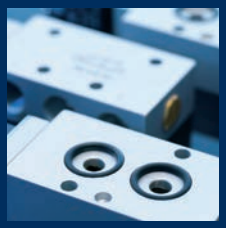
Hafner-Pneumatik

Excellence in Pneumatics



Competence in Valve Automation

Excellence in Pneumatics

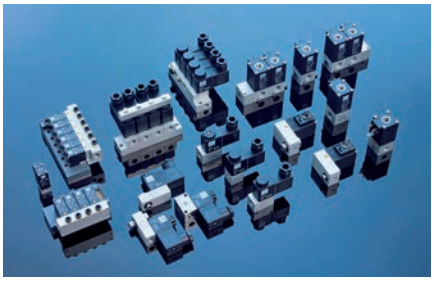
Hafner-Pneumatik is the manufacturer of a complete range of high-quality pneumatic control valves.

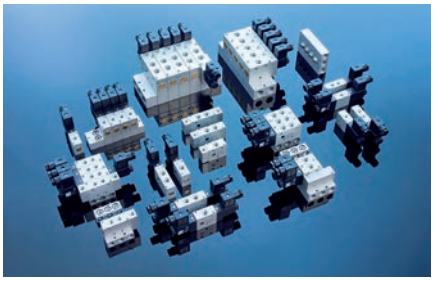
50 years of knowledge and venture in the development of pneumatics.
Manufacturing facility with a total of more than 2.000 m².

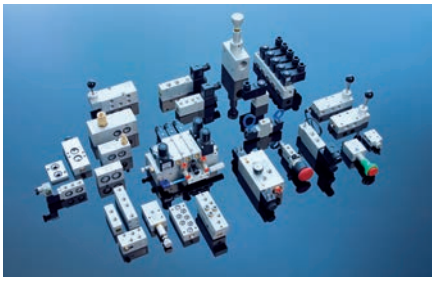
Highest quality with state-of-the-art products.

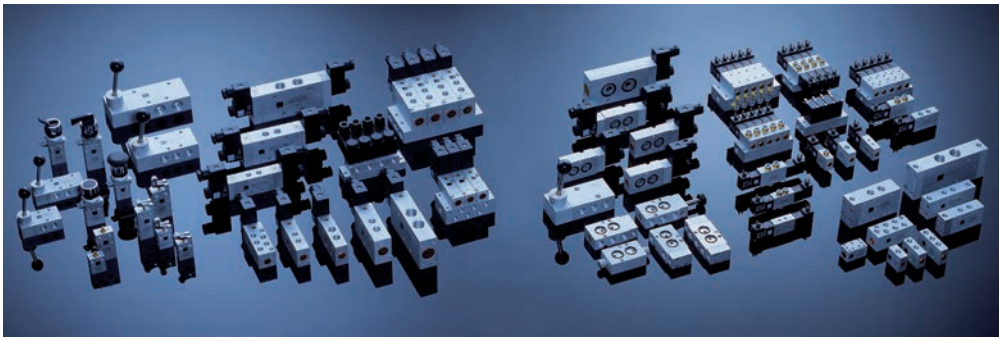
Latest manufacturing technology.

Our products for the valve automation business are just a small part of our entire product portfolio. We are committed to provide a complete range of pneumatic control valves for numerous industries.









Further information on:
www.hafner-pneumatik.com

HAFNER

Certificate / Certificat
Zertifikat / 合格証

HAF 1511126 P0038 C001

exida hereby confirms that the:

Mechanically actuated valves
Direct operated solenoid valves
Pneumatically operated valves
Pilot operated solenoid valves

HAFNER Pneumatika Kft.
Halászi, Hungary

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFD_{AVG} and Architecture Constraints must be verified for each application

Safety Function:
The valve will move to the designed safe position when de-energized / energized within the specified safety time.

Application Restrictions:
The valve must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 1.0 Nov 23, 2016
Surveillance Audit Due
Nov 30 , 2019

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

HAFNER

CERTIFICATE

EN ISO 9001 : 2008
Quality Management System

VINÇOTTE nv
Jan Olieslagerslaan 35, 1800 Vilvoorde, Belgium

This is to certify that ***Hafner Pneumatika Kft.***

Located at ***Püski út 3.***
9228 Halászi
Hungary

has established and maintains a quality system according the requirements of EN ISO 9001 : 2008 "Quality Management System" for:

Design, manufacturing and sales of pneumatic as well as electro-pneumatic components and systems.
Accessories for industrial and process automation and other applications.

This certificate is based on the result of a quality audit documented in the audit report **REP-R-16-213/IS**.

Certificate number: **13 QMS 5248a**
First issued: **14 October 2013**
Valid from **14 October 2016** to **14 September 2018**

Further clarifications regarding the scope of this certificate and the applicability of EN ISO 9001 : 2008 requirements may be obtained by consulting the organization.

This certificate is granted during the Certification Commission of **26 September 2016** and is subject to the General Regulations of VINÇOTTE nv.

VINÇOTTE

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

Signed for the certification body:

Bart Janssens
Chairman Certification Committee

BELAC
016-QMS

EAC

ТАМОЖЕННЫЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель Совместное общество с ограниченной ответственностью «СитурГрупп», УНП 191752880
Место нахождения и фактический адрес: 220055, город Минск, улица Алеся Гаруна, дом 25, помещение 2Н, Республика Беларусь. Телефон: +375 17 312 25 97. Факс: +375 17 312 25 97. Адрес электронной почты: info@citur.by.
в лице Директора Шеленова Павла Владимировича
заявляет, что
Арматура промышленная трубопроводная:
торговой марки "HAFNER", клапаны с механическим управлением, модели: BV, BR, BL, BA, BAE, BH, BHP, BHN, BC, BZ, HV, HVR, HVN, HVRN, HVP, HVZ, HVZN, HE, HVRZN с комплектующими и запасными частями;
клапаны с пневмоуправлением, модели: P, PD, RP, PN, SU, SUH, PH;
клапаны быстрого сброса, модели: SE, SEJ, SEN, SENR, SEA, DSV, DSVN, UB, CBN;
обратные клапаны, модели: VNR, VSR;
пневмодроссели с обратным клапаном (регуляторы расхода), модели: DRN, DRF,SCU, RCU, SUC, RUC,SCO, RCO, SSC, SVE;
регуляторы давления (редукционные клапаны), регуляторы давления совмещенные с фильтрующими и смазочными устройствами (фильтры-регуляторы), модели: FRL, FR, F, R, L, FE, C.01 , C.11, C.33, R.01;
изготовитель "Hafner-Pneumatik Kramer KG"
Место нахождения и фактический адрес: Stammheimer Strasse 10, 70806 Kornwestheim(Germany), Германия

код ТН ВЭД ТС 8481 80 790 0, 8481 80 739 9, 8481 30 910 8, 8481 30 990 9, 8481 10 050 0, 8481 10 190 8, 8481 10 990 9, 8481 80 990 8
Серийный выпуск.
соответствует требованиям
ТР ТС 010/2011 "О безопасности машин и оборудования"

Декларация о соответствии принята на основании
Протокол испытаний № 1970-ТС-15.7/БМО от 29.07.2015 года. Испытательная лаборатория «ЛСМ» ООО «Трансконсалтинг", рег. № РОСС RU.0001.21АВ61 от 02.06.2011г. по 02.06.2016 г.
Дополнительная информация
Схема декларирования 3д.

Декларация о соответствии действительна с даты регистрации по 29.07.2020 **включительно.**

«СитурГрупп»

Шеленов Павел Владимирович
(инициалы и фамилия руководителя организации-заявителя или физического лица, зарегистрированного в качестве индивидуального предпринимателя)

М.П.

Сведения о регистрации декларации о соответствии:
Регистрационный номер декларации о соответствии: ТС № RU Д-DE.АГ03.В.82509
Дата регистрации декларации о соответствии 30.07.2015

HAFNER

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Temperature range:

Type-number	Temperature range
BV, BR, BL, BA	-20°C to +50°C
BG, BH	-10°C to +60°C
HV, HVR, P	-10°C to +60°C
MH, MNH DC-version	-10°C to +60°C
MH, MNH AC-version	-10°C to +50°C
MD, MK	-10°C to +50°C
TT series 500/700	-50°C to +50°C
TT series 121	-40°C to +50°C

Several customer-specific items have been catered for an enlarged temperature range.

Leakage rate at 6 bar pressure:
All (100 % of) the Hafner-valves leaving the factory are individually tested on function and leakage.
The following leakage rate is allowed and a valve is still rated as good with the following:
- Internal leakage: 4 cm^3 / min
- External leakage: 2 cm^3 / min

For TT-valves series 500/700 only:
At temperatures below - 40°C the internal leakage can increase to 10 cm^3 / min

General Warranty:
The general warranty is 12 month from delivery. Warranty expires when valves have been opened.

Recommended signal length:
The recommended signal length to reach full flow is 50 msek.

Operation and required air-quality:
The valves are designed for being used with cleaned and lubricated or cleaned and unlubricated compressed air.
Required Air-quality-level in accordance to ISO 8573-1:2010: 7 – 4 – 4 for particles – water – oil

Lubrication:
Valves do not require any lubrication but lubrication in general increases the life-time of the products. Please avoid to lubricate the valves during a certain period of time and let them run dry later. For low-temperature-items: Do not lubricate as most kinds of oil and grease do not properly operate below - 25°C.

Voltage tolerance:
The general voltage tolerance of all solenoid systems is +/- 10%.

Standard materials used for Hafner-valves:

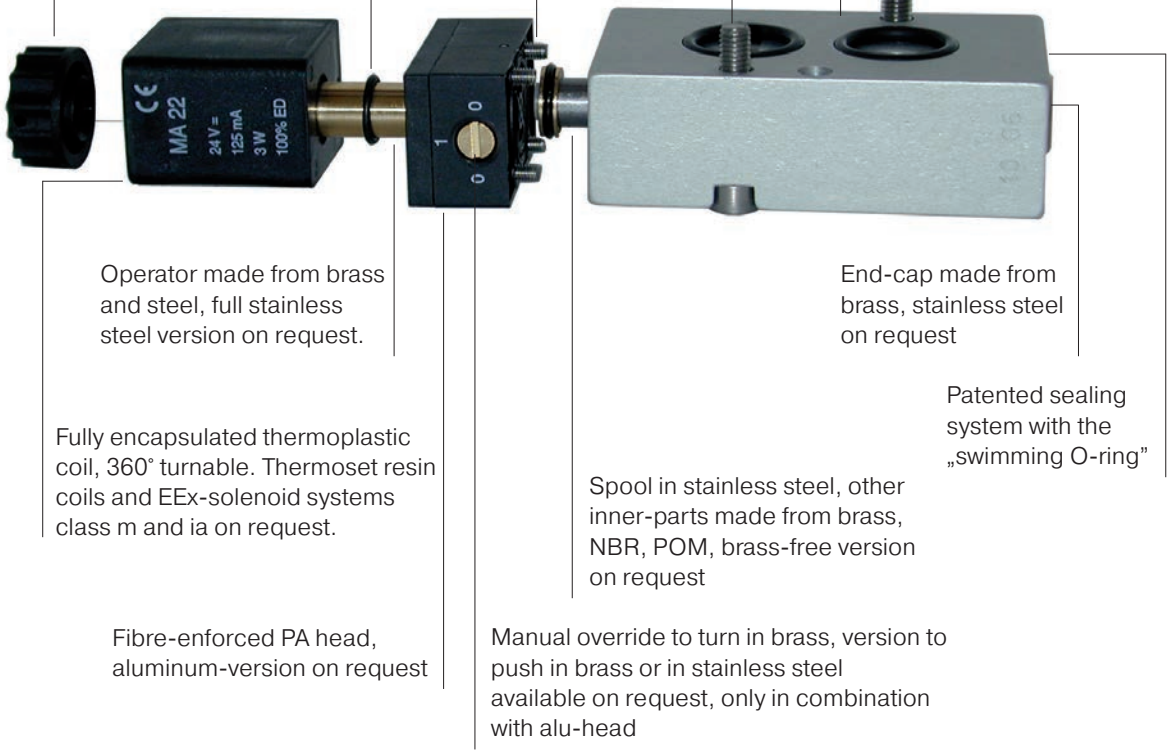
Bodies	standard	anodised aluminum
	VES / KES chapter 6.	1.4404
Spool		stainless steel 1.4104, operator tube 1.4305
Sealing-system	standard	brass & NBR
	low temperature chapter 5.	brass & PUR
	1/4" VES / KES chapter 6.	stainless steel, operator tube 1.4305 & PUR
	1/2" VES chapter 6.	stainless steel, operator tube 1.4305 & FKM
Other inner parts	standard	brass, POM, NBR
	low temperature chapter 5.	brass, POM, NBR
	VES / KES chapter 6.	stainless steel, operator tube 1.4305 POM, FKM
Actuation elements	BA-valves	PA 6.6 30 % glass filled
	HV	Duroplast PF31 P/PA
	BH	Duroplast PF31 P/PA
	BHP	ABS-plastic
Upper part solenoids	series 500 and 700	PA 6.6 30 % glass filled, brass
	other series	anodised aluminum, brass
	VES	1.4404
	KES	PA 6.6 30 % glass filled, stainless steel, operator tube 1.4305

PA	*Polyamide*
1.4404	*high graded stainless steel*
POM	*Polyoxymethlene*
FKM	*Fluoroelastomer*

In accordance to CETOP position paper „PP07 Machine Directive 2006/42/EC": Single valves placed on the market are not ... within the meaning of Annex V, point 4 of Machine Directive 2006/42/EC.

The Hafner company policy is one of a continuous improvement process. We therefore reserve the right to amend, enhance and change specifications of the products presented in this document without notice.

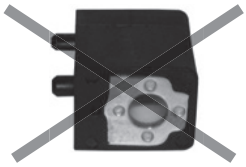
Besides maximum flow of 1.250 Nl/min at compact design there are 11 more competitive advantages of the Hafner NAMUR-valves series 701.



The special Hafner coil with covered yoke and additional seals between the coil and valve offers excellent protection in wet and humidity environment. Most Hafner solenoid valves offer IP65 as a standard and IP67 as an option.

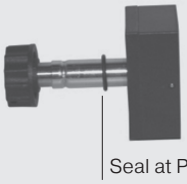
The yoke of the MA 22 standard coil is completely covered in Polyamide. This prevents the yoke from rusting and as a result not to burn out.

Protected yoke of Hafner's MA 22-coils

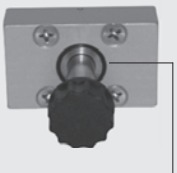


Open yoke at coils of competitors

Additionally an O-Ring between the operator tube and the coil protects the electrical part from moisture.



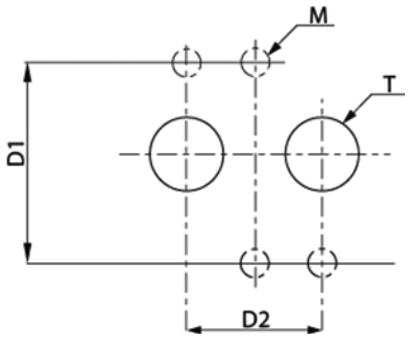
Seal at PA-head



Seal at Aluminum-head

Using our Epoxy coil, a special connector with moulded cable and a second O-Ring, the system reaches protection class IP67 in accordance to IEC 60 529.

The Hafner NAMUR-valves are available with the 1/4” standard in accordance to VDI / VDE 3845 also called NAMUR 1 – as well as with the 1/2” standard – also called NAMUR 2.



NAMUR-standard: Drawing of the actuator flange

Notice: Difference between 1/4” – 1/8” and 1/2 “ – 3/8“ is port-size and position as well as the size, position and depth of the fixing screws in the actuator. On actuators NAMUR 1 (G 1/8” and **G 1/4”**) the same NAMUR-valves can be used. The same is true on NAMUR 2 (G 3/8” and **G 1/2”**) where also the same NAMUR-valves fit.

Type	D1 (mm)	D2 (mm)	M (mm)
1/4” (1/8”)	32	24	M5
1/2” (3/8”)	45	40	M6

Hafner’s target to offer valves with maximum flow leads to offer 3 sizes of NAMUR-valves.

Series 701 / 711 Orifice size 7 mm 1.250 l/min
NAMUR-interface 1/4”
Port size G 1/4” or 1/4” NPT

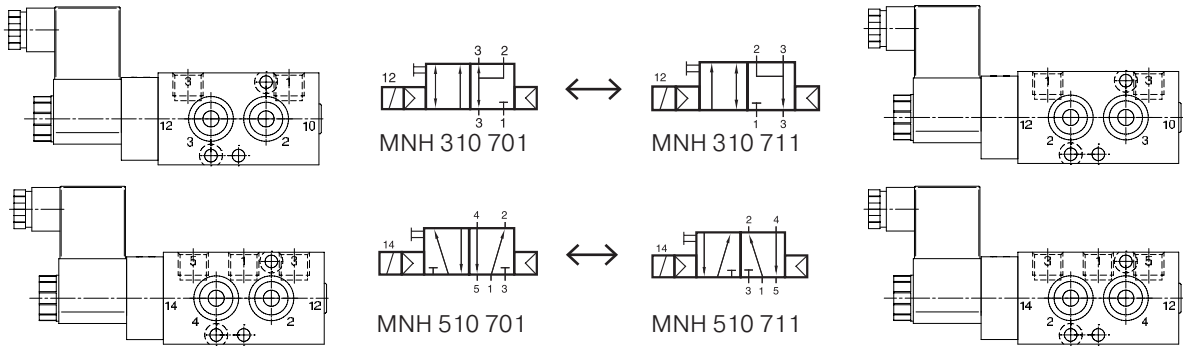
Series 101 Orifice size 10 mm 2.250 l/min
NAMUR-interface 1/4”
Port size G 3/8”

Series 121 Orifice size 12 mm 3.000 l/min
NAMUR-interface 1/2”
Port size G 1/2” or 1/2” NPT

For single solenoid valves we offer two different port-schemes. Use depends on actuator interface.

2 port-schemes for 1/4" NAMUR-valves

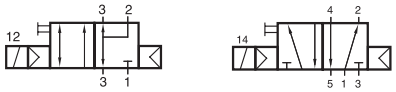
standard port-scheme **alternative port-scheme**



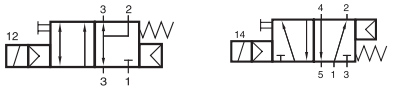
Port 2 at end-cap **Port 2 at solenoid**

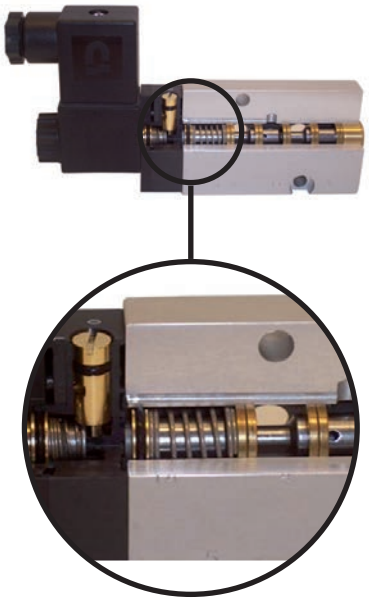
Single solenoid and single pilot valves are available with air spring or combined (air and mechanical spring) return.

Valves with air spring return



Valves with combined spring return





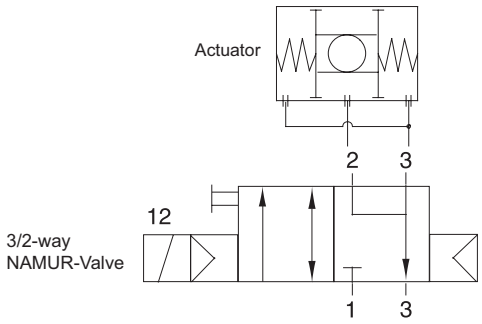
Combined spring assures a **fail-safe function** in case of loss of air pressure. Also available in **1/2"-valves**.

Air-recirculation into the spring chamber or “purge” is a central demand in process-automation. On standard Rack and Pinion actuators as well as on smaller Scotch Yoke actuators with spring return the spring chamber has an air-port. Therefore the pilot valve should support the desire of the user to supply the spring chamber with process air and not just suck ambient atmosphere into it.

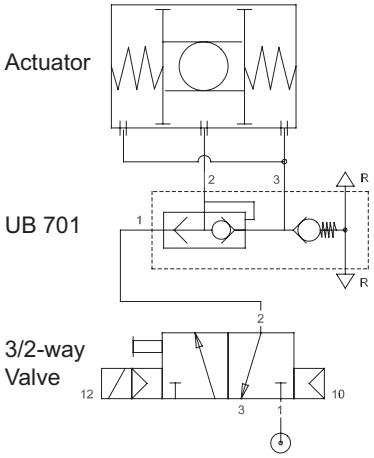
This function is called **exhaust air-recirculation or “purge”**.

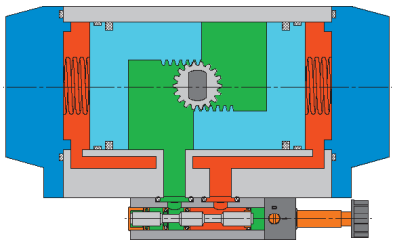
How it works: When the actuator “closes” (pressurized chamber exhausts), a part of the instrument air is directed from the actuation side into the spring chamber. The rest exhausts out of port 3.

Function if actuator is piloted by a NAMUR-valve:

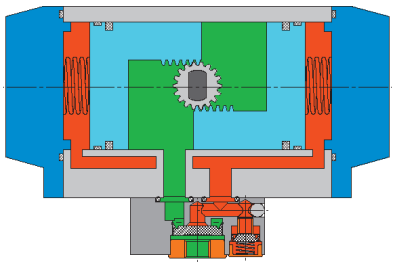


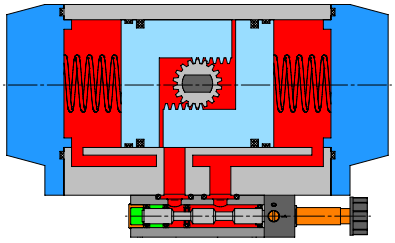
Function if actuator is remote piloted:



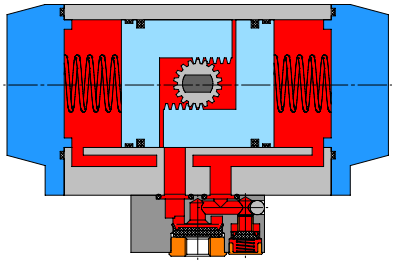


Step 1 - Opening:
1. Pilot valve opens
2. Air flows into actuation chamber
3. Actuator opens





Step 2 - Closing:
1. Pilot valve closes
2. Actuator closes through the force of the springs
3. Air is directed from the actuation chamber into the spring chamber. Excessive air exhausts through exhaust port of the valve.



All 3-way Hafner NAMUR-valves ensure the exhaust air-recirculation! That applies also to our Hafner NAMUR-Flex valve (page 2.1.3).

If single-acting actuators are remote controlled, we strongly recommend to use our air-recirculation block type UB 701 which you can find on page 3.3. Only by using the UB 701 you can avoid that ambient atmosphere can suck into the actuator.

Optimal accessibility of the manual override and available options

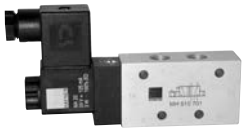
The head (pilot part) of our NAMUR solenoid valves can be turned by 180° to ensure optimal accessibility to the manual override.

Standard MNH 510 701 mounted on a double acting actuator. The override is on the same side as the fittings.

MNH 510 701 **H180** mounted on a double acting actuator. The pilot part is turned by 180°. The override is on the other side from the fittings.
Advantage: Better accessibility

Different customers have demand for different manual overrides. Hafner offers a standard but on demand variations are an option.

Series MH
Manual override to turn by screw driver:
- Direct acting valves
- 22+ mm wide valves (by default)



Series MD
Manual override to push, momentary:
- Direct acting valves
- 16 mm wide valves (by default)
- 22+ mm wide valves

Series MF
Manual override to turn by hand:
- Direct acting valves
- 22+ mm wide valves

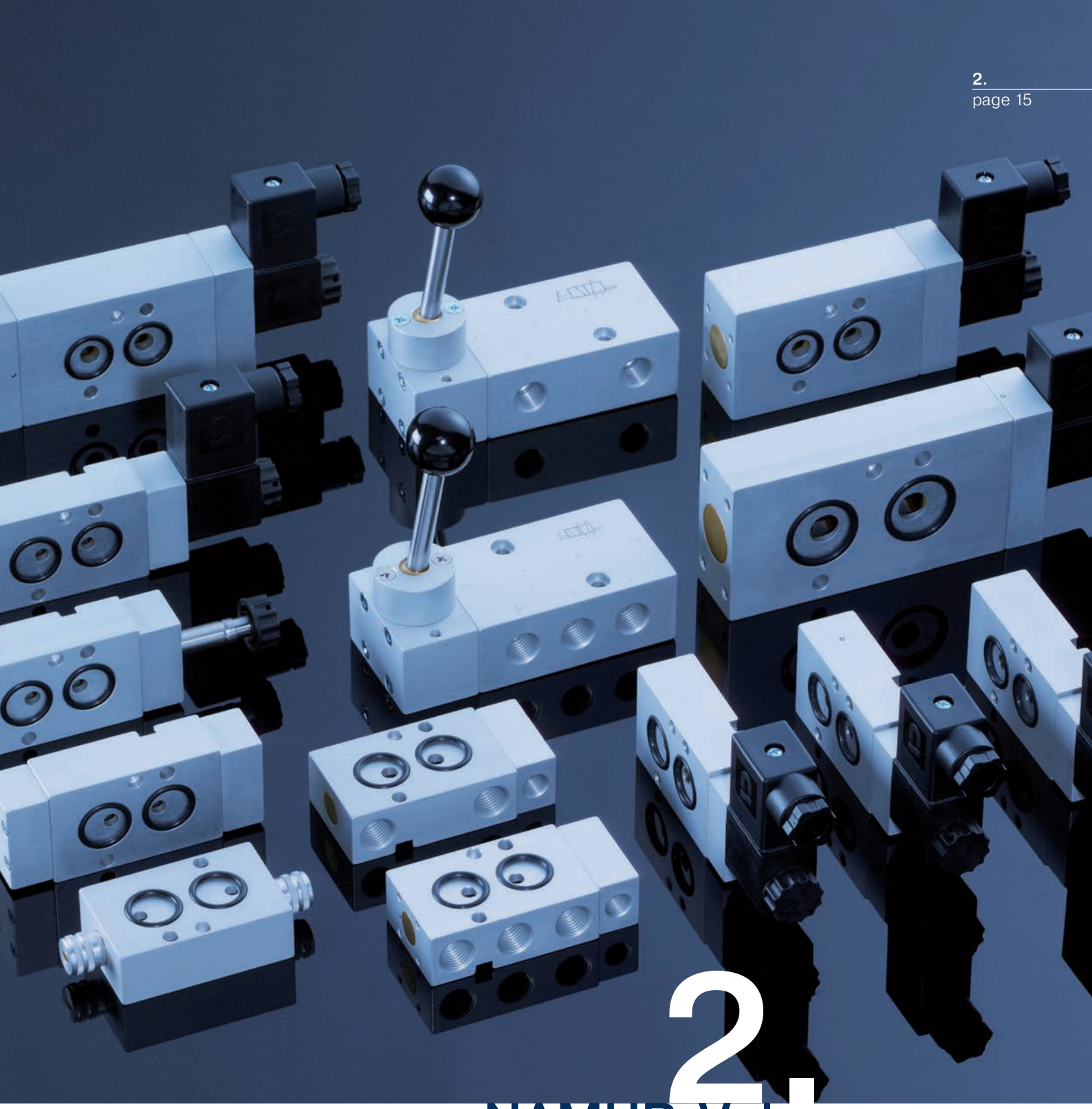
Series MHF
Manual override to turn by hand and recess for screw-driver use:
- Direct acting valves
- 22+ mm wide valves

16 mm

22+ mm

Series MHD
Manual override to push plus detent position by turning:
- Direct acting valves
- 16 mm wide valves
- 22+ mm wide valves

M-Version
Without manual override.
- An option for all 22 mm + wide valves



2. NAMUR-Valves

NAMUR 1/4" also called "NAMUR 1" in accordance to VDI/VDE 3845. NAMUR 1/2" also called "NAMUR 2".

