

# 2.5 Solenoid Valves



Selected models are available for low temperature application. For detailed information refer to chapter 2.11.



Selected models are available with high flow and low power consumption. For detailed information refer to page 108.



Selected models are available in stainless steel. For detailed information refer to chapter 2.12.



Selected models can be equipped for high temperature environments up to 80 °C, DC only!

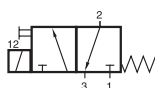
Selected models are available for explosion hazardous environment. They are ATEX-Ex certified. For detailed information refer to chapter 2.14.



## MD 311 010

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MD 311 010



Direct acting 3/2-way solenoid, valve normally closed (n.c.), equipped with mechanical spring return.

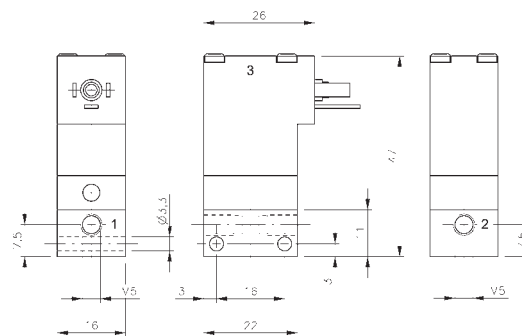
By closing port 3 valve can be converted into a 2/2-way valve.

Available with solenoid operators:  
230/50Hz, 110V/50Hz, 24V50Hz, 24V=,  
12V=, 6V= either for connector form C ISO 15217 or  
with flying leads, standard cable length 500 mm.

For details about solenoid system, please refer to  
page 2.13.1.

Valves are generally equipped with manual  
override to push.

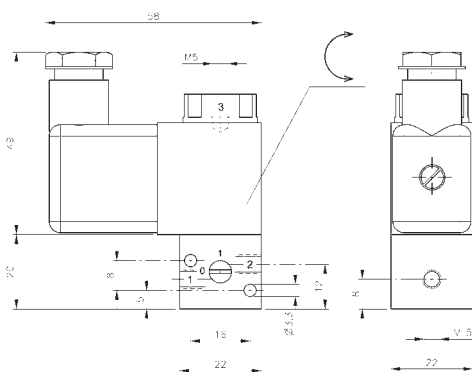
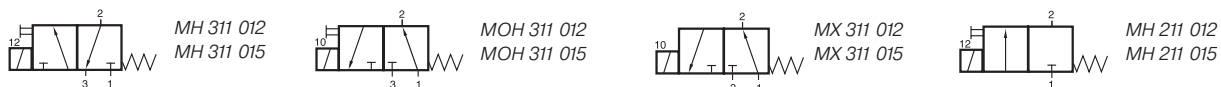
Valves can be used for technical vacuum too.



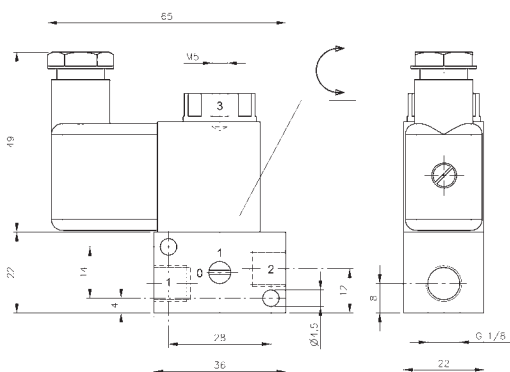
MD 311 010

Type	Funktion	Port size	Air flow	Operating press.	Power consumption	Weight
MD 311 010	n.c.	M5	30 l/min	-0,9 - 10 bar	1,8 W = / 3 VA ~	0,05 kg

MH 311 012/MOH 311 012/ MX 311 012 /MH 211 012  
 MH 311 015/MOH 311 015/ MX 311 015 /MH 211 015



MH 311 012/MOH 311 012/MX 311 012/  
 MH 211 012



MH 311 015/MOH 311 015/ MX 311 015  
 MH 211 015



Direct acting 3/2-way and 2/2-way solenoid valve equipped with mechanical spring return.

**Type MH 311 \_ \_ \_**  
 Normally closed, port 1 and 2 in the valve, port 3 at the top of the solenoid with manual override.

**Type MOH 311 \_ \_ \_**  
 Normally open, port 2 and 3 in the valve, port 1 at the top of the solenoid with manual override.

**Type MX 311 \_ \_ \_**  
 Normally open, port 1 and 2 in the valve, port 3 at the top of the solenoid, no manual override.

**Type MH 211 \_ \_ \_**  
 2/2-way valve n.c. with manual override.

By closing port 3 3/2-way valves can be converted into 2/2-way version, not possible for MX.  
 Please note: Drawings are for MH 311 \_ \_ \_-valves. For MOH-valves ports 1 and 3 are swapped, for MH 211 port 3 is not existing. Operator system of MX-valve is 8 mm longer. MOH 311 and MH 211-valves are equipped with a flat plastic nut.

Available with solenoid operators:  
 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

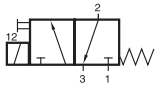
Valves can be used for technical vacuum too.

Type	Ways	Function	Port size			Air flow	Operating pressure	Power-consumption	Weight	
			1	2	3					
MH 311 012	3/2	n.c.	M5	M5	M5	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,12 kg	Ex
MH 311 015	3/2	n.c.	G 1/8"	G 1/8"	M5	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg	Ex
MOH 311 012	3/2	n.o.	M5	M5	M5	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,12 kg	
MOH 311 015	3/2	n.o.	M5	G 1/8"	G 1/8"	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg	
MX 311 012	3/2	n.o.	M5	M5	hole	40 l/min	-0,9 - 8 bar	3 W = / 5 VA ~	0,13 kg	
MX 311 015	3/2	n.o.	G 1/8"	G 1/8"	hole	50 l/min	-0,9 - 8 bar	3 W = / 5 VA ~	0,15 kg	
MH 211 012	2/2	n.c.	M5	M5		40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,12 kg	
MH 211 015	2/2	n.c.	G 1/8"	G 1/8"		50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg	



# MH 311 205/MH 311 209

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MH 311 205  
MH 311 209

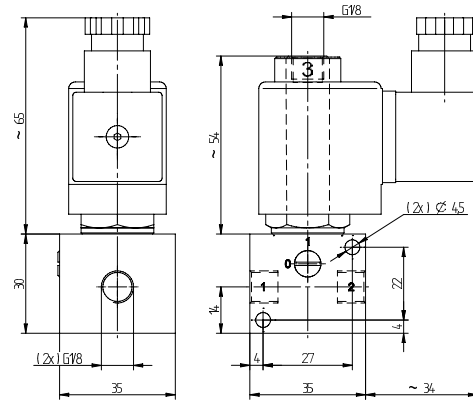


Normally closed direct acting 3/2-way solenoid valve equipped with mechanical spring return.  
Orifice size: 2 mm, max. pressure 10 bar.

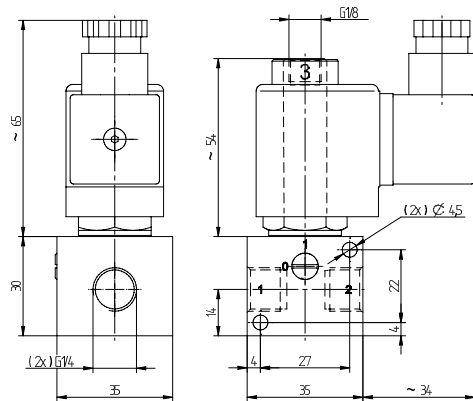
Available with solenoid operators:  
230V/50Hz, 24V/50 Hz, 24V=.  
Others on request.

Valves are generally equipped with manual override.

Suitable solenoid coils type MA 30 S13 \_\_ and connectors Form A (30 mm) type ST 30 can be found on page 2.13.5.



MH 311 205

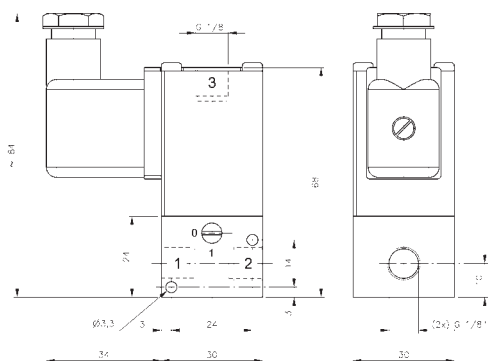
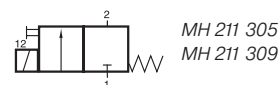
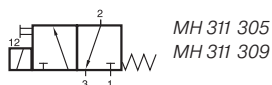


MH 311 209

Type	Port size			Air flow	Operating press.	Power cons.	Weight
	1	2	3				
MH 311 205	G 1/8"	G 1/8"	G 1/8"	120 l/min	0 - 10 bar	10 W = /13/11 VA ~	0,31 kg
MH 311 209	G 1/4"	G 1/4"	G 1/8"	120 l/min	0 - 10 bar	10 W = /13/11 VA ~	0,31 kg



# MH 311 305/MH 311 309/MOH 311 305 MOH 311 309/MH 211 305/MH 211 309



MH 311 305/MOH 311 305/MH 211 305



Direct acting 3/2-way and 2/2-way solenoid valve equipped with mechanical spring return.  
Orifice size: 3 mm, max. pressure: 7 bar.

