02-AB/09	21-R-07-07/4	M5 x 40	M5 x 40
RF-02-AB/10	21-R-07-07/6	M5 x 16	M5 x 16
RF-02-AB/11	21-R-07-07/6	M5 x 25	M5 x 25
RF-02-AB/12	21-R-07-07/6	M5 x 35	M5 x 35

Order number	Hexagonal nut	Screw 1	Screw 2
RF-02-CD/02	21-R-07-07/05	M5 x 35	M5 x 35
RF-02-CD/03	21-R-07-07/05	M5 x 45	M5 x 45
RF-02-CD/04	21-R-07-07/2	M5 x 35	M5 x 35
RF-02-CD/05	21-R-07-07/2	M5 x 45	M5 x 45
RF-02-CD/06	21-R-07-07/2	M5 x 55	M5 x 55
RF-02-CD/07	21-R-07-07/4	M5 x 30	M5 x 30
RF-02-CD/08	21-R-07-07/4	M5 x 40	M5 x 40
RF-02-CD/09	21-R-07-07/4	M5 x 50	M5 x 50
RF-02-CD/10	21-R-07-07/6	M5 x 30	M5 x 30
RF-02-CD/11	21-R-07-07/6	M5 x 40	M5 x 40
RF-02-CD/12	21-R-07-07/6	M5 x 50	M5 x 50

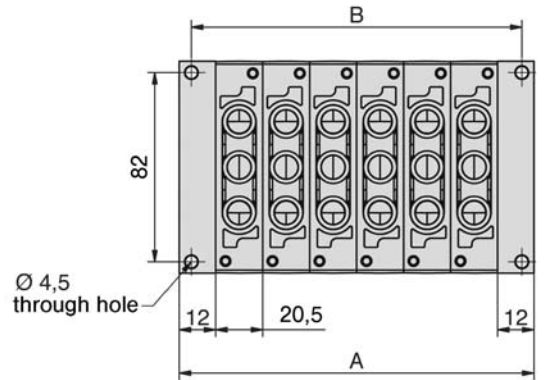
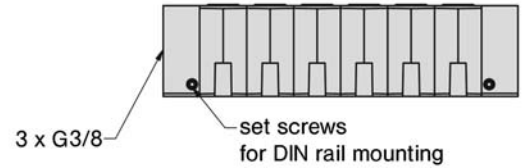
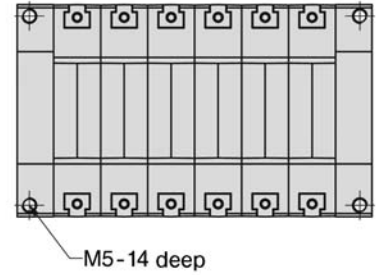
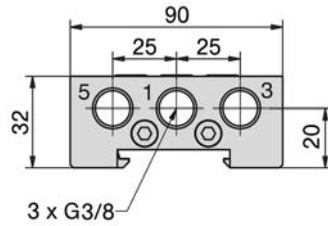
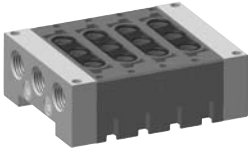
Order number	Hexagonal nut	Screw 1	Screw 2
RF-02-AD/02	21-R-07-07/05	M5 x 20	M5 x 35
RF-02-AD/03	21-R-07-07/05	M5 x 30	M5 x 45
RF-02-AD/04	21-R-07-07/2	M5 x 20	M5 x 35
RF-02-AD/05	21-R-07-07/2	M5 x 30	M5 x 45
RF-02-AD/06	21-R-07-07/2	M5 x 40	M5 x 55
RF-02-AD/07	21-R-07-07/4	M5 x 20	M5 x 30
RF-02-AD/08	21-R-07-07/4	M5 x 30	M5 x 40
RF-02-AD/09	21-R-07-07/4	M5 x 40	M5 x 50
RF-02-AD/10	21-R-07-07/6	M5 x 16	M5 x 30
RF-02-AD/11	21-R-07-07/6	M5 x 25	M5 x 40
RF-02-AD/12	21-R-07-07/6	M5 x 35	M5 x 50