Selected models are available for low temperature application.
Temperature-range: - 40° C to + 50° C.
For detailed information refer to chapter 5.

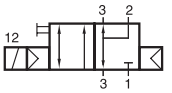
Selected models can be equipped for high temperature environments up to 80 °C, DC only!

316 Selected models are available in stainless steel.
For detailed information refer to chapter 6.

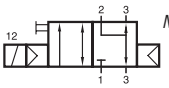
Selected models are available for explosion hazardous environment. They are ATEX-Ex certified.
For detailed information refer to chapter 8.

HAFNER

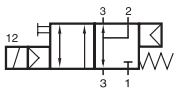
MNH 310 701/MNH 310 711/MNH 311 701
MNOH 310 701/MNK 310 701/MNK 311 701



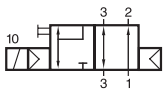
MNH 310 701
MNK 310 701
MNH 310 701 NPT



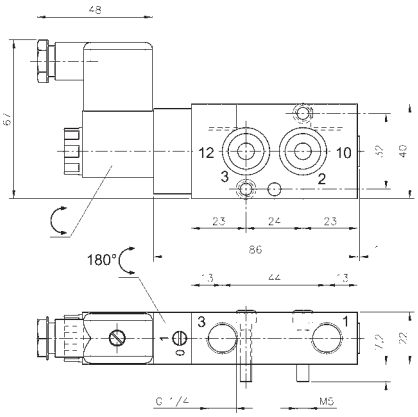
MNH 310 711



MNH 311 701
MNK 311 701
MNH 311 701 NPT



MNOH 310 701



MNH 310 701/MNH 311 701/MNOH 310 701
MNH 310 701 NPT/MNH 311 701 NPT

3/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4" NAMUR-standard, with exhaust air recirculation ("purge").

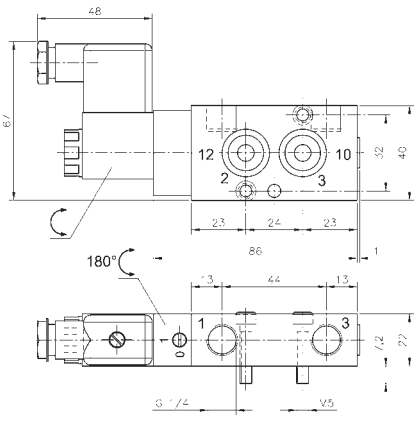
Type MNH 31_ 7_1	normally closed
Type MNOH 31_ 701	normally open
Type MNK 31_ 701	n.c. low power

MNH 310 701, MNH 310 711, MNOH 310 701 and MNK 310 701 with pneumatic spring return, MNH 311 701 and MNK 311 701 with combined spring assuring a fail-safe function.

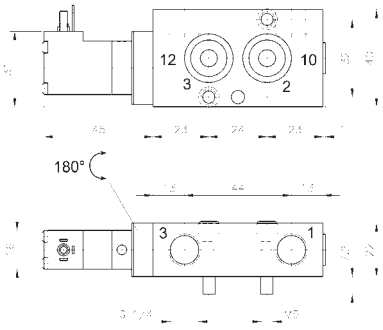
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

MNK with manual override to push with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=

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



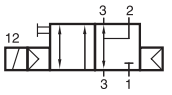
MNH 310 711 ports 1 and 3 are swapped!



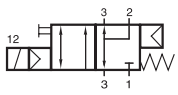
MNK 310 701/MNK 311 701

Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 310 701	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNOH 310 701	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 310 711	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 311 701	n.c.	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNK 310 701	n.c.	G 1/4"	1250 l/min	2 - 10 bar	1,8 W = / 3 VA ~	0,21 kg	
MNK 311 701	n.c.	G 1/4"	1250 l/min	2,5 - 10 bar	1,8 W = / 3 VA ~	0,21 kg	
MNH 310 701 NPT	n.c.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 311 701 NPT	n.c.	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	

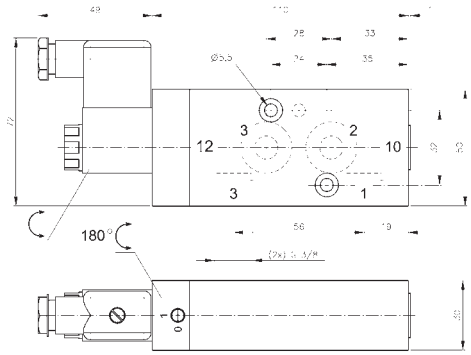
MNH 310 101/MNH 311 101
MNH 310 121/MNH 311 121



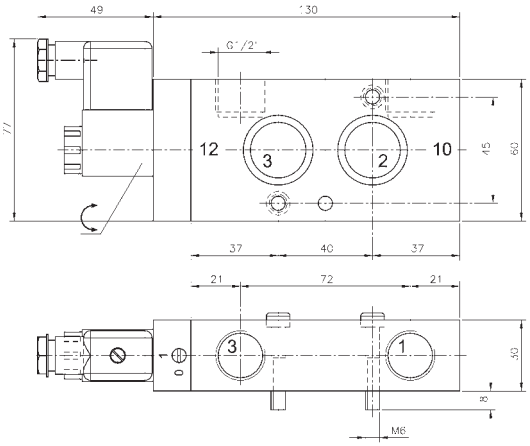
MNH 310 101
MNH 310 121
MNH 310 121 NPT



MNH 311 101
MNH 311 121
MNH 311 121 NPT



MNH 310 101/MNH 311 101



MNH 310 121/MNH 311 121
MNH 310 121 NPT/MNH 311 121 NPT

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

Type 101 according to 1/4” NAMUR-standard
Type 121 according to 1/2” NAMUR-standard

MNH 310 101, MNH 310 121 with pneumatic spring return, MNH 311 101 and MNH 311 121 with combined spring assuring a fail-safe function.

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

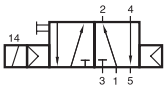
The valves are generally equipped with manual override to turn.

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

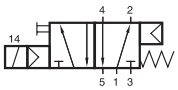
Type	NAMUR	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 310 101	1/4”	G 3/8”	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,55 kg	
MNH 311 101	1/4”	G 3/8”	2250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,55 kg	
MNH 310 121	1/2”	G 1/2”	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,70 kg	Ex ❄
MNH 311 121	1/2”	G 1/2”	3000 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,70 kg	❄
MNH 310 121 NPT	1/2”	1/2” NPT	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,70 kg	Ex
MNH 311 121 NPT	1/2”	1/2” NPT	3000 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,70 kg	

MNH 510 701/MNH 510 711/MNH 511 701
MNH 511 711/MNK 510 701/MNK 511 701

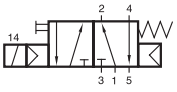
MNH 510 701
MNK 510 701
MNH 510 701 NPT



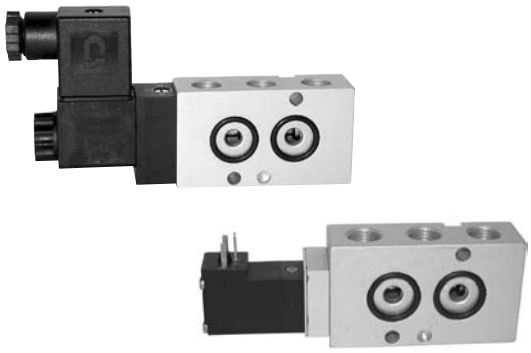
MNH 510 711

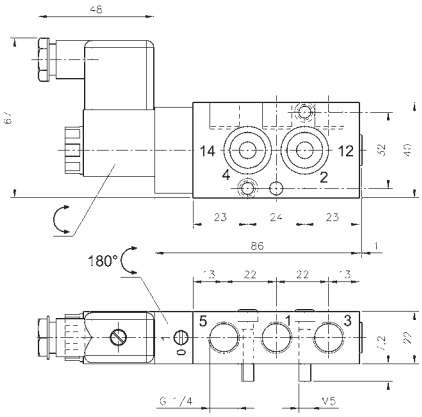


MNH 511 701
MNK 511 701
MNH 511 701 NPT



MNH 511 711





MNH 510 701/MNH 511 701
MNH 510 701 NPT/MNH 511 701 NPT

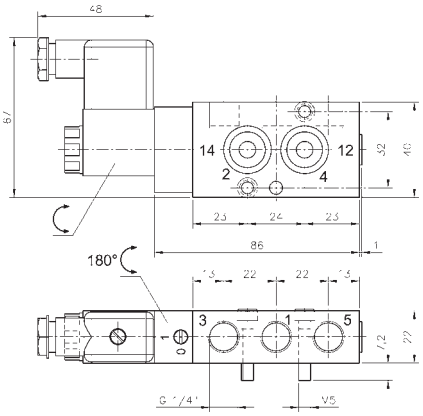
5/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4" NAMUR-standard.

MNH 510 701, MNH 510 711 and MNK 510 701 with pneumatic spring return, MNH 511 701, MNH 511 711 and MNK 511 701 with combined spring.

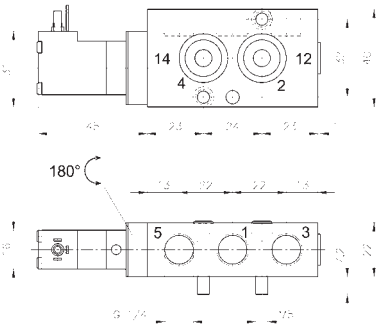
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

MNK with manual override to push with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=.

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



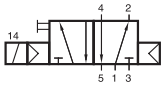
MNH 510 711/MNH 511 711
ports 2,4,3,5 are swapped!



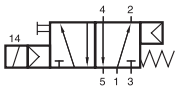
MNK 510 701/MNK 511 701

Type	Port size	Air flow	Operating press.	Power consumption	Weight	
MNH 510 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 510 711	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 511 701	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 511 711	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNK 510 701	G 1/4"	1250 l/min	2 - 10 bar	1,8 W = / 3 VA ~	0,21 kg	
MNK 511 701	G 1/4"	1250 l/min	2,5 - 10 bar	1,8 W = / 3 VA ~	0,21 kg	
MNH 510 701 NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 511 701 NPT	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	

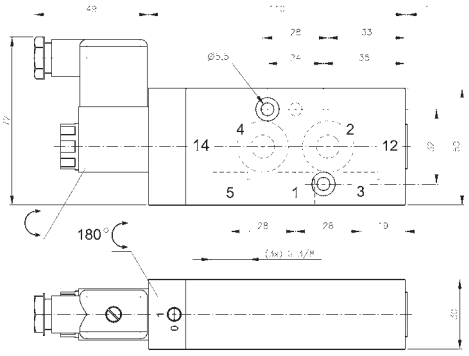
MNH 510 101/MNH 511 101
MNH 510 121/MNH 511 121



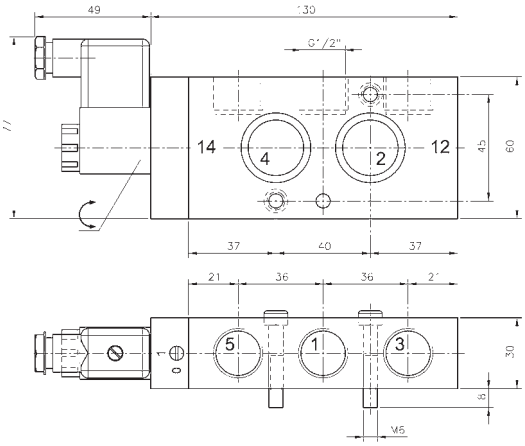
MNH 510 101
MNH 510 121
MNH 510 121 NPT



MNH 511 101
MNH 511 121
MNH 511 121 NPT



MNH 510 101/MNH 511 101



MNH 510 121/MNH 511 121
MNH 510 121 NPT/MNH 511 121 NPT

5/2-way solenoid valve, actuated by permanent signal. Interface according to NAMUR-standard.

Type 101 according to 1/4" NAMUR-standard
Type 121 according to 1/2" NAMUR-standard

MNH 510 101, MNH 510 121 with pneumatic spring return, MNH 511 101 and MNH 511 121 with combined spring.

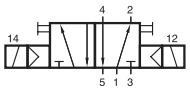
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

The valves are generally equipped with manual override to turn.

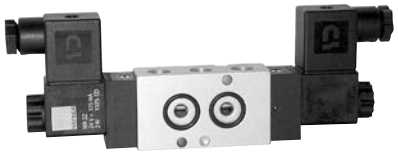
Delivery includes 1 pin, 2 screws, 2 O-rings.

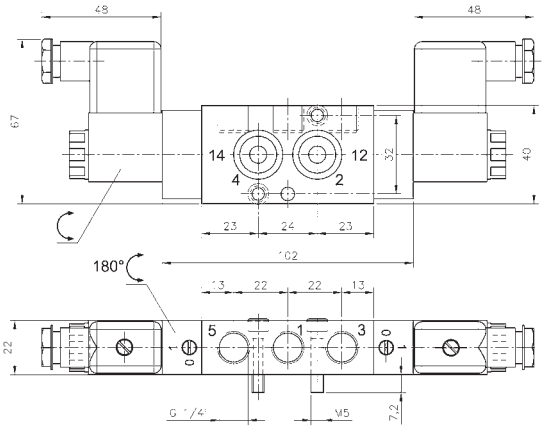
Type	NAMUR	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 510 101	1/4"	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,55 kg	
MNH 511 101	1/4"	G 3/8"	2250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,55 kg	
MNH 510 121	1/2"	G 1/2"	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,70 kg	Ex ❄
MNH 511 121	1/2"	G 1/2"	3000 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,70 kg	❄
MNH 510 121 NPT	1/2"	1/2" NPT	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,70 kg	Ex
MNH 511 121 NPT	1/2"	1/2" NPT	3000 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,70 kg	

MNH 520 701/MNH 520 101/MNH 520 121
MNK 520 701



MNH 520 701
MNH 520 101
MNH 520 121
MNK 520 701
MNH 520 701 NPT
MNH 520 121 NPT





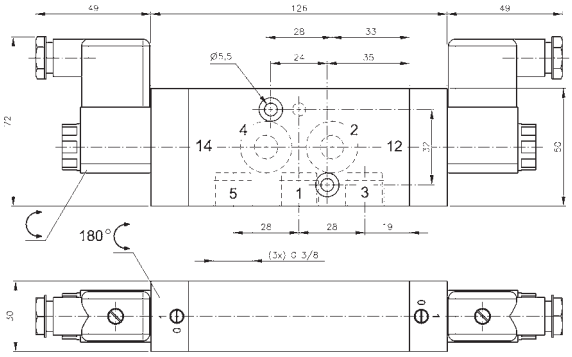
MNH 520 701/MNH 520 701 NPT

5/2-way solenoid valve actuated by impulse. Position is kept until next electrical signal even when not attached to electrical source. Interface according to NAMUR-standard.

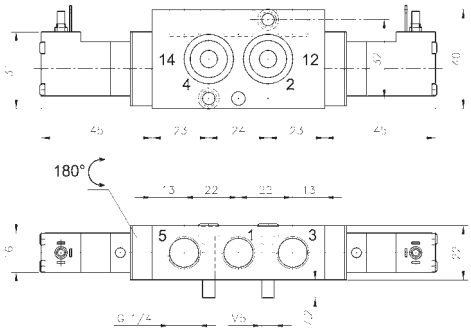
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

MNK with manual override to push with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=.

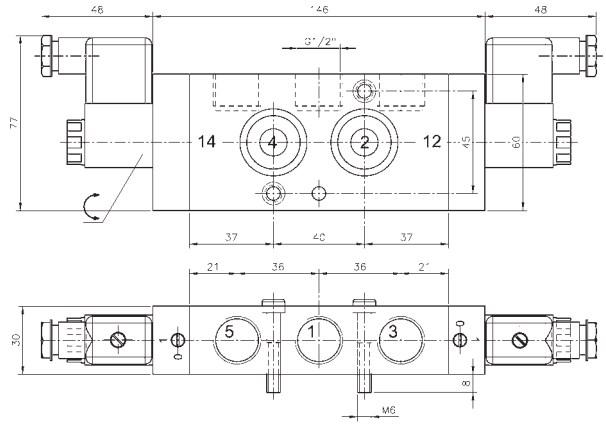
Delivery includes 1 pin, 2 screws, 2 O-rings.



MNH 520 101

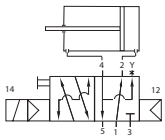


MNK 520 701

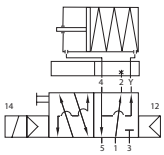


MNH 520 121/MNH 520 121 NPT

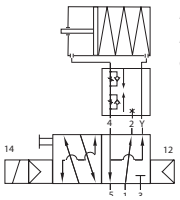
Type	NAMUR	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 520 701	1/4”	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg	Ex ❄ 316
MNH 520 101	1/4”	G 3/8”	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,84 kg	
MNH 520 121	1/2”	G 1/2”	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,87 kg	Ex ❄
MNK 520 701	1/4”	G 1/4”	1250 l/min	2 - 10 bar	1,8 W = / 3 VA ~	0,31 kg	
MNH 520 701 NPT	1/4”	1/4” NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,35 kg	Ex ❄ 316
MNH 520 121 NPT	1/2”	1/2” NPT	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,87 kg	316



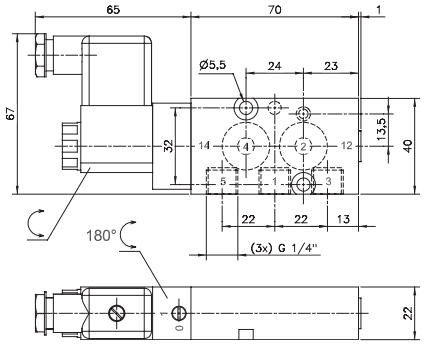
MNH 350 701 on double acting act.

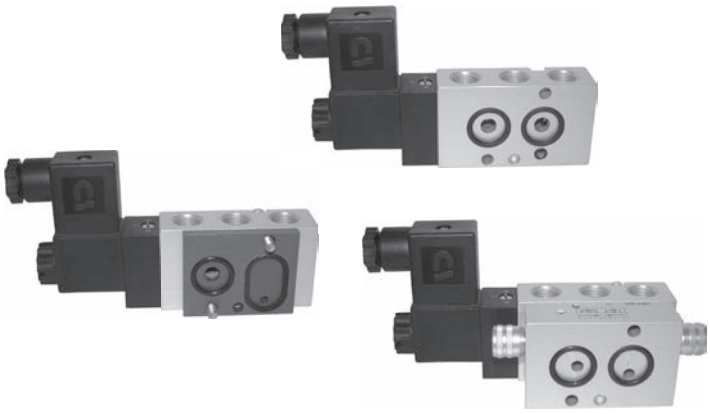


MNH 350 701 and Flex-Pack FP 701 on single acting act.

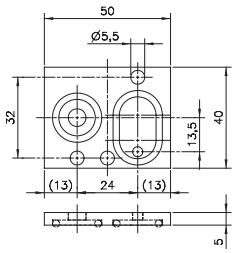


MNH 350 701 and Flex-Regulator DRF 3 601 on single acting act.

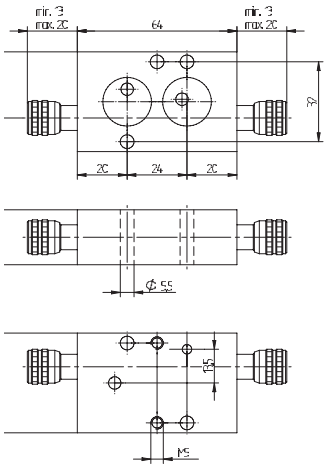




MNH 350 701/MNH 351 701
MNH 350 701 NPT/MNH 351 701 NPT



FP 701 K/FP 701 A



DRF 3 601

5/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4“ NAMUR-standard. Adding the **„Flex-Pack“**, converts the valve into a 3/2-way NAMUR-valve with exhaust-air recirculation (“purge”).

MNH 350 701 with pneumatic spring return,
MNH 351 701 with combined spring.

Valves are available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=

Valves are generally equipped with manual override.

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

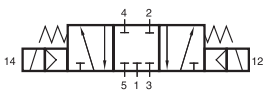
Instead of the Flex-Pack the **„Flex-regulator“** Type DRF 601 converts the function of the valve and offers the possibility to control opening- and closing-speed of a spring-return actuator independently.

Delivery of FP 701 and DRF 3 601 includes longer screws, seals as well as a plug to close port 3 of the valve.

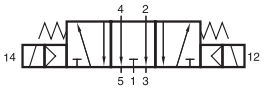
Type	Material	Orifice 4	Orifice 2-3	Weight
FP 701 K	PA	7 mm	4 mm	0,012 kg
FP 701 A	alu	7 mm	4 mm	0,016 kg
DRF 3 601	alu + brass	0,5 - 6 mm	4 mm	0,18 kg

Type	Port size	Air flow	Operating press.	Power Cons.	Weight
MNH 350 701	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701	G 1/4”	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 350 701 NPT	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701 NPT	1/4” NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,24 kg

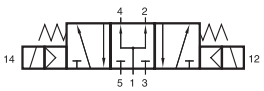
MNH 531 701/MNH 532 701/MNH 533 701
MNH 531 101/MNH 531 121/MNK 531 701



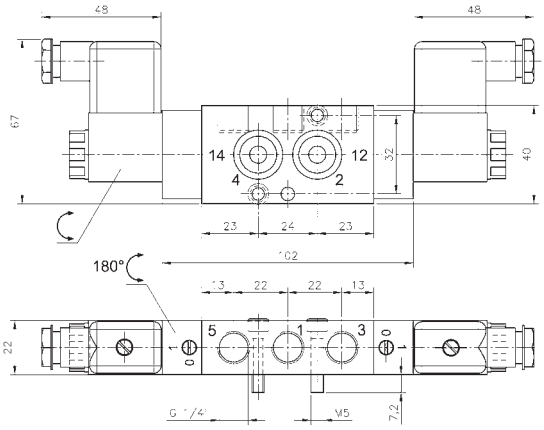
MNH 531 701
MNH 531 101
MNH 531 121
MNK 531 701
MNH 531 701 NPT
MNH 531 121 NPT



MNH 532 701



MNH 533 701



MNH 53_ 701/MNH 531 701 NPT

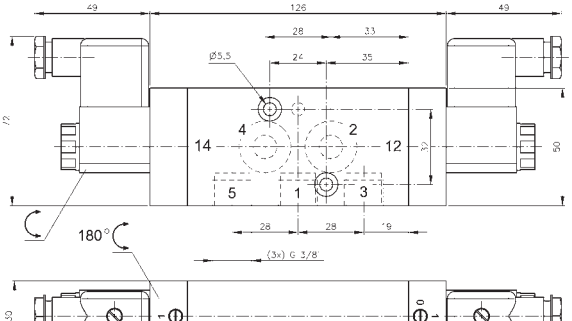
5/3-way solenoid valve with spring return to middle position. Interface according to NAMUR-standard.

Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurised

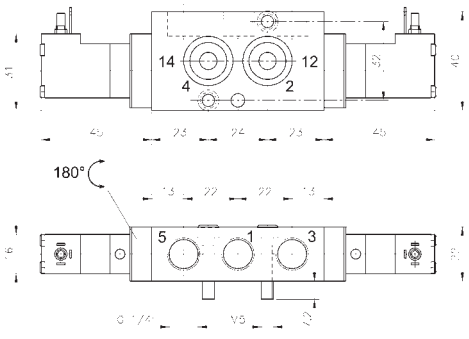
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

MNK with manual override to push with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=.

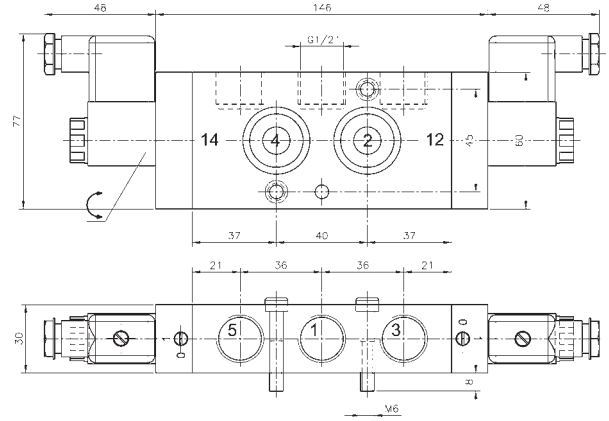
Delivery includes 1 pin, 2 screws and 2 O-rings.