**Type MH 311 \_\_\_**

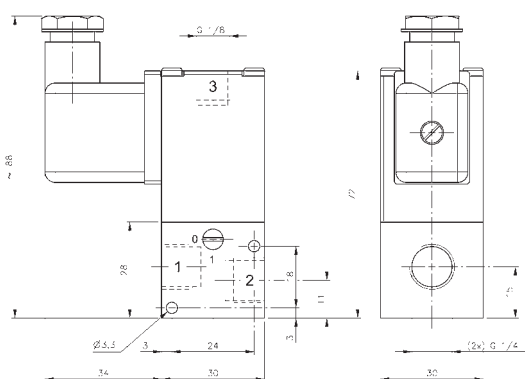
Normally closed, port 1 and 2 in the valve, port 3 at the top of the solenoid

**Type MOH 311 \_\_\_**

Normally open, port 2 and 3 in the valve, port 1 at the top of the solenoid

**Type MH 211 \_\_\_**

2/2-way valve n.c.



MH 311 309/MOH 311 309/MH 211 309

Please note:

Drawings are for MH 311 \_\_\_-valves. For MOH-valves ports 1 and 3 are swapped, for MH 211 port 3 is not existing.

Available with solenoid operators:  
230V/50Hz, 24V/50Hz, 24V=.

Valves are generally equipped with manual override.

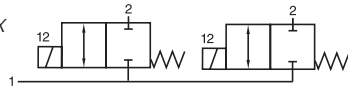
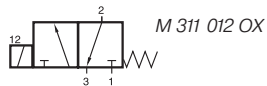
Connector Industry B (22 mm). Flying leads on request.

Type	Ways	Function	Port size			Air flow	Operating Power		Weight
			1	2	3		pressure	consumption	
MH 311 305	3/2	n.c.	G 1/8"	G 1/8"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,17 kg	
MH 311 309	3/2	n.c.	G 1/4"	G 1/4"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,18 kg	
MOH 311 305	3/2	n.o.	G 1/8"	G 1/8"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,17 kg	
MOH 311 309	3/2	n.o.	G 1/4"	G 1/4"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,18 kg	
MH 211 305	2/2	n.c.	G 1/8"	G 1/8"		200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,17 kg	
MH 211 309	2/2	n.c.	G 1/4"	G 1/4"		200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,18 kg	

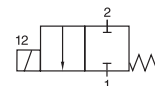


# M 311 012 OX/R 02 M 211 012 OX

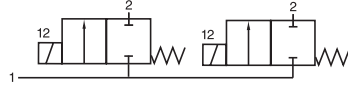
Valves for Oxygen Applications



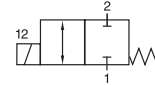
**R 02 M 211 012 OX**  
Pressure can be applied to port 1 or 2, max. pressure limited to 2 bar.



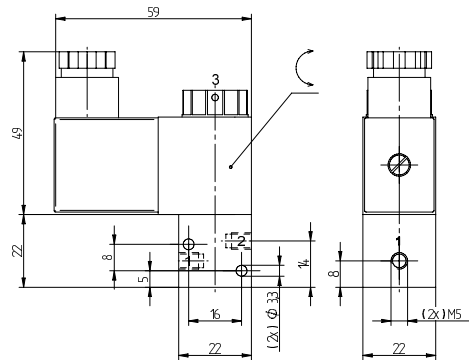
**M 211 012 OX**  
Pressure can be applied to port 1 or 2, max. pressure limited to 2 bar.



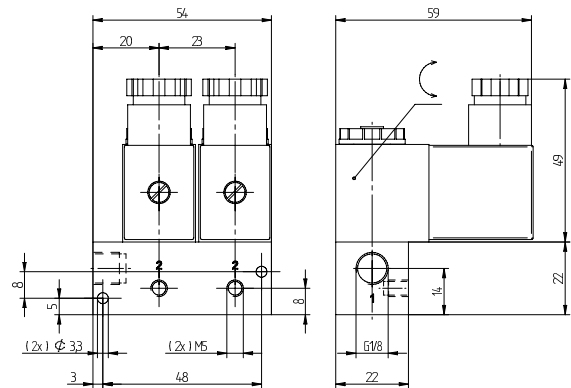
If a higher pressure is required (max. 10 bar), pressure may only be applied to port 1.



If a higher pressure is required (max. 10 bar), pressure may only be applied to port 2.



**M 311 012 OX**



**R 02 M 211 012 OX**

Direct acting 3/2-way and 2/2-way solenoid valve equipped with mechanical spring return. Valves have been designed for the healthcare industry and can be used with pure oxygen. If medium includes ozone (O<sub>3</sub>), please contact the manufacturer.

**Type M 311 012 OX**

Normally closed, port 1 and 2 in the valve, port 3 at the top of the solenoid. Without manual override.

- Material body: 1.4404
- Seals: NBR / FPM
- Other parts: brass

**R 02 M 211 012 OX**

2 x 2/2-way normally closed valves integrated in a manifold block. Port 1 and 2 in the valve. Without manual override.

- Material manifold: 1.4404
- Seals: NBR / FPM
- Other parts: brass

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

**M 211 SET 01 OX**

Set including flat nut and plug to convert the M 311 012 OX into a 2/2-way normally closed valve.

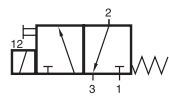


Type	Port size			Air flow	Operating press.	Power cons.	Weight
	1	2	3				
M 311 012 OX	M5	M5	M5	40 l/min	0 - 10 bar	3 W= / 5 VA	0,12 kg
M 211 012 OX	G 1/8"	M5	M5	40 l/min	0 - * bar	3 W= / 5 VA	0,12 kg

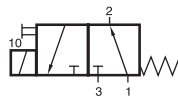
\* 0 - 2 bar: Pressure can be applied to port 1 or 2  
0 - 10 bar: Pressure may only be applied to port 2



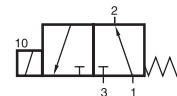
# MH 311 105/MOH 311 105/MX 311 105



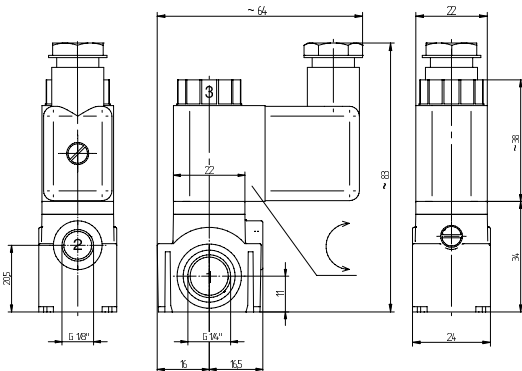
MH 311 105



MOH 311 105



MX 311 105



MH 311 105/MOH 311 105



Direct acting 3/2-way solenoid valve, equipped with mechanical spring return, body made from polyamide.

**Type MH 311 105**

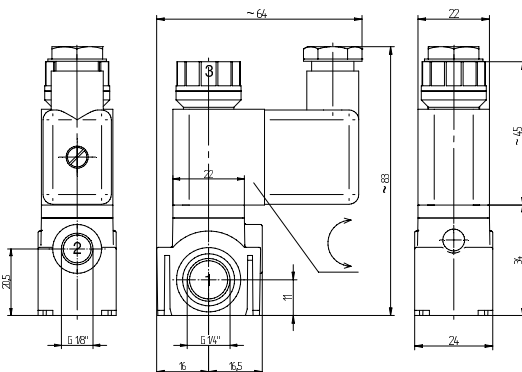
Normally closed, port 1 in the body, including manual override

**Type MOH 311 105**

Normally open, port 1 at the top of the solenoid, including manual override

**Type MX 311 105**

Normally open, port 1 in the body, no manual override



MX 311 105

Individual valves can easily be combined to manifold systems just by putting 2 brass brackets (type KV SET 01) into the bodies from the bottom. MH and MX valves can be combined in the same manifold system.

By closing port 3 valves can be turned into 2/2-way valves.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves can be used for technical vacuum too.

Available and useful accessories:

**KV SET 01**

Set to connect two valves consisting of two brass clamping brackets and a NBR O-ring.

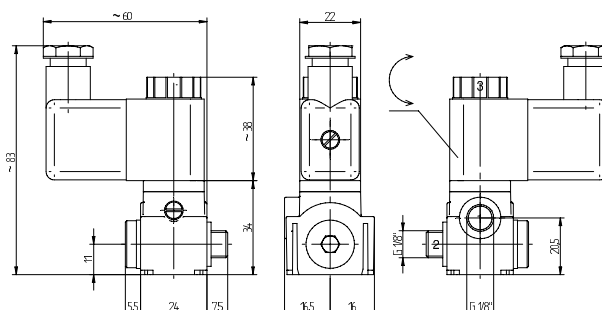
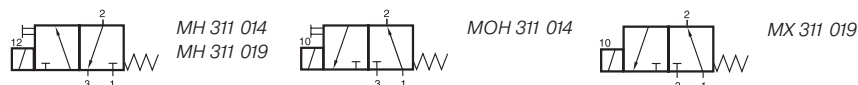
**3015 – 1/4**

Plug to close one side of the two supply ports in the valve, brass, nickel plated G1/4" with O-ring seal.