# Manifolds for electrically operated valves

Series BM-02



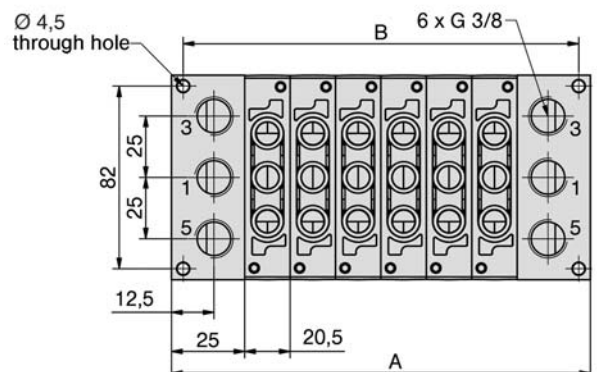
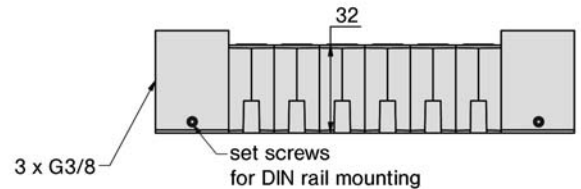
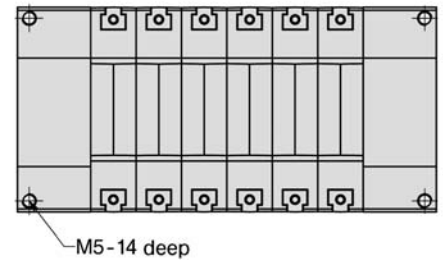
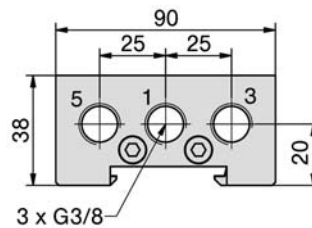
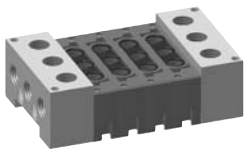
## RF-02-AB



Materials: End plate Al (anodized), 1 station element PA,  
Seals NBR, Screws steel zinc plated

Order number	A	B	Weight
RF-02-AB/02	65 ± 0.3	57 ± 0.3	0.230 kg (0.507 lb.)
RF-02-AB/03	85.5 ± 0.35	77.5 ± 0.35	0.270 kg (0.595 lb.)
RF-02-AB/04	106 ± 0.4	98 ± 0.4	0.310 kg (0.683 lb.)
RF-02-AB/05	126.5 ± 0.45	118.5 ± 0.45	0.350 kg (0.772 lb.)
RF-02-AB/06	147 ± 0.5	139 ± 0.5	0.390 kg (0.860 lb.)
RF-02-AB/07	167.5 ± 0.55	159.5 ± 0.55	0.430 kg (0.948 lb.)
RF-02-AB/08	188 ± 0.6	180 ± 0.6	0.470 kg (1.036 lbs.)
RF-02-AB/09	208.5 ± 0.65	200.5 ± 0.65	0.510 kg (1.124 lbs.)
RF-02-AB/10	229 ± 0.7	221 ± 0.7	0.550 kg (1.212 lbs.)
RF-02-AB/11	249.5 ± 0.75	241.5 ± 0.75	0.590 kg (1.301 lbs.)
RF-02-AB/12	270 ± 0.8	262 ± 0.8	0.630 kg (1.389 lbs.)