MNH 531 101

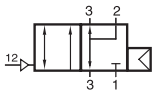


MNK 531 701

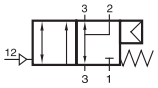


MNH 531 121/MNH 531 121 NPT

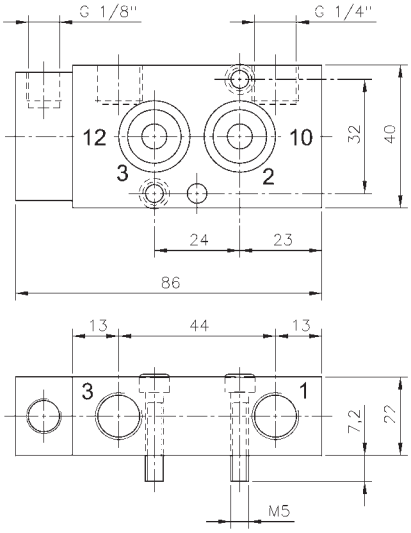
Type	NAMUR	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 53_ 701	1/4”	G 1/4”	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,36 kg	Ex ❄
MNH 531 101	1/4”	G 3/8”	2250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,84 kg	
MNH 531 121	1/2”	G 1/2”	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,87 kg	Ex ❄
MNK 531 701	1/4”	G 1/4”	1250 l/min	3 - 10 bar	1,8 W = / 3 VA ~	0,32 kg	
MNH 531 701 NPT	1/4”	1/4” NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,36 kg	Ex ❄
MNH 531 121 NPT	1/2”	1/2” NPT	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,87 kg	Ex



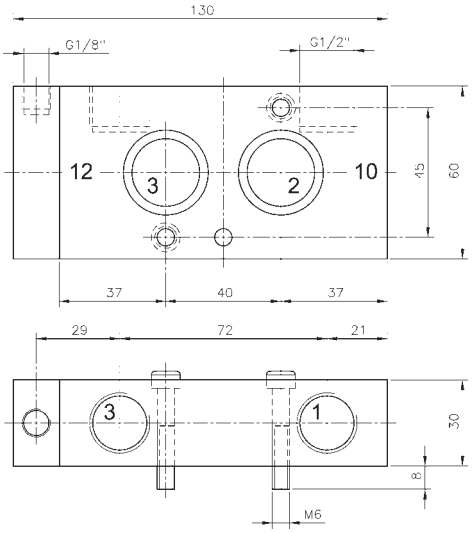
PN 310 701
PN 310 121



PN 311 701



PN 310 701/PN 311 701



PN 310 121

Pneumatically actuated 3/2-way spool valve. Interface according to NAMUR-standard with exhaust recirculation („purge").

PN 310 701 and PN 310 121 with pneumatic spring. For valves with pure pneumatic spring operating and actuation pressure should be at the same level. PN 311 701 with combined mechanical and pneumatic spring return.

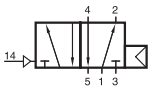
Port sizes type 701:	1 and 3:	G 1/4"
	12:	G 1/8"
Port sizes type 121:	1 and 3:	G 1/2"
	12:	G 1/8"

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

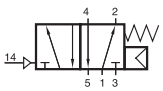
NPT ported valves are available on request.

Type	NAMUR	Port size	Air flow	Operating press.	Actuation press.	Weight
PN 310 701	1/4"	G 1/4" - G 1/8"	1250 l/min	2 - 10 bar	the same	0,20 kg
PN 311 701	1/4"	G 1/4" - G 1/8"	1250 l/min	3 - 10 bar	3 - 10 bar	0,20 kg
PN 310 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	the same	0,62 kg

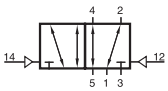
PN 510 701/PN 511 701/PN 510 121
PN 520 701/PN 520 121



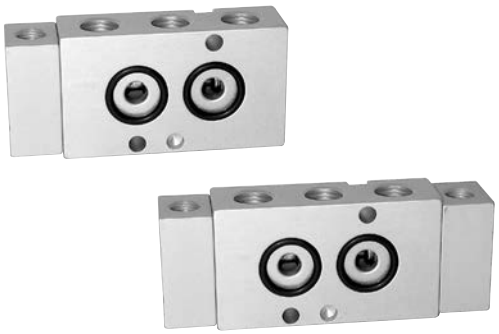
PN 510 701
PN 510 121

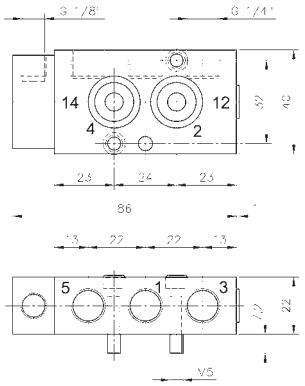


PN 511 701



PN 520 701
PN 520 121





PN 510 701/PN 511 701

Pneumatically actuated 5/2-way spool valve. Interface according to NAMUR-standard.

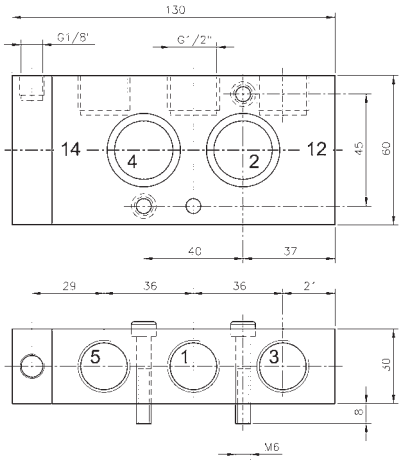
PN 510 701 and PN 510 121 with pneumatic spring. For valves with pure pneumatic spring operating and actuation pressure should be at the same level. PN 511 701 with combined mechanical and pneumatic spring return. PN 520 with double pilot.

Port sizes type 701: 1, 3 and 5: G 1/4”
12 and 14: G 1/8”

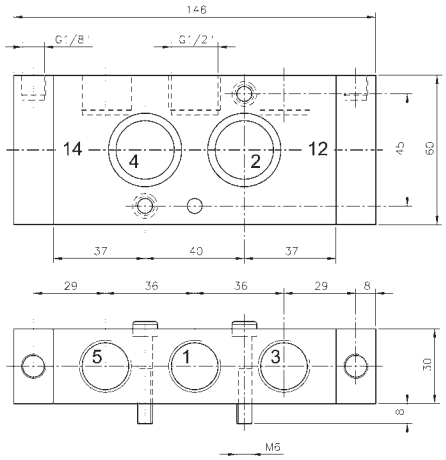
Port sizes type 121: 1, 3 and 5: G 1/2”
12 and 14: G 1/8”

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

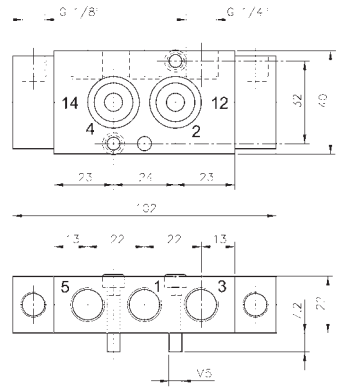
NPT ported valves are available on request.



PN 510 121

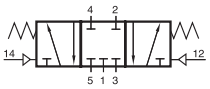


PN 520 121

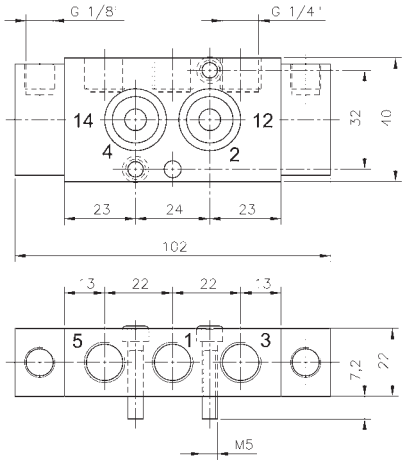


PN 520 701

Type	NAMUR Port size		Air flow	Operating press.	Actuating press.	Weight	
PN 510 701	1/4”	G 1/4” - G 1/8”	1250 l/min	2 - 10 bar	the same	0,19 kg	Ex ❄ 316
PN 511 701	1/4”	G 1/4” - G 1/8”	1250 l/min	3 - 10 bar	3 - 10 bar	0,19 kg	❄ 316
PN 510 121	1/2”	G 1/2” - G 1/8”	3000 l/min	1 - 10 bar	the same	0,60 kg	Ex ❄
PN 520 701	1/4”	G 1/4” - G 1/8”	1250 l/min	2 - 10 bar	2,5 - 10 bar	0,22 kg	Ex ❄ 316
PN 520 121	1/2”	G 1/2” - G 1/8”	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,67 kg	Ex ❄



PN 531 701
PN 531 121



PN 531 701

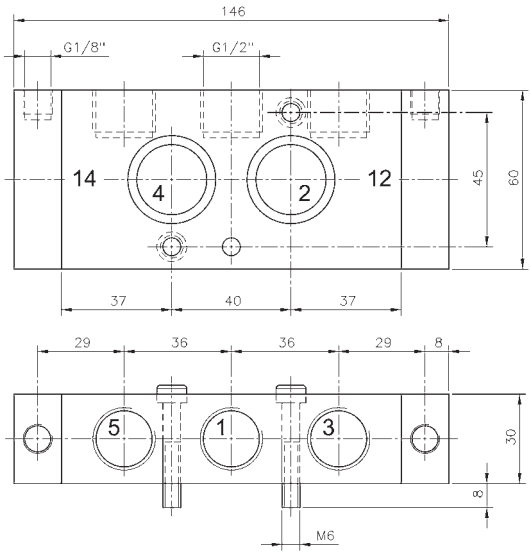
Pneumatically actuated 5/3-way spool valve with spring return to middle position, centre closed. Interface according to NAMUR-standard.

Port sizes type 701:	1, 3 and 5:	G 1/4”
	12 and 14:	G 1/8”
Port sizes type121:	1, 3 and 5:	G 1/2”
	12 and 14:	G 1/8”

Other 5/3-way versions (centre exhausted or pressurised) are available on request.

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

NPT ported valves are available on request.

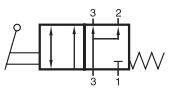


PN 531 121

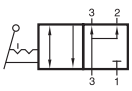
Type	NAMUR	Port size	Air flow	Operating press.	Actuation press.	Weight	
PN 531 701	1/4“	G 1/4“ - G 1/8“	1250 l/min	1 - 10 bar	3 - 10 bar	0,22 kg	
PN 531 121	1/2“	G 1/2“ - G 1/8“	3000 l/min	1 - 10 bar	3 - 10 bar	0,67 kg	

HAFNER

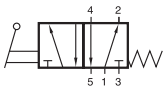
HVN 311 701/HVRN 320 701
HVN 511 701/HVRN 520 701



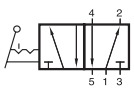
HVN 311 701



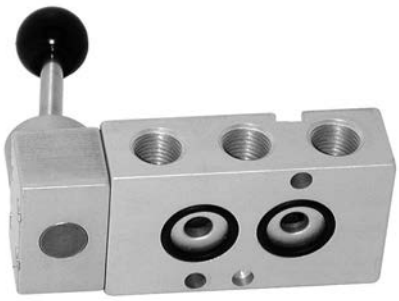
HVRN 320 701



HVN 511 701



HVRN 520 701



Lever actuated spool valves with interface according to 1/4" NAMUR- standard.
4 versions are offered:

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

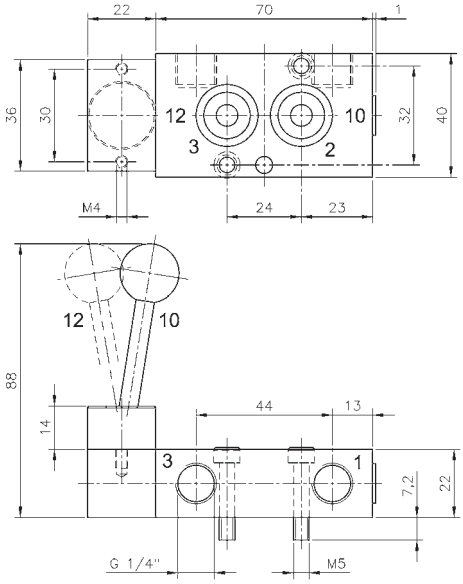
3/2-way valves offer exhaust air recirculation („purge").

The lever is sealed by using a metal ball.

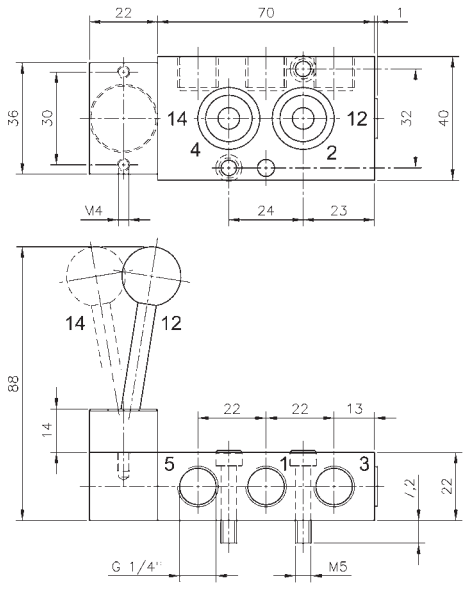
Exhaust can be throttled.

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

NPT ported versions and 5/3-way valves are available on request.



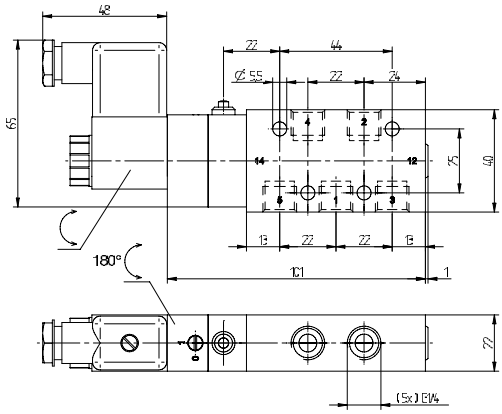
HVN 311 701/HVRN 320 701



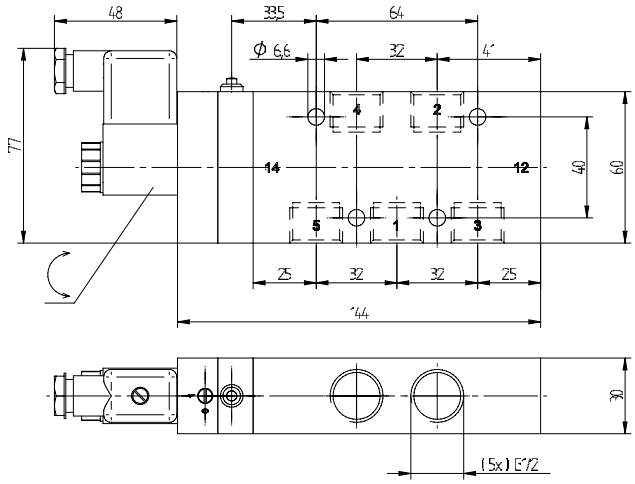
HVN 511 701/HVRN 520 701

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HVN 311 701	3/2-way spring	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVRN 320 701	3/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVN 511 701	5/2-way spring	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVRN 520 701	5/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg

Valves with manual reset function



MHLL 510 701 ALU



MHLL 510 121

Valves with manual reset function for monitored reactivation by maintenance staff.
When the solenoid valve is de-energized it will move to its default position.
A regular solenoid valves will be switched on just by energizing the solenoid.
Unlike a valve with a manual reset function:
In order to switch-on the valve the solenoid has to be actuated and initially a knob on the valve has to be pushed.

The requirement that an operator has to be physically present when an especially important or critical piece of equipment is activated is fulfilled by this product.

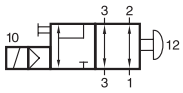
The manual reset system is available for our G 1/8", G 1/4" as well as G 1/2" valves.

On request:
- *Stainless steel version*
- *ATEX-approved*
- *Pneumatically actuated valves*

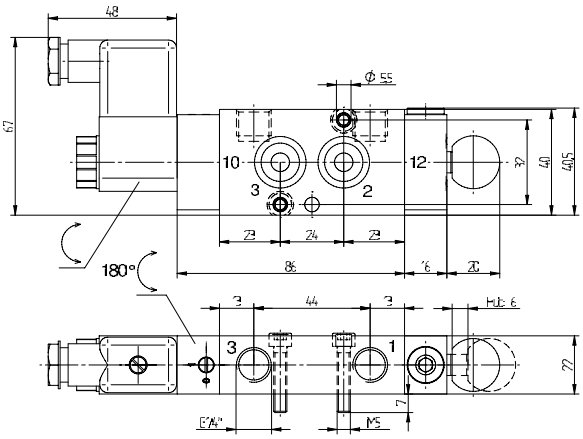
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MHLL 510 701 ALU	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg
MHLL 510 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,72 kg

HAFNER

Valves with latch-lock function



MNOHH 320 701



MNOHH 320 701

The MNOHH 320 701 is a 2-positon valve, actuated from one side by solenoid, from the other side manually.
Interface according to1/4" NAMUR- standard.
As long as there is no electric signal applied, the valve is open from 1 to 2 and port 3 can exhaust.
When an electric signal is applied to the solenoid, the valve moves to the closed position. The valve will stay in this position no matter if the electric signal cuts-off. It can only be switched into the other position by manually pushing the knob.

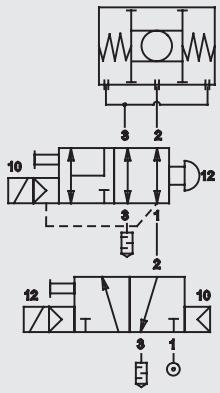
Typical application:
Valve is mounted on a single acting actuator.
Another 3/2-way control valve is connected to port 1 of the MNOHH 320 701.
In normal operation, no electric signal is applied to the solenoid and the actuator can be opened and closed by the 3/2-way control valve. When there is an emergency, an electric signal is applied to the solenoid and the valve moves to the closed position. The air supply to the actuator is now cut-off and the actuator will close by the force of the spring.
As a result the process valve stays in this position until maintenance personnel is present and resets the valve.

Function:

Actuator

MNOHH 320 701

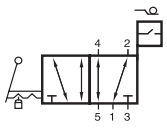
3/2-way valve



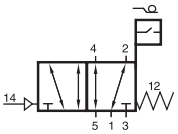
On request:
- *Other functions*
- *ATEX-approved*
- *Stainless steel version*

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MNOHH 320 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg

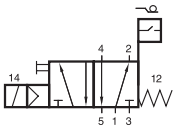
Valves with position feedback function



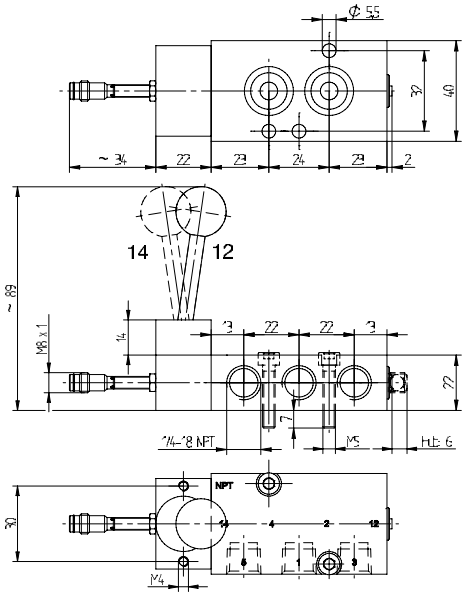
HVRN 520 701 L NPT EA 01



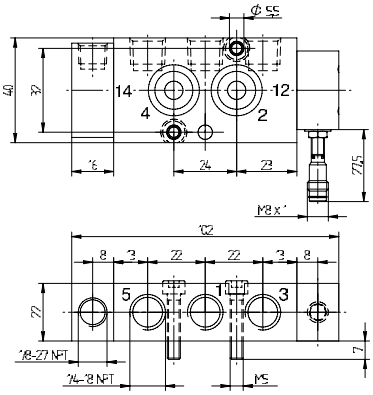
PN 511 701 NPT EA 01



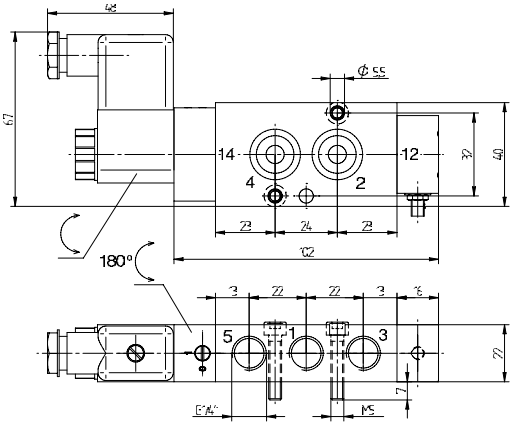
MNH 511 701 EA



HVRN 520 701 L NPT EA 01



PN 511 701 NPT EA 01



MNH 511 701 EA

The Machinery Directive DIN EN ISO 13849 is challenging machine manufacturers. The security level of control system has to be assessed, redundant systems or components with feedback-functions have to be installed.

Solution from Hafner:
Valves with position feedback function. The sensors give a signal assuring that the valve has fully switched through.

HVRN 520 701 L NPT EA 01:
Lever actuated 5/2-way spool valve, indexed. Interface according to 1/4“ NAMUR-standard. Additionally the user can put a padlock in the drilling of the extended spool and thereby lock the valve. Equipped with an inductive sensor from Contrinex according to NAMUR (DIN 19234).

PN 511 701 NPT EA 01:
Pneumatically actuated 5/2-way spool valve. Interface according to 1/4“ NAMUR-standard. Equipped with an inductive sensor from Contrinex according to NAMUR (DIN 19234).

MNH 511 701 EA:
5/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4“ NAMUR-standard. Equipped with an inductive sensor from Balluff with 0.30 m cable.

Other valves and sensors available on request.

Type	Port size	Air flow	Operating press.	Actuation press.	Power consumption	Weight
HVRN 520 701 L NPT EA 01	1/4” NPT	1250 l/min	1 - 10 bar	–	–	0,24 kg
PN 511 701 NPT EA 01	1/4” NPT	1250 l/min	1 - 10 bar	3 - 6 bar	–	0,19 kg
MNH 511 701 EA	G 1/4”	1250 l/min	2 - 10 bar	–	3 W = / 5 VA ~	0,25 kg

HAFNER

Valves for high temperature applications/ Exhaust Protection Fittings

Hafner is offering selected products to be used in **high temperature environment**.

All valves of the series 500 (G 1/8") as well as 700 (G 1/4") can be delivered like that.
Other sizes available on request.

Temperature range solenoid valves (DC-coils only):
-10°C to +80° (100% ED)

The solenoid valves are available with coils 24V=.

For a better heat resistance, we equip the valves with the Epoxy coil (MA 22 D).

Temperature range manually, mechanically and pneumatically actuated valves: **-10°C to +120°C.**

Other products can be made available for high temperature applications as well.
Please send us your inquiry!

Sample Product: P 310 701 VIT
Pneumatically actuated 3/2-way valve with FKM seals.

Sample Product: MNH 310 701 HT
3/2-way solenoid valve, interface according to 1/4" NAMUR-standard.
Equipped with aluminum pilot-head, aluminum fixing nut and Epoxy coil.
Inner seals are made from FKM.

Sample Product: HVR 520 701 L
Lever actuated 5/2-way spool valve, indexed, with FKM seals.
Added value: The user can put a padlock in the drilling of the extended spool and thereby lock the valve.

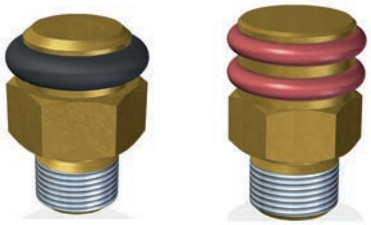
Sample Product: D 181 G
Block form flow regulator, bi-directional.
Port-size G 3/4", 6000 l/min air-flow.

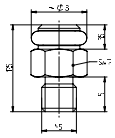
Exhaust Protection Fittings

The Hafner exhaust protection fittings protect exhaust ports from dirt and moisture.

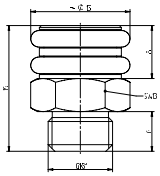
The exhaust drillings are covered by a pre-stressed O-ring.

These kind of fittings are typically used in the armature tube of an operator system as well as in the valve exhaust ports.

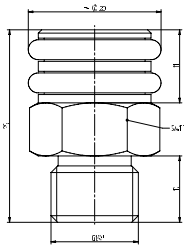




ESR M5



ESR G 1/8"

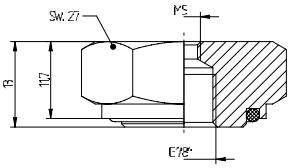


ESR G 1/4"

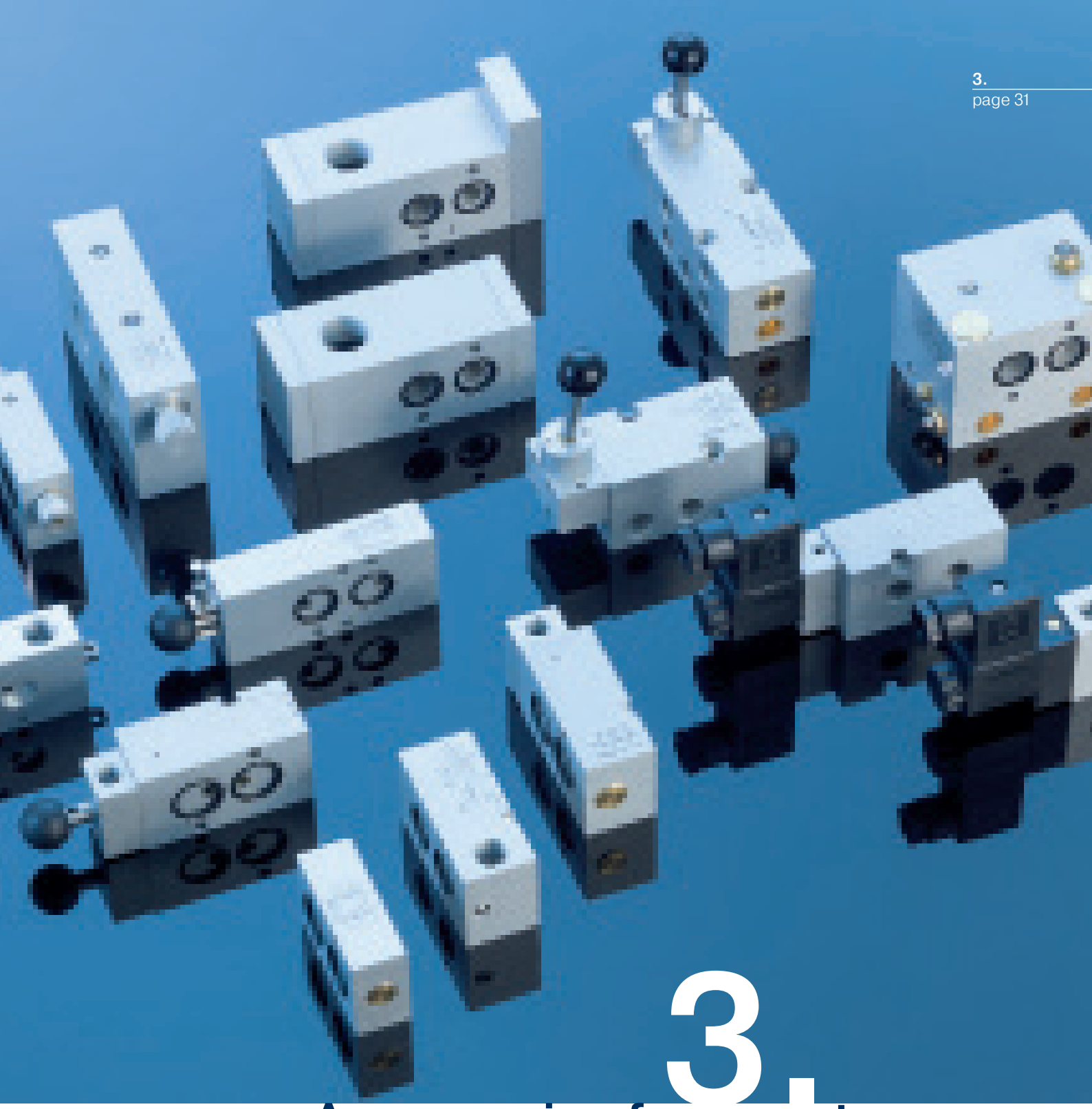
Type	Port size	Material body	O-Ring
ESR M5	M5	Brass	NBR
ESR G 1/8"	G 1/8"	Brass	MVQ50
ESR G 1/4"	G 1/4"	Brass	MVQ50

Other materials as well as high- and low temperature versions available on request.

