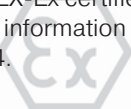




2.11

„Hafner on the Rocks“ Low Temperature Valves

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

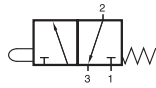


Temperature range:

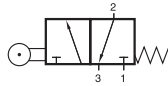
1/8" and 1/4" valves: – 50° C to + 50° C

1/2" valves: – 40° C to + 50° C

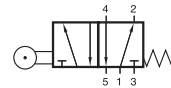
BG 311 701 TT / BR 311 701 TT BR 511 701 TT



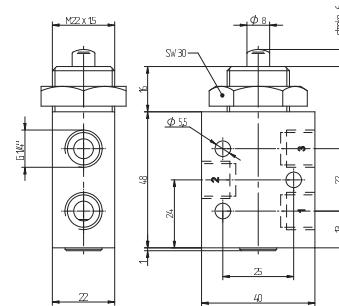
BG 311 701 TT



BR 311 701 TT



BR 511 701 TT



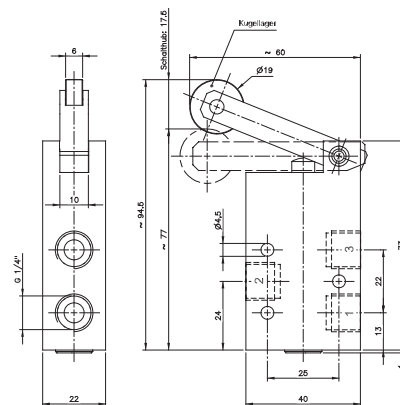
BG 311 701 TT

BG 311 701 TT heavy duty stem actuated 3/2-way spool valve with mechanical spring for low temperature environment – 50° C to + 50° C. Suitable for wall or panel mounting. Nut for panel mounting M22 x 1,5 is included.

BR 311 701 TT / BR 511 701 TT heavy duty roller-lever spool valve with mechanical spring for low temperature environment – 50° C to + 50° C. Lever-construction has proven capabilities in rough environmental applications for decades.

BR 311 701 TT 3/2-way, spring return
BR 511 701 TT 5/2-way, spring return

Due to the specific design of the low temperature seals pressure has to be applied to port 1. For other versions (e.g. normally open) please get in touch with the manufacturer.



BR 311 701 TT

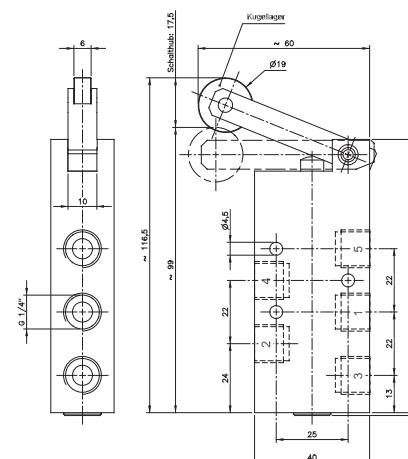
Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of the environment and media. Air has to be dried!

Below -40° C the leakage-rate of the valve can increase to 10 cm³/min.

Use unlubricated air only.

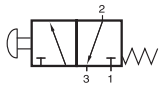
Exhaust can be throttled.



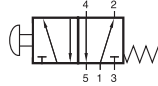
BR 511 701 TT

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
BG 311 701 TT	3/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	17 N	0,13 kg
BR 311 701 TT	3/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	3,5 N	0,20 kg
BR 511 701 TT	5/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	3,5 N	0,25 kg

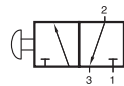
BH 311 701 TT/BH 320 701 TT BH 511 701 TT/BH 520 701 TT



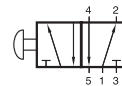
BH 311 701 TT



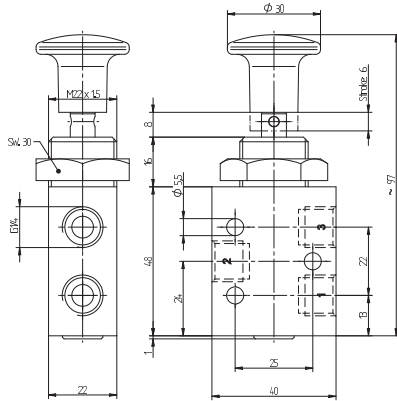
BH 511 701 TT



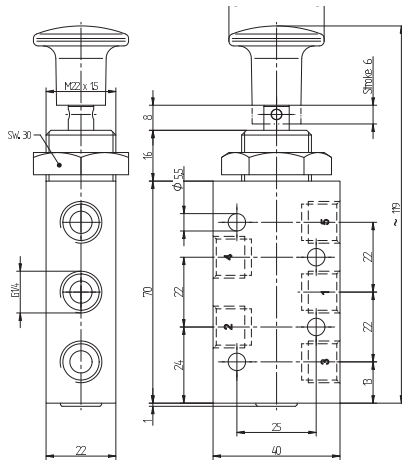
BH 320 701 TT



BH 520 701 TT



BH 311 701 TT/BH 320 701 TT



BH 511 701 TT/BH 520 701 TT



Manually actuated spool valve for low temperature environment - 50° C to + 50° C.

- BH 311 701 3/2-way, normally closed, spring return
- BH 320 701 3/2-way, indexed
- BH 511 701 5/2-way, spring return
- BH 520 701 5/2-way, indexed

Due to the specific design of the low temperature seals pressure has to be applied to port 1. For other versions (e.g. normally open) please get in touch with the manufacturer.

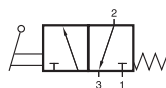
Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Below - 40° C the leakage-rate of the valve can increase to 10 cm³/min.
Use unlubricated air only.

Exhaust can be throttled.

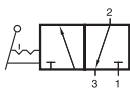
Suitable for wall or panel mounting. Nut for panel mounting M22 x 1,5 is included.

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
BH 311 701 TT	3/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	17 N	0,14 kg
BH 320 701 TT	3/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	18 N	0,14 kg
BH 511 701 TT	5/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	17 N	0,18 kg
BH 520 701 TT	5/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	18 N	0,18 kg

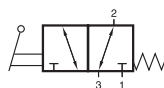
HV 311 501 TT/HV 311 701 TT/HV 311 121 TT HVR 320 501 TT/HVR 320 701 TT/HVR 320 121 TT



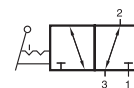
HV 311 501 TT
HV 311 701 TT



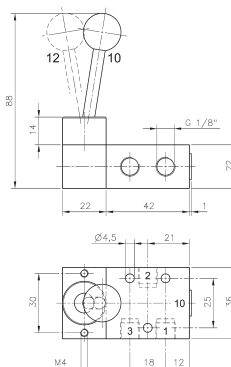
HVR 320 501 TT
HVR 320 701 TT



HV 311 121 TT



HVR 320 121 TT



HV 311 501 TT/HVR 320 501 TT

Lever actuated 3/2-way spool valve for low temperature environment.

Type HV 311 normally closed, spring return
Type HVR 320 indexed

The lever is sealed by using a metal ball.

Valves type 501 TT/ 701 TT:

Due to the specific design of the low temperature seals pressure has to be applied to port 1.
For other versions (e.g. normally open) please get in touch with the manufacturer.

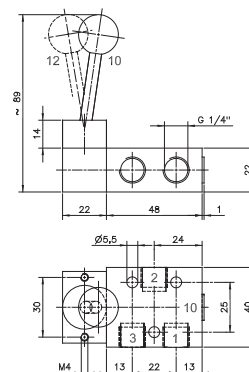
Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

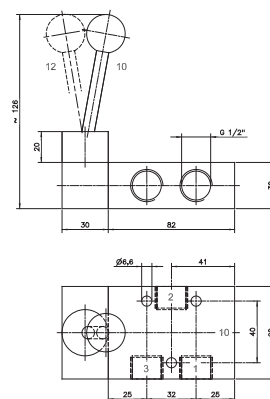
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

Exhaust can be throttled.



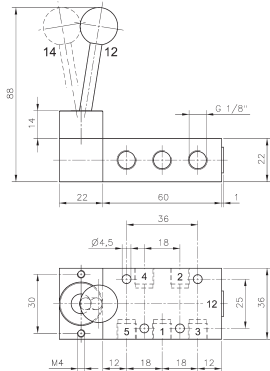
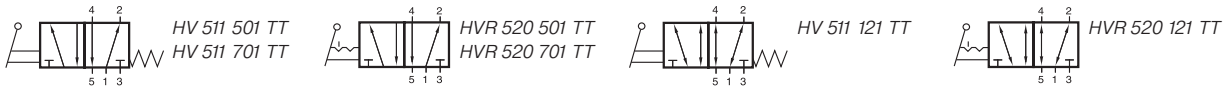
HV 311 701 TT/HVR 320 701 TT



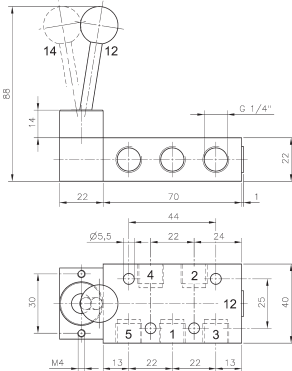
HV 311 121 TT/HVR 320 121 TT

Type	Temp. Range	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 311 501 TT	-50°C to +50°C	3/2-way spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg
HV 311 701 TT	-50°C to +50°C	3/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg
HV 311 121 TT	-40°C to +50°C	3/2-way spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,69 kg
HVR 320 501 TT	-50°C to +50°C	3/2-way indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg
HVR 320 701 TT	-50°C to +50°C	3/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg
HVR 320 121 TT	-40°C to +50°C	3/2-way indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,69 kg

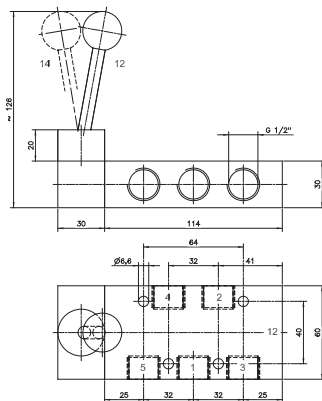
HV 511 501 TT/HV 511 701 TT/HV 511 121 TT HVR 520 501 TT/HVR 520 701 TT/HVR 520 121 TT



HV 511 501 TT/HVR 520 501 TT



HV 511 701 TT/HVR 520 701 TT



HV 511 121 TT/HVR 520 121 TT



Lever actuated 5/2-way spool valve for low temperature environment.