Type	Function	Port size			Air flow	Operating pressure	Power consumption	Weight
		1	2	3				
MH 311 105	n.c.	G 1/4"	G 1/8"	M5	60 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,09 kg
MOH 311 105	n.o.	M5	G 1/8"	G 1/4"	60 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,09 kg
MX 311 105	n.o.	G 1/4"	G 1/8"	hole	60 l/min	-0,9 - 8 bar	3 W= / 5 VA	0,09 kg



# MH 311 014/MOH 311 014 MH 311 019/MX 311 019



MH 311 014/MOH 311 014

Direct acting 3/2-way solenoid valve equipped with spring return. Orifice size 1.3 mm.

**Type MH 311 014:**

Normally closed, port 1 in the valve, port 2 as banjo screw, exhaust through operator system with manual override.

**Type MH 311 019 \_\_:**

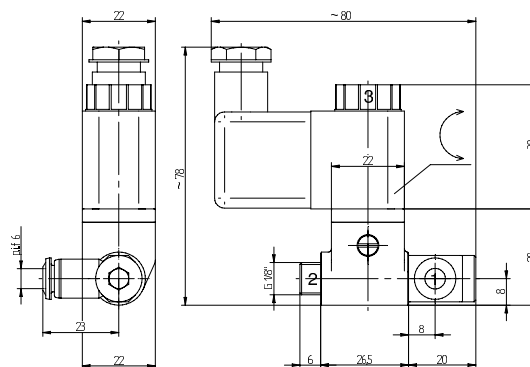
Normally closed, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system with manual override.

**Type MOH 311 014:**

Normally open, port 1 at the top of the operator system, port 2 as banjo screw, exhaust at the body, manual override included, delivery with flat nut. Drawing displays MH-valve, for MOH ports 1 and 3 swapped.

**Type MX 311 019 \_\_:**

Normally open, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system no manual override. Operator system is 8 mm longer than in drawing.



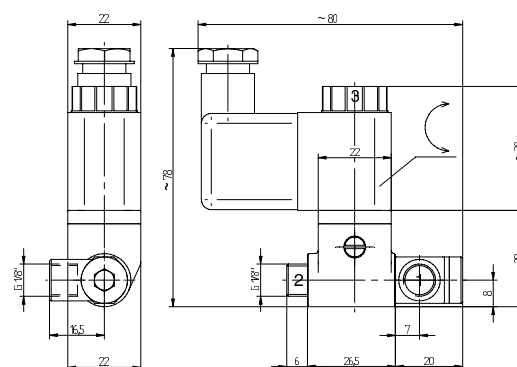
MH 311 019 6/MX 311 019 6

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Available accessory:

**KV SET 02**

Reducer fitting for banjo-screw to change from 1/8" to 1/4", with captive seal.



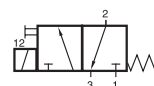
MH 311 019 1/8 / MX 311 019 1/8

Type	Funct.	Port 1	Port 2 banjo	Port 3	Air flow	Operating pressure	Power cons.	Weight
MH 311 014	n.c.	G 1/8"	G 1/8"	M5	60 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,13 kg
MOH 311 014	n.o.	M5	G 1/8"	G 1/8"	60 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,13 kg
MH 311 019 6	n.c.	Swivel 6 mm pif	G 1/8"	M5	50 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,16 kg
MX 311 019 6	n.o.	Swivel 6 mm pif	G 1/8"	M5	50 l/min	-0,9 - 8 bar	3 W= / 5 VA	0,16 kg
MH 311 019 1/8	n.c.	Swivel G 1/8"	G 1/8"	hole	50 l/min	-0,9 - 10 bar	3 W= / 5 VA	0,16 kg
MX 311 019 1/8	n.o.	Swivel G 1/8"	G 1/8"	hole	50 l/min	-0,9 - 8 bar	3 W= / 5 VA	0,16 kg

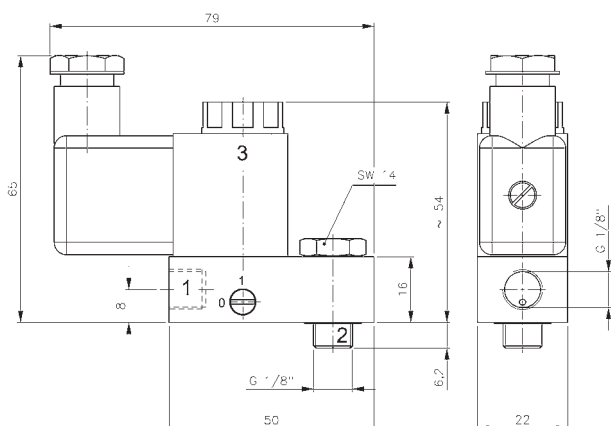




# MH 311 013/MH 311 017



MH 311 013  
MH 311 017



MH 311 013



Direct acting 3/2-way solenoid valve equipped with mechanical spring return, normally closed.

Port 2 is a banjo that can be screwed directly into the actuator that is to be controlled.

Products with port 1 in NPT on request.

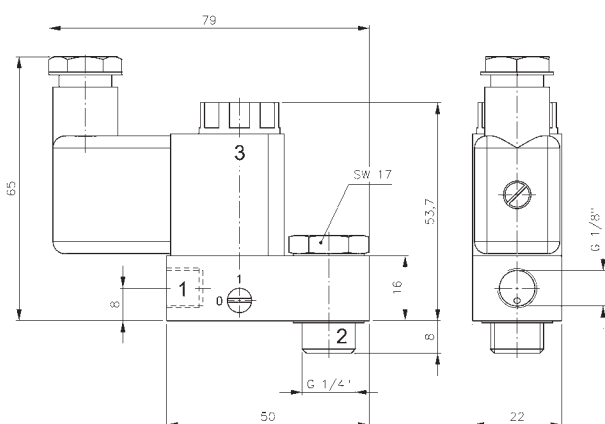
Products normally open on request.

2/2-way version on request.

Available with solenoid operators:

230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are generally equipped with manual override.



MH 311 017



Version with integrated flow-regulator available on request.



MH 311 013 and MH 311 017 are designed for piloting angle seat valves or small spring-return actuators.

When assembling this type of valve to a spring-return actuator, please take into consideration that there is no exhaust air recirculation ("purge").

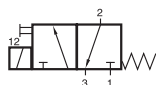
Instead of the standard banjo-screw, the valve can also be equipped with a flow-regulating banjo-screw.

Three different versions are available on request: Banjo-screw to regulate the opening speed, the closing speed as well as the opening and closing speed (not independent).

Type	Function	Port			Air flow	Operating pressure	Power consumption	Weight
		1	2 banjo	3				
MH 311 013	n.c.	G 1/8"	G 1/8"	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg ❄️
MH 311 017	n.c.	G 1/8"	G 1/4"	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,16 kg ❄️

# MH 311 313/MH 311 317

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MH 311 313  
MH 311 317



Direct acting 3/2-way solenoid valve equipped with mechanical spring return, normally closed. Orifice size: 3 mm, max. pressure: 7 bar.

Port 2 is a banjo that can be screwed directly into the actuator that is to be controlled.

Products with port 1 in NPT on request.  
Products normally open on request.  
2/2-way version on request.

Available with solenoid operators:  
230V/50Hz, 24V/50Hz, 24V=.

Valves are generally equipped with manual override.

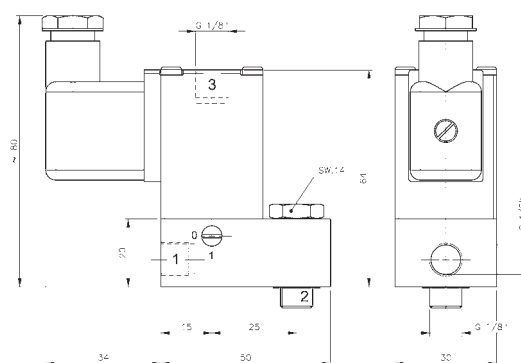
Connector Industry B (22 mm). Flying leads on request.

MH 311 313 and MH 311 317 are designed for piloting angle seat valves or small spring-return actuators.

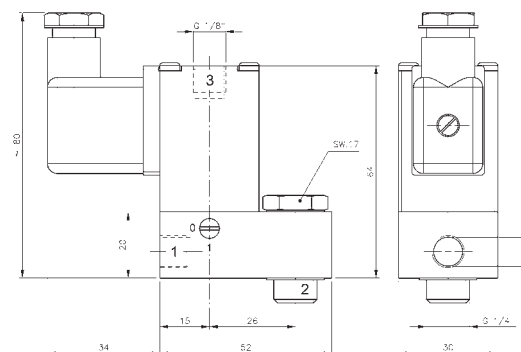
When assembling this type of valve to a spring-return actuator, please take into consideration that there is no exhaust air recirculation ("purge").

Instead of the standard banjo-screw, the valve can also be equipped with a flow-regulating banjo-screw.

Three different versions are available on request: Banjo-screw to regulate the opening speed, the closing speed as well as the opening and closing speed (not independent).