The ESR M5 can also be used in combination with the M G1/8 M5 nut on Ex e mb operator systems in order to reach IP 67. Further details on page 8.2.5.4.



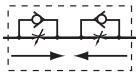
M G 1/8 M5



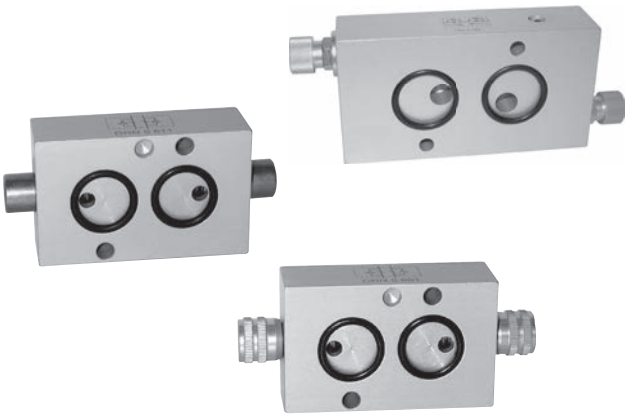
3.
Accessories for smart valve automation

DRN 3 601/DRN 3 611/DRN 3 128

Flow regulator plate



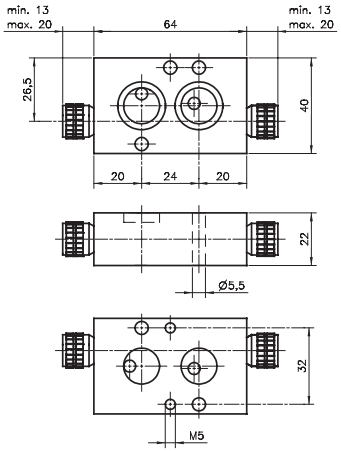
DRN 3 601
DRN 3 611
DRN 3 128



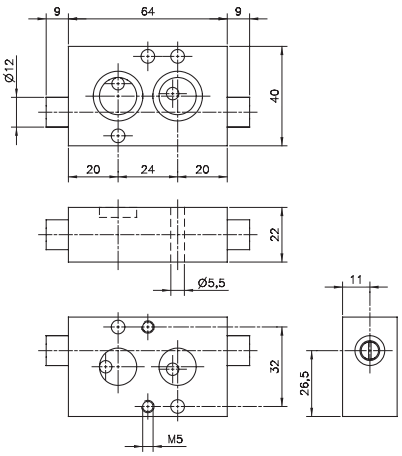
Block form flow regulator as intermediate plate, interface according to NAMUR-standard, for 3/2-way valves with exhaust air recirculation.

To regulate the forward stroke of a single acting pneumatic actuator and to regulate the exhaust air going into the spring return unit. DRN 3 601 and DRN 3 128 to be operated manually, DRN 3 611 with a screw-driver.

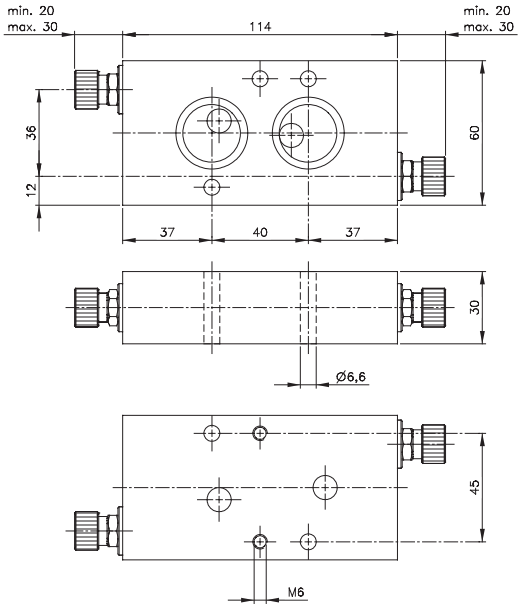
If flow regulator is required with G 1/4“ ports, plate GPN 1/4 can be added. For details please refer to page 3.17.
Delivery includes 1 pin, 2 screws, 2 O-rings.



DRN 3 601



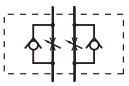
DRN 3 611



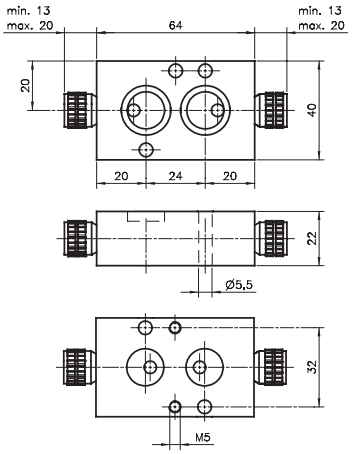
DRN 3 128

Type	Function	NAMUR	Port size	Max. air flow	Operating pressure	Weight
DRN 3 601	3-way	1/4”	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 3 611	3-way	1/4”	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 3 128	3-way	1/2”	Ø 8 mm	1.500 l/min	0,5 - 10 bar	0,60 kg

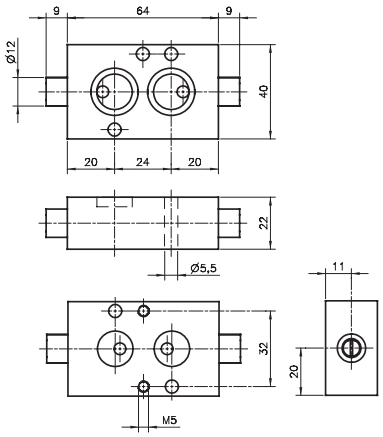
HAFNER



DRN 5 601
DRN 5 611
DRN 5 128



DRN 5 601



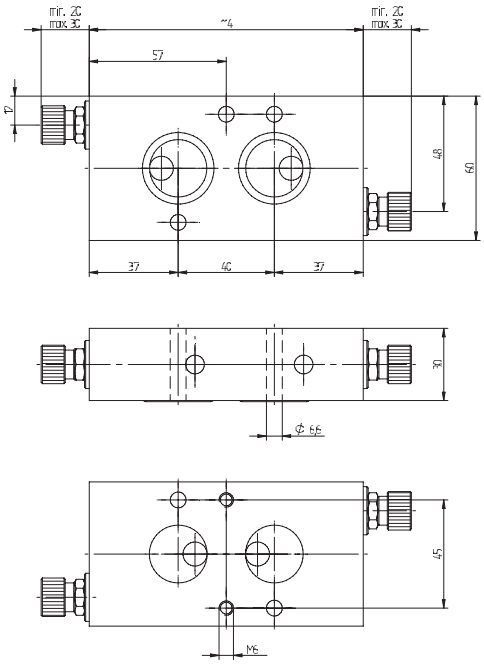
DRN 5 611

Block form flow regulator as intermediate plate, interface according to NAMUR-standard, for 5-way valves only.

To regulate the forward- and backward-stroke of a double acting pneumatic actuator. DRN 5 601 and DRN 5 128 to be operated manually, DRN 5 611 with a screw-driver.

If flow regulator is required with G 1/4“ ports, plate GPN 1/4 can be added. For details please refer to page 3.17.

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



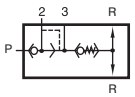
DRN 5 128

Type	Function	NAMUR	Port size	Max. air flow	Operating pressure	Weight
DRN 5 601	5-way	1/4”	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 5 611	5-way	1/4”	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 5 128	5-way	1/2”	Ø 8 mm	1.500 l/min	0,5 - 10 bar	0,60 kg

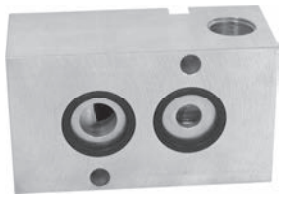
HAFNER

UB 701

Air-recirculation block for single acting actuators



UB 701



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.

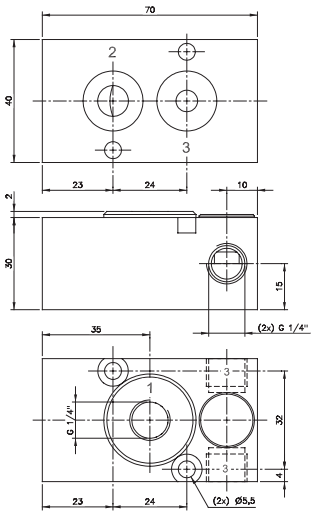
Valve is designed for spring return pneumatic actuators with 1/4” NAMUR-interface to be controlled by a remote piloted 3/2-way valve.

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

Body:	aluminum
Diaphragm:	NBR
Other inner parts:	brass

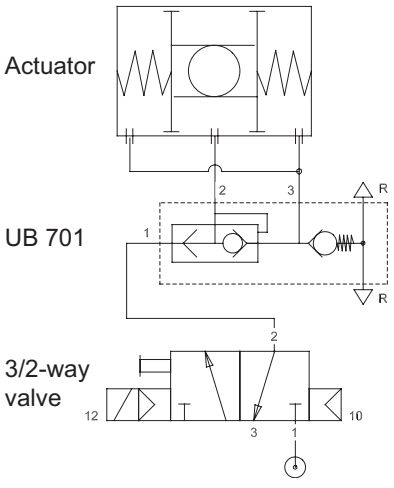
One of the two exhaust ports 3 to be closed by a plug.

Delivery includes 2 srews, 2 O-rings, 1/4” plug for port 3.

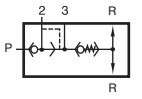


UB 701

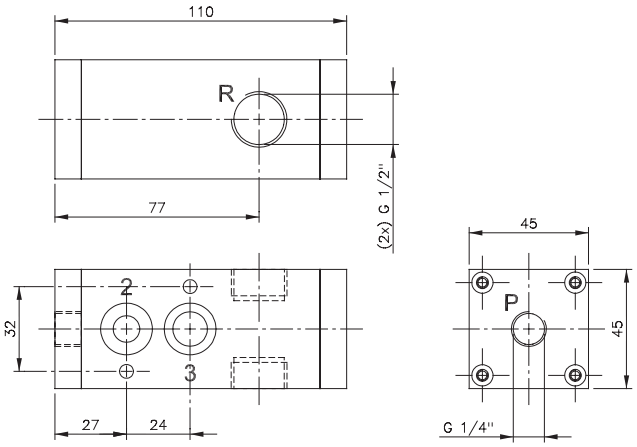
Function:



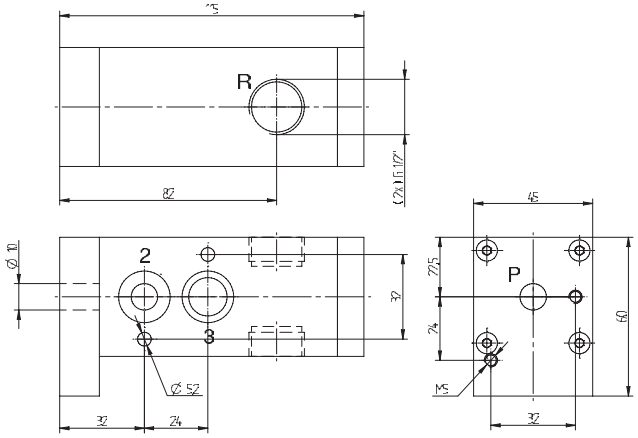
Type	NAMUR	Port size	Air flow	Operating pressure	Weight
UB 701	1/4”	G 1/4”	1250 l/min	1 - 10 bar	0,22 kg



SENR 20
SENR 207
SENR 207 01



SENR 20



SENR 207

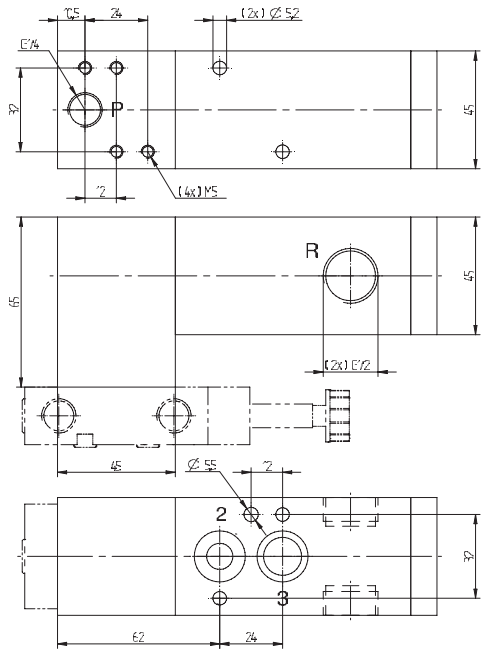
The valve is designed for fast closing of spring-return actuators with 1/4" NAMUR-interface.

Any 3/2-way valve can be used as pilot valve. The connection towards the pilot valve is either G 1/4" ported (SENR 20/SENR 207 01) or for NAMUR-valves with the 1/4" NAMUR-interface (SENR 207/SENR 207 01).

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.

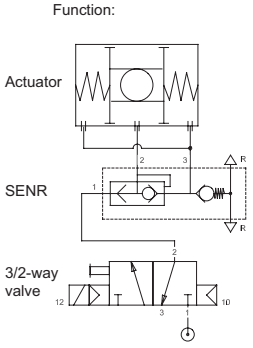
Two exhaust-ports R allow that the product can always be assembled so the silencer faces downwards.

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



SENR 207 01

Special solution (SENR 207 01):
Quick-exhaust block for external piping and universal NAMUR-valve mounting.

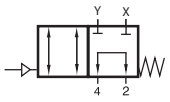


Type	NAMUR	Port P	Port R	Air flow P to 2	Air flow exhaust	Operating press.	Weight	
SENR 20	1/4"	G 1/4"	G 1/2"	1250 l/min	2500 l/min	2 - 10 bar	0,54 kg	❄
SENR 207	1/4"	1/4" NAMUR	G 1/2"	1250 l/min	2500 l/min	2 - 10 bar	0,56 kg	❄
SENR 207 01	1/4"	G 1/4" - 1/4" NAMUR	G 1/2"	1250 l/min	2500 l/min	2 - 10 bar	0,85 kg	

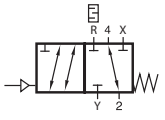
HAFNER

PN 411 721/P 411 121

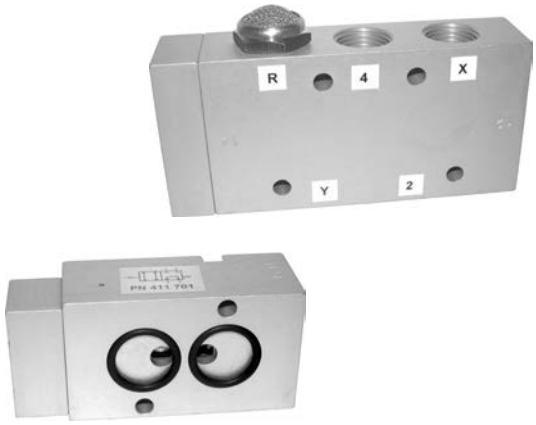
Short-cut valve when using manual gearbox



PN 411 721



P 411 121



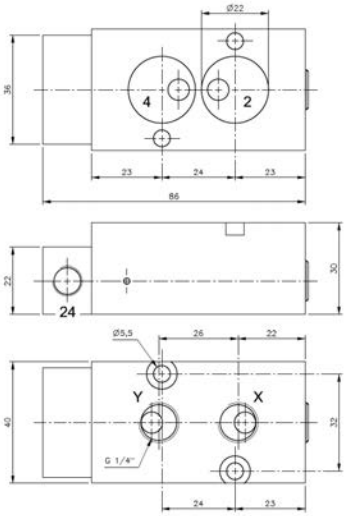
The **PN 411 721** is made for direct assemblage to an actuator with 1/4" NAMUR-interface.
It offers a 1/4" NAMUR-interface towards the pilot-valve (use as sandwich plate) as well as ports G 1/4" for piped application.
Delivery includes 2 screws, 2 O-rings.

The **P 411 121** is an in-line-version for high-flow-application, ported G1/2".

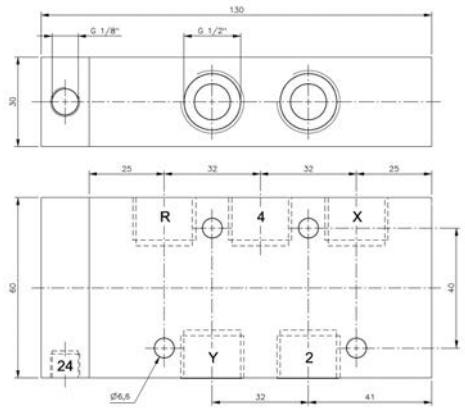
Function:
As long as a pneumatic signal is applied, the valve forwards the signals applied to 2 an 4 through to X and Y. When no pneumatic signal is applied the ports 2 and 4 are shortcut.

Typical application:
On automated process-valve equipped with a gear-box for manual actuation in case of emergency. When failure occurs, compressed air might get trapped in the actuator. Manual operation might damage the actuator. Valve assures, that the user doesn't have to close the process valve against the force of the air.

On request:
Valve that is normally blocked, type PN 411 711.



PN 411 721

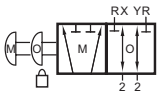


P 411 121

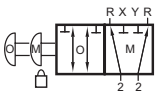
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
PN 411 721	G 1/4"	1250 l/min	1,5 - 10 bar	3 - 10 bar	0,20 kg
P 411 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,63 kg

BHN 601/BHN 601 01/BHN 611 01
BHN 420 701

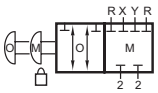
Manual actuated block and vent/block and block/short-cut valve



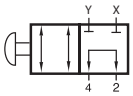
BHN 601



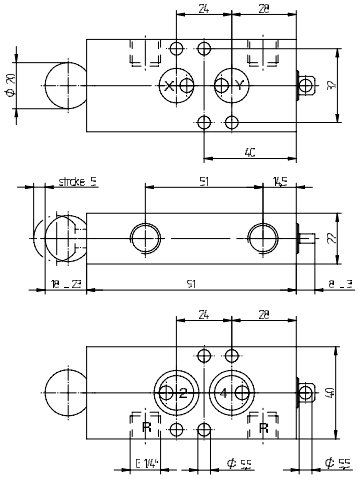
BHN 601 01



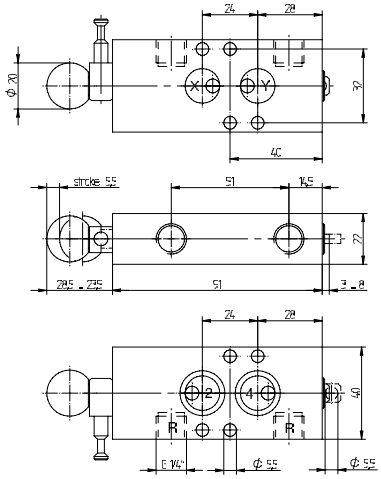
BHN 611 01



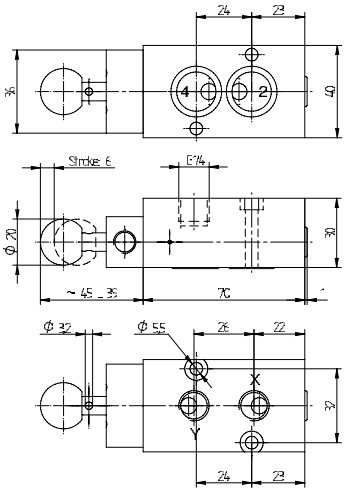
BHN 420 701



BHN 601



BHN 601 01/ BHN 611 01



BHN 420 701

Intermediate valve for assemblage onto the actuator with 1/4“ NAMUR-interface. Blocks signals from pilot-valve.

BHN 601 exhausts actuator when knob is pulled. Lockable in standard operation mode (O-position).

BHN 601 01 exhaust actuator when knob is pushed. Lockable in manual mode (M-position). Protection against unintended use with pin.
Typical application: to avoid injuries of maintenance personal when working on installed process equipment.

BHN 611 01 blocks actuator when knob is pushed. Lockable in manual mode (M-position). Protection against unintended use with pin.
Typical application: For process valves on tanks where maintenance people have to go into the tank.

BHN 420 701 compressed air in the actuator is free to float between the two chambers.
Typical application: For process valves with manual gear-box to avoid damage caused by potentially trapped compressed air in the actuator.

If BHN 6_ _ are required with G 1/4“ ports, plate GPN 1/4 can be added. For details please refer to page 3.17.

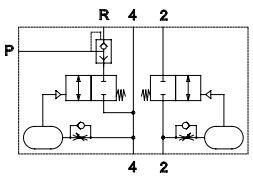
Delivery includes 1 pin, 2 srews, 2 O-rings.

Type	Function	lockable	Air flow	Operating press.	Actuation force	Weight
BHN 601	vents actuator	O-position	900 l/min	1 - 10 bar	18 N	0,23 kg
BHN 601 01	vents actuator	M-position	900 l/min	1 - 10 bar	18 N	0,24 kg
BHN 611 01	blocks actuator	M-position	900 l/min	1 - 10 bar	18 N	0,24 kg
BHN 420 701	shortcuts actuator	–	1250 l/min	1 - 10 bar	18 N	0,22 kg

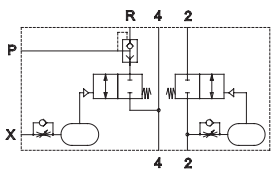
HAFNER

CBN 700 K/CBN 700 K EB

Controlblock for butterfly valves with inflatable valve-seat



CBN 700 K



CBN 700 K EB

Control block for double acting actuators with interface according to 1/4“ NAMUR-standard, to be used on process-valves with inflatable valve seat.

The control-block receives it‘s signals to open and close from a standard 5/2-way NAMUR-valve.
The block is to be put between the actuator and the NAMUR-valve (flange-version).
The closing-signal is fed through to the actuator, the seal is inflated with time-delay.

When the process-valves is to be closed first the seal is deflated, with time-delay the actuator opens the process-valve.

Opening- and closing-time-delay can be adjusted independently but they are related to the operating pressure.

At 6 bar time-delay can be adjusted between 0 and 2 seconds.

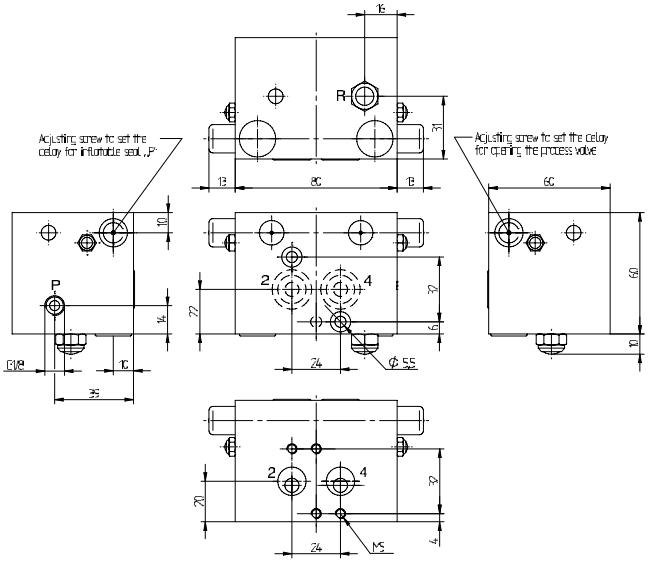
Type **CBN 700 K EB** with additional port X: pressurizing of the inflatable seal does not start before a pneumatic signal is received.

If the valve is required with G 1/4“ ports, plate GPN 1/4 can be added. For details please refer to page 3.17.

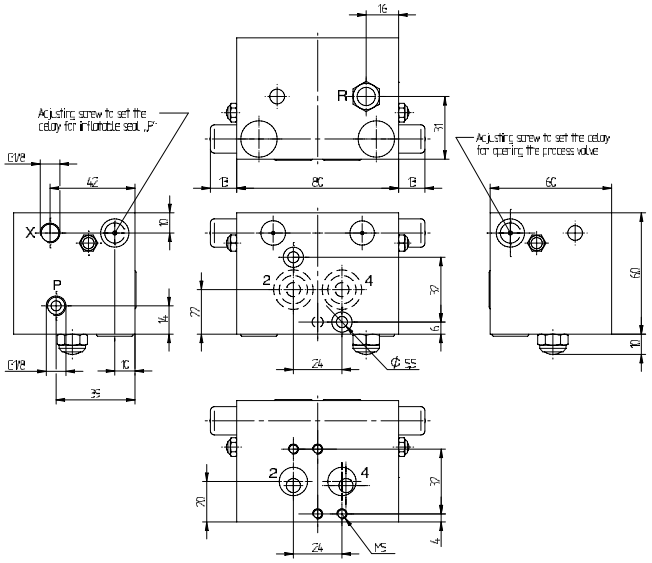
Delivery includes 2 screws, 2 O-rings, 2 protection caps.