## RF-02-CD



Materials: End plate Al (anodized), 1 station element PA,  
Seals NBR, Screws steel zinc plated

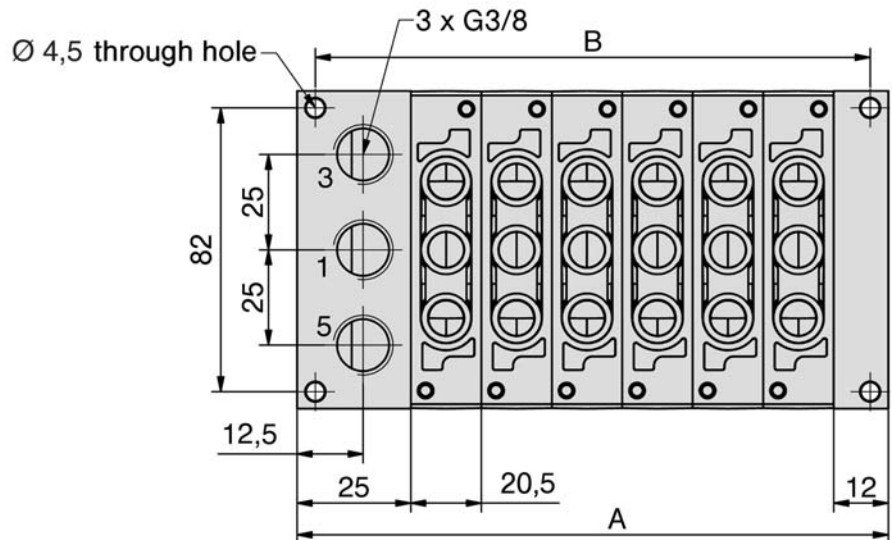
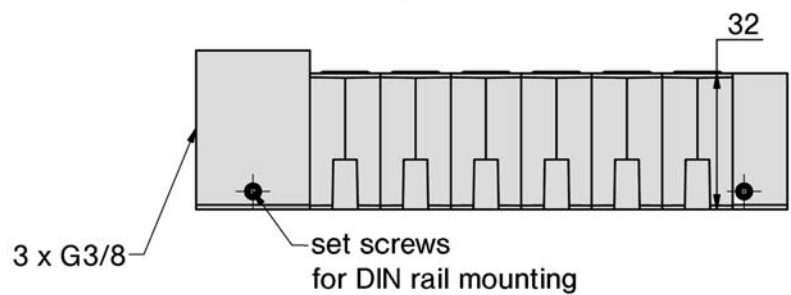
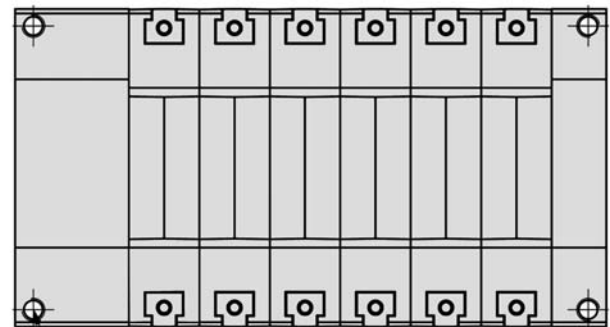
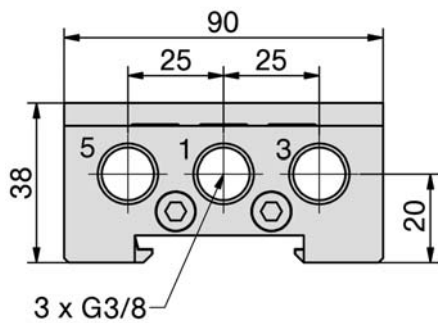
Order number	A	B	Weight
RF-02-CD/02	91 ± 0.3	83 ± 0.3	0.420 kg (0.926 lb.)
RF-02-CD/03	111.5 ± 0.35	103.5 ± 0.35	0.460 kg (1.014 lbs.)
RF-02-CD/04	132 ± 0.4	124 ± 0.4	0.500 kg (1.102 lbs.)
RF-02-CD/05	152.5 ± 0.45	144.5 ± 0.45	0.540 kg (1.190 lbs.)
RF-02-CD/06	173 ± 0.5	165 ± 0.5	0.580 kg (1.279 lbs.)
RF-02-CD/07	193.5 ± 0.55	185.5 ± 0.55	0.620 kg (1.367 lbs.)
RF-02-CD/08	214 ± 0.6	206 ± 0.6	0.660 kg (1.455 lbs.)
RF-02-CD/09	234.5 ± 0.65	226.5 ± 0.65	0.700 kg (1.543 lbs.)
RF-02-CD/10	255 ± 0.7	247 ± 0.7	0.740 kg (1.631 lbs.)
RF-02-CD/11	275.5 ± 0.75	267.5 ± 0.75	0.780 kg (1.719 lbs.)
RF-02-CD/12	296 ± 0.8	288 ± 0.8	0.820 kg (1.808 lbs.)