Type HV 511 spring return
Type HVR 520 indexed

The lever is sealed by using a metal ball.

Valves type 501 TT/ 701 TT:

Due to the specific design of the low temperature seals pressure has to be applied to port 1. If other function is required please get in touch with the manufacturer.

Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

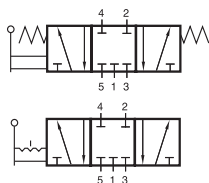
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

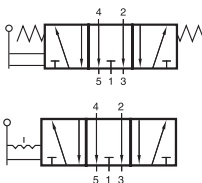
Exhaust can be throttled.

Type	Temp. Range	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 511 501 TT	-50°C to +50°C	5/2-way spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 511 701 TT	-50°C to +50°C	5/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HV 511 121 TT	-40°C to +50°C	5/2-way spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg
HVR 520 501 TT	-50°C to +50°C	5/2-way indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HVR 520 701 TT	-50°C to +50°C	5/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 520 121 TT	-40°C to +50°C	5/2-way indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg

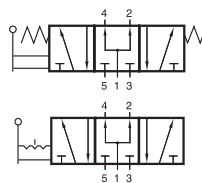
HV 53_ 501 TT/HV 53_ 701 TT HVR 53_ 501 TT/HVR 53_ 701 TT



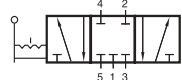
HV 531 501 TT
HV 531 701 TT



HV 532 501 TT
HV 532 701 TT



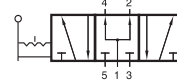
HV 533 501 TT
HV 533 701 TT



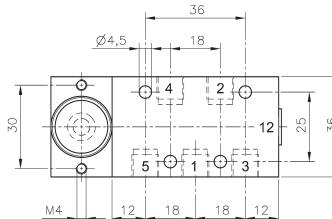
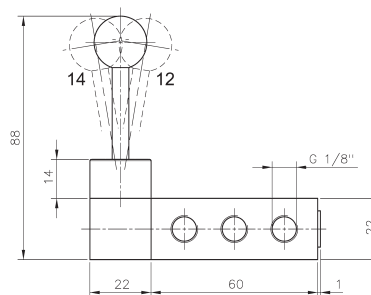
HVR 531 501 TT
HVR 531 701 TT



HVR 532 501 TT
HVR 532 701 TT



HVR 533 501 TT
HVR 533 701 TT



HV 53_ 501 TT/HVR 53_ 501 TT

Lever actuated 5/3-way spool valve for low temperature environment - 50° C to + 50° C.

Type HV spring return to middle position
Type HVR indexed

Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurized

When ordering please complete the type number by 1, 2 or 3 according to the type required.

The lever is sealed by using a metal ball.

Exhaust can be throttled.

Due to the specific design of the low temperature seals pressure has to be applied to port 1. If other function is required please get in touch with the manufacturer.

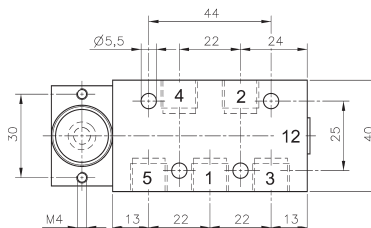
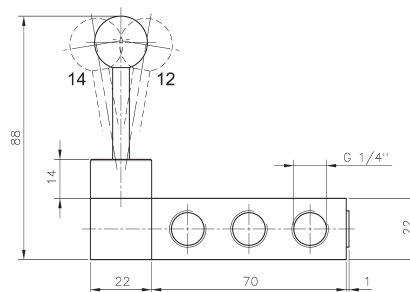
Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

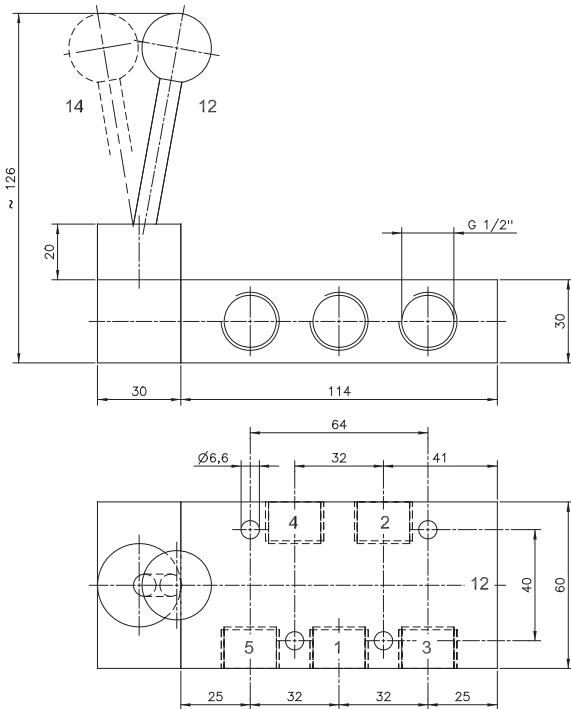
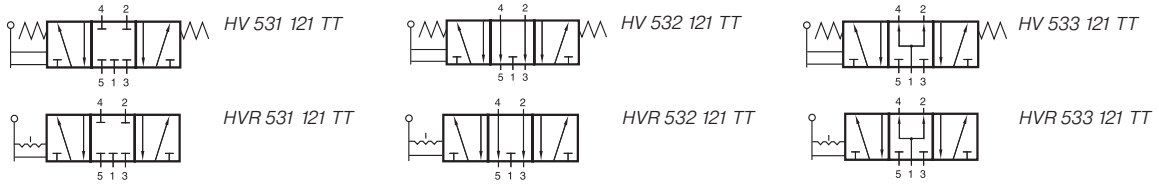
Use unlubricated air only.

For type 531: pressure at port 1 has to be ≥ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.



HV 53_ 701 TT/HVR 53_ 701 TT

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 53_ 501 TT	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 53_ 701 TT	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 53_ 501 TT	indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HVR 53_ 701 TT	indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg



HV 53_ 121 TT/HVR 53_ 121 TT



Lever actuated 5/3-way spool valve for low temperature environment - 50° C to + 50° C.

Type HV spring return to middle position
Type HVR indexed

Type 531 middle position closed
Type 532 middle position exhausted
Type 533 middle position pressurized

When ordering please complete the type number by 1, 2 or 3 according to the type required.

The lever is sealed against the valve by using a metal ball.

Please notice:

Due to the specific design of the low-temperature seals pressure has to be applied to port 1. If other function is required please get in touch with the manufacturer.

Please notice:

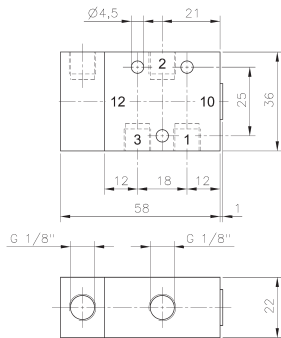
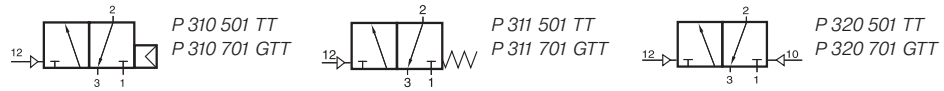
When operated below 0°C the pressure condensation point has to be at least 15°C below the temperature of environment and media. Air has to be dried!

Below -40°C the leakage-rate of the valve can increase to 10 cm³ /min.

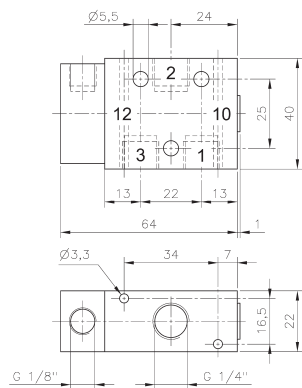
Exhaust can be throttled.

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 53_ 121 TT	spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg
HVR 53_ 121 TT	indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg

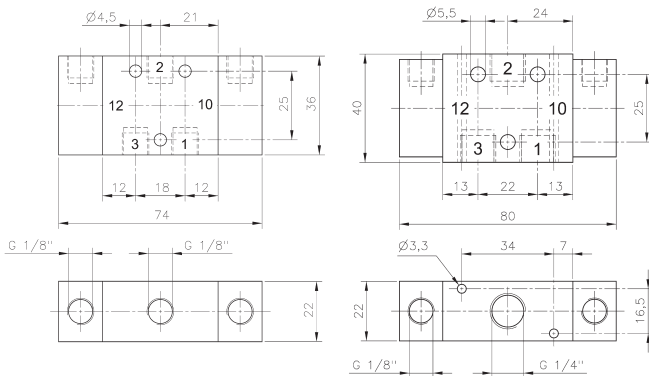
P 310 501 TT/P 310 701 GTT/P 311 501 TT P 311 701 GTT/P 320 501 TT/P 320 701 GTT



P 310 501 TT/P 311 501 TT



P 310 701 GTT/P 311 701 GTT



P 320 501 TT

P 320 701 GTT



Pneumatically actuated 3/2-way spool valve for low temperature environment - 50° C to + 50° C.