MH 311 313



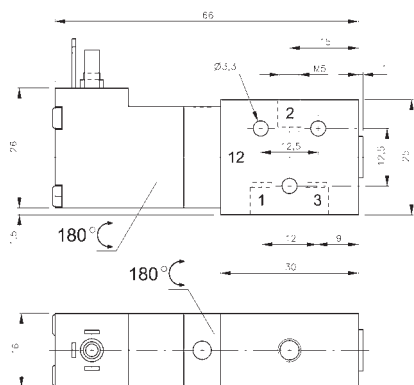
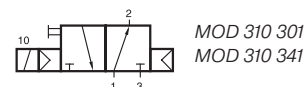
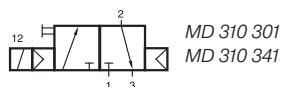
MH 311 317



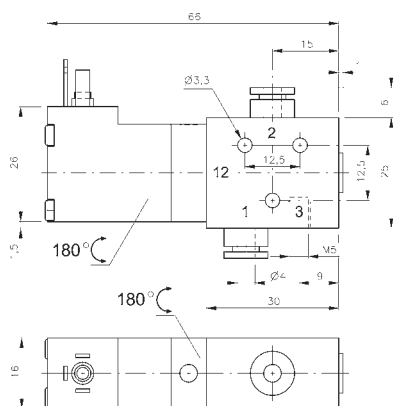
Type	Function	Port			Air flow	Operating pressure	Power consumption	Weight
		1	2 banjo	3				
MH 311 313	n.c.	G 1/8"	G 1/8"	G 1/8"	150 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,21 kg
MH 311 317	n.c.	G 1/8"	G 1/4"	G 1/8"	150 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,22 kg



# MD 310 301/MOD 310 341 MOD 310 301/MOD 310 341



MD 310 301/MOD 310 301



MD 310 341/MOD 310 341



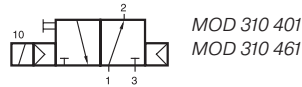
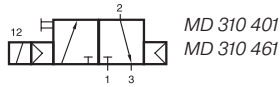
3/2-way solenoid valve normally closed (MD) or normally open (MOD) actuated by permanent signal and equipped with air spring return.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.

Type	Function	Port size 1 and 2	Air flow	Operating pressure	Power consumption	Weight
MD 310 301	n.c.	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MD 310 341	n.c.	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MOD 310 301	n.o.	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MOD 310 341	n.o.	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg

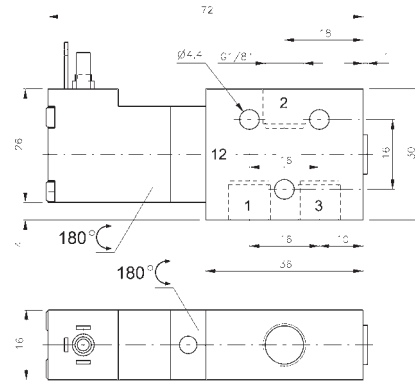
# MD 310 401/MD 310 461 MOD 310 401/MOD 310 461



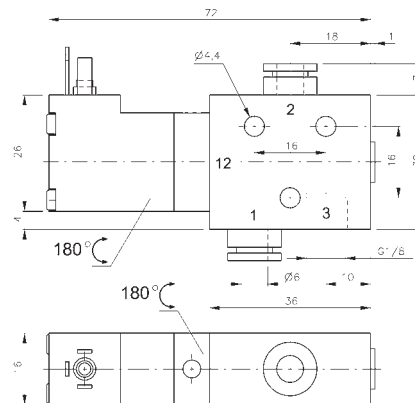
3/2-way solenoid valve normally closed (MD) or normally open (MOD) actuated by permanent signal and equipped with air spring return.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.



MD 310 401/MOD 310 401



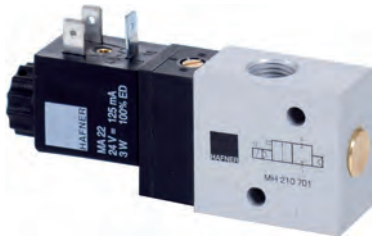
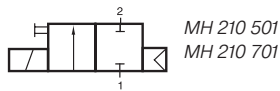
MD 310 461/MOD 310 461

Type	Function	Port size 1 and 2	Air flow	Operating pressure	Power consumption	Weight
MD 310 401	n.c.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 310 461	n.c.	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MOD 310 401	n.o.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MOD 310 461	n.o.	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg





# MH 210 501/MH 210 701

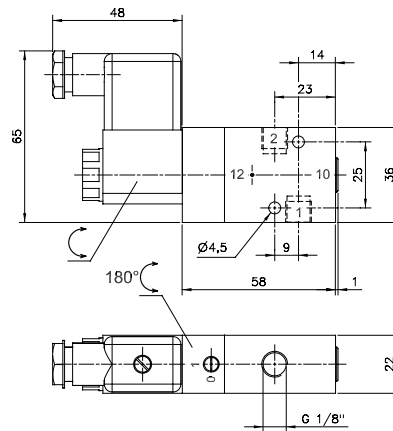


2/2-way solenoid valve, normally closed, actuated by permanent signal and equipped with air spring return.

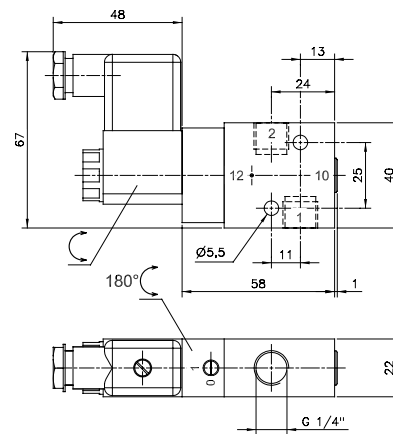
Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,  
24V=, 12V=.

Valves are generally equipped with manual override.

Normally open version (MOH) on request.



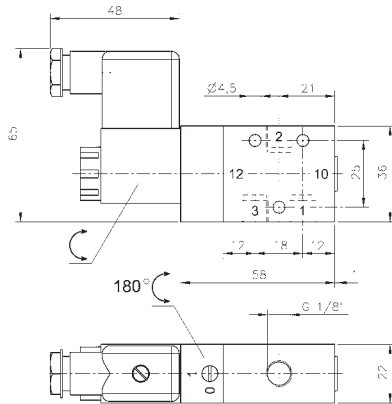
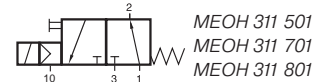
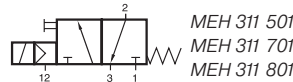
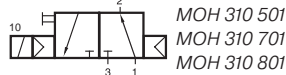
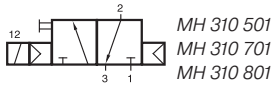
MH 210 501



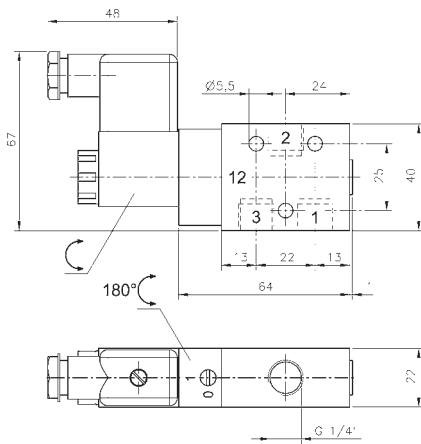
MH 210 701

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 210 501	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MH 210 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg

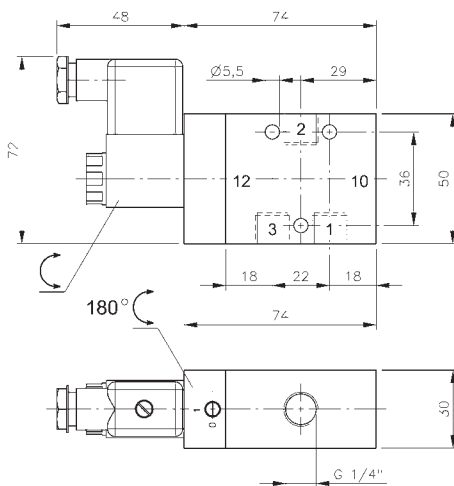
# MH 310 501/MH 310 701/MH 310 801 MOH 310 501/MOH 310 701/MOH 310 801



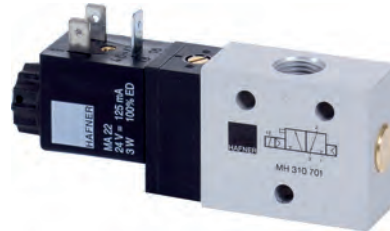
**MH 310 501/MOH 310 501**



**MH 310 701/MOH 310 701**



**MH 310 801/MOH 310 801**



3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 310 \_\_\_ / MO 310 \_\_\_

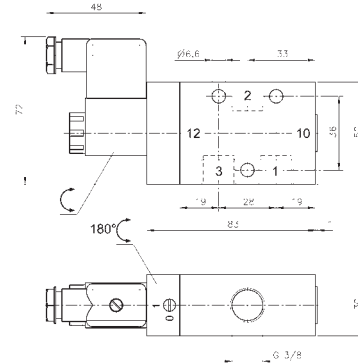
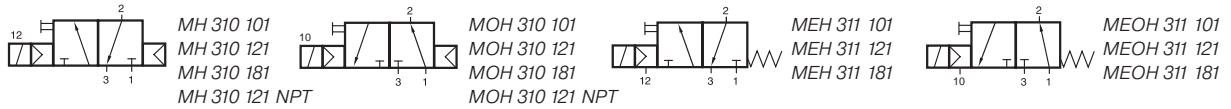
Valves are also available with external pilot feed. Type: MEH 311 \_\_\_ (n.c.) or MEOH 311 \_\_\_ (n.o.). Port 12 series 501 and 701 M5, series 801 G 1/8". Minimum actuation pressure: 3 bar. Operating pressure: 0 - 10 bar. Version for vacuum on request.

Please note:  
Do not close port 3 to convert into a 2-way valve.