Also available for explosion hazardous environment zone 22 (cat. III D), please refer to page 8.3.3.

Please note:
If a pressure regulator is used between the CBN 700 (port P) and the inflatable seal, an additional quick exhaust valve is needed to exhaust te seal.



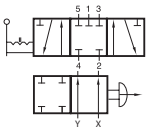
CBN 700 K



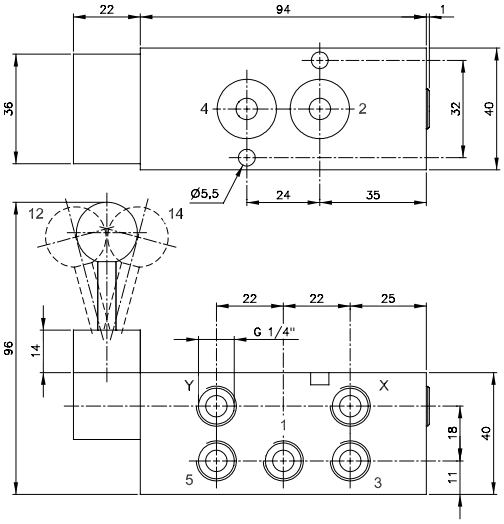
CBN 700 K EB

Type	NAMUR	Port P	Port X	Air flow act.	Operating press.	Air flow seal	Weight	
CBN 700 K	1/4”	G 1/8”		900 l/min	3 - 10 bar	400 l/min	0,80 kg	⟨Ex⟩
CBN 700 K EB	1/4”	G 1/8”	G 1/8”	900 l/min	3 - 10 bar	400 l/min	0,80 kg	⟨Ex⟩

HVRZN 731 701



HVRZN 731 702



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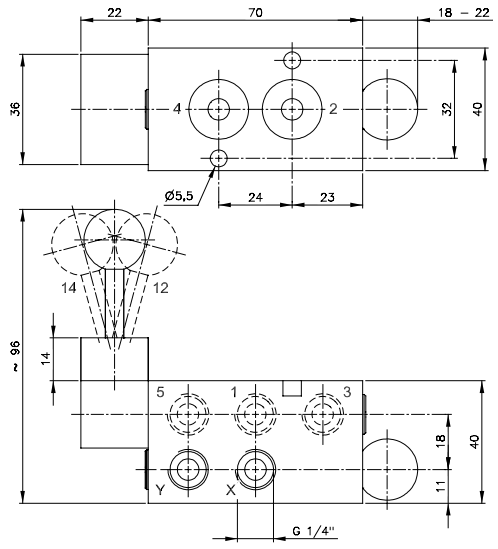


HVRZN 731 702

Lever valve for direct assemblage to an actuator with 1/4” NAMUR-interface.

Valves offer the possibility to override a positioner.

Version 731 701:
Normally the lever is in the middle position and the actuator is piloted by the positioner. In this position the valve just feeds the signals from the positioner through to the actuator.
In case of electric / electronic problems the actuator can be opened or closed manually.

Advantages of version 701:
Only one lever to manipulate (no second actuation elements).
Overrides in manual mode the positioner, manual mode and automatic mode truly independent.

Version 731 702:
If the knob is pushed, air flows from the positioner from Y to 4 and from X to 2.
If the knob is pulled valve is in manual mode.
The lever valve is to be used as a centre closed 5/3-way valve, actuator can be fully opened, fully closed or put into intermediate position.

Advantage of version 702:
Offers in manual mode a centre closed 5/3-way-valve. Version 701 is in manual mode a 5/2-way-valve.

Safety lever:
In order to avoid unintended manual actuation the lever of both versions has to be pulled thoroughly for being manipulated out of central position.

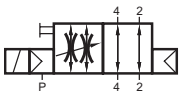
Delivery includes 2 screws, 2 O-rings.

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HVRZN 731 701	5/2-way indexed	G 1/4”	1250 l/min	1 - 10 bar	~ 25 N	0,53 kg
HVRZN 731 702	5/3-way indexed	G 1/4”	1250 l/min	1 - 10 bar	~ 25 N	0,45 kg

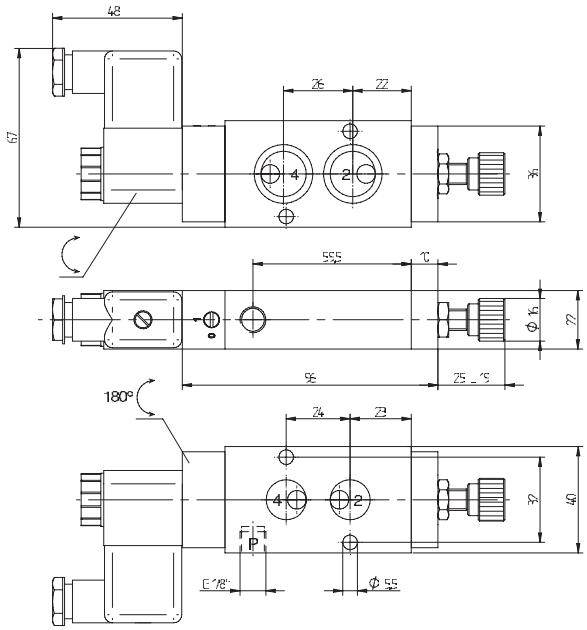
HAFNER

SGV 700

Two-speed valve



SGV 700



SGV 700

Two-speed valve to operate a pneumatic actuator at two different speeds.
This ensures a smooth closing and, if requested, a smooth opening of the process valve and helps to avoid water hammers.

Function:
When the valve is switched-off the air streams through the valve without any restriction.

When the actuator reaches a defined angle e.g. 5° the solenoid receives a signal from the switch-box (additional electric switch required) to actuate it. This restricts the air-flow. The flow can be regulated by turning the spindle at the and of the valve.

To open you have the choice whether to keep the restrictor active = solenoid energized until actuator reaches a certain angle (again) or if you want to open at full speed = switch-off the valve.

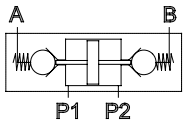
The valve is designed to go as a sandwich between actuator and NAMUR-pilot-valve.

If the valve is required with G 1/4“ ports, plate GPN 1/4 can be added.
For details please refer to page 3.17.

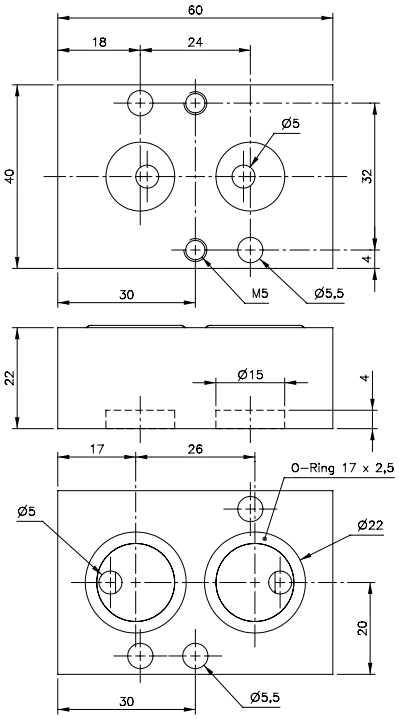
The valve needs an external air supply, port P (M5).

Delivery includes 2 screws, 2 O-rings.

Type	NAMUR	Air flow	Operating press.	Power consumption	Weight
SGV 700	1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg



DSVN 5



DSVN 5

Pressure applied safety valve to hold a double acting actuator at the current position in case of cut-off of pressure supply.

The valve is consisting of two non-return valves which will be unlocked by pressurising port P1 or P2.

Installation between pilot valve and actuator.

Inner parts are made from brass and POM, seals are made from NBR.

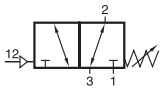
If the valve is required with G 1/4“ ports, plate GPN 1/4 can be added.
For details please refer to page 3.17.

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

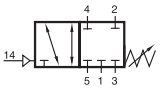
Type	NAMUR	Air flow P to A/B	Air flow A/B to P	Operating press.	Weight
DSVN 5	1/4”	230 l/min	360 l/min	1 - 10 bar	0,10 kg

P 311 501 SR/P 411 701 SR
P 411 701 SR NPT

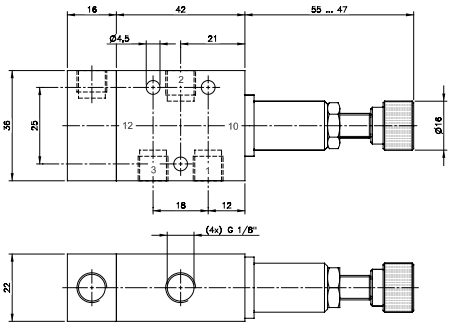
Pneumatic pressure switch



P311 501 SR



P 411 701 SR
P 411 701 SR NPT

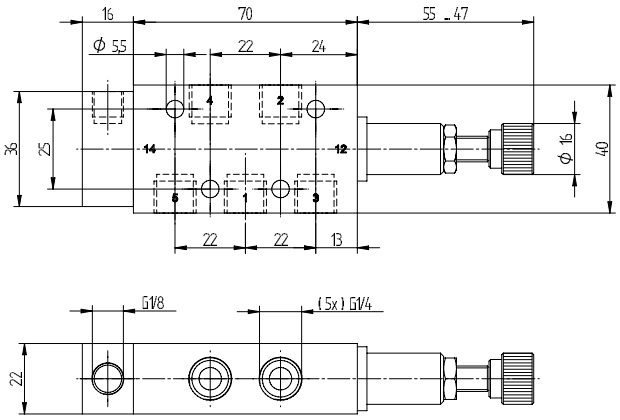


P 311 501 SR

P 311 501 SR pneumatically actuated 3/2-way valve with mechanical spring return.
Valve can be used normally closed (pressure at port 1) and normally open (pressure at port 3).
Can also be used as 2/2-way valve.
Unused port to be closed with a silencer or plug.

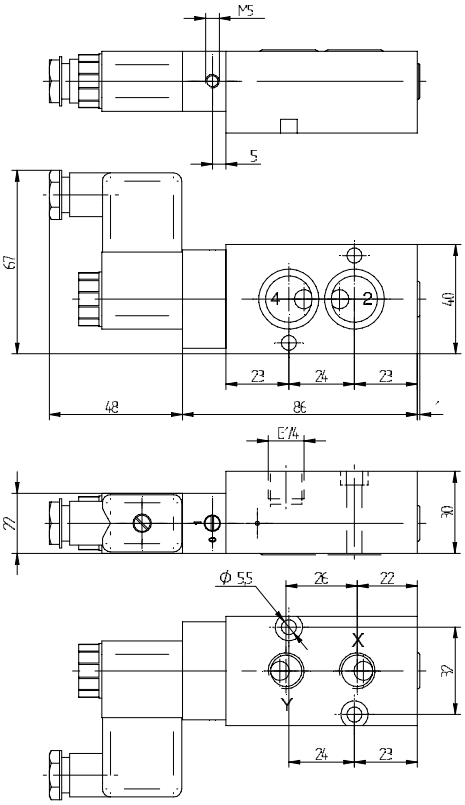
P 411 701 SR pneumatically actuated 4/2-way valve with mechanical spring return.
Valve either blocks all ports or is open from 1 to 4 and from 3 to 2.
Port 5 is a vent port and should have a silencer installed, do not plug.

Valve can be used as an **adjustable pneumatic pressure switch**. By turning the hand-wheel the required minimum actuation pressure can be set between 3 and 6 bar. Adjustment is not independent from operation pressure.

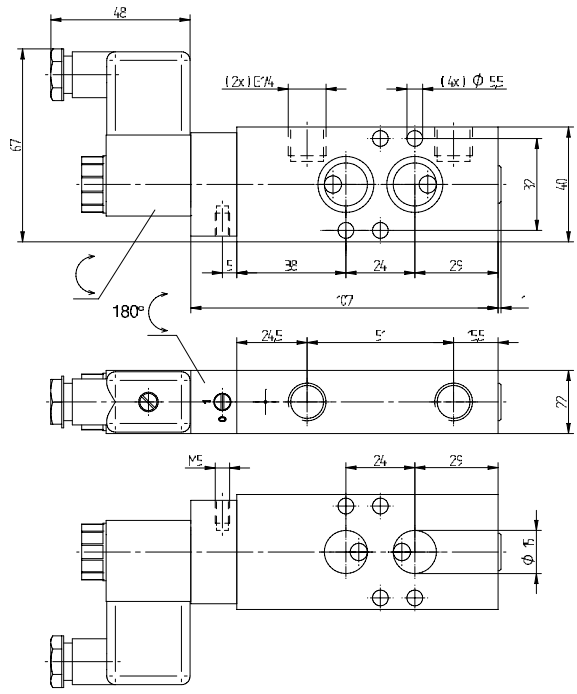


P 411 701 SR/P 411 701 SR NPT

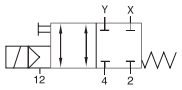
Type	Port size	Air flow	Operating press.	Regulating range act. press.	Max. act. press.	Weight
P 311 501 SR	G 1/8”	650 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,16 kg
P 411 701 SR	G 1/4”	1250 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,21 kg
P 411 701 SR NPT	1/4” NPT	1250 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,21 kg



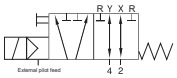
MNEH 411 711



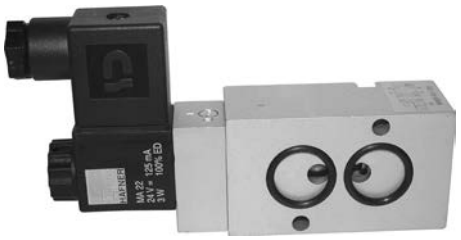
MNEH 611 601



MNEH 411 711



MNEH 611 601



The **MNEH 411 701** is made for blocking the air supply from the pilot valve to the actuator and holding the actuator in the current position. It offers a so-called "stay-put" or "fail-in-place" function.
It is designed for direct assemblage to an actuator with 1/4" NAMUR-interface.
It offers a 1/4" NAMUR-interface towards the pilot-valve (use as sandwich) as well as G 1/4" ports (piped application).
Delivery includes 2 screws, 2 O-rings.

Function:
As long as an electric signal is applied to the solenoid as well as air pressure is applied to the external pilot port, the valve forwards the signals from the pilot valve which are applied to X and Y through to 2 and 4.
All ports are blocked when the electric signal or air pressure at the external pilot port cuts off.
On request: Valve where port 2 and 4 is shortcut in basic position, type MNEH 411 721.

The **MNEH 611 601** is made for blocking the air supply from the pilot valve to the actuator and venting the actuator at the same time. It is designed for direct assemblage to an actuator with 1/4" NAMUR-interface.
It offers a 1/4" NAMUR-interface towards the pilot-valve (use as sandwich).
Delivery includes 1 pin, 2 screws, 2 O-rings.

Function:
As long as there is neither an electric signal applied to the coil nor air pressure applied to the external pilot port, the valve forwards the signals from the pilot valve which are applied to X and Y through to 2 and 4.
Pilot ports are blocked and actuator chamber is vented as soon as an electric signal as well as air pressure to the external pilot port is applied.

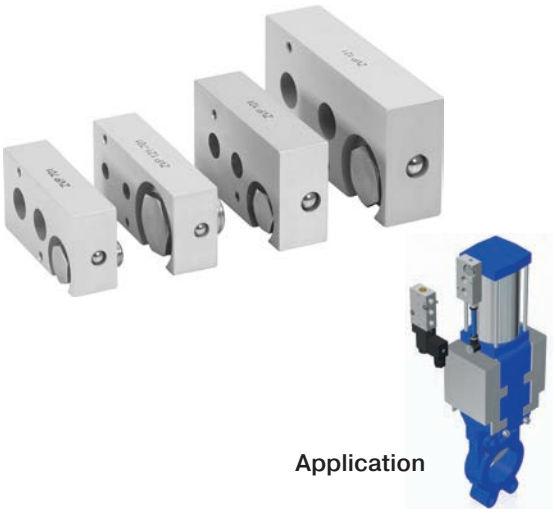
Available with solenoid operators:
230V/50Hz, 100V/50Hz, 24V/50Hz, 48V=. 24V=, 12V=.
The valves are equipped with manual override to turn.
Valves can be used in combination with a positioner.
External pilot-feed is required.

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

Type	Port size	Air flow	Operating press.	Actuation press.	Power consumption	Weight
MNEH 411 711	G 1/4" - 1/4" NAMUR	1250 l/min	1 - 10 bar	3 - 6 bar	3 W = / 5 VA ~	0,20 kg
MNEH 611 601	1/4" NAMUR	900 l/min	1 - 10 bar	3 - 6 bar	3 W = / 5 VA ~	0,28 kg

ZVP 701/ZVP 101/ZVP 121/ZVP 121-701

Plates for cylinder-valve combinations – 1. for standard pneumatic cylinders



Application

Plates to combine NAMUR-valves with double acting cylinders / the actuation element of a knife gate valve.

The plates can be attached to different cylinders, independent on their stroke.

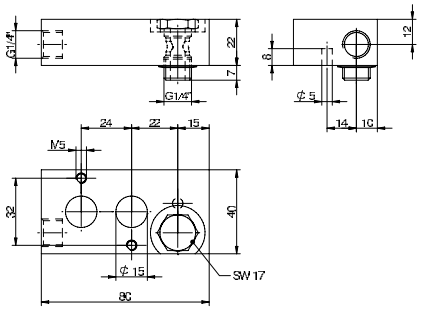
ZVP 701 to be assembled onto a cylinder with G 1/4“ ports (diameter 32, 40, 50 mm according to ISO 6431/ISO 15552). Designed for an orifice size 7 mm in combination with e.g. MNH 510 711.

ZVP 101 to be assembled onto a cylinder with G 3/8“ ports (diameter 63, 80 mm according to ISO 6431/ISO 15552). Designed for an orifice size 10 mm in combination with e.g. MNH 510 101.

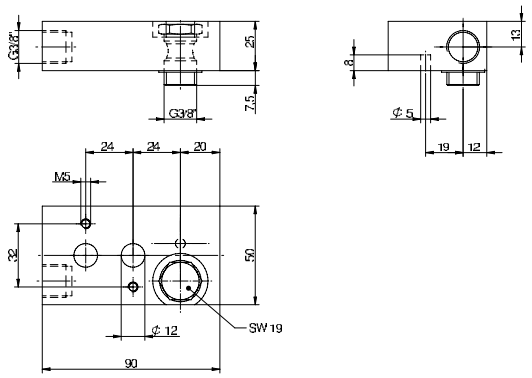
ZVP 121 to be assembled onto a cylinder with G 1/2“ ports (diameter 100, 125 mm according to ISO 6431/ISO 15552). Designed for an orifice size 12 mm in combination with e.g. MNH 510 121.

ZVP 121-701 to be assembled onto a cylinder with G 1/2“ ports and equipped with a NAMUR-valve of 1/4“ standard.

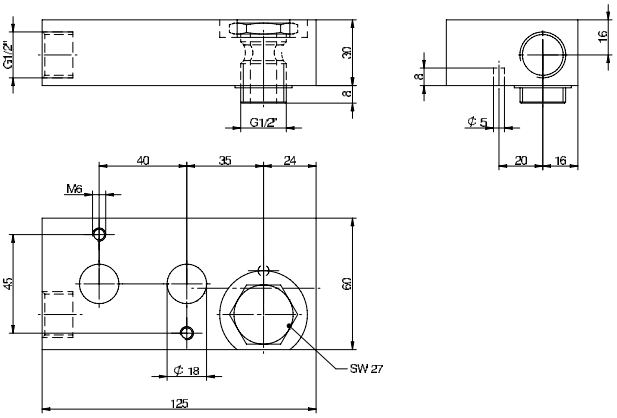
Delivery contains the plate and the banjo for one port.
Straight male fittings and rotating elbow fittings to make the other connection can be supplied on request.



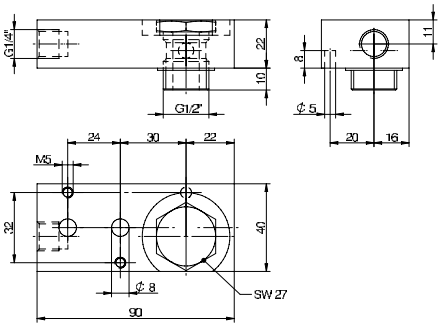
ZVP 701



ZVP 101

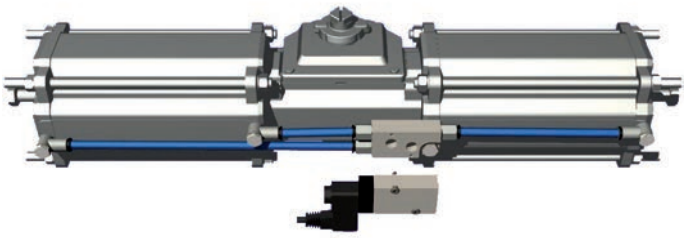


ZVP 121



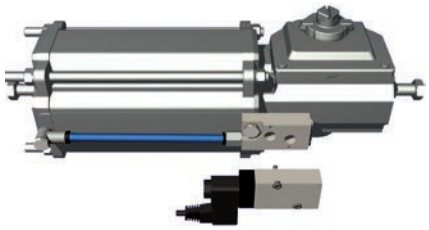
ZVP 121-701

Type	Port A	Port B	NAMUR	Orifice	Weight
ZVP 701	Banjo G 1/4”	G 1/4”	1/4”	7 mm	0,35 kg
ZVP 101	Banjo G 3/8”	G 3/8”	1/4”	10 mm	0,40 kg
ZVP 121	Banjo G 1/2”	G 1/2”	1/2”	12 mm	0,45 kg
ZVP 121-701	Banjo G 1/2”	G 1/4”	1/4”	7 mm	0,35 kg

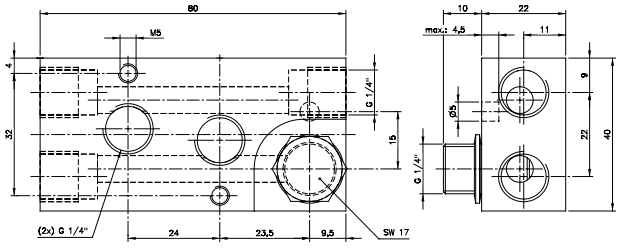


Double cylinder actuator

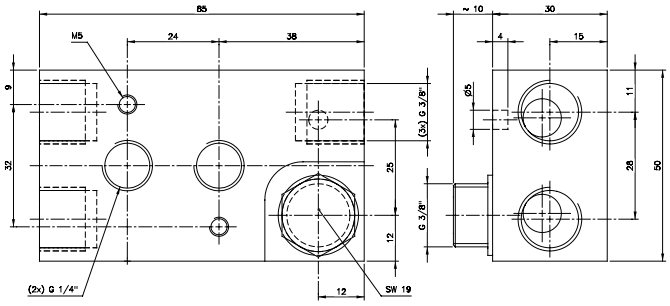
Single cylinder actuator, piped



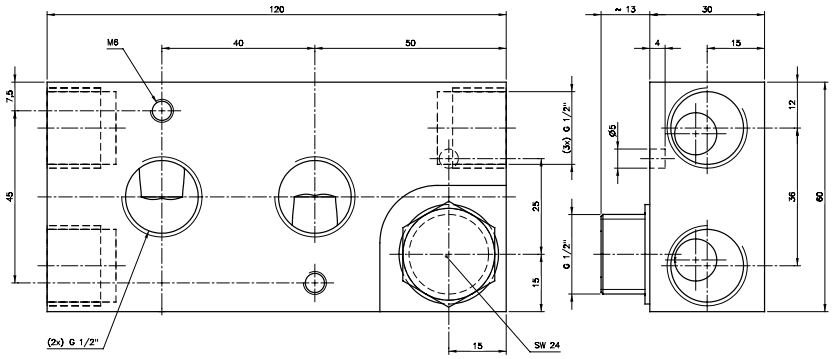
Single cylinder actuator, NAMUR



ZVPS 701



ZVPS 101



ZVPS 121

Plates to combine NAMUR-valves with scotch-yoke-actuators.

The plates can be attached to different actuators, independent on their stroke.

ZVPS 701 to be assembled onto an actuator with G 1/4“ ports. Designed for an orifice size 7 mm in combination with e.g. MNH 510 711.

ZVPS 101 to be assembled onto an actuator with G 3/8“ ports. Designed for an orifice size 10 mm in combination with e.g. MNH 510 101.

ZVPS 121 to be assembled onto an actuator with G 1/2“ ports. Designed for an orifice size 12 mm in combination with e.g. MNH 510 121.

Delivery contains the plate and the banjo for one port.
Straight male fittings and rotating elbow fittings to make the other connection can be supplied on request.

Type	Port A	Port B	Port C + O	NAMUR	Orifice	Weight
ZVPS 701	Banjo G 1/4”	G 1/4”	G 1/4”	1/4”	7 mm	0,35 kg
ZVPS 101	Banjo G 3/8”	G 3/8”	G 1/4”	1/4”	10 mm	0,40 kg
ZVPS 121	Banjo G 1/2”	G 1/2”	G 1/2”	1/2”	12 mm	0,45 kg

Cylinder-Valve Combinations

Cylinder-valves-bridges

As an alternative to the flexible cylinder-valve combination plates type ZVP, Hafner is offering very robust cylinder-valve-bridges made from a solid aluminum bar.

Key features:

- Very robust design
- Available for cylinder ports from G 1/4“ up to G 3/4“
- Material aluminum
- Custom made for different strokes and cylinder designs
- NAMUR 1 (1/4“) or NAMUR 2 (1/2“) interface towards control valve

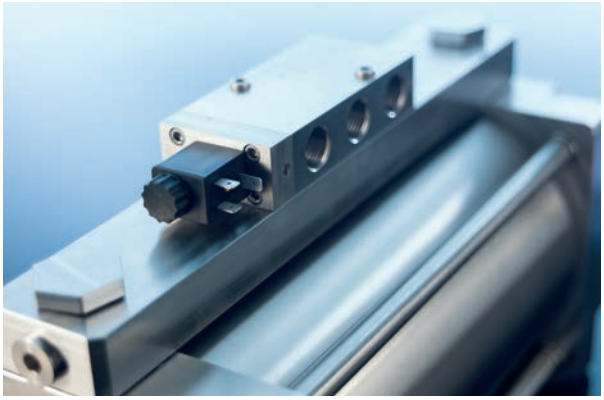
Stroke is limited, please contact us.