- Type 310 single pilot n.c. air-spring return
operating and actuating pressure
should be at the same level.
- Type 311 single pilot n.c. mechanical
spring return
- Type 320 double pilot

GTT: dual use, valves can be used in-line as well as on manifold plates. Manifolds for valves type 701 G are displayed on page 2.7.1.4.

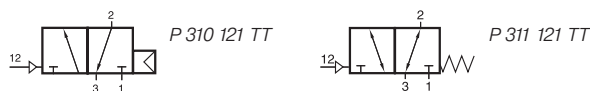
Due to the specific design of the low temperature seals pressure has to be applied to port 1. For other versions (e.g. normally open) please get in touch with the manufacturer.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min, actuation pressure minimum 3 bar.
Use unlubricated air only.

Exhaust can be throttled.

Type	Function	Port size	Air flow	Operating pressure	Actuating pressure	Weight
P 310 501 TT	n.c. air return	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg
P 310 701 GTT	n.c. air return	G 1/4"	1250 l/min	2 - 10 bar	the same	0,14 kg
P 311 501 TT	n.c. mech. spring	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,13 kg
P 311 701 GTT	n.c. mech. spring	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,14 kg
P 320 501 TT	double pilot	G 1/8"	650 l/min	2 - 10 bar	≤ operating press.	0,16 kg
P 320 701 GTT	double pilot	G 1/4"	1250 l/min	2 - 10 bar	≤ operating press.	0,17 kg

P 310 121 TT/P 311 121 TT



Pneumatically actuated 3/2-way spool valve for low temperature environment -40°C to +50°C.

Type P 310 121 TT with air-spring-return. Operating pressure and actuating pressure should be at the same level.

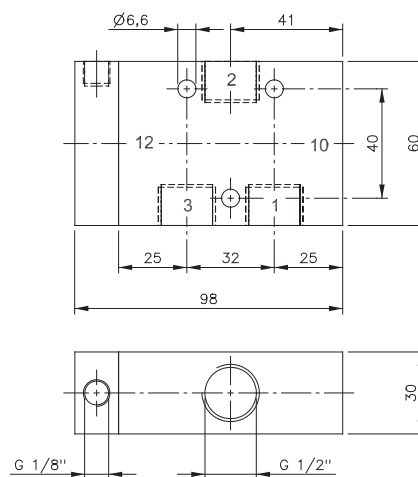
Type P 311 121 TT with mechanical spring return.

If pressure is attached to port 1 the function is normally closed.
If pressure is applied to port 3 the function is normally open.
Pressure can only be attached to port 2 if valve has a mechanical spring (type P 311 121 TT).

Exhaust can be throttled.

Please note:

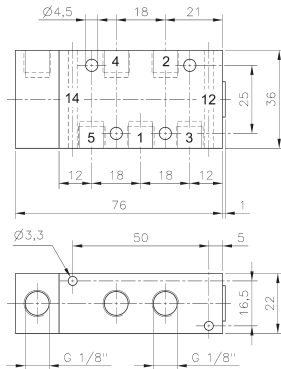
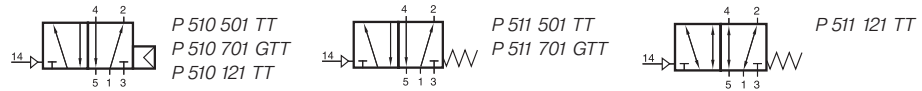
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Use unlubricated air only.



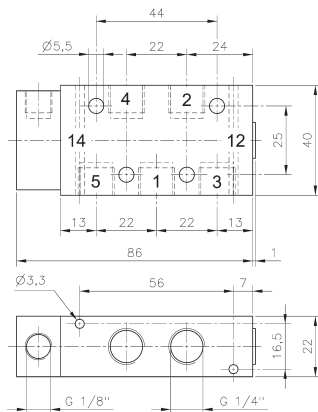
P 310 121 TT/P 311 121 TT

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 121 TT	G 1/2"	1250 l/min	2 - 10 bar	the same	0,45 kg
P 311 121 TT	G 1/2"	1250 l/min	2 - 10 bar	3 - 10 bar	0,45 kg

P 510 501 GTT/P 510 701 GTT/P 511 501 GTT P 511 701 GTT/P 510 121 TT/P 511 121 TT



P 510 501 GTT/P 511 501 GTT



P 510 701 GTT/P 511 701 GTT

Pneumatically actuated 5/2-way spool valve for low temperature environment.

- Type 510 single pilot air-spring return
operating and actuating pressure
should be at the same level.
- Type 511 single pilot mechanical spring return

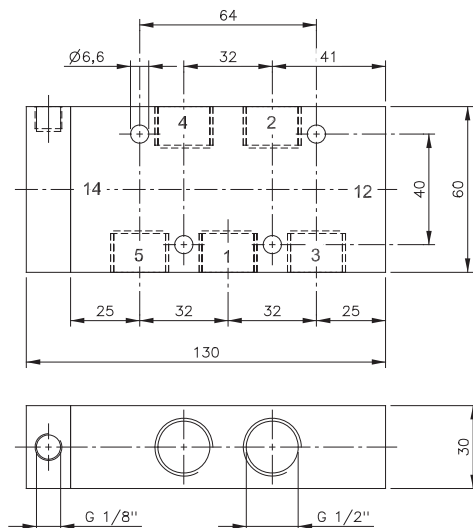
GTT: dual use, valves can be used in-line as well as on manifold plates. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifold for valves type 701 G are displayed on page 2.7.2.3.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

Valves type P 51_501 GTT and P 51_701 GTT:
Due to the specific design of the low temperature seals pressure has to be applied to port 1.
For other versions please get in touch with the manufacturer.

Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min and actuating pressure generally increases to 3 bar.

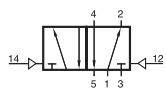
Exhaust can be throttled.



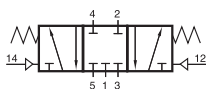
P 510 121 TT/P 511 121 TT

Type	Temp. range	Function	Port size	Air flow	Operating pressure	Actuating pressure	Weight	
P 510 501 GTT	-50°C to +50°C	air return	G 1/8"	650 l/min	2 - 10 bar	the same	0,16 kg	⊕
P 510 701 GTT	-50°C to +50°C	air return	G 1/4"	1250 l/min	2 - 10 bar	the same	0,18 kg	⊕
P 511 501 GTT	-50°C to +50°C	mech. spring	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,16 kg	
P 511 701 GTT	-50°C to +50°C	mech. spring	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,18 kg	
P 510 121 TT	-40°C to +50°C	air return	G 1/2"	3000 l/min	2 - 10 bar	the same	0,59 kg	
P 511 121 TT	-40°C to +50°C	mech. spring	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	0,59 kg	

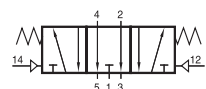
P 520 501 GTT/P 520 701GTT/P 520 121 TT P 53_ 501 GTT/P 53_ 701 GTT/P 53_ 121 TT



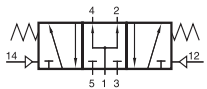
P 520 501 GTT
P 520 701 GTT
P 520 121 TT



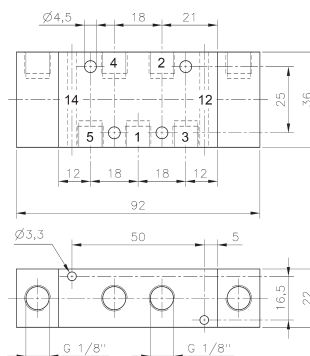
P 531 501 GTT
P 531 701 GTT
P 531 121 TT



P 532 501 GTT
P 532 701 GTT
P 532 121 TT



P 533 501 GTT
P 533 701 GTT
P 533 121 TT



P 520 501 GTT/P 53_ 501 GTT

Pneumatically actuated 5-way valves for low temperature environment.

- Type 520 double pilot
- Type 531 5/3-way centre closed
- Type 532 5/3-way centre exhausted
- Type 533 5/3-way centre pressurized

GTT: dual use, valves can be used in-line as well as on manifold plates. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifold for valves type 701 G are displayed on page 2.7.2.3.

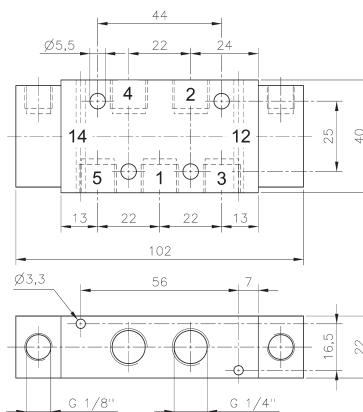
Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

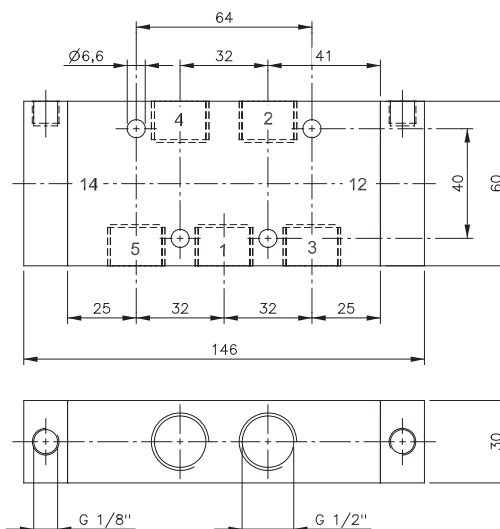
Valves type P 5__ 501 GTT and P 5__ 701 GTT: Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min and actuating pressure generally increases to 3 bar.