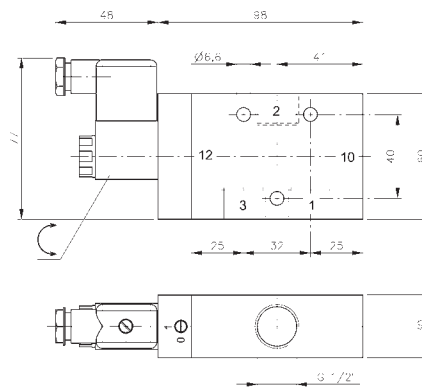
Type	Function	Port size	Air flow	Operating press.	Power consumption	Weight
MH 310 501	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MH 310 701	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MH 310 801	n.c.	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,39 kg
MOH 310 501	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MOH 310 701	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MOH 310 801	n.o.	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,39 kg



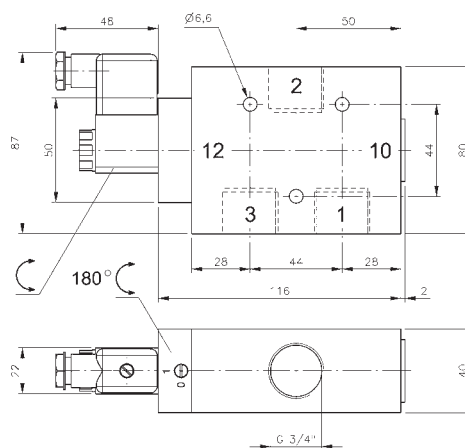
# MH 310 101/MH 310 121/MH 310 181 MOH 310 101/MOH 310 121/MOH 310 181



**MH 310 101/MOH 310 101**



**MH 310 121/MOH 310 121  
MH 310 121 NPT/MOH 310 121 NPT**



**MH 310 181/MOH 310 181**

3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 310 \_\_\_ / MO 310 \_\_\_.

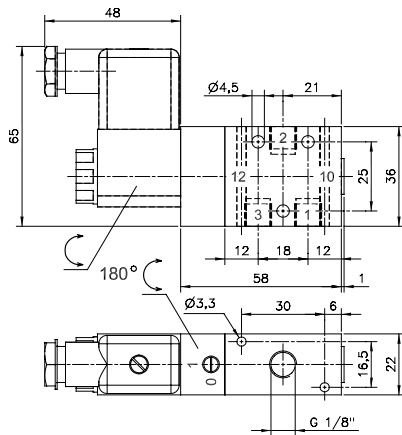
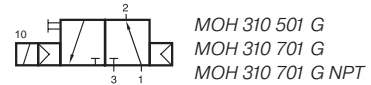
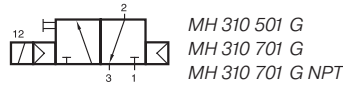
Valves are also available with external pilot feed.  
Type: MEH 311 \_\_\_ (n.c.) or MEOH 311 \_\_\_ (n.o.).  
Port 12: G 1/8".

Minimum actuation pressure: 3 bar.  
Operating pressure: 0 - 10 bar.  
Version for vacuum on request.

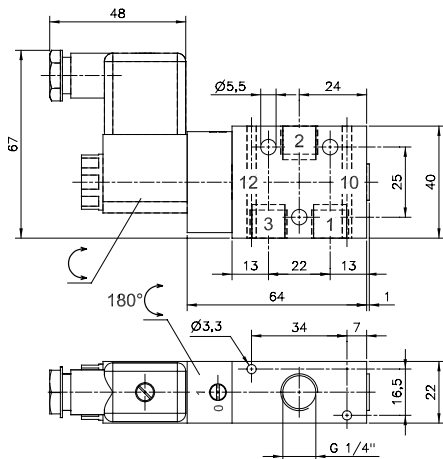
Please note:  
Do not close port 3 to convert into a 2-way valve.

Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 310 101	n.c.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MH 310 121	n.c.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg
MH 310 181	n.c.	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,88 kg
MOH 310 101	n.o.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MOH 310 121	n.o.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg
MOH 310 181	n.o.	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,88 kg
MH 310 121 NPT	n.c.	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg
MOH 310 121 NPT	n.o.	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg

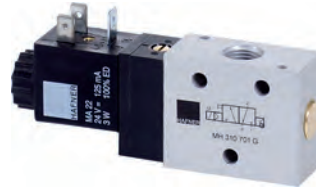
# MH 310 501 G/MH 310 701 G MOH 310 501 G/MOH 310 701 G



MH 310 501 G/MOH 310 501 G



MH 310 701 G/MOH 310 701 G  
MH 310 701 G NPT/ MOH 310 701 G NPT



G-Series 501 G/701 G



3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

The G-Series valves offer the flexibility of in-line fitment as well as the option of being assembled on to a manifold as shown. Manifolds are displayed on page 2.7.1.4.

Normally open and normally closed products can be mixed on one plate.

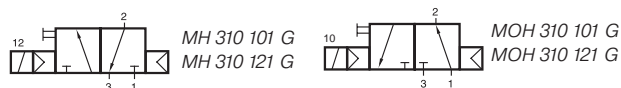
Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,  
24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 310 \_\_\_ / MO 310 \_\_\_.

Please note:  
Do not close port 3 to convert into a 2-way valve.

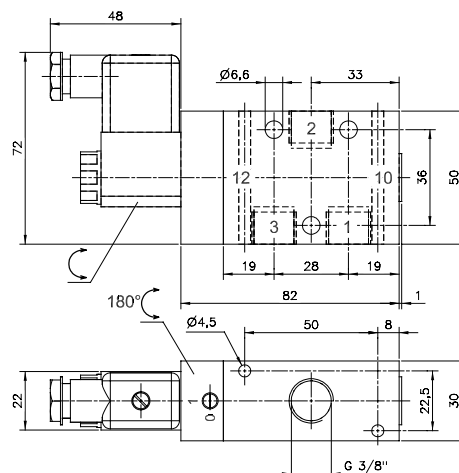
Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 310 501 G	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,20 kg
MH 310 701 G	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg  MK
MOH 310 501 G	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,20 kg
MOH 310 701 G	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg  MK
MH 310 701 G NPT	n.c.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MOH 310 701 G NPT	n.o.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg

# MH 310 101 G/MH 310 121 G MOH 310 101 G/MOH 310 121 G



G-Series 101 G

G-Series 121 G



MH 310 101 G/MOH 310 101 G

3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

The G-Series valves offer the flexibility of in-line fitment as well as the option of being assembled on to a manifold as shown. Manifolds are displayed on page 2.7.1.5.

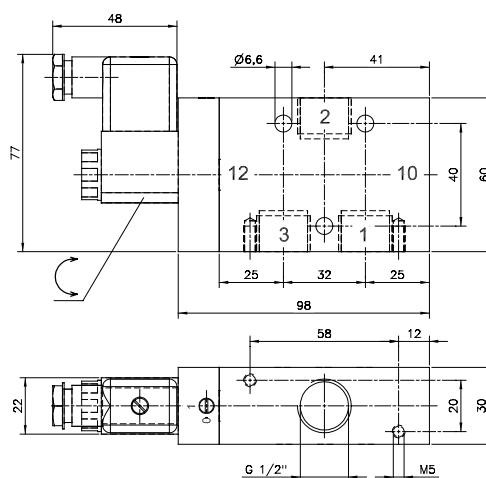
Normally open and normally closed products can be mixed on one plate.

Valves G1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=  
24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 310 \_\_\_ / MO 310 \_\_\_.

Please note:  
Do not close port 3 to convert into a 2-way valve.

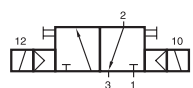


MH 310 121 G/MOH 310 121 G

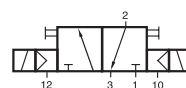
Type	Function	Port size	Air flow	Operating press.	Power consumption	Weight
MH 310 101 G	n.c.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MH 310 121 G	n.c.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg
MOH 310 101 G	n.o.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MOH 310 121 G	n.o.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg



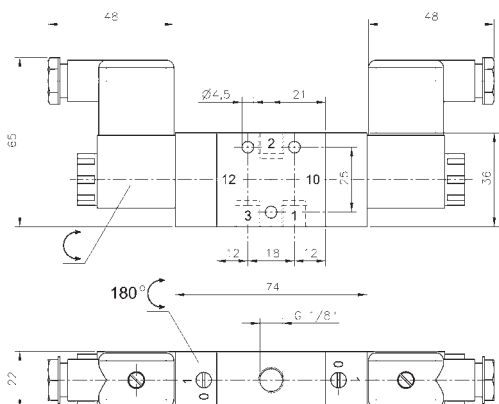
# MH 320 501/MH 320 701/MH 320 801



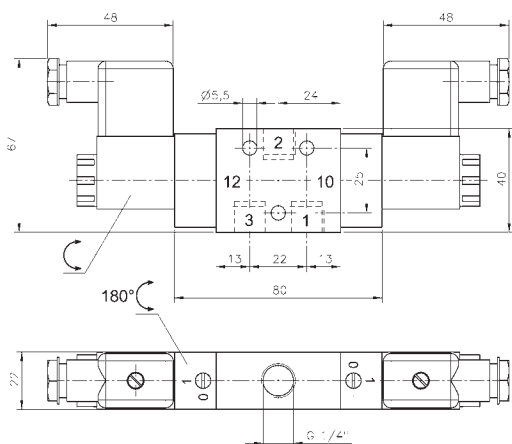
MH 320 501  
MH 320 701  
MH 320 801



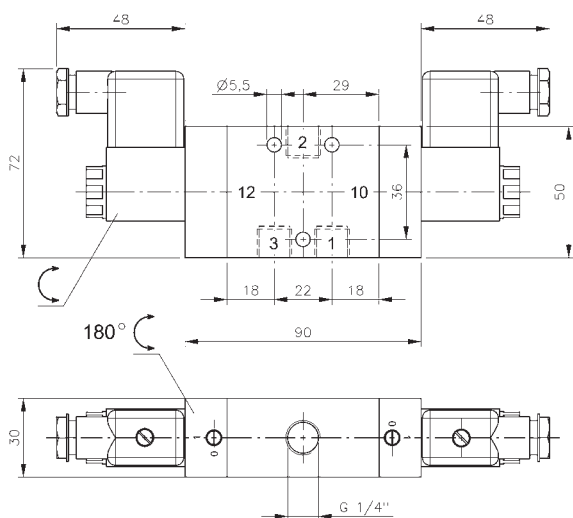
MEH 320 501  
MEH 320 701  
MEH 320 801



**MH 320 501**



**MH 320 701**



**MH 320 801**



3/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to an electrical source.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,  
24V=, 12V=.