The cylinder-valve-bridges are also available entirely made from **316L (A4) stainless steel.** Additionally Hafner has the ability to offer full stainless steel units.

The units consist of:

- Cylinder according to ISO 15552 or ISO 21287 (compact cylinders)
- Cylinder-valve combination plate, which can be fitted to the cylinder with banjo-screws, offering a NAMUR-interface towards the pilot valve.
- Pilot valve with NAMUR-interface.

Possible configurations:



- Stainless steel cylinders with diameter up to 200 mm.
- Cylinder-valve combination plate with NAMUR 1 (1/4“) or NAMUR 2 (1/2“) interface.
- Wide range of pilot valves, different port sizes, functions and flow rates.
- Units for explosion hazardous environment, ATEX certified for zone 1 / 21.
- Valves with SIL 3 certificate.
- Units for a wide temperature range.
- Accessories such as flow regulator plates or fittings made from stainless steel.

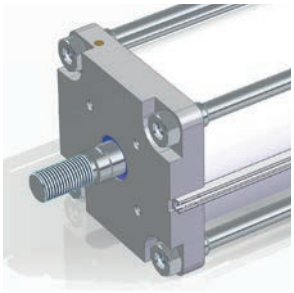
For further information, please contact us.

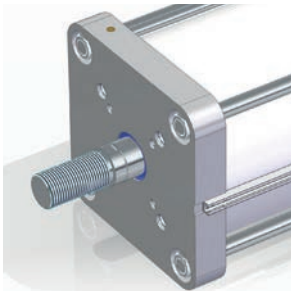
Application

Hafner has developed a new cylinder series with integrated NAMUR mounting port pattern.
This allows to assemble NAMUR-valves and accessories directly to the cylinder.

Key features:

- Double acting
- Cylinder standard similar to ISO 15552
- Diameter: 80 ... 320 mm
  - 80 – 125 mm: Profile tube
  - 160 – 320 mm: with tie rods
- Stroke length: 25 ... 1000 mm (others on request)
- Interface to solenoid valve according to VDI/VDE 3845 (NAMUR 1 – 1/4“).
- All cylinders with magnetic piston as a standard

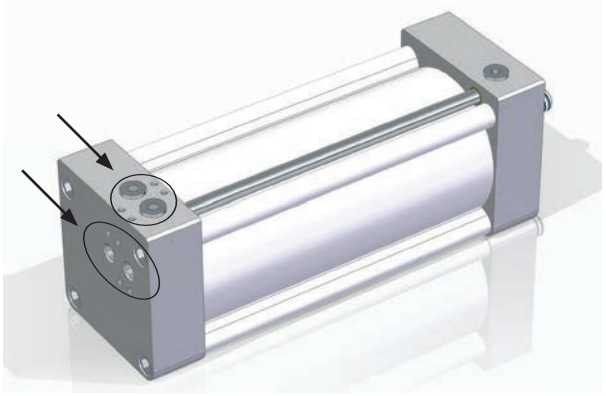




These kind of cylinders are mainly used for the automation of knife-gate-valves. Therefore the head of the cylinder has a mounting port pattern according to DIN 3358/ISO 5210 for direct mounting to knife-gate-valves.

Other interfaces on request.

Diameter up to 125 mm with NAMUR-interface at the bottom and long side of the cylinder for maximum flexibility. Unused ports to be plugged.
Starting diameter 160 mm only with one NAMUR-interface at the bottom.



Diameter up to 125 mm

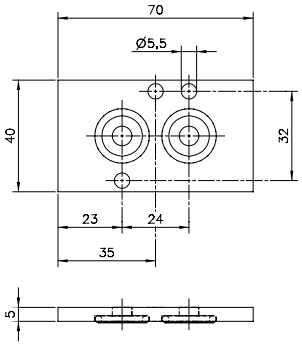
Diameter from 160 mm

For further information, please contact us.

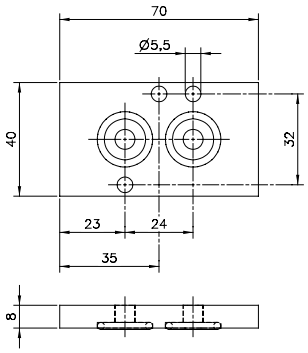
HAFNER

Mounting Accessories

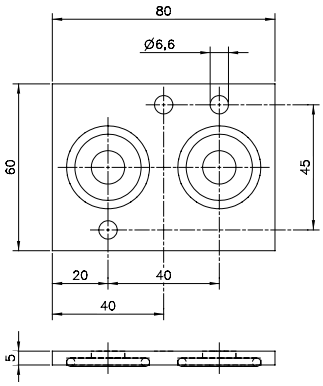
Mounting accessories for products with NAMUR-interface. O-Ring seals made from NBR 70° shore, fasteners such as screws and pins are made from stainless steel (A2) only.



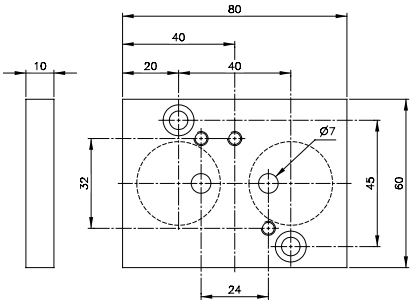
ZPN 5
Intermediate plate, made from anodized aluminum. To be used in case a 30 mm wide coil is to be assembled to a 22 mm wide 1/4“ NAMUR-valve. Version ZPN 5 K made from Polyamide.



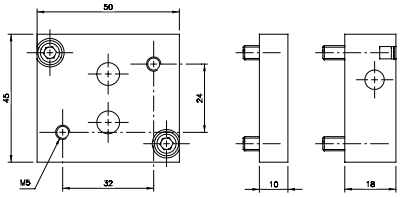
ZPN 8
Intermediate plate, made from anodized aluminum. To be used in case a 36 mm wide coil is to be assembled to a 22 mm wide 1/4“ NAMUR-valve.



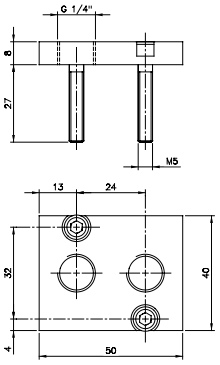
ZPN 6-5
Adapter plate, made from anodized aluminum. To be used in case a 36 mm wide coil is to be assembled to a 30 mm wide 1/2“ NAMUR-valve.



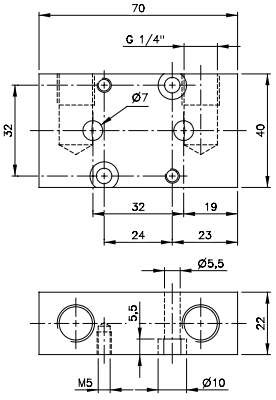
ZPN 6-10
Adapter plate to assemble a 1/4“ NAMUR-valve to an actuator with 1/2” NAMUR-interface.



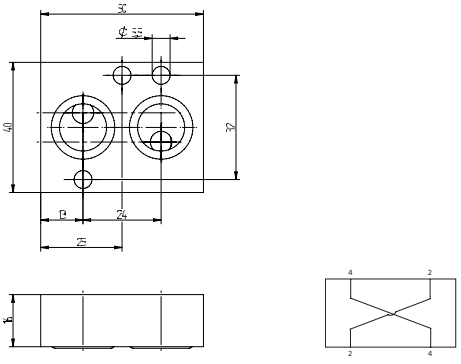
ZPN 701-90
Plate to turn a NAMUR-valve by 90° on the actuator.



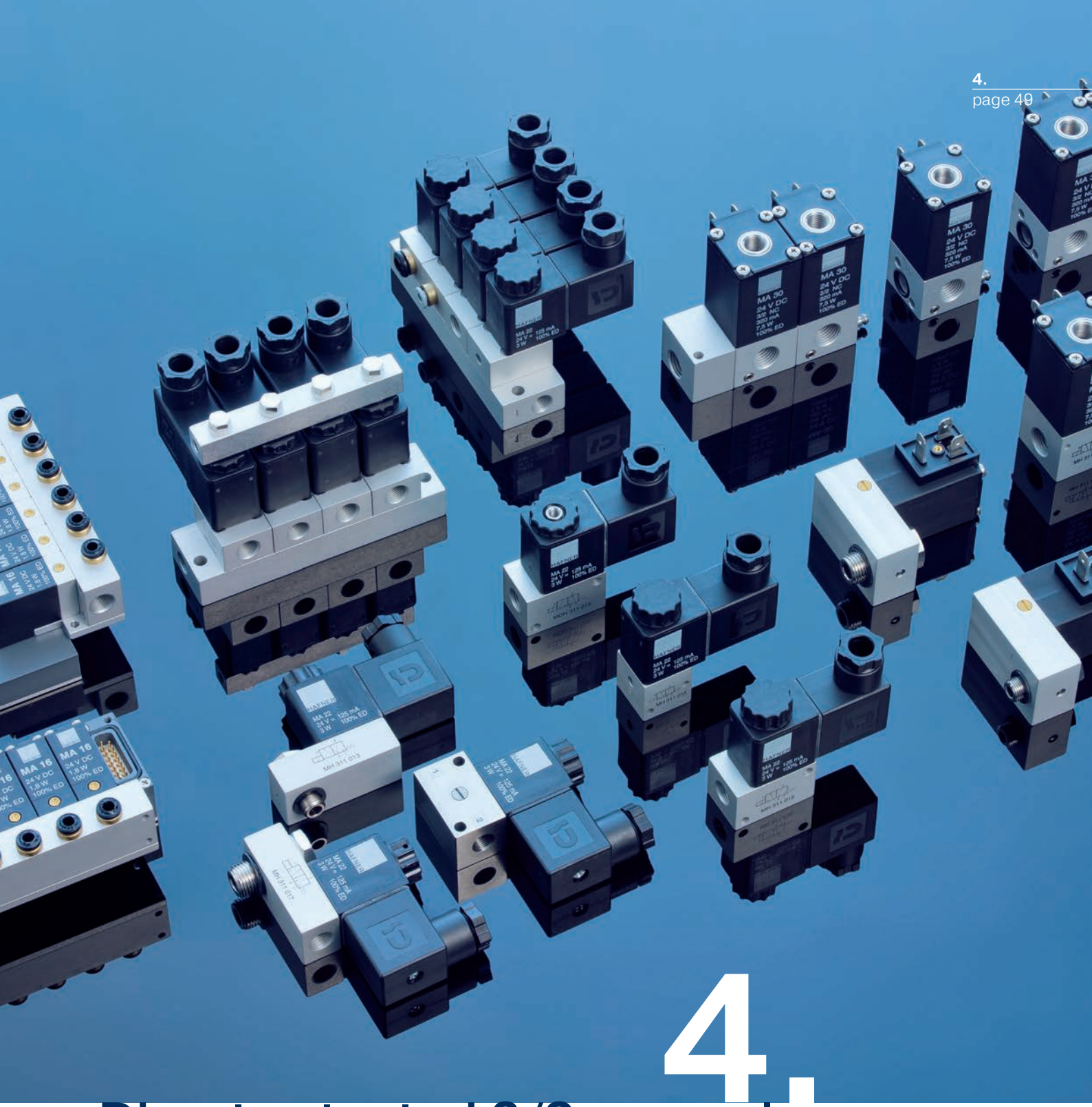
GPN 1/4
Plate to convert a ¼” NAMUR-interface into 2 x G 1/4“ threaded ports for remote piloting. For ½” NAMUR-interface on request.



FPNW 22-1/4
Plate to convert a 5-way NAMUR-valve into an inline valve. The NAMUR ports 2 and 4 are transferred into the plate and offer G ¼” BSP threads. Mounting plate can be assembled independently and the valve is attached later-on.

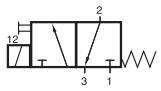


ZPNX 16
Plate to swap the working ports of a NAMUR-valve. Can be used in case pressure- and exhaust ports face into the wrong direction.

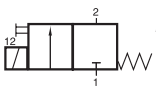


4.
Direct actuated 3/2-way valves

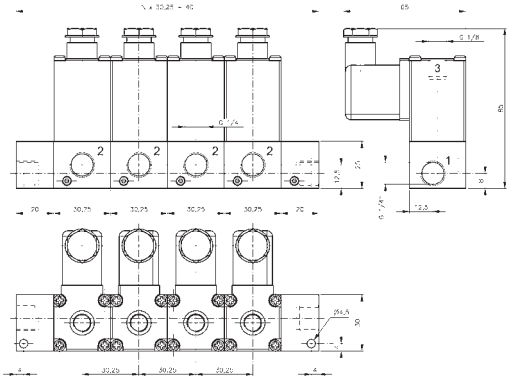
MH 339/MH 239/R 33 R/R 33 L



MH 339



MH 239



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).

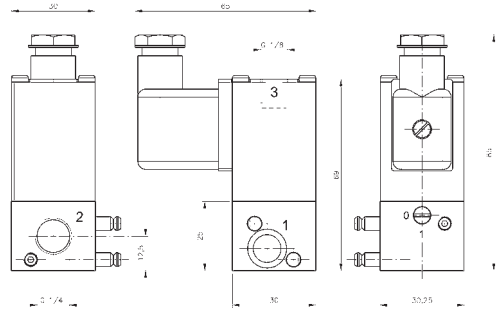
Valves are generally equipped with manual override.

The system consits of:

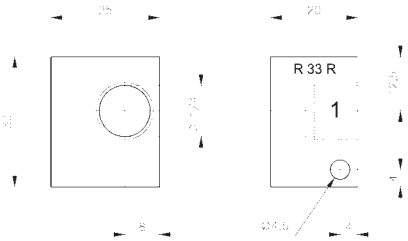
End-plate right	type R 33 R
End-plate left	type R 33 L
Individual valve 3/2-way	type MH 339
Individual valve 2/2-way	type MH 229

The end-plates can be equipped with DIN-rail mounting clips.

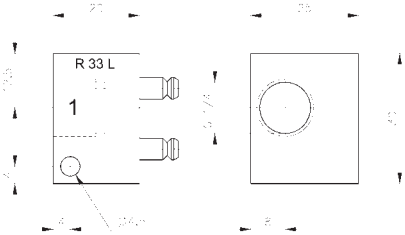
Products are to be ordered individually but system can be delivered fully assembled.



Individual valve MH 339/MH 239

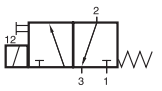


End-plate right R 33 R

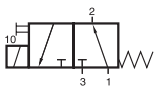


End-plate left R 33 L

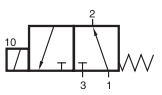
Type	Ways	Function	Port size 1	2	3	Air flow	Operating pressure	Power consumption	Weight
MH 339	3/2	n.c.		G 1/4"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,18 kg
MH 239	2/2	n.c.		G 1/4"		200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,18 kg
R 33 R		end-plate right	G 1/4"						0,04 kg
R 33 L		end-plate left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



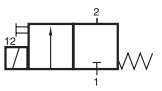
MH 311 012
MH 311 015



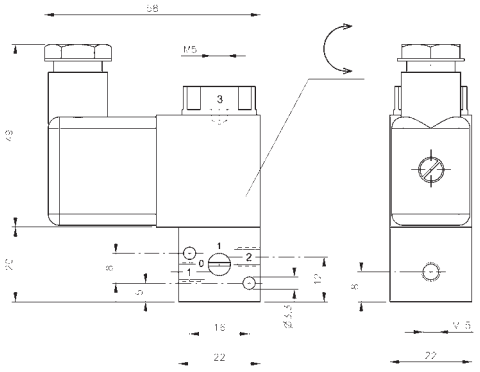
MOH 311 012
MOH 311 015



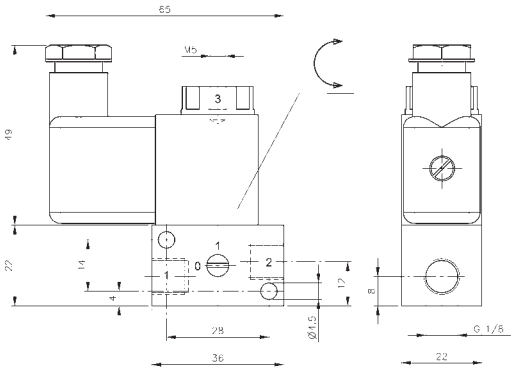
MX 311 012
MX 311 015



MH 211 012
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 notice: 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.

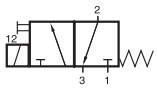
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves can be used for technical vacuum too.

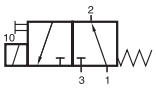
Type	Ways	Function	Port size 1	2	3	Air flow	Operating pressure	Power-consumption	Weight	
MH 311 012	3/2	n.c.	M5	M5	M5	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,12 kg	
MH 311 015	3/2	n.c.	G 1/8”	G 1/8”	M5	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg	
MOH 311 012	3/2	n.o.	M5	M5	M5	40 l/min	-0,9 - 10 bar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

HAFNER

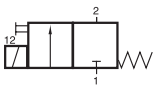
MH 311 305/MH 311 309/MOH 311 305 MOH 311 309/MH 211 305/MH 211 309



MH 311 305
MH 311 309



MOH 311 305
MOH 311 309



MH 211 305
MH 211 309

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

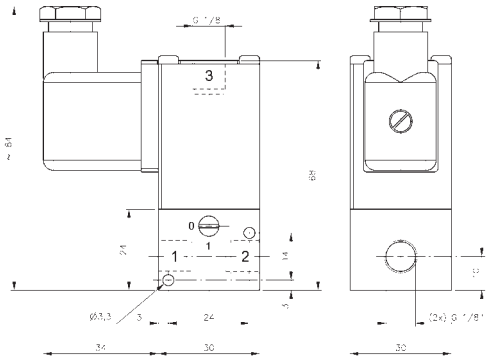
Type MH 211 _ _ _
2/2-way valve n.c.

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

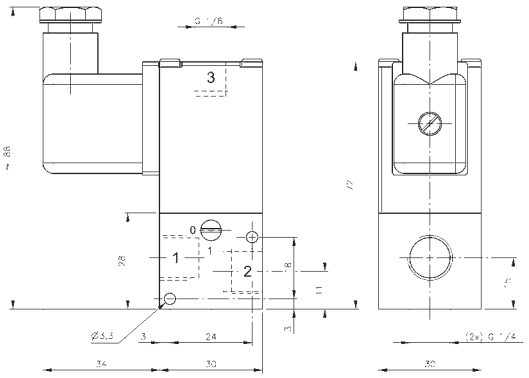
Available with solenoid operators:
230V/50Hz, 24V/50Hz, 24V=
Connector Industry B (22 mm).

Valves are generally equipped with manual override.

Connector Industry B (22 mm).

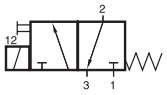


MH 311 305/MOH 311 305/MH 211 305

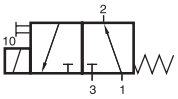


MH 311 309/MOH 311 309/MH 211 309

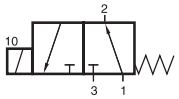
Type	Ways	Function	Port size			Air flow	Operating pressure	Power consumption	Weight
			1	2	3				
MH 311 305	3/2	n.c.	G 1/8"	G 1/8"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,17 kg
MH 311 309	3/2	n.c.	G 1/4"	G 1/4"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,18 kg
MOH 311 305	3/2	n.o.	G 1/8"	G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



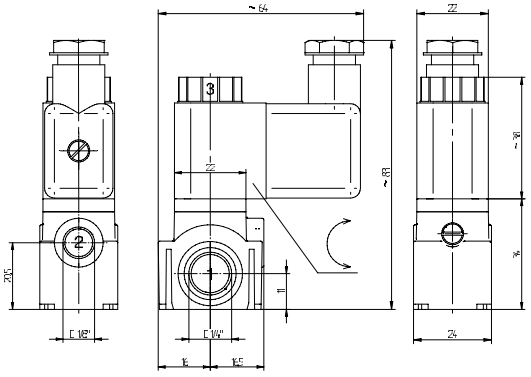
MH 311 105



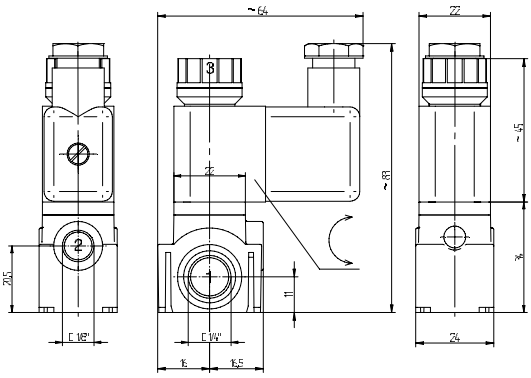
MOH 311 105



MX 311 105



MH 311 105/MOH 311 105



MX 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

Individual valves can easily be combined to manifold systems just by putting 2 brass brackets (type VBM 105) 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=.

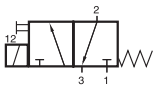
Valves can be used for technical vacuum too.

Available and useful accessories:
KV SET 01
Set to connect two valves consisting of two brass clamping brackets and an NBR O-ring.

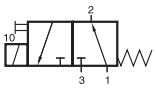
3015 – 1/4
Plug to close one side of the two supply ports in the valve, brass, nickel plated G1/4" with O-ring seal.

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 - 10 bar	3 W= / 5 VA	0,09 kg

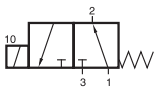
MH 311 014/MOH 311 014
MH 311 019/MX 311 019



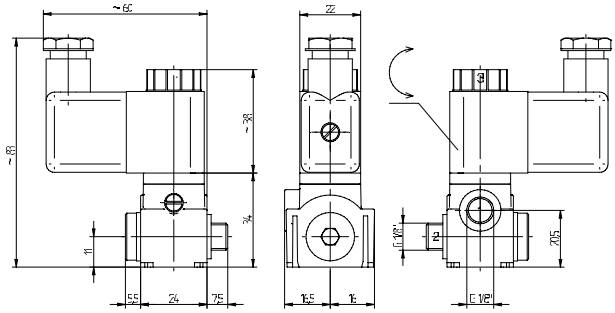
MH 311 014
MH 311 019



MOH 311 014



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, max. pressure 7 bar.

Type MH 311 014:
Normally closed, port 1 in the valve, port 2 as banjo screw, exhaust through operator system with manual override.

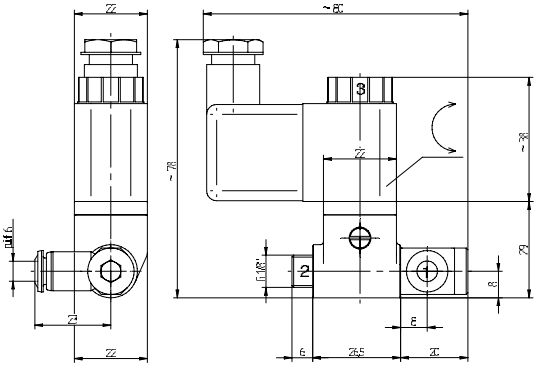
Type MH 311 019 _ _:
Normally closed, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system with manual override.

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.

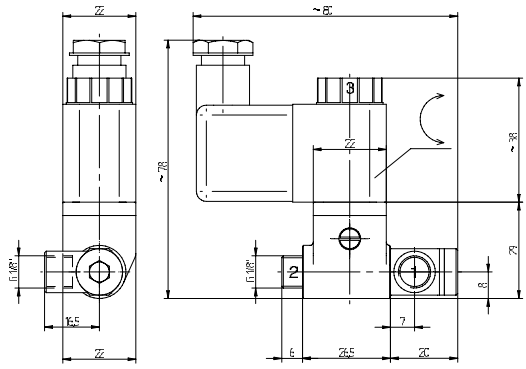
Type MX 311 019 _ _:
Normally open, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system no manual override. Operator system is 8 mm longer than in drawing.

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

Available and useful accessories:
KV SET 02
1/8" to 1/4" reducer for port 2.

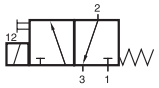


MH 311 019 6/MX 311 019 6

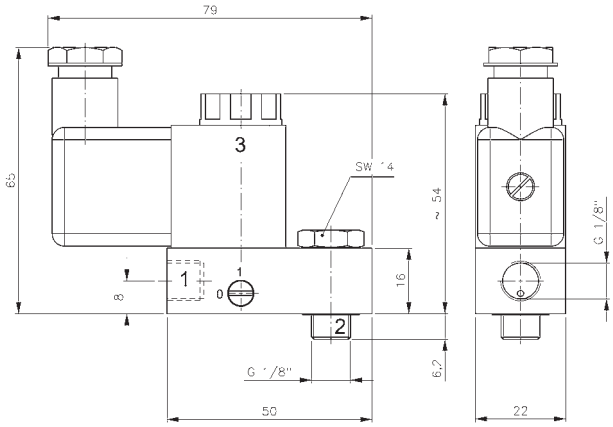


MH 311 019 1/8 / MX 311 019 1/8

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 - 8 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

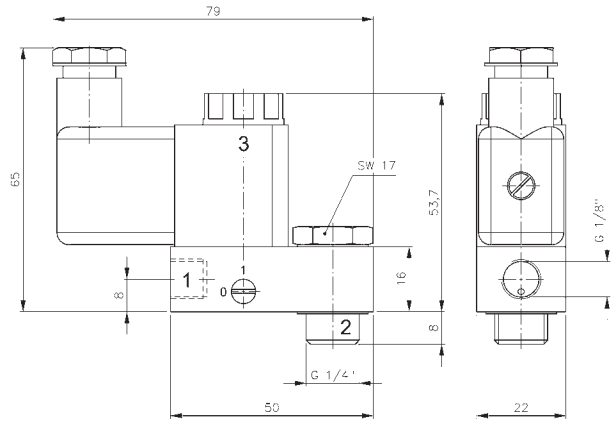
Direct acting 3/2-way solenoid valve equipped with mechanical spring return, normally closed.

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

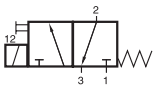
MH 311 013 and MH 311 017 are designed for piloting angle seat valves or small spring-return actuators.

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



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.