For type P 531 501 GTT and P 531 701 GTT: Pressure at port 1 has to be ≤ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

Exhaust can be throttled.

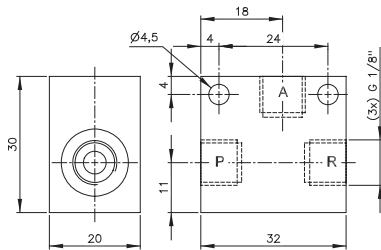
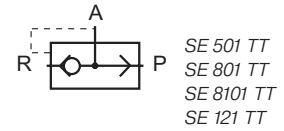


P 520 701 GTT/P 53_ 701 GTT



P 520 121 TT/P 53_ 121 TT

Type	Temp. range	Port size	Air flow	Operating pressure	Actuating pressure	Weight
P 520 501 GTT	-50°C to +50°C	G 1/8"	650 l/min	2 - 10 bar	≤operating press.	0,20 kg
P 520 701 GTT	-50°C to +50°C	G 1/4"	1250 l/min	2 - 10 bar	≤operating press.	0,22 kg
P 520 121 TT	-40°C to +50°C	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	0,67 kg
P 53_ 501 GTT	-50°C to +50°C	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,20 kg
P 53_ 701 GTT	-50°C to +50°C	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,22 kg
P 53_ 121 TT	-40°C to +50°C	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	0,67 kg



SE 501 TT

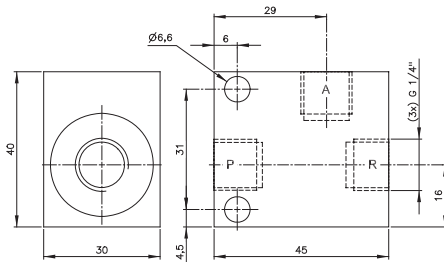


Quick-exhaust valve which can also be used as non-return valve as well as or-gate.

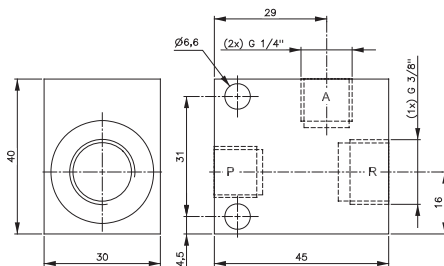
If used as a non-return valve please plug port R. Open from P to A, closed from A to P.

If used as an or-gate connect pressure to P and R. Port A is outlet.

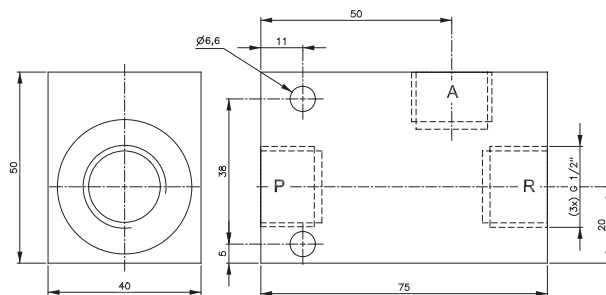
Temperature range: -40° C to +80° C



SE 801 TT



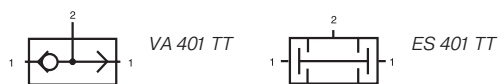
SE 8101 TT



SE 121 TT

Type	Port size A + P	Port size R	Air flow from A to R	Operating press.	Weight
SE 501 TT	G 1/8"	G 1/8"	564 l/min	0,3 - 10 bar	0,06 kg
SE 801 TT	G 1/4"	G 1/4"	1188 l/min	0,2 - 10 bar	0,18 kg
SE 8101 TT	G 1/4"	G 3/8"	1188 l/min	0,2 - 10 bar	0,18 kg
SE 121 TT	G 1/2"	G 1/2"	3600 l/min	0,5 - 10 bar	0,26 kg

VA 401 TT/ES 401 TT



VA 401 TT OR-gate

The OR-gate has two inputs 1 and one output 2.

The shuttle valve is used when only one of two possible signals is required to pass on a signal.

Function: If one of two signal inputs are activated, an output signal on port 2 is present and the other input is blocked.

In case of pressurising both inputs at different pressure levels, the higher pressure is fed to port 2.

ES 401 TT AND-gate

The AND-gate has two inputs 1 and one output 2.

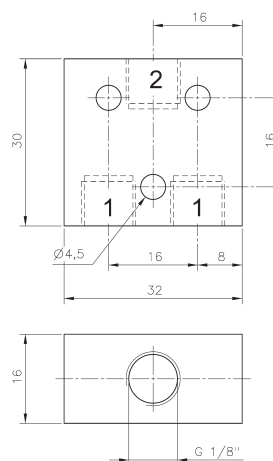
The dual-pressure valve is used when at least 2 signals are required before a signal is passed on.

Function: Only when both inputs are pressurised output 2 is pressurised.

If two different pressures are applied the lower pressure is fed to output 2.

In case of only one signal at one of the two ports 1, the output 2 is blocked.

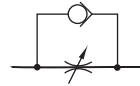
Temperature range: -40°C to +50°C.



VA 401 TT/ES 401 TT

Type	Function	Port size	Air flow	Operating press.	Weight
VA 401 TT	OR	G 1/8"	280 l/min	1 - 10 bar	0,04 kg
ES 401 TT	AND	G 1/8"	280 l/min	1 - 10 bar	0,04 kg

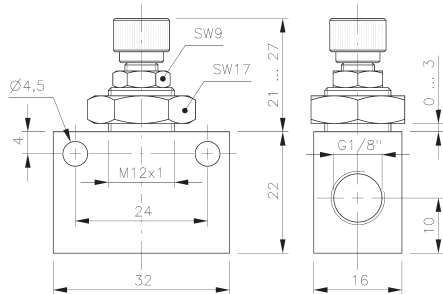
DR 501 TT/DR 801 TT D 501 TT/D 801 TT



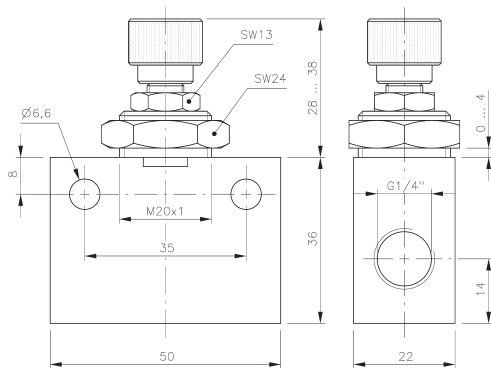
DR 501 TT
DR 801 TT



D 501 TT
D 801 TT



DR 501 TT/D 501 TT



DR 801 TT/D 801 TT



Block form flow regulator for low temperature environment -40°C to +50°C.

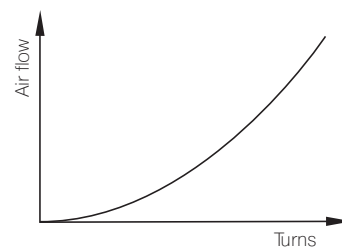
Type DR
uni-directional block form flow regulator.
Air streaming in the direction of the throttle can be regulated by turning the spindle. In the opposite direction air streams unthrottled.

Type D
bi-directional flow regulator. Air is regulated in both directions.

The throttle can be adjusted very precisely along the entire regulation range.

Adjustment can be locked.

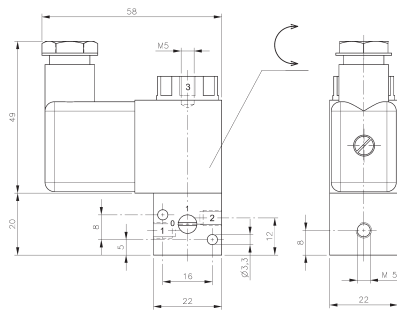
Suitable for wall and panel mounting.
Nut is included.



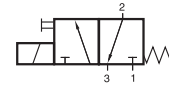
Type	Port size	Air flow*	Airflow in opposite direction*	Operating press.	Weight
D 501 TT	G 1/8"	450 l/min	450 l/min	0,5 - 10 bar	0,04 kg
D 801 TT	G 1/4"	1150 l/min	1150 l/min	0,5 - 10 bar	0,13 kg
DR 501 TT	G 1/8"	450 l/min	450 l/min	2 - 10 bar	0,04 kg
DR 801 TT	G 1/4"	1150 l/min	1150 l/min	2 - 10 bar	0,13 kg

* Values at 10 bar inlet pressure and without back pressure.

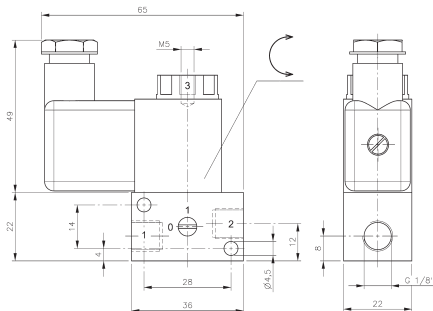
MH 311 012 TT/MH 311 015 TT MH 311 013 TT/MH 311 017 TT



MH 311 012 TT



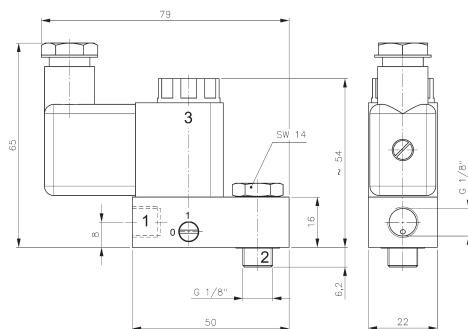
MH 311 012 TT
MH 311 015 TT
MH 311 013 TT
MH 311 017 TT



MH 311 015 TT

Direct acting 3/2-way solenoid valve equipped with mechanical spring return for low temperature environment - 50° C to + 50° C.