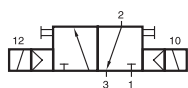
Valves are generally equipped with manual override. If requested without manual override please order type no. M 320 \_\_\_\_.

Valves are also available with external pilot feed.  
Type: MEH 320 \_\_\_\_.  
Port 12 series 501 and 701 M5, series 801 G 1/8".  
Minimum actuation pressure: 2,5 bar.  
Operating pressure: 0 - 10 bar.  
Version for vacuum on request.

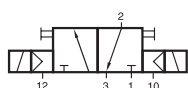
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 320 501	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,29 kg
MH 320 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,31 kg
MH 320 801	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,54 kg



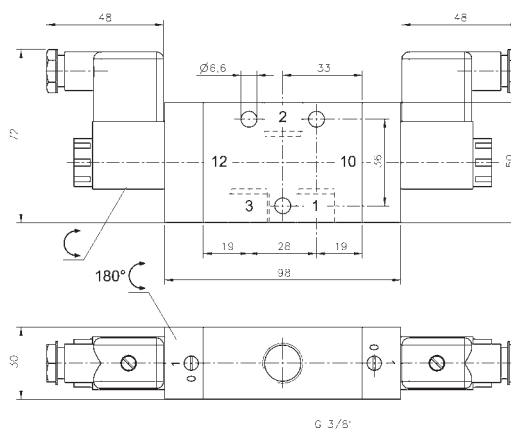
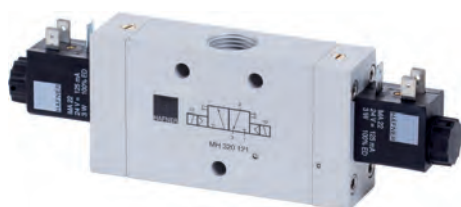
# MH 320 101/MH 320 121/MH 320 181



MH 320 101  
MH 320 121  
MH 320 181



MEH 320 101  
MEH 320 121  
MEH 320 181



MH 320 101

3/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to an electrical source.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,  
24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order type no. M 320 \_\_\_\_.

Valves are also available with external pilot feed.

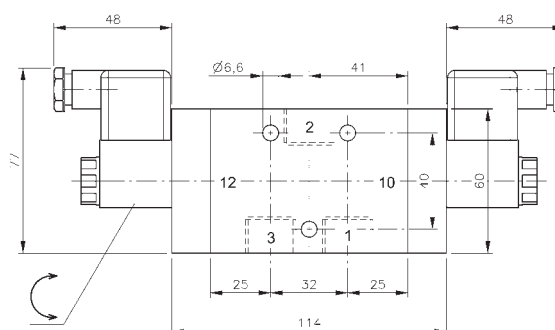
Type: MEH 320 \_\_\_\_.

Port 12: G 1/8\"

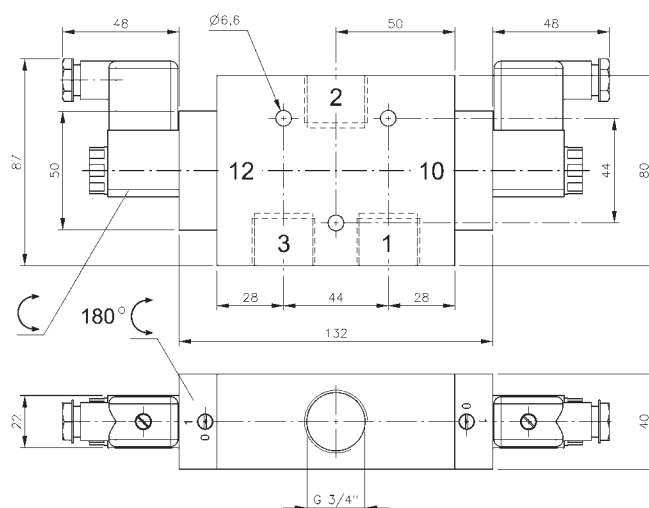
Minimum actuation pressure: 2,5 bar.

Operating pressure: 0 - 10 bar.

Version for vacuum on request.



MH 320 121

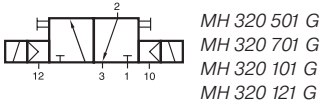


MH 320 181

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 320 101	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,58 kg
MH 320 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,70 kg
MH 320 181	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,08 kg

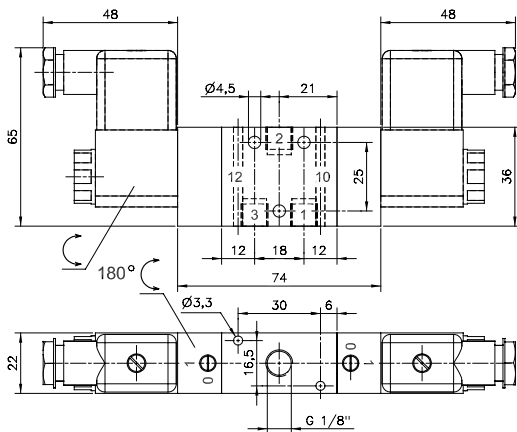


# MH 320 501 G/MH 320 701 G MH 320 101 G/MH 320 121 G

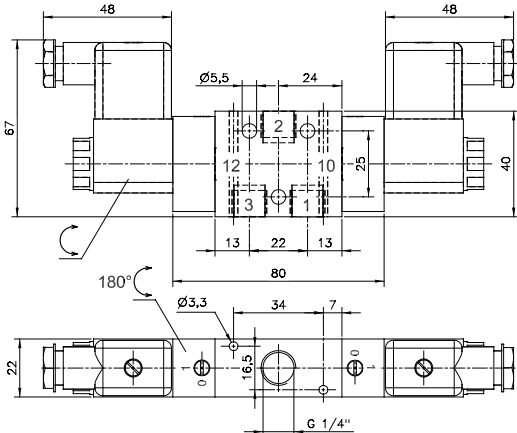


G-Series 501 G/701 G

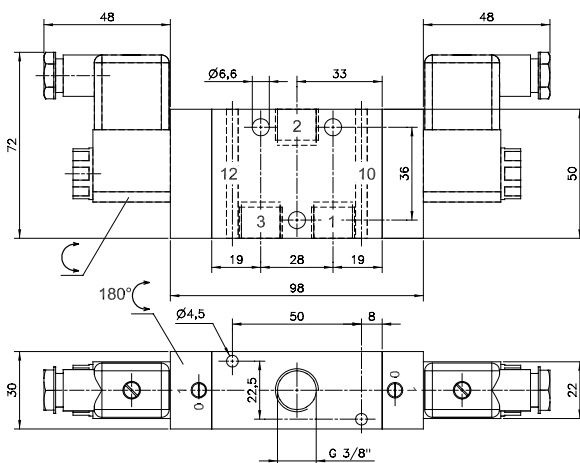
G-Series 121 G



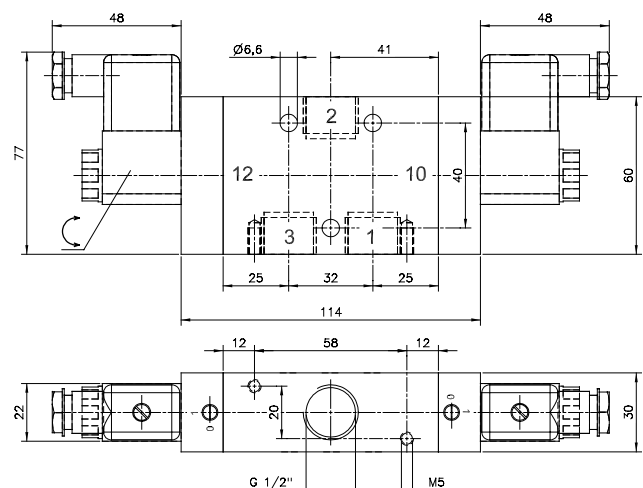
MH 320 501 G



MH 320 701 G



MH 320 101 G



MH 320 121 G

3/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to an electrical source.

The G-Series valves offer the flexibility of in-line fitment as well as the option of being assembled on to a manifold as shown. Manifolds for valves type 501 G and 701 G are displayed on page 2.7.1.4, manifolds for valves type 101 G and 121 G are displayed on page 2.7.1.5.

Please note: Valves G1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V-, 12V=.