# Manifolds for electrically operated valves

Series BM-02



## RF-02-AD



Materials: End plate Al (anodized),  
1 station element PA,  
Seals NBR, Screws steel zinc plated

Order number	A	B	Weight
RF-02-AD/02	78 ± 0.3	70 ± 0.3	0.320 kg (0.705 lb.)
RF-02-AD/03	98.5 ± 0.35	90.5 ± 0.35	0.360 kg (0.794 lb.)
RF-02-AD/04	119 ± 0.4	111 ± 0.4	0.400 kg (0.882 lb.)
RF-02-AD/05	139.5 ± 0.45	131.5 ± 0.45	0.440 kg (0.970 lb.)
RF-02-AD/06	160 ± 0.5	152 ± 0.5	0.480 kg (1.058 lbs.)
RF-02-AD/07	180.5 ± 0.55	172.5 ± 0.55	0.520 kg (1.146 lbs.)
RF-02-AD/08	201 ± 0.6	193 ± 0.6	0.560 kg (1.234 lbs.)
RF-02-AD/09	221.5 ± 0.65	213.5 ± 0.65	0.600 kg (1.323 lbs.)
RF-02-AD/10	242 ± 0.7	234 ± 0.7	0.640 kg (1.411 lbs.)
RF-02-AD/11	262.5 ± 0.75	254.5 ± 0.75	0.680 kg (1.499 lbs.)
RF-02-AD/12	283 ± 0.8	275 ± 0.8	0.720 kg (1.587 lbs.)



# Accessories for electrically operated valves

## Solenoid coils



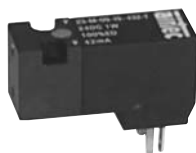
### Solenoid coils with connection pattern pursuant to DIN EN 175301-803 Shape C

<b>Degree of protection</b>	IP 65 according to EN 60529 with connected plug socket
<b>Duty cycle</b>	100 %
<b>Temperature range</b>	- 20 °C ... + 50 °C (- 4 °F ... + 122 °F)
<b>Voltage tolerance</b>	± 10 %
<b>Standard for series</b>	BM-01, BM-02



<b>Order number</b>	<b>23-M-09-19-461-T</b>	<b>23-M-09-19-462-T</b>	<b>23-M-09-19-452-T</b>	<b>23-M-09-19-456-T</b>	<b>23-M-09-19-457-T</b>
<b>Standard voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption</b>	1 W	1 W	3 VA	3 VA	3 VA
<b>Ambient temperature</b>	- 10 °C ... + 50 °C (+ 14 °F ... + 122 °F)				
<b>Manual override</b>	non detented				
<b>Position of manual override</b>	Side of the contacts				