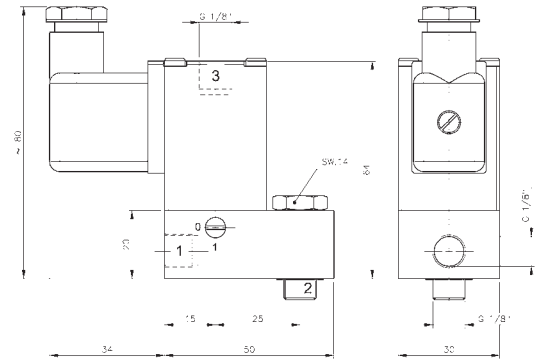
Port 2 is a banjo that can be screwed directly into the actuator that is to be controlled.

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

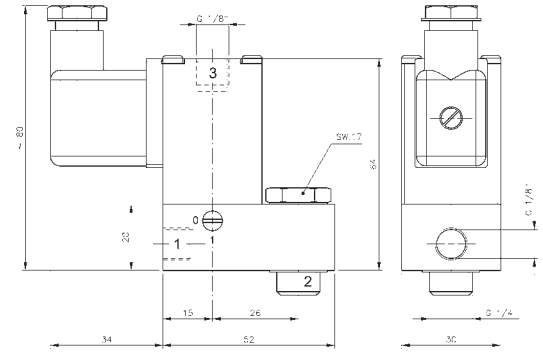
Available with solenoid operators:
230V/50Hz, 24V/50Hz, 24V=
Connector Industry B (22 mm).

Valves are generally equipped with manual override.

Connector Industry B (22 mm)



MH 311 313



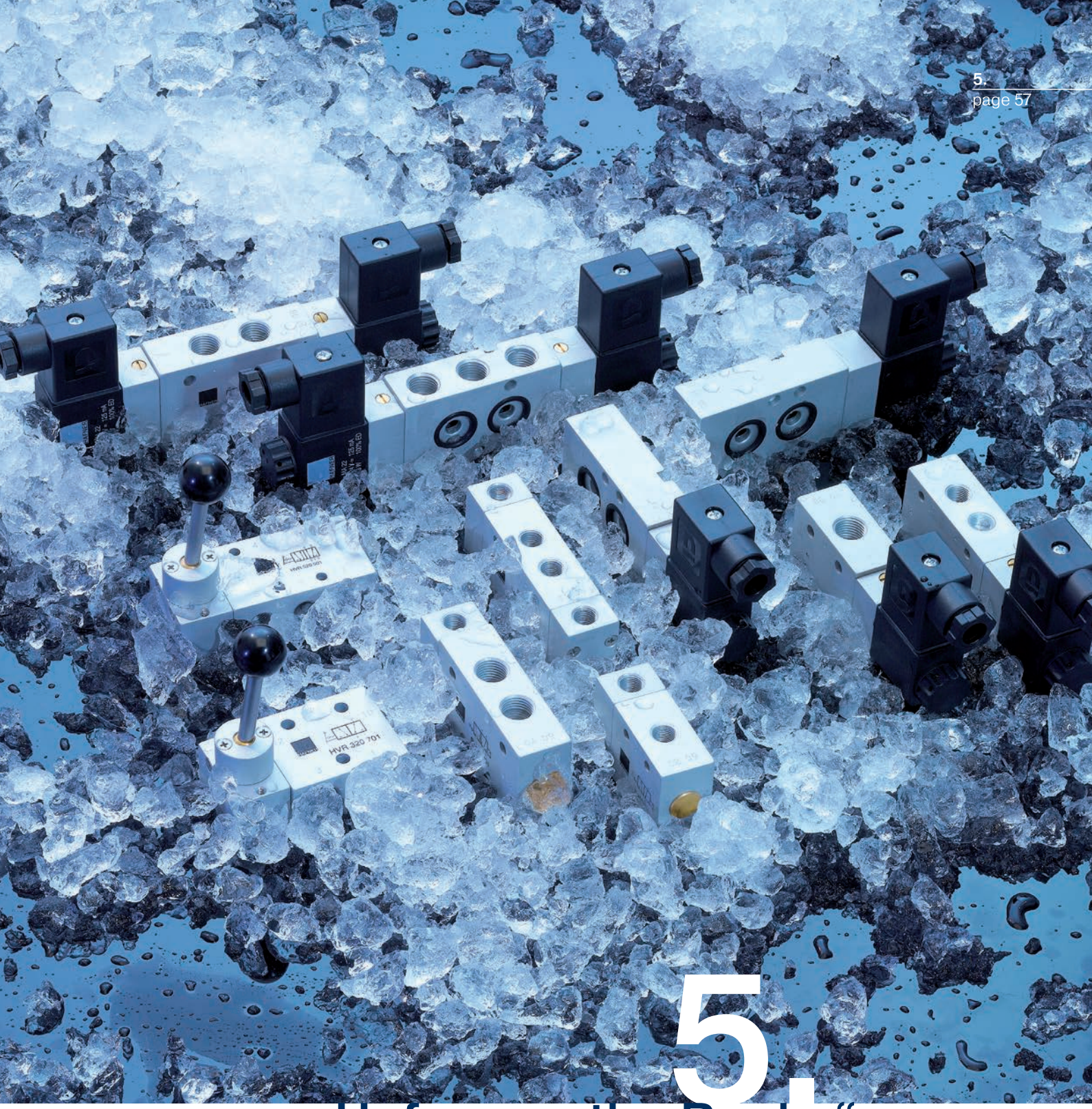
MH 311 317

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).

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



5.

„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 8.

Temperature range:
1/8” and 1/4” valves: – 50° C to + 50° C
1/2” valves: – 40° C to + 50° C

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Overview: Manually and pneumatically actuated valves for low temperature environment

Example:
3/2 and 5/2 manually actuated spool valve,
G 1/4“, spring return or indexed

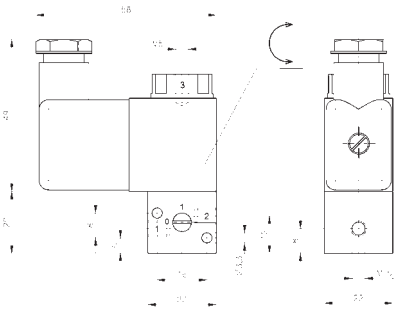
Actuation:	Manually and pneumatically
Port-size:	G 1/8”, 1/8” NPT, G 1/4“, 1/4“ NPT
Flow:	650 Nl (1/8”), 1.250 Nl (1/4”)
Function:	3/2-way, 5/2-way, 5/3-way

For detailed information, please refer to our full catalogue chapter 2.11 or contact us directly.

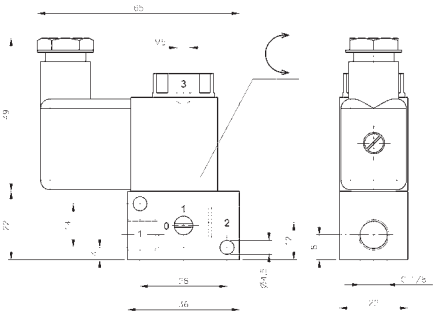
Example:
3/2 and 5/2 hand lever valve, G 1/4“,
spring return or indexed

Example:
Single and double pilot 5/2 pneumatically act.
valve, G 1/4“

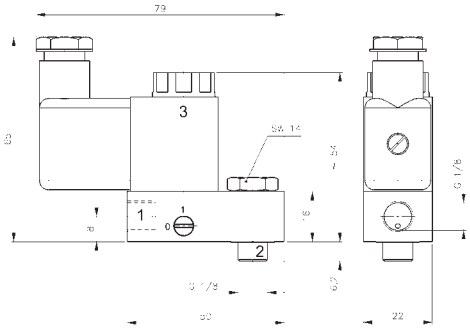
MH 311 012 TT/MH 311 015 TT
MH 311 013 TT/MH 311 017 TT



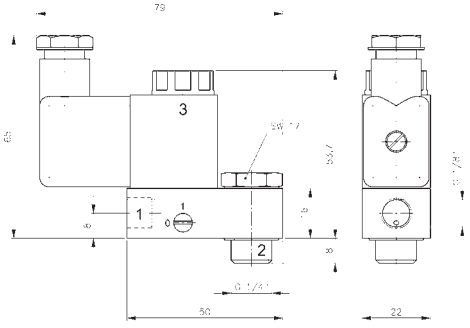
MH 311 012 TT



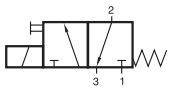
MH 311 015 TT



MH 311 013 TT



MH 311 017 TT



MH 311 012 TT
MH 311 015 TT
MH 311 013 TT
MH 311 017 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 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 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!
Use unlubricated air only.

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	Ex
MH 311 015 TT	G 1/8”	G 1/8”	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg	Ex
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	Ex
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	Ex

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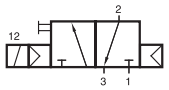
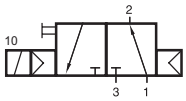
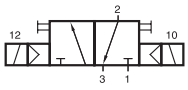
M(O)H 310 501 TT/M(O)H 310 701 GTT
MH 320 501 TT/MH 320 701 GTT



MH 310 501 TT
MH 310 701 GTT



MOH 310 501 TT
MOH 310 701 GTT



MH 320 501 TT
MH 320 701 GTT

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. For manifold plates please refer to our full catalogue chapter 2.7.

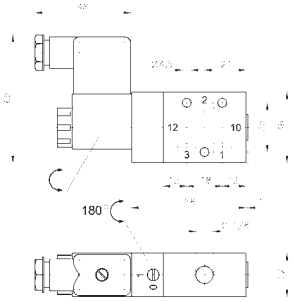
Available with solenoid operators
230V/50 Hz, 110V/50 Hz, 24V/50 Hz, 48V=,
24V=, 12V=.

Valves are equipped with manual override to turn.

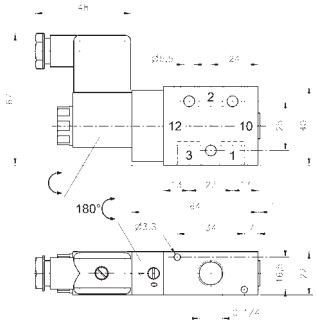
Please notice:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Below - 40° C the leakage-rate of the valve can increase to 10 cm^3 /min.
Use unlubricated air only.

Valves are also available with external pilot feed.

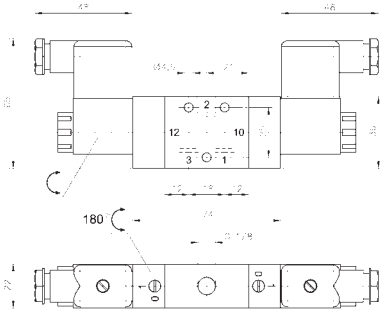
NPT ported valves are available on request.



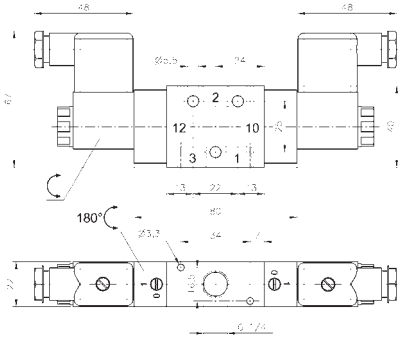
MH 310 501 TT/MOH 310 501 TT



MH 310 701 GTT/MOH 310 701 GTT

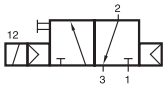


MH 320 501 TT

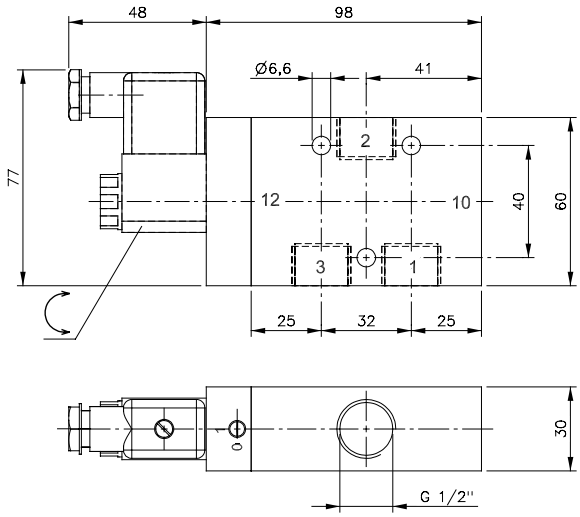


MH 320 701 GTT

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	Ex
MH 310 701 GTT	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg	Ex
MOH 310 501 TT	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg	Ex
MOH 310 701 GTT	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg	Ex
MH 320 501 TT	double sol.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,34 kg	Ex
MH 320 701 GTT	double sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,36 kg	Ex



MH 310 121 TT



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=.

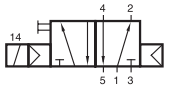
Valves are generally equipped with manual override. If requested without manual override please order M 310 121 TT.

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

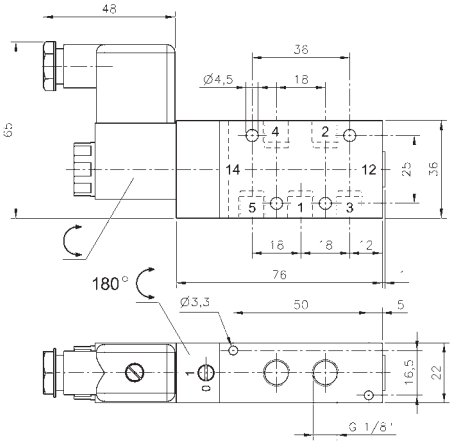
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Use unlubricated air only.

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



MH 510 501 GTT

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=.

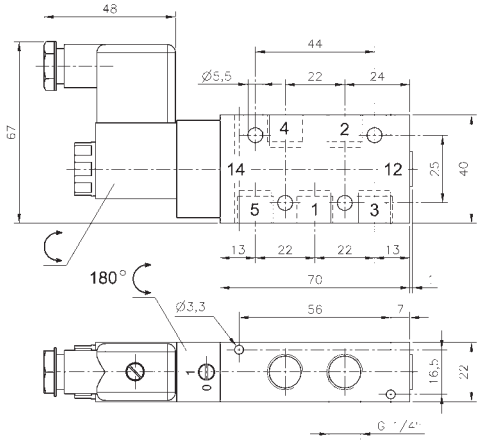
Valves are equipped with manual override to turn.

Please 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! Use unlubricated air only.

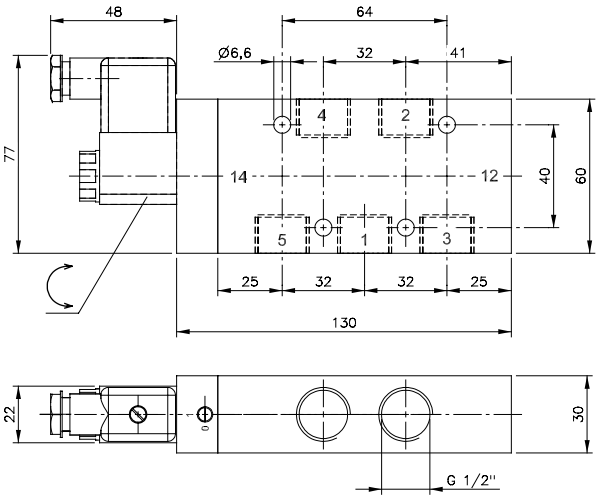
Valves type MH 510 501 GTT and MH 510 701 GTT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm^3 /min and operating pressure generally increases to 3 bar.

Valves are also available with external pilot feed.

NPT ported valves are available on request.



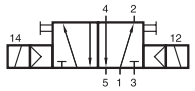
MH 510 701 GTT



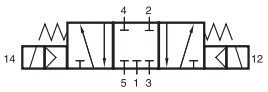
MH 510 121 TT

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	Ex
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	Ex
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	

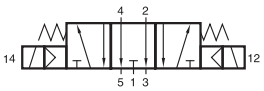
MH 520 501 GTT/MH 520 701 GTT
MH 53_ 501 GTT/MH 53_ 701 GTT



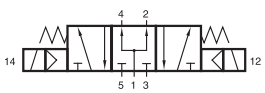
MH 520 501 GTT
MH 520 701 GTT



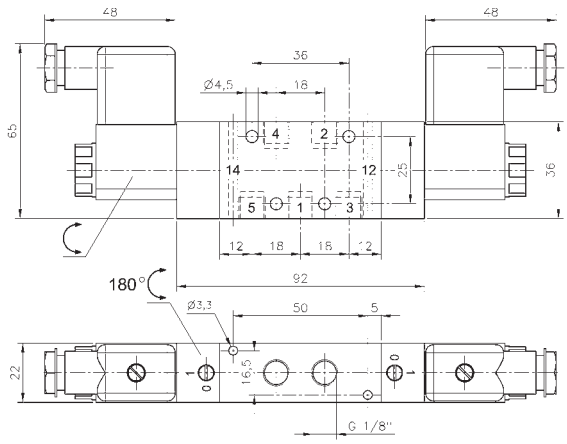
MH 531 501 GTT
MH 531 701 GTT



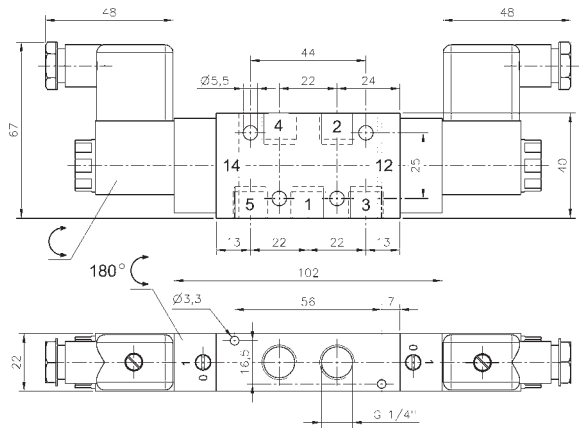
MH 532 501 GTT
MH 532 701 GTT



MH 533 501 GTT
MH 533 701 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. 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 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 cm^3 /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	Ex
MH 520 701 GTT	G 1/4"	1250 l/min	1 - 10 bar	3 W = / 5 VA ~	0,40 kg	Ex
MH 53_ 501 GTT	G 1/8"	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,38 kg	Ex
MH 53_ 701 GTT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,40 kg	Ex

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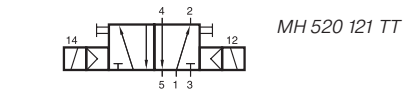
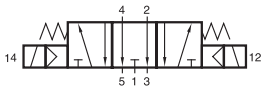
MH 520 121 TT/MH 53_ 121 TT

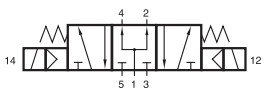


MH 520 121 TT

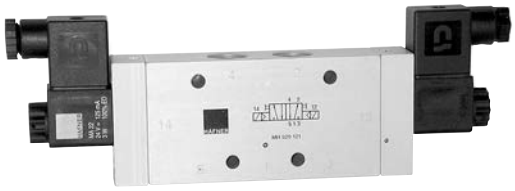
MH 531 121 TT



MH 532 121 TT



MH 533 121 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

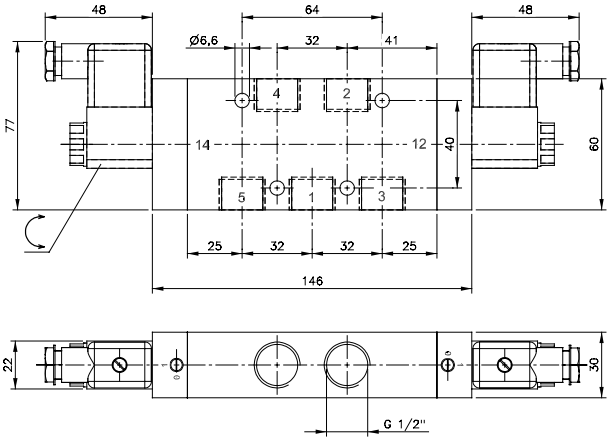
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

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

Please 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! Use unlubricated air only.

Valves are also available with external pilot feed.

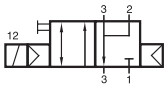
NPT ported valves are available on request.



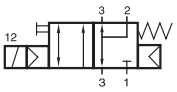
MH 520 121 TT/MH 53_121 TT

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

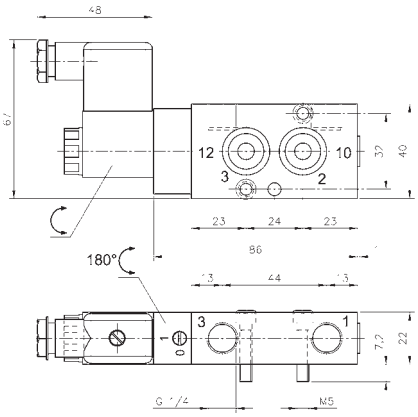
MNH 310 701 TT/MNH 311 701 TT
MNH 310 121 TT/MNH 311 121 TT



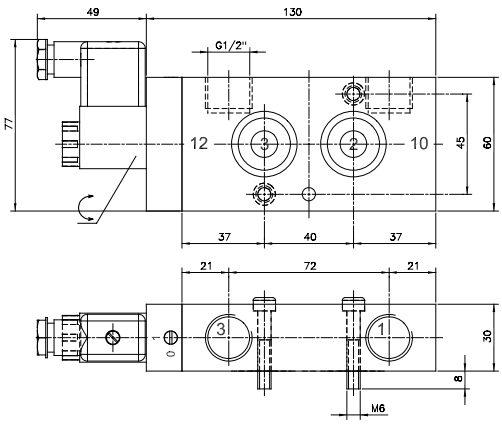
MNH 310 701 TT
MNH 310 121 TT



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 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! Use unlubricated air only.

Valves type MNH 31_ 701 TT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm^3 /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	Ex
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	

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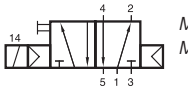
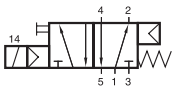
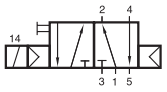
MNH 510 701 TT/MNH 511 701 TT
MNH 510 711 TT/MNH 511 711 TT
MNH 510 121 TT/MNH 511 121 TT



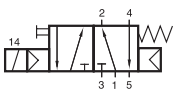
MNH 510 701 TT
MNH 510 121 TT



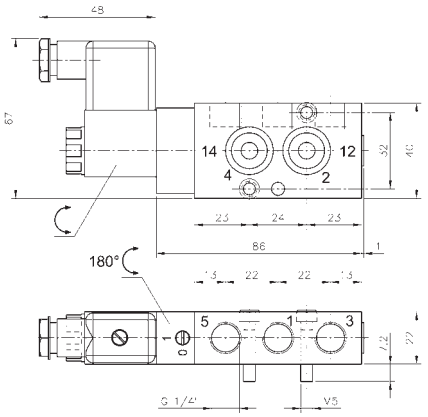
MNH 511 701 TT
MNH 511 121 TT



MNH 510 711 TT



MNH 511 711 TT



MNH 510 701 TT/MNH 511 701 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=.

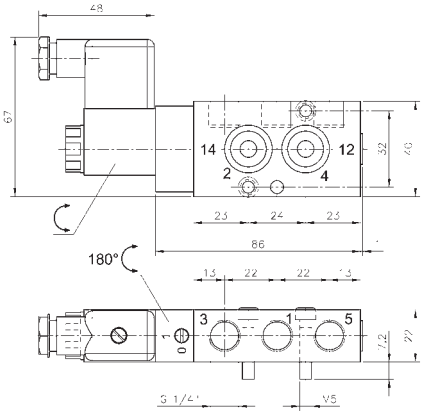
Valves are equipped with manual override to turn.

Please 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! Use unlubricated air only.

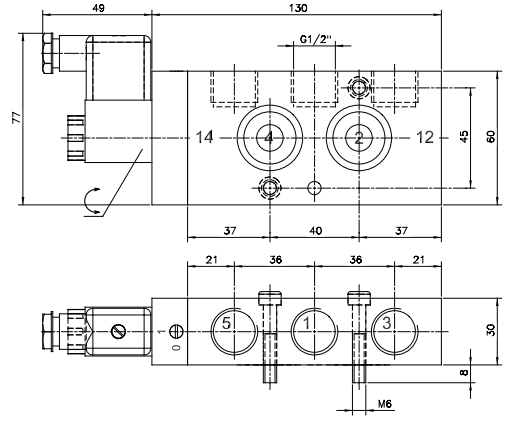
Valves type MNH 51_ 701 TT:
Below - 40° C the leakage-rate of the valve can increase to 10 cm3 /min and operating pressure generally increases to 3 bar.

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

NPT ported valves are available on request.



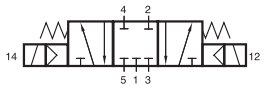
MNH 510 711 TT/MNH 511 711 TT
ports 2 and 4 are swapped!