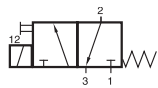
Valves are generally equipped with manual override. If requested without manual override please order M 310 \_\_\_ / MO 310 \_\_\_.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 320 501 G	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,29 kg
MH 320 701 G	G 1/4"	250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,31 kg
MH 320 101 G	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,58 kg
MH 320 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,70 kg

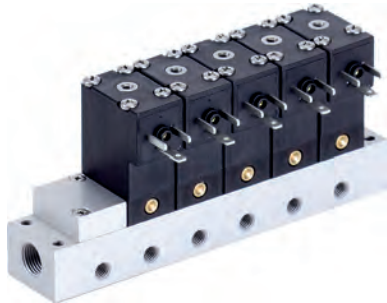
HAFNER

# MD 311 104/RD 3\_\_ 104/RD 3\_\_ 144

2.5.1.2.1  
page 102



MD 311 104



System consisting of direct acting 3/2-way solenoid valves, normally closed, actuated by permanent signal and manifold plates for common pressure supply (1). Port 2 is in the plate, either threaded M5 or with 4 mm push-in fitting, exhaust through the operator tube, thread M3.

### Valves

Type MD 311 104:

with electrical connection C ISO 15217, pins are 8 mm apart

Type MD 311 104 L:

with flying leads standard length 500 mm

Available with solenoid operators:

230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=.

For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.

### Plates

RD 3\_\_ 104:

with M5 at port 2 (add 2 digits for number of positions required)

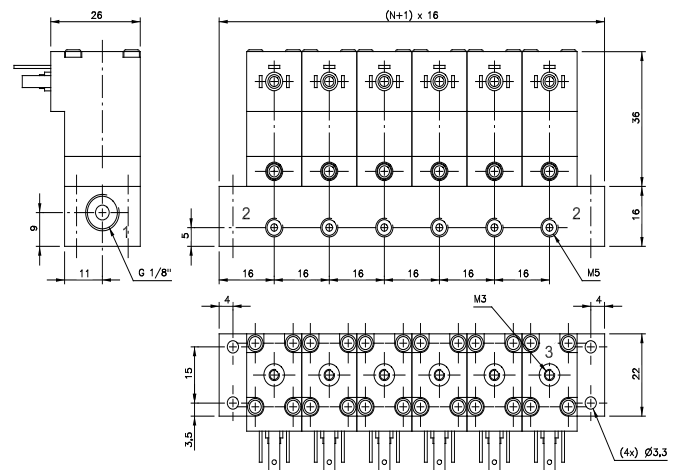
RD 3\_\_ 144:

with pif 4 mm at port 2 (add 2 digits for number of positions required)

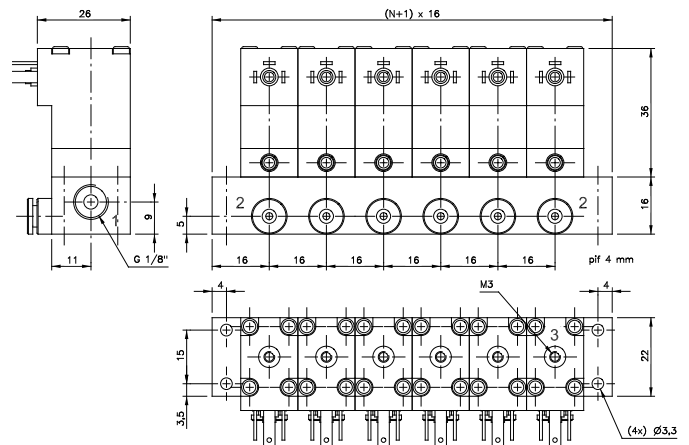
Plates are available with 2, 3, 4, 5, 6, 8, 10 and 12 positions, others on request.

Products are to be ordered individually but system will be delivered fully assembled.

Versions with common electrical connection (terminals) are displayed on page 2.8.2.1



MD 311 104/RD 3\_\_ 104

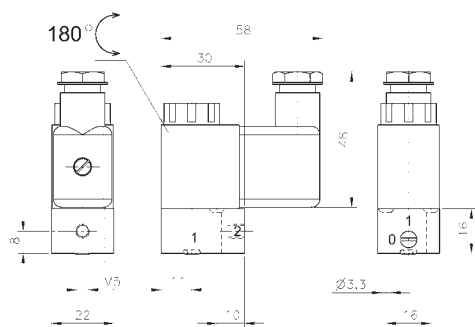


MD 311 104/RD 3\_\_ 144

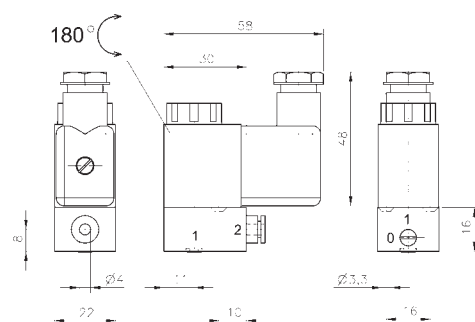
Valves can be used for technical vacuum too.

Type	Electric interface	Air flow	Operating press.	Power consumption	Weight
MD 311 104	form C, 8 mm pin	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,06 kg
MD 311 104 L	flying leads	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,07 kg

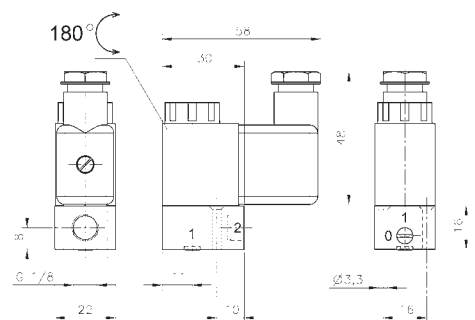
# MH 312/MH 314/MH 315/MH 316/MX 315



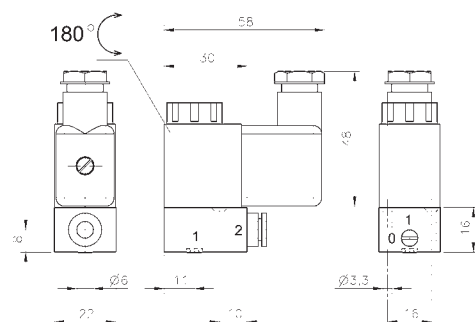
**MH 312**



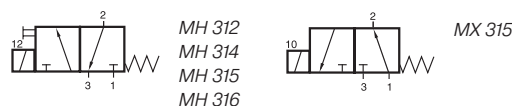
**MH 314**



**MH 315/MX 315**



**MH 316**



System consisting of direct actuated 3/2 way solenoid valves actuated by permanent signal and a manifold plate for common pressure supply (1). Exhaust through the operator tube.

**Type MH:**

Normally closed with manual override to turn. Exhaust at the top of the operator tube, ported M5. Common exhaust line to be assembled on the top using banjo joints is available on request.

**Type MX:**

Normally open, no manual override, 8 mm longer operator system than in drawing. Exhaust is a hole on the top of the operator tube.

Available with solenoid operators  
230V/50 Hz, 110V/50 Hz, 24V/50 Hz, 48V=, 24V=, 12V=.

Different types of valves can be mixed on one plate.

Manifolds are displayed on page 2.7.1.1.

Blanking plates are also available: Type no. BP 3.

Mounting screws and seals are included.

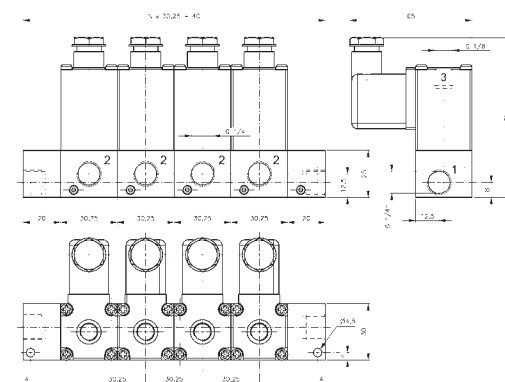
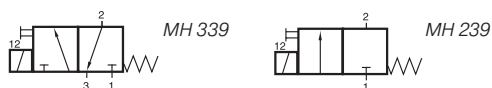
Valves can be used for technical vacuum too.

Type	Function	Port 2	Air flow	Operating press.	Power consumption	Weight
MH 312	n.c.	M5	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,13 kg
MH 314	n.c.	pif 4 mm	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,13 kg
MH 315	n.c.	G 1/8"	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,13 kg
MH 316	n.c.	pif 6 mm	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,13 kg
MX 315	n.o.	G 1/8"	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg





# MH 339/MH 239/R 33 R/R 33 L



Modular system MH 339/MH 239

Modular system consisting of direct acting 3/2-way or 2/2-way solenoid valves normally closed, actuated by permanent signal and endplates for common pressure supply (1). Port 2 is in the valve, G 1/4", exhaust through the operator tube, thread G 1/8".

By opening 2 hexagonsocket screws at the bodies the system can be taken apart at any point and valves can be added or taken away.

**Valves:**

Type MH 339: 3/2-way – drawings show 3/2-way valves

Type MH 229: 2/2-way – 2/2-way without port 3

Orifice size: 3 mm, max. pressure: 7 bar.

Available with solenoid operators:

230V/50Hz, 24V/50Hz, 24V=

Connector Industry B (22 mm). Flying leads on request.