<b>Order number</b>	<b>23-M-09-19-461-R</b>	<b>23-M-09-19-462-R</b>	<b>23-M-09-19-452-R</b>	<b>23-M-09-19-456-R</b>	<b>23-M-09-19-457-R</b>
<b>Standard voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption</b>	1 W	1 W	3 VA	3 VA	3 VA
<b>Ambient temperature</b>	- 10 °C ... + 50 °C (+ 14 °F ... + 122 °F)				
<b>Manual override</b>	detented				
<b>Position of manual override</b>	Side of the contacts				



<b>Order number</b>	<b>23-M-09-19-431-T</b>	<b>23-M-09-19-432-T</b>	<b>23-M-09-19-422-T</b>	<b>23-M-09-19-426-T</b>	<b>23-M-09-19-427-T</b>
<b>Standard voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption</b>	1 W	1 W	3 VA	3 VA	3 VA
<b>Manual override</b>	non detented				
<b>Position of manual override</b>	Opposite the contacts				

<b>Order number</b>	<b>23-M-09-19-431-R</b>	<b>23-M-09-19-432-R</b>	<b>23-M-09-19-422-R</b>	<b>23-M-09-19-426-R</b>	<b>23-M-09-19-427-R</b>
<b>Standard voltage</b>	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC
<b>Power consumption</b>	1 W	1 W	3 VA	3 VA	3 VA
<b>Manual override</b>	detented				
<b>Position of manual override</b>	Opposite the contacts				

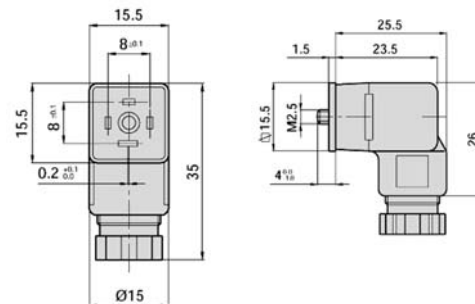
# Accessories for electrically operated valves

## Plug sockets for coil



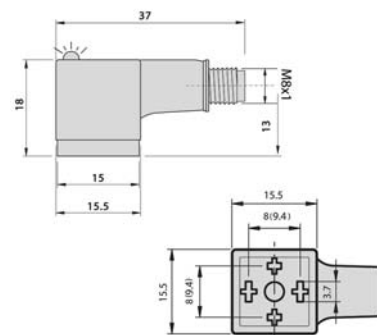
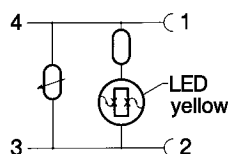
### Plug sockets pursuant to DIN EN 175301-803 Shape C

(2pol. + PE, 15,5 x 15,5 mm, Contact distance 8 mm)



<b>Order number</b>	28-ST-02-1	28-ST-09-1-112	28-ST-09-1-127	28-ST-10-1-112	28-ST-10-1-127	28-ST-10-1-K3-112
<b>Standard voltage</b>	all	24 V DC	230 V AC	24 V DC	230 V AC	24 V DC
<b>Protective circuit</b>	no	no	no	yes	yes	yes
<b>Status indicator</b>	without	yes	yes	yes	yes	yes
<b>Degree of protection</b>	IP 65 pursuant to EN 60529 requires a flat gasket					
<b>Connecting cable</b>	without					3 m
<b>max. Ø Connecting cable</b>	6,5 mm					—
<b>Max. wire cross section</b>	0,75 mm <sup>2</sup>					—
<b>for coil</b>	23-M-09-19					

### Plug socket 28-ST-02-1-05



2 = +24 Volt (+)  
3 = 0 Volt (-)  
4 = not connected

<b>Order number</b>	<b>28-ST-02-1-05</b>
<b>Standard voltage</b>	24 V DC
<b>Protective circuit</b>	yes
<b>Status indicator</b>	yes
<b>Degree of protection</b>	IP 65 pursuant to EN 60529 requires a flat gasket
<b>Contact distance</b>	8 mm
<b>for plug sockets</b>	M8
<b>for coil</b>	23-M-09-19