By closing port 3 the valves can be converted into 2/2-way version.



MH 311 013 TT

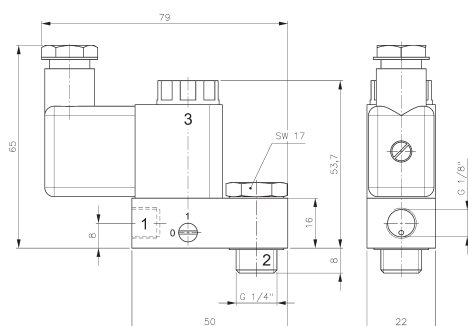
MH 311 013 TT and MH 311 017 TT are designed for piloting angle seat valves or small spring-return actuators.

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

Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Use unlubricated air only.



MH 311 017 TT

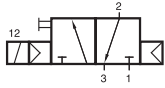
Available with solenoid operators:

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

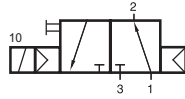
Valves are equipped with manual override to turn.

Type	Port size			Air flow	Operating pressure	Power consumption	Weight	
	1	2	3					
MH 311 012 TT	M5	M5	M5	40 l/min	0 - 10 bar	3 W = / 5 VA ~	0,12 kg	⊕
MH 311 015 TT	G 1/8"	G 1/8"	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg	⊕
MH 311 013 TT	G 1/8"	G 1/8" Banjo	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg	⊕
MH 311 017 TT	G 1/8"	G 1/4" Banjo	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,16 kg	⊕

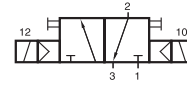
M(O)H 310 501 TT/M(O)H 310 701 GTT MH 320 501 TT/MH 320 701 GTT



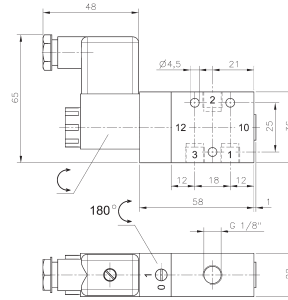
MH 310 501 TT
MH 310 701 GTT



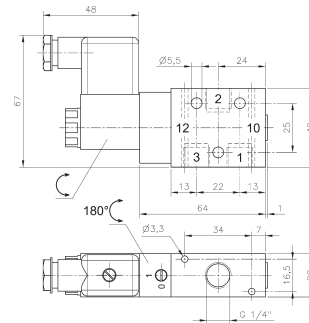
MOH 310 501 TT
MOH 310 701 GTT



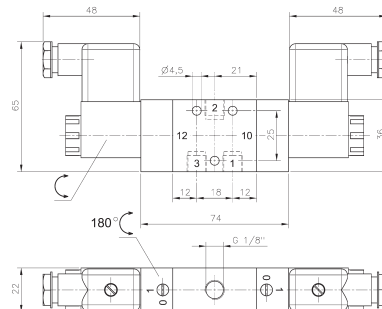
MH 320 501 TT
MH 320 701 GTT



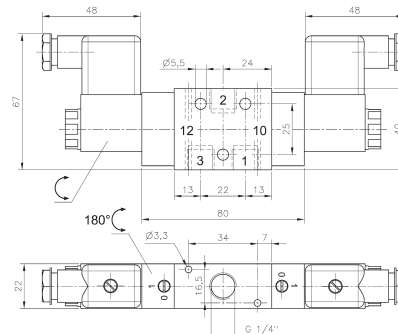
MH 310 501 TT/MOH 310 501 TT



MH 310 701 GTT/MOH 310 701 GTT



MH 320 501 TT



MH 320 701 GTT

3/2-way solenoid valve for low temperature environment - 50° C to + 50° C.

Type MH 310 single solenoid n.c. air-spring return
Type MOH 310 single solenoid n.o. air-spring return
Type MH 320 double solenoid

G 1/4"-valves are dual use, they can be used in-line as well as on manifold plates. Manifolds for valves type 701 G are displayed on page 2.7.1.4.

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

Valves are equipped with manual override to turn.

Please note:

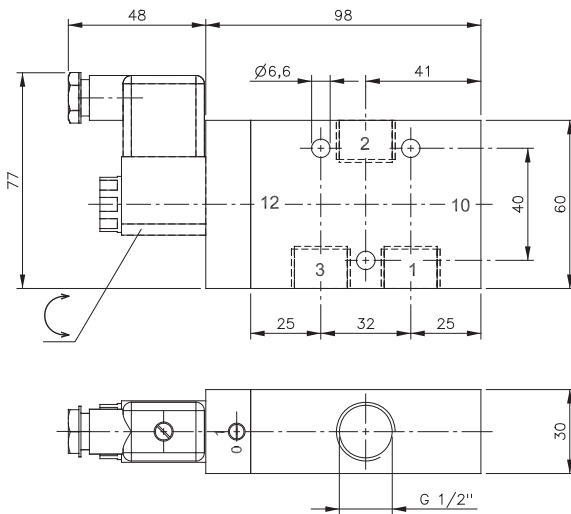
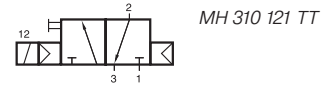
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Below - 40° C the leakage-rate of the valve can increase to 10 cm³/min.
Use unlubricated air only.

Valves are also available with external pilot feed.

NPT ported valves are available on request.

Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 310 501 TT	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MH 310 701 GTT	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MOH 310 501 TT	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MOH 310 701 GTT	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MH 320 501 TT	double sol.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,34 kg
MH 320 701 GTT	double sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,36 kg



MH 310 121 TT

3/2-way solenoid valve normally closed actuated by permanent signal and equipped with air spring return.

For low temperature environment – 40° C to + 50° C.

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 310 121 TT.

Please note:

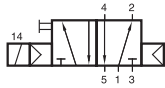
Do not close port 3 to convert into a 2-way valve.

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Use unlubricated air only.

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

MH 510 501 GTT/MH 510 701 GTT MH 510 121 TT



MH 510 501 GTT
MH 510 701 GTT
MH 510 121 TT



5/2-way single solenoid valve equipped with air spring return for low temperature environment.

Valves type MH 510 501 GTT and MH 510 701 GTT can be used in-line as well as on manifold plates. For manifold plates please refer to our full catalogue chapter 2.7.

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

Valves are equipped with manual override to turn.

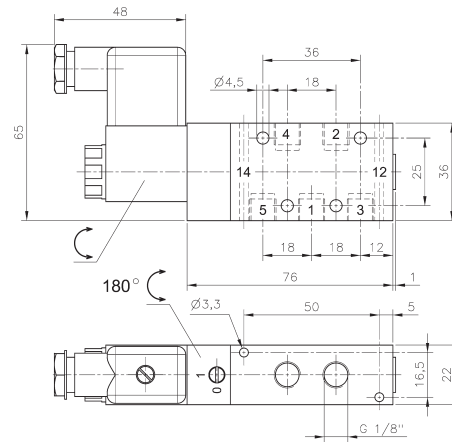
Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

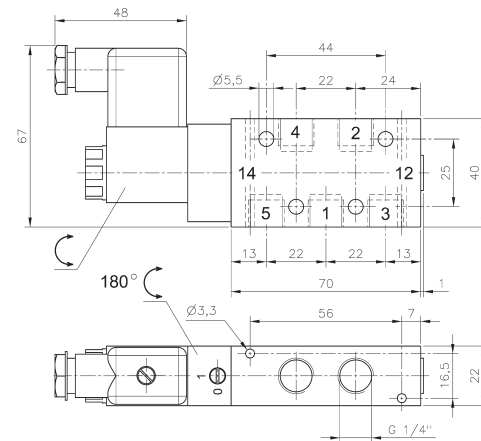
Valves type MH 510 501 GTT and MH 510 701 GTT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm³/min and operating pressure generally increases to 3 bar.

Valves are also available with external pilot feed.

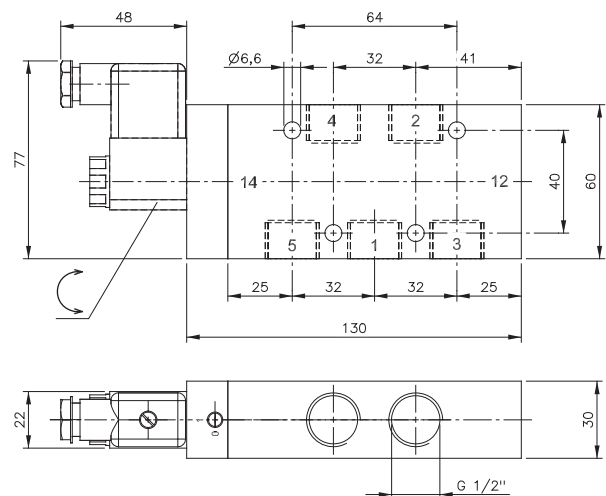
NPT ported valves are available on request.