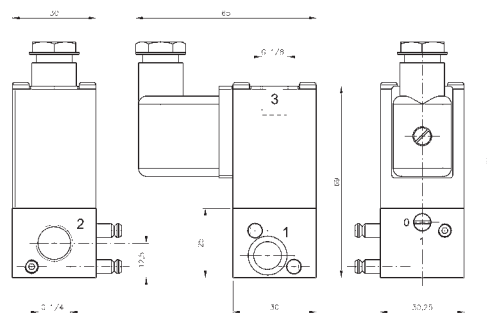
Valves are generally equipped with manual override.

The system consists of:

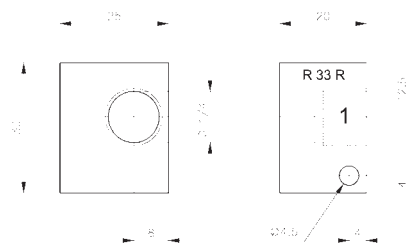
- End-plate right type R 33 R
- End-plate left type R 33 L
- Individual valve 3/2-way type MH 339
- Individual valve 2/2-way type MH 229

The end-plates can be equipped with DIN-rail mounting clips. For details, please refer to page 2.7.3.

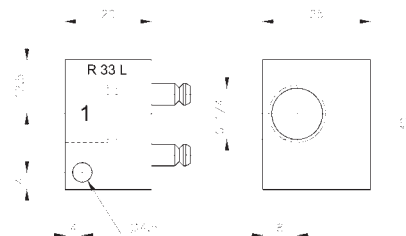
Products are to be ordered individually but system can be delivered fully assembled.



Individual valve MH 339/MH 239



End-plate right R 33 R

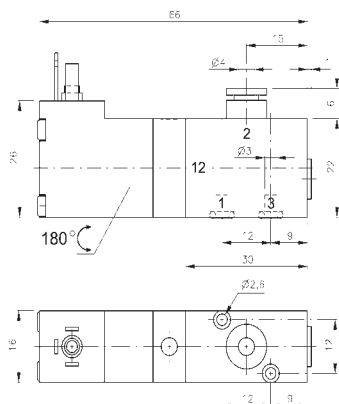
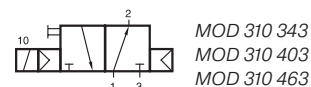
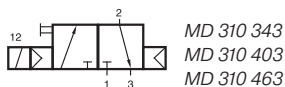


End-plate left R 33 L

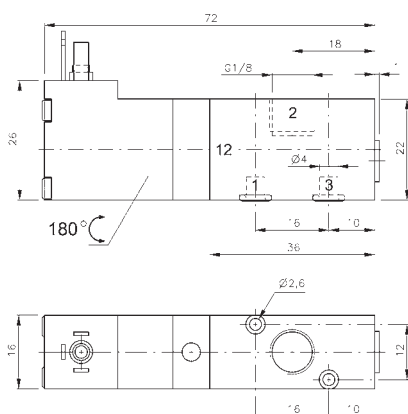
Type	Ways	Function	Port size			Air flow	Operating pressure	Operating Power consumption	Weight
			1	2	3				
MH 339	3/2	n.c.	G 1/4"	G 1/8"		200 l/min	0 - 7 bar	7,5 W = /8,5 VA	~ 0,18 kg
MH 239	2/2	n.c.	G 1/4"			200 l/min	0 - 7 bar	7,5 W = /8,5 VA	~ 0,18 kg
R 33 R		end-plate right	G 1/4"						0,04 kg
R 33 L		end-plate left	G 1/4"						0,04 kg



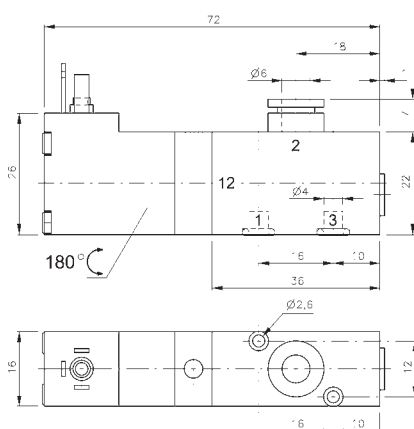
# MD 310 343/MD 310 403/MD 310 463 MOD 310 343/MOD 310 403/MOD 310 463



MD 310 343/MOD 310 343



MD 310 403/MOD 310 403



MD 310 463/MOD 310 463



3/2-way solenoid valve normally closed (MD) or normally open (MOD) for assembling on a manifold plate. Port 2 in the valve.

Available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.7.1.2.

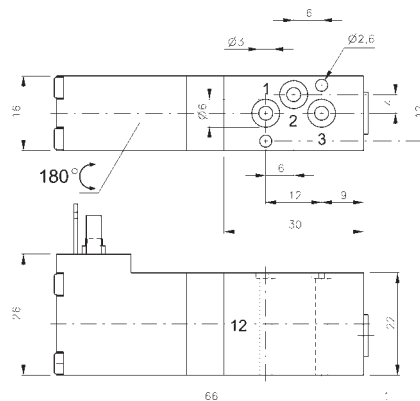
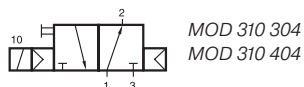
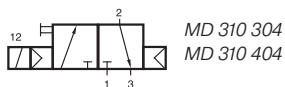
Valves normally open and normally closed can be mixed on one manifold plate!

Blanking plates are also available type BP 3 303 or BP 3 403.

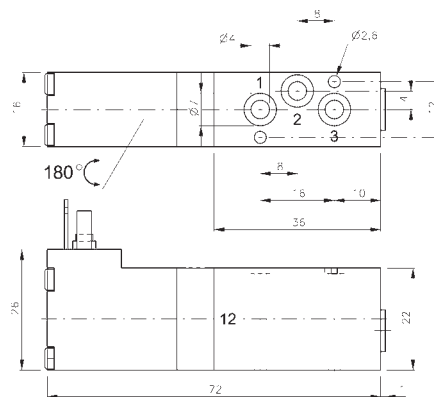
Mounting screws and seals are included.

Type	Function	Port size	Air flow	Operating press.	Power consumption	Weight
MD 310 343	n.c.	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MD 310 403	n.c.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 310 463	n.c.	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MOD 310 343	n.o.	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MOD 310 403	n.o.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MOD 310 463	n.o.	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg

# MD 310 304/MOD 310 404 MOD 310 304/MOD 310 404



**MD 310 304/MOD 310 304**



**MD 310 404/MOD 310 404**

3/2-way solenoid valve normally closed (MD) or normally open (MOD) for assembling on a manifold plate. All the ports are in the plate.

Available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.7.1.3.

Valves normally open and normally closed can be mixed on one manifold plate!

Blanking plates are also available type BP 3 304 or BP 3 404.

Mounting screws and seals are included.

Type	Function	Air flow	Operating press.	Power consumption	Weight
MD 310 304	n.c.	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MD 310 404	n.c.	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MOD 310 304	n.o.	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,08 kg
MOD 310 404	n.o.	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg



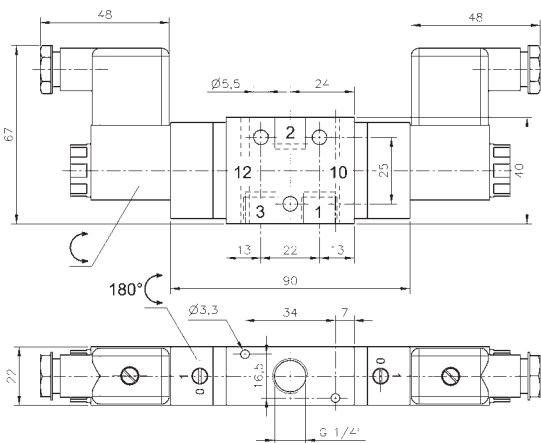
# MH 331 701 G/MH 331 121 G



G-Series 501 G/701 G



G-Series 121 G



MH 331 701 G



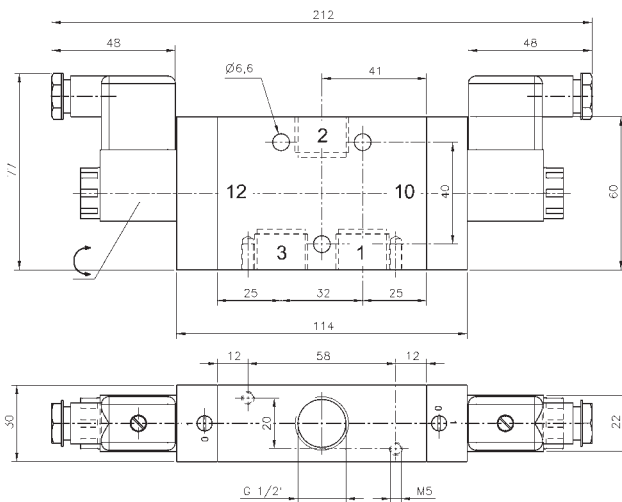
3/3-way solenoid valve with spring return to middle position, actuated by permanent signal. Valve is to be used when a single acting cylinder or any other single acting actuator such as a lifting bag or car-suspension needs to be held in an intermediate position.

Available with solenoid operators:  
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,  
24V-, 12V=.

The G-Series valves offer the flexibility of in-line fitment as well as the option of being assembled on to a manifold as shown. Plates are displayed on page 2.7.1.5.

Please note:  
Valves G 1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

Valves are generally equipped with manual override to turn.



MH 331 121 G

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 331 701 G	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,32 kg
MH 331 121 G	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,72 kg