MH 510 501 GTT



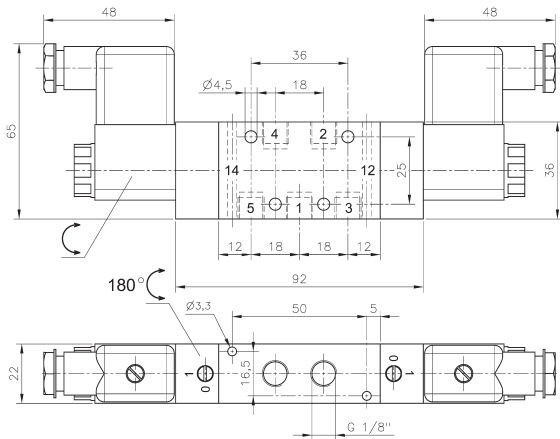
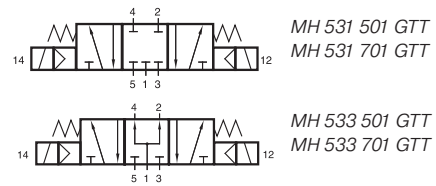
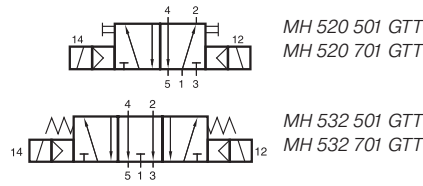
MH 510 701 GTT



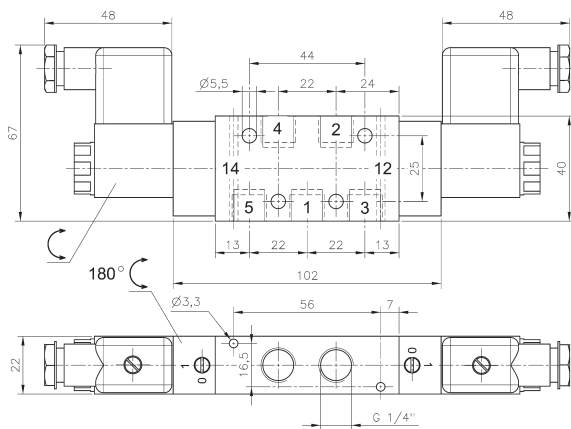
MH 510 121 TT

Type	Temp. range	Port size	Air flow	Operating press.	Power cons	Weight
MH 510 501 GTT	- 50° C to + 50° C	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg
MH 510 701 GTT	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,27 kg
MH 510 121 TT	- 40° C to + 50° C	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	0,67 kg

MH 520 501 GTT/MH 520 701 GTT MH 53_ 501 GTT/MH 53_ 701 GTT



MH 520 501 GTT/MH 53_ 501 GTT



MH 520 701 GTT/MH 53_ 701 GTT



5-way solenoid valve for low temperature environment - 50° C to + 50° C.

- Type 520 5/2-way double solenoid, actuated by impulse
- Type 531 5/3-way centre closed
- Type 532 5/3-way centre exhausted
- Type 533 5/3-way centre pressurized

Valves are dual use, they can be used in-line as well as on manifold plates. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifold for valves type 701 G are displayed on page 2.7.2.3

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

Valves are equipped with manual override to turn.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Below - 40° C the leakage-rate of the valve can increase to 10 cm³/min and operating pressure generally increases to 3 bar.
Use unlubricated air only.

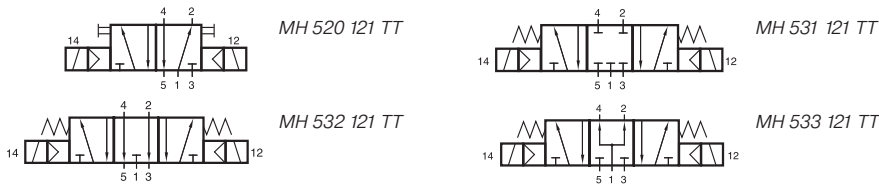
For type 531: pressure at port 1 has to be ≥ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

Valves are also available with external pilot feed.

NPT ported valves are available on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight	
MH 520 501 GTT	G 1/8"	650 l/min	1 - 10 bar	3 W = / 5 VA ~	0,38 kg	⊕x
MH 520 701 GTT	G 1/4"	1250 l/min	1 - 10 bar	3 W = / 5 VA ~	0,40 kg	⊕x
MH 53_ 501 GTT	G 1/8"	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,38 kg	⊕x
MH 53_ 701 GTT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,40 kg	⊕x

MH 520 121 TT/MH 53_121 TT



5-way solenoid valves for low temperature environment -40° C to +50° C.

- Type 520 5/2-way double solenoid, actuated by impulse
- Type 531 5/3-way centre closed
- Type 532 5/3-way centre exhausted
- Type 533 5/3-way centre pressurised

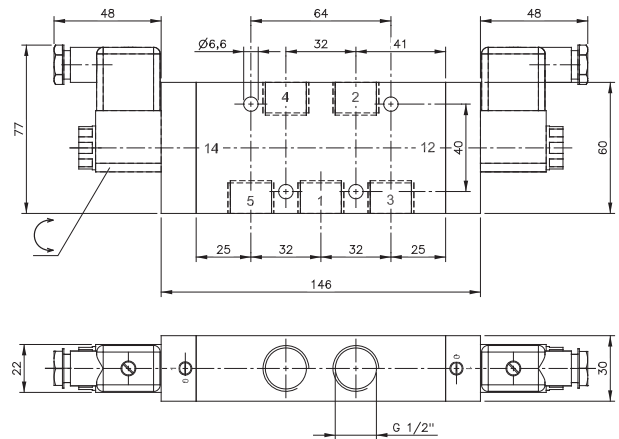
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

Valves are generally equipped with manual override.
If requested without manual override please order M 5__ 121 TT.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

Valves are also available with external pilot feed.

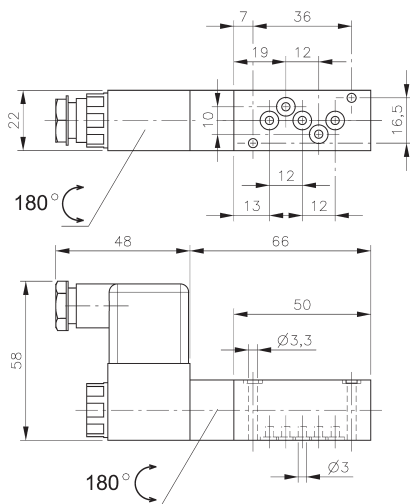
NPT ported valves are available on request.



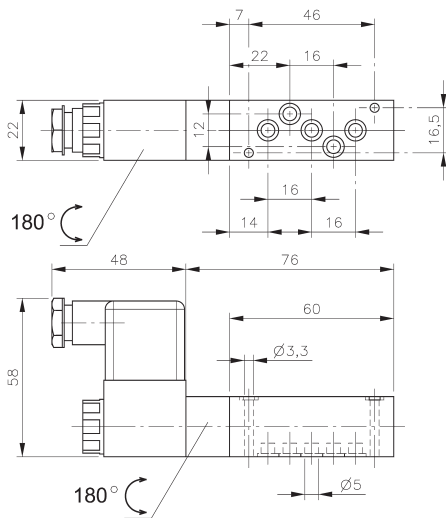
MH 520 121 TT/MH 53_121 TT

Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 520 121 TT	5/2 double sol.	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	0,84 kg
MH 53_121 TT	5/3-way	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,84 kg

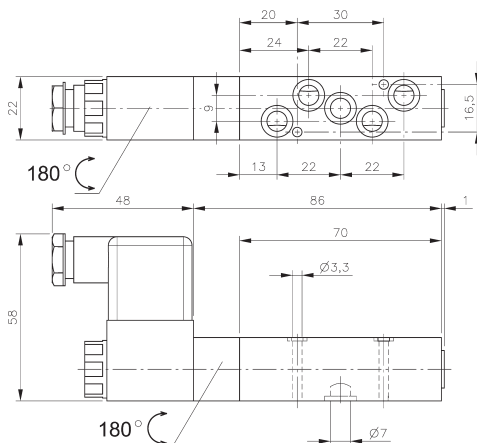
MH 510 304 TT/MH 510 504 TT MH 510 704 TT



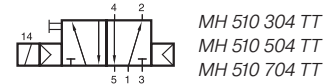
MH 510 304 TT



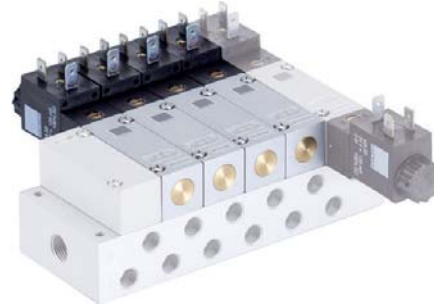
MH 510 504 TT



MH 510 704 TT



MH 510 304 TT
MH 510 504 TT
MH 510 704 TT



5/2-way single solenoid valve equipped with air spring return for low temperature environment - 50° C to + 50° C.

All the ports are in the plate, plates are displayed on page 2.7.2.7 and 2.7.2.8.

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

Valves are equipped with manual override to turn.

Please note:
When operated below 0°C the pressure condensation point has to be at least 15°C below the temperature of environment and media. Air has to be dried!

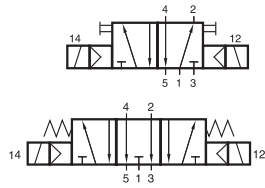
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

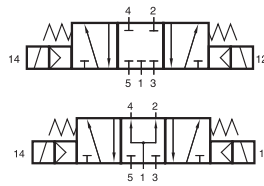
Mounting screws and seals are included.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 304 TT	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,20 kg
MH 510 504 TT	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MH 510 704 TT	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,22 kg

MH 520 304 TT/MH 520 504 TT/MH 520 704 TT MH 53_304 TT/MH 53_504 TT/MH 53_704 TT



MH 520 304 TT
MH 520 504 TT
MH 520 704 TT



MH 531 304 TT
MH 531 504 TT
MH 531 704 TT

MH 533 304 TT
MH 533 504 TT
MH 533 704 TT



5-way solenoid valve for low temperature environment - 50° C to + 50° C.

- Type 520 5/2-way double solenoid, actuated by impulse
- Type 531 5/3-way centre closed
- Type 532 5/3-way centre exhausted
- Type 533 5/3-way centre pressurized

All the ports are in the plate, plates are displayed on page 2.7.2.7 and 2.7.2.8.

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

Valves are equipped with manual override to turn.

Please note:

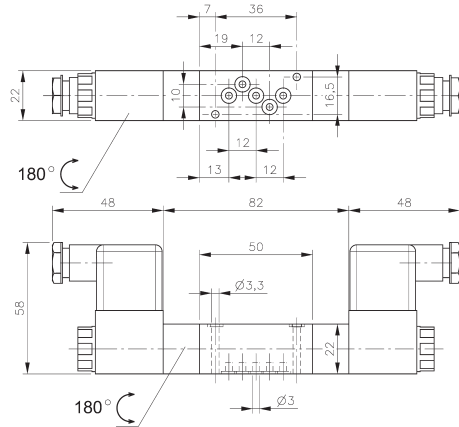
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

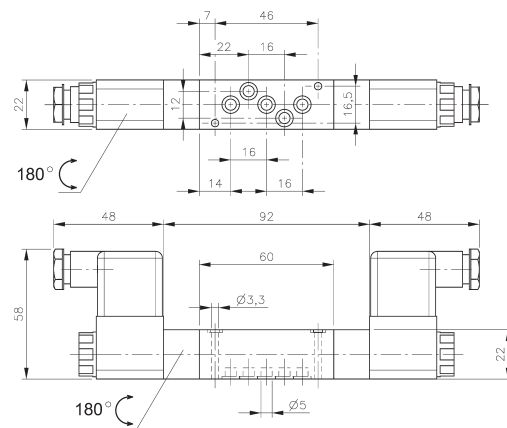
Use unlubricated air only.

For type 531: pressure at port 1 has to be ≥ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

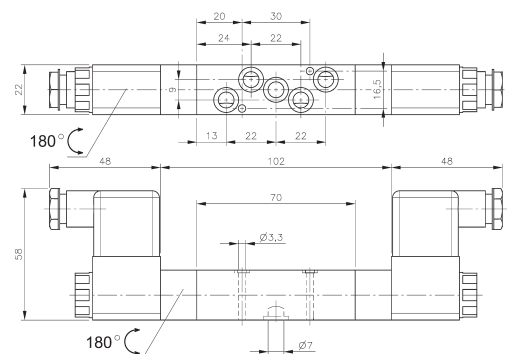
Mounting screws and seals are included.



MH 520 304 TT/MH 53_304 TT



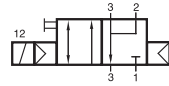
MH 520 504 TT/MH 53_504 TT



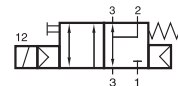
MH 520 704 TT/MH 53_704 TT

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 304 TT	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg
MH 520 504 TT	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,32 kg
MH 520 704 TT	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,34 kg
MH 53_304 TT	Ø 3 mm	220 l/min	3 - 10 bar	3 W = / 5 VA ~	0,30 kg
MH 53_504 TT	Ø 5 mm	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,32 kg
MH 53_704 TT	Ø 7 mm	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,34 kg

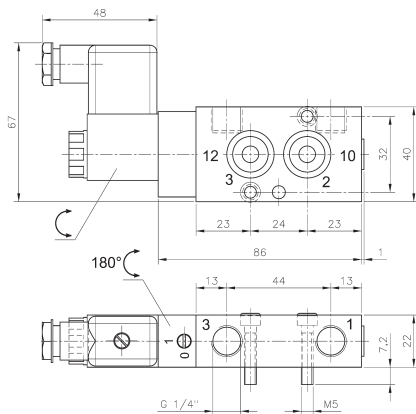
MNH 310 701 TT/MNH 311 701 TT MNH 310 121 TT/MNH 311 121 TT



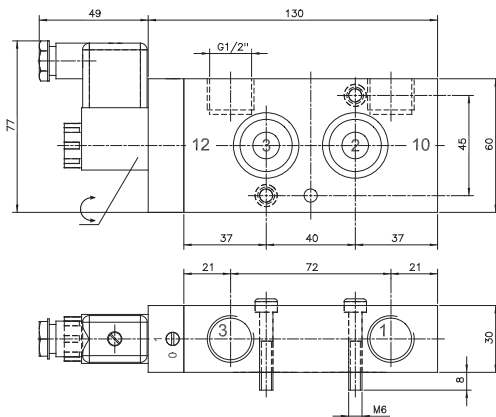
MNH 310 701 TT
MNH 310 121 TT



MNH 311 701 TT
MNH 311 121 TT



MNH 310 701 TT/MNH 311 701 TT



MNH 310 121 TT/MNH 311 121 TT

3/2-way solenoid valve, actuated by permanent signal for low temperature environment. Interface according to NAMUR-standard, with exhaust air recirculation (purge).

Type MNH 310 ___ with pneumatic spring return
Type MNH 311 ___ with combined spring assuring a fail-safe function in case of cut-off of pressure supply.

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

Valves are equipped with manual override to turn.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

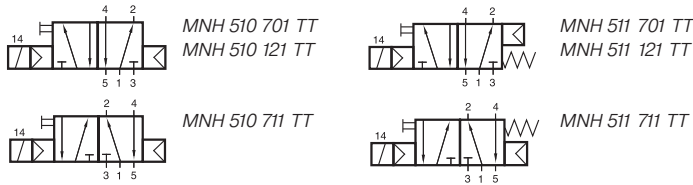
Valves type MNH 31_ 701 TT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min and operating pressure generally increases to 3 bar.

Delivery includes 1 pin, 2 screws, 2 O-rings.

NPT ported valves are available on request.

Type	NAMUR	Temp. range	Port size	Air flow	Operating press.	Power cons.	Weight
MNH 310 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 311 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 310 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	0,70 kg
MNH 311 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,70 kg

MNH 510 701 TT/MNH 511 701 TT MNH 510 711 TT/MNH 511 711 TT MNH 510 121 TT/MNH 511 121 TT



5/2-way solenoid valve, actuated by permanent signal for low temperature environment.
Interface according to NAMUR-standard, with exhaust air recirculation (purge).

Type MNH 510 ___ with pneumatic spring return
Type MNH 511 ___ with combined spring

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

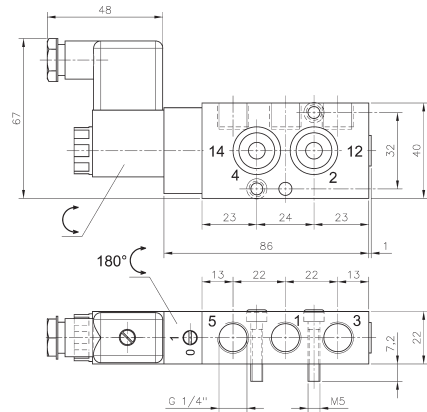
Valves are equipped with manual override to turn.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

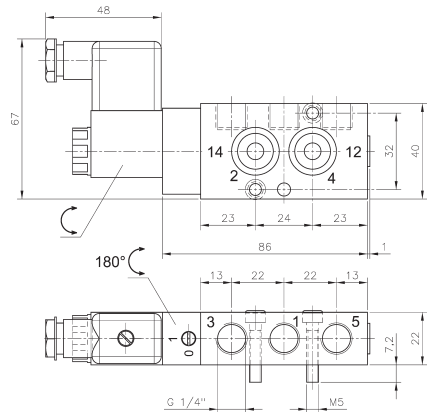
Valves type MNH 51_ 701 TT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min and operating pressure generally increases to 3 bar.

Delivery includes 1 pin, 2 screws, 2 O-rings.

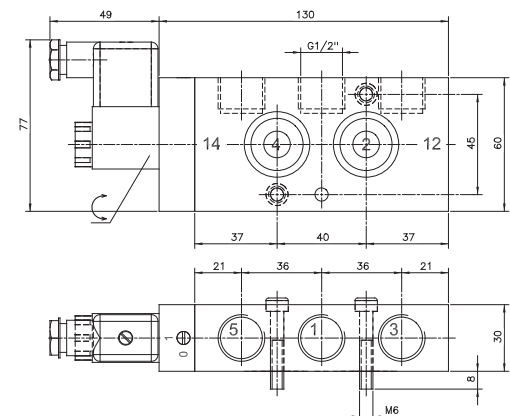
NPT ported valves are available on request.



MNH 510 701 TT/MNH 511 701 TT



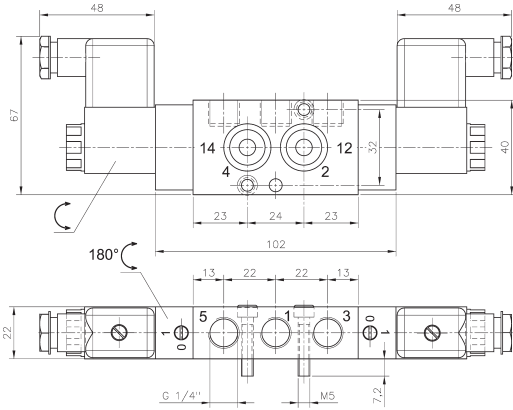
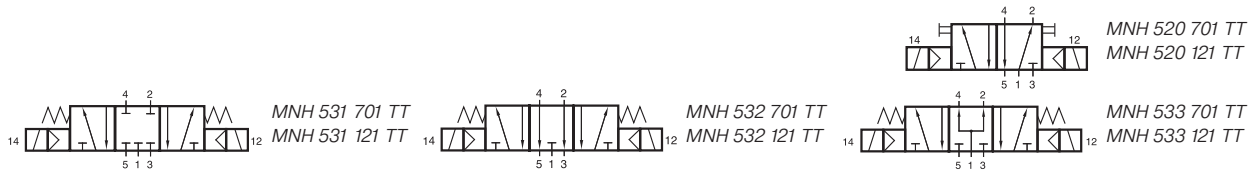
**MNH 510 711 TT/MNH 511 711 TT
ports 2 and 4 are swapped!**



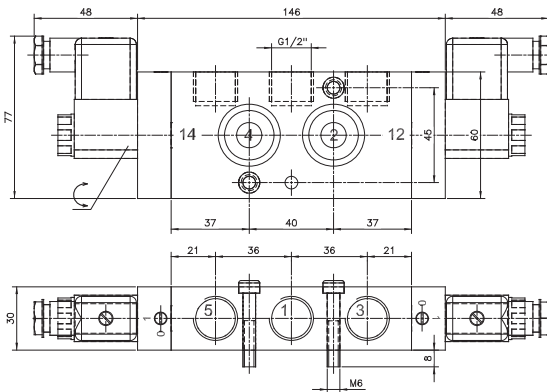
MNH 510 121 TT/MNH 511 121 TT

Type	NAMUR	Temp. range	Port size	Air flow	Operating press.	Power cons.	Weight
MNH 510 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 511 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 510 711 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 511 711 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 510 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	0,70 kg
MNH 511 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,70 kg

MNH 520 701 TT/MNH 53_ 701 TT MNH 520 121 TT/MNH 53_ 121 TT



MNH 520 701 TT/MNH 53_ 701 TT



MNH 520 121 TT/MNH 53_ 121 TT



5-way solenoid valves for low temperature environment.

Interface according to NAMUR-standard.

- Type 520 5/2-way double solenoid, actuated by impulse
- Type 531 5/3-way centre closed
- Type 532 5/3-way centre exhausted
- Type 533 5/3-way centre pressurised

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 5_ 121 TT.

Please note:

When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried! Use unlubricated air only.

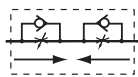
Valves type MNH 520 701 TT and MNH 53_ 701 TT: Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min and operating pressure generally increases to 3 bar.

Delivery includes 1 pin, 2 screws, 2 O-rings.

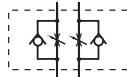
NPT ported valves are available on request.

Type	NAMUR	Temp. range	Port size	Air flow	Operating press.	Power cons.	Weight
MNH 520 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,41 kg
MNH 53_ 701 TT	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,41 kg
MNH 520 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	0,70 kg
MNH 53_ 121 TT	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,70 kg

DRN 3 611 TT/DRN 5 611 TT



DRN 3 611 TT



DRN 5 611 TT



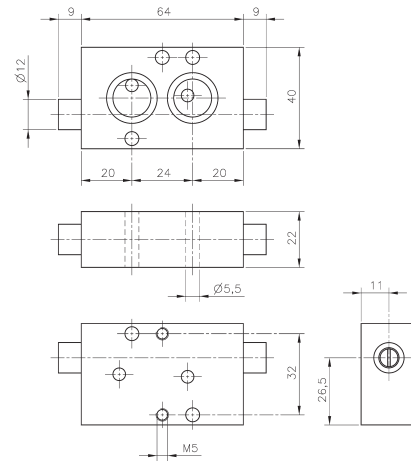
Block form flow regulator as intermediate plate, interface according to 1/4" NAMUR-standard for low temperature environment - 50° C to + 50° C.

Type DRN 3 611 TT:
for 3/2-way valves with exhaust air recirculation only. To regulate the forward stroke of a single acting pneumatic actuator and to regulate the exhaust air going into the spring return unit independently. To be operated with a screw-driver.

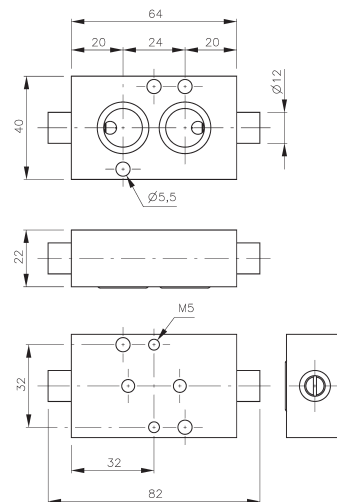
Type DRN 5 611 TT:
for 5/2 and 5/3 way valves only. To regulate the forward- and backward stroke of a double acting pneumatic actuator. To be operated with a screw-driver.

Please note:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Use unlubricated air only.

Delivery includes 1 pin, 2 screws (50 mm long), 2 O-rings.

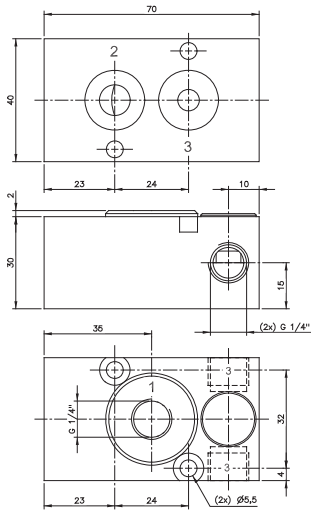
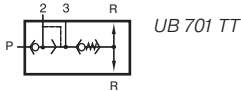


DRN 3 611



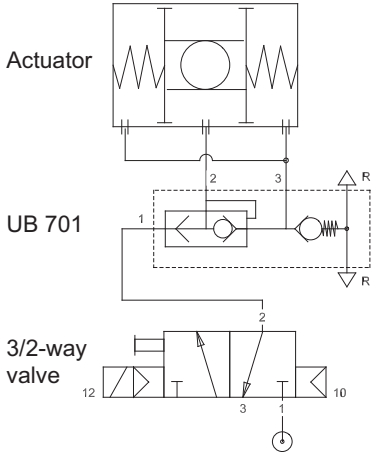
DRN 5 611

Type	Function	Port size	Max. air flow	Operating pressure	Weight
DRN 3 611 TT	3-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 5 611 TT	5-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg



UB 701 TT

Function:



The air-recirculation block guarantees, that only exhausting air from the actuation chamber is going into the spring chamber, no ambient atmosphere is sucked-in.

Valve is designed for spring return pneumatic actuators with 1/4" NAMUR-interface to be controlled by a remote piloted 3/2-way valve.

Standard with G 1/4" pilot port. Materials being used:

- Body: aluminum
- Diaphragm: NBR
- Other inner parts: brass

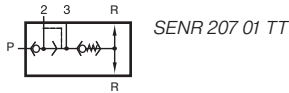
One of the two exhaust ports 3 to be closed by a plug.

Delivery includes 2 screws, 2 O-rings, 1/4" plug for port 3.

Temperature range: -40°C to +50°C

Type	NAMUR	Port size	Air flow	Operating pressure	Weight
UB 701 TT	1/4"	G 1/4"	1250 l/min	1 - 10 bar	0,22 kg

SENR 207 01 TT

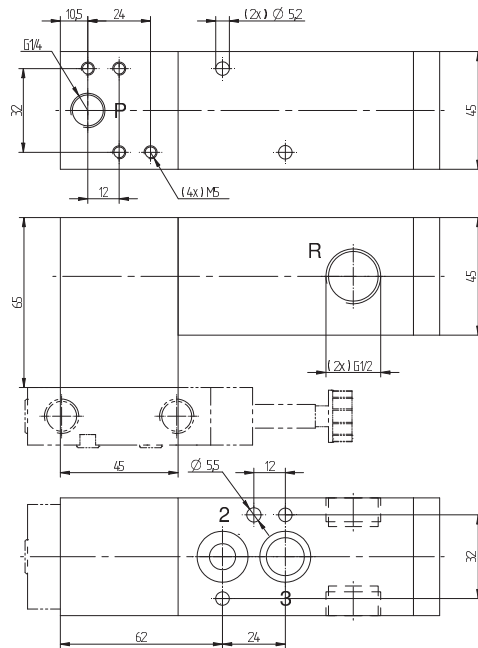


Quick-exhaust block for external piping and universal NAMUR-valve mounting for low temperature environment -40°C to +50°C. The valve is designed for fast closing of spring-return actuators with 1/4" NAMUR-interface.

The block assures that only compressed air that has been used to open the actuator is used in the spring-chamber (non-return-function). Excess air is released very fast by the quick-exhaust valve, exhaust-port G 1/2", orifice 10 mm. The non-return valve makes absolutely sure that no ambient atmosphere can be sucked into the actuator.

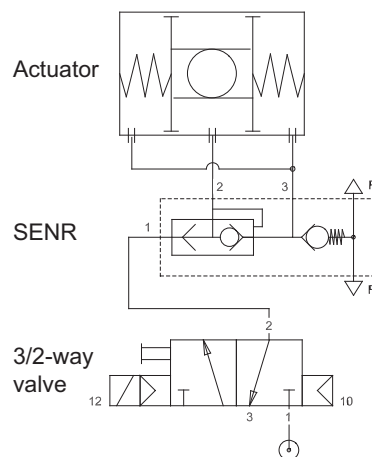
Two exhaust-ports R allow that the product can always be assembled so the silencer faces downwards.

Delivery includes 2 screws, 2 O-rings, 1/2" plug for port R.



SENR 207 01 TT

Function:



Type	NAMUR Port P	Port R	Air flow P to 2	Air flow exhaust	Operating Weight press.
SENR 207 01 TT	1/4" G 1/4" - 1/4" NAMUR	G 1/2"	1250 l/min	2500 l/min	2 - 10 bar 0,85 kg