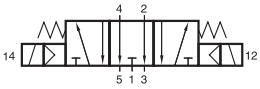
MNH 510 121 TT/MNH 511 121 TT

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	Ex
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	Ex
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	

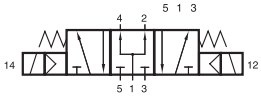
MNH 520 701 TT/MNH 53_ 701 TT
MNH 520 121 TT/MNH 53_121 TT



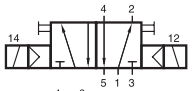
MNH 531 701 TT
MNH 531 121 TT



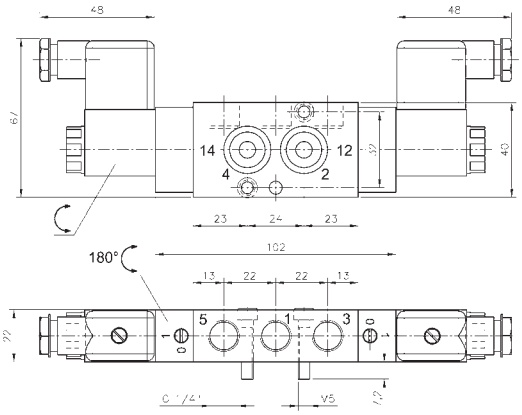
MNH 532 701 TT
MNH 532 121 TT



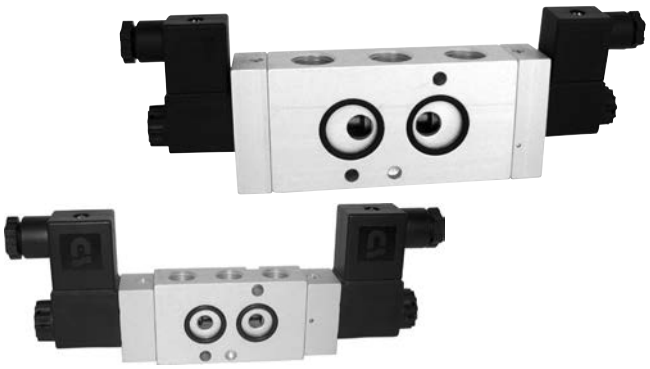
MNH 533 701 TT
MNH 533 121 TT

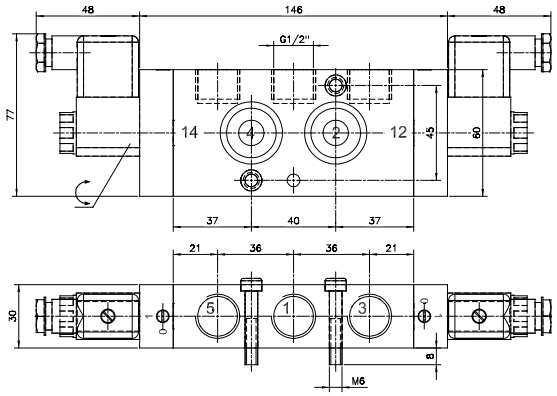


MNH 520 701 TT
MNH 520 121 TT



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 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! 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	Function	NAMUR	Temp. range	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 520 701 TT	5/2 double sol.	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg	Ex
MNH 53_ 701 TT	5/3 way	1/4"	- 50° C to + 50° C	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg	Ex
MNH 520 121 TT	5/2 double sol.	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	5/3 way	1/2"	- 40° C to + 50° C	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,70 kg	

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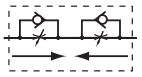
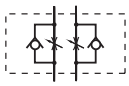
DRN 3 611 TT/DRN 5 611 TT


DRN 3 611 TT


DRN 5 611 TT

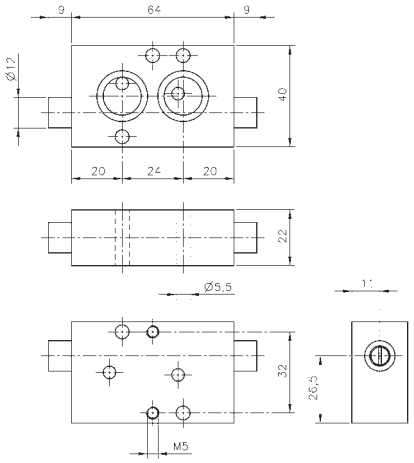
Block form flow regulator as intermediate plate, interface according to 1/4" NAMUR-standard for low temperature environment - 50° C to + 50° C.

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.

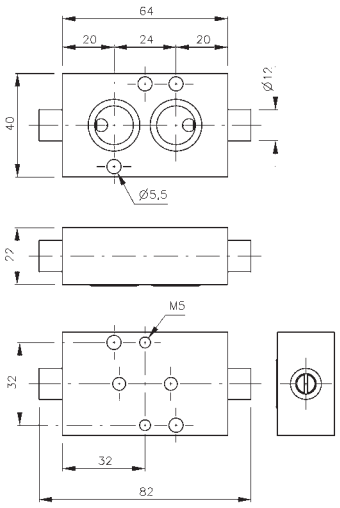
Type DRN 5 611 TT:
for 5/2 and 5/3 way valves only. To regulate the forward- and backward stroke of a double acting pneumatic actuator. To be operated with a screw-driver.

Please 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!
Use unlubricated air only.

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

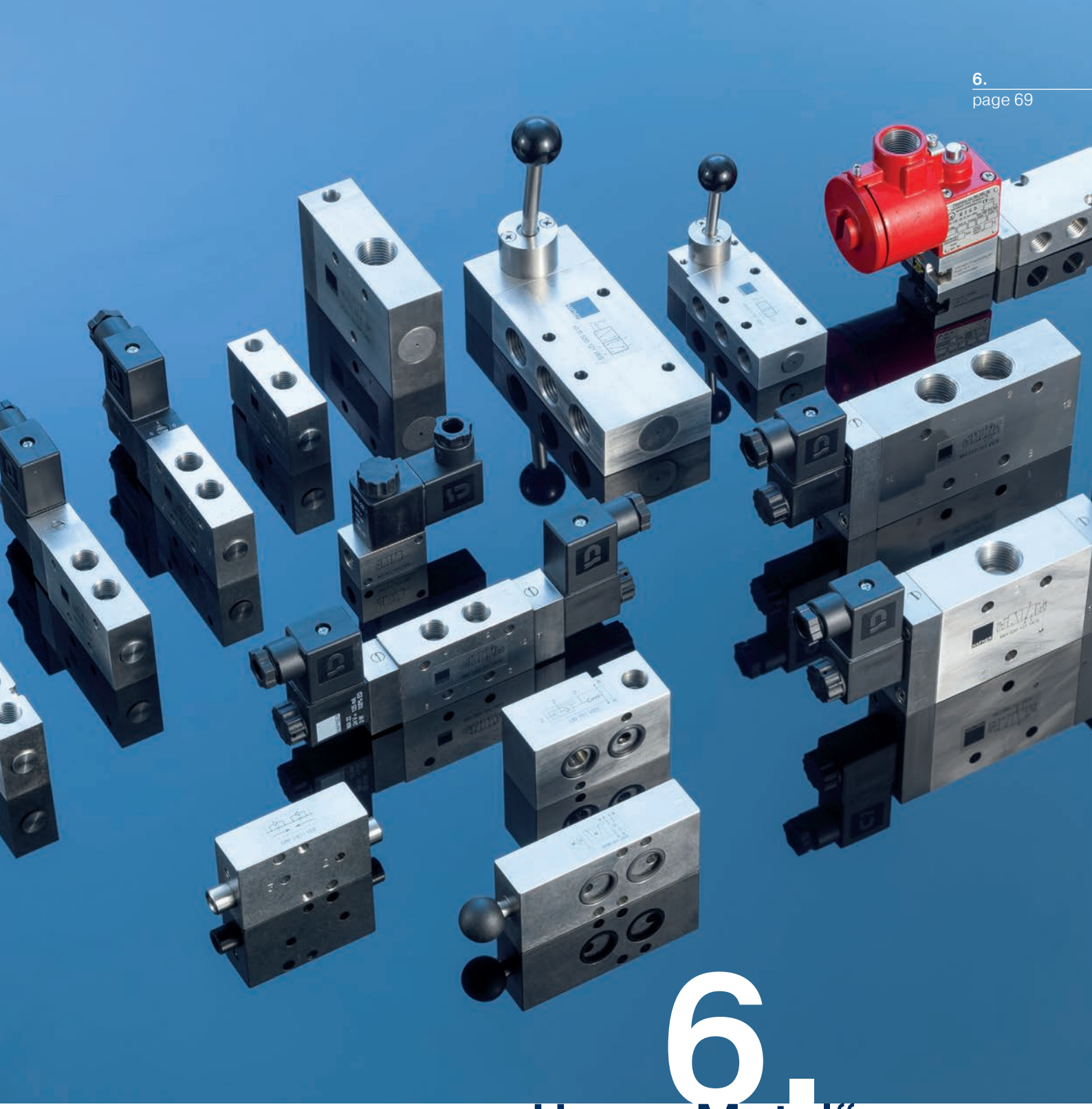


DRN 3 611



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



6.
„Heavy Metal“ Stainless Steel Valves

316

Selected models are available for explosion hazardous environment.
They are ATEX-Ex certified.
For detailed information refer to chapter 8.

Selected models are available for low temperature application.
Temperature-range: - 50° C to + 50° C.
For detailed information refer to chapter 5.

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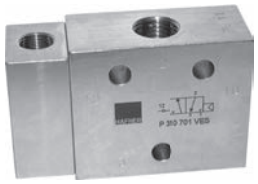
Overview: Manually and pneumatically actuated valves in stainless steel

Example:
3/2 -way lever-valve G 1/4” spring return or indexed

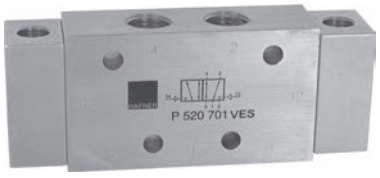
Actuation:	Manually, pneumatically and on request mechanically
Port-size:	G 1/4”, 1/4” NPT, G 1/2“, 1/2“ NPT
Flow:	1.250 Nl (1/4”), 3.000 Nl (1/2”)
Function:	3/2-way, 5/2-way, 5/3-way

For detailed information in these items, please refer to our full catalogue chapter 2.12 or contact us directly.

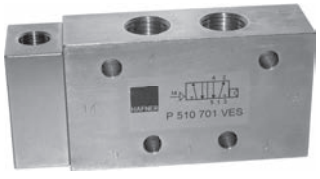
Example:
5 -way lever-valve G 1/2” spring return or indexed



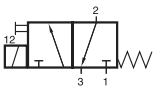
Example:
3/2-way pneumatically act. valve spring return



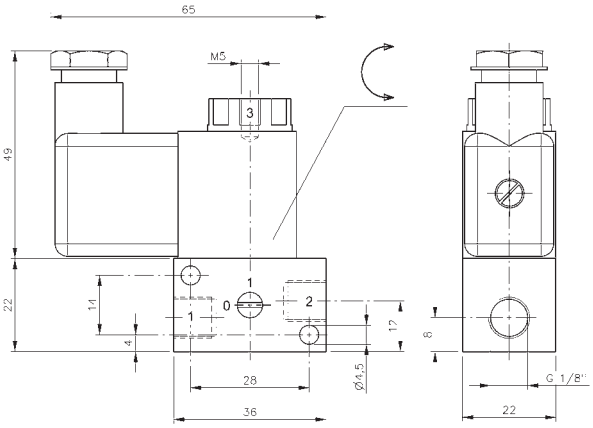
Example:
5-way double pilot pneumatically act. valve



Example:
5-way pneumatically act. valve spring return



MH 311 015 VES



MH 311 015 VES

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

Valve body is made from stainless steel, material: 1.4404.
Plunger-seals are made of FKM.

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

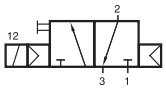
By closing port 3 valve can be converted into a 2/2-way valve.

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

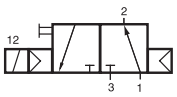
Valves are generally equipped with manual override.

Type	Function	Port size			Air flow	Operating pressure	Power consumption	Weight
		1	2	3				
MH 311 015 VES	n.c.	G 1/8“	G 1/8“	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg

MH 310 701 VES/MH 310 701 KES
MOH 310 701 VES/MOH 310 701 KES



MH 310 701 VES
MH 310 701 KES
MH 310 701 VES NPT
MH 310 701 KES NPT



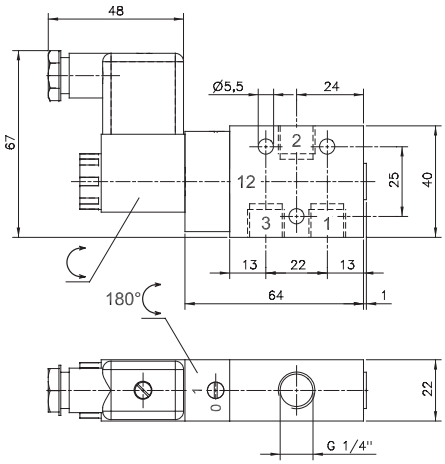
MOH 310 701 VES
MOH 310 701 KES
MOH 310 701 VES NPT
MOH 310 701 KES NPT

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

Body parts are made from stainless steel 316L / 1.4404. Customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.

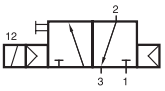


MH 310 701 VES/KES
MOH 310 701 VES/KES
MH 310 701 VES/KES NPT
MOH 310 701 VES/KES NPT

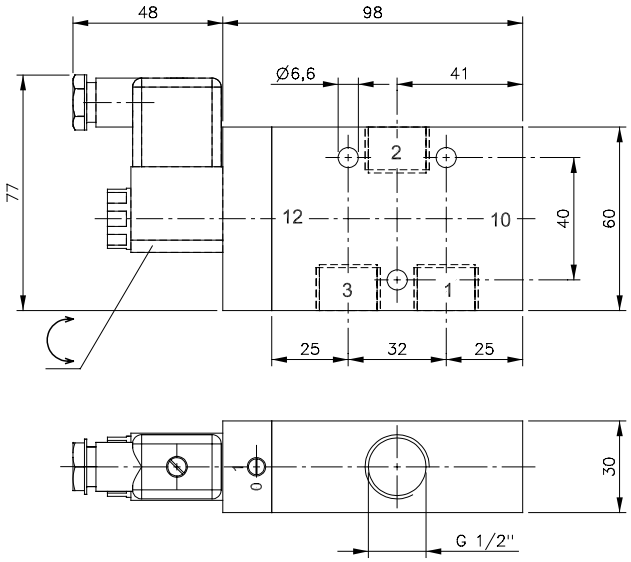
Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM

Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight	
MH 310 701 VES	n.c.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg	❄ Ex
MH 310 701 KES	n.c.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg	
MOH 310 701 VES	n.o.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg	❄ Ex
MOH 310 701 KES	n.o.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg	
MH 310 701 VES NPT	n.c.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg	❄ Ex
MH 310 701 KES NPT	n.c.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg	
MOH 310 701 VES NPT	n.o.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg	❄ Ex
MOH 310 701 KES NPT	n.o.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg	

MH 310 121 VES



MH 310 121 VES



MH 310 121 VES
MH 310 121 VES NPT

Type MH 310 121 VES 3/2-way solenoid valve normally closed actuated by permanent signal and equipped with air spring return.

Body parts are made from stainless steel 316L / 1.4404, rubber parts are made from FKM.

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

Valves are equipped with manual override to be turned.

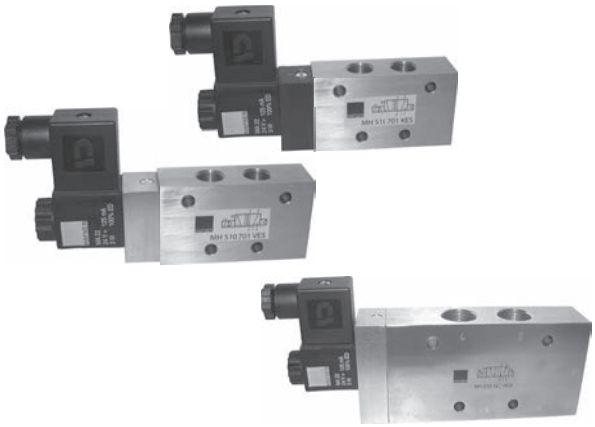
Normally open version on request.

Type	Function	Port size	Air flow	Oper. Press.	Power cons.	Weight	
MH 310 121 VES	n.c.	G 1/2”	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,20 kg	Ex
MH 310 121 VES NPT	n.c.	1/2” NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,20 kg	Ex

HAFNER

MH 510 701 VES/MH 510 701 KES
MH 510 121 VES

MH 510 701 VES/KES
MH 510 701 VES/KES NPT
MH 510 121 VES
MH 510 121 VES NPT



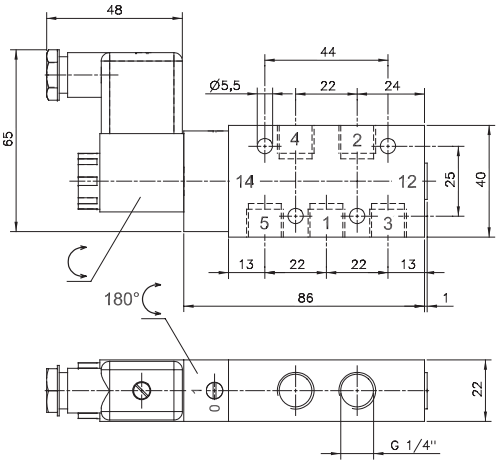
5/2-way solenoid valves actuated by permanent signal and equipped with air spring return.

Body parts are made from stainless steel 316L / 1.4404.

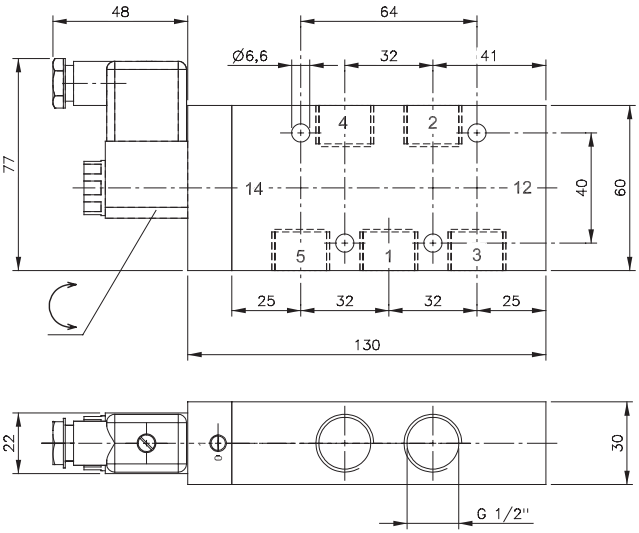
For series 701 the customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.



MH 510 701 VES/KES
MH 510 701 VES/KES NPT

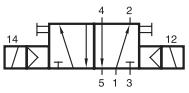


MH 510 121 VES
MH 510 121 VES NPT

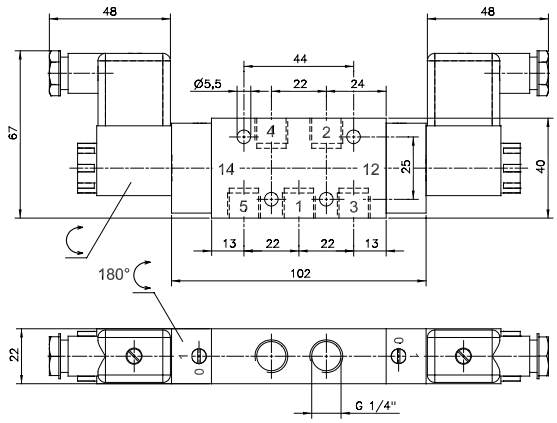
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight	
MH 510 701 VES	single sol.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,53 kg	❄ Ex
MH 510 701 KES	single sol.	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,46 kg	
MH 510 701 VES NPT	single sol.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,53 kg	❄ Ex
MH 510 701 KES NPT	single sol.	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,46 kg	
MH 510 121 VES	single sol.	G 1/2”	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	1,50 kg	Ex
MH 510 121 VES NPT	single sol.	1/2” NPT	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	1,50 kg	Ex

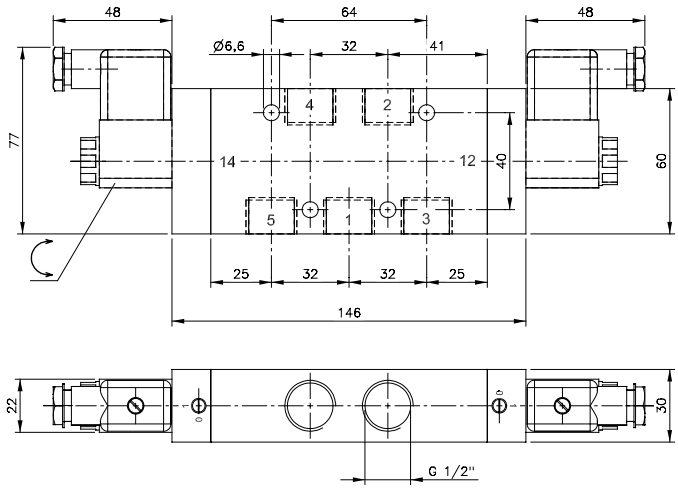
MH 520 701 VES/MH 520 701 KES
MH 520 121 VES



MH 520 701 VES/KES
MH 520 701 VES/KES NPT
MH 520 121 VES
MH 520 121 VES NPT



MH 520 701 VES/KES
MH 520 701 VES/KES NPT



MH 520 121 VES
MH 520 121 VES NPT

5/2-way double solenoid valves.
Position is kept until an electrical signal is applied to the opposite side even when not attached to an electrical source.

Body parts are made from stainless steel 316L / 1.4404, rubber parts FKM, PUR (series 701). Series 701: Customer has the choice between two versions KES and VES, for details refer to the table below.

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

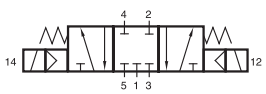
Valves are equipped with manual override to be turned.

Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

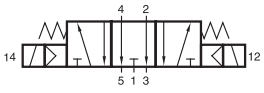
Type	Port size	Air flow	Oper. Press.	Power cons.	Weight	
MH 520 701 VES	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,74 kg	Ex
MH 520 701 KES	G 1/4”	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,60 kg	
MH 520 701 VES NPT	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,74 kg	Ex
MH 520 701 KES NPT	1/4” NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,60 kg	
MH 520 121 VES	G 1/2”	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,70 kg	Ex
MH 520 121 VES NPT	1/2” NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,70 kg	Ex

HAFNER

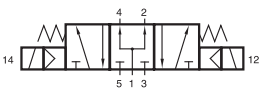
MH 53_ 701 VES/MH 53_ 701 KES
MH 53_ 121 VES



MH 531 701 VES/KES
MH 531 701 VES/KES NPT
MH 531 121 VES
MH 531 121 VES NPT



MH 532 701 VES/KES
MH 532 701 VES/KES NPT
MH 532 121 VES
MH 532 121 VES NPT



MH 533 701 VES/KES
MH 533 701 VES/KES NPT
MH 533 121 VES
MH 533 121 VES NPT

5/3-way valves actuated with spring return to middle position, actuated by permanent signal.

Body parts are made from stainless steel 316L / 1.4404, rubber parts FKM, PUR (series 701). Series 701: Customer has the choice between two versions KES and VES, for details refer to the table below.

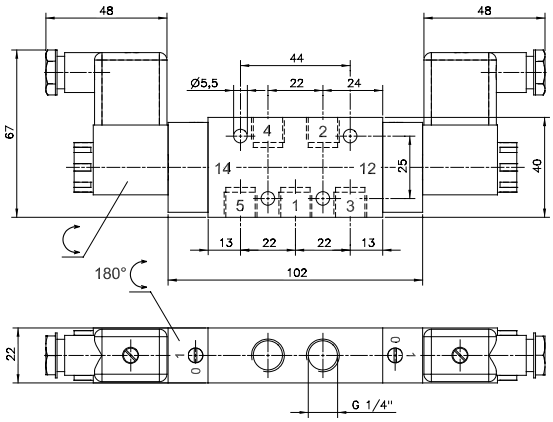
Type 531	centre closed
Type 532	centre exhausted
Type 533	centre pressurized

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

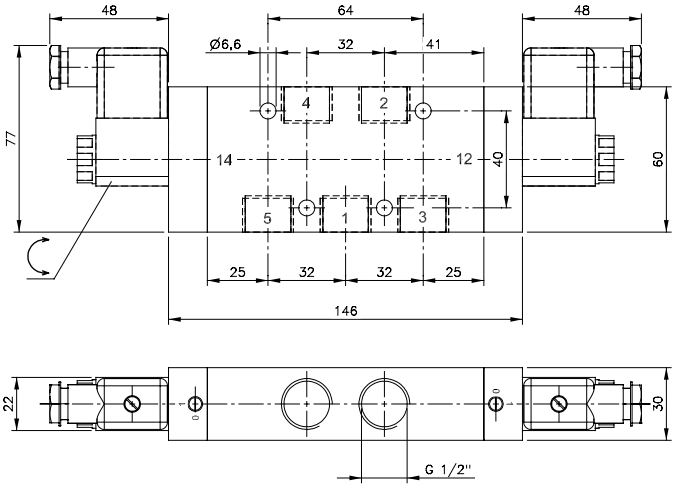
Valves are available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are equipped with manual override to be turned.

For type 531 701: 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.



MH 53_ 701 VES/KES
MH 53_ 701 VES/KES NPT

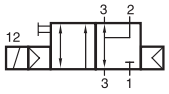


MH 53_ 121 VES
MH 53_ 121 VES NPT

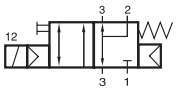
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

Type	Port size	Air flow	Oper. Press.	Power cons.	Weight	
MH 53_ 701 VES	G 1/4”	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,74 kg	Ex
MH 53_ 701 KES	G 1/4”	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,60 kg	
MH 53_ 701 VES NPT	1/4” NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,74 kg	Ex
MH 53_ 701 KES NPT	1/4” NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,60 kg	
MH 53_ 121 VES	G 1/2”	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	1,70 kg	Ex
MH 53_ 121 VES NPT	1/2” NPT	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	1,70 kg	Ex

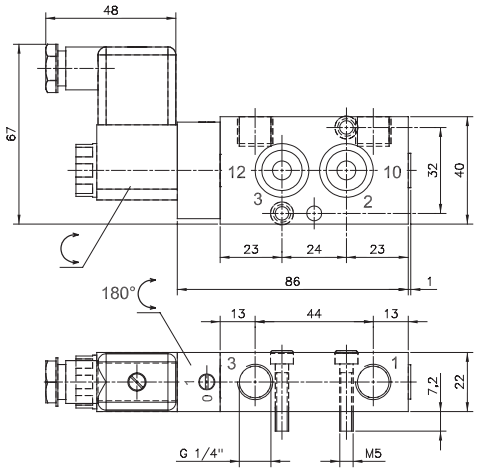
MNH 310 701 VES/MNH 310 701 KES
MNH 311 701 VES/MNH 311 701 KES



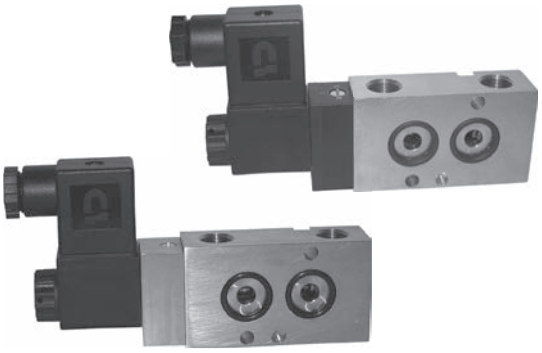
MNH 310 701 VES
MNH 310 701 KES
MNH 310 701 VES NPT
MNH 310 701 KES NPT



MNH 311 701 VES
MNH 311 701 KES
MNH 310 701 VES NPT
MNH 310 701 KES NPT



MNH 310 701 VES/KES
MNH 311 701 VES/KES
MNH 310 701 VES/KES NPT
MNH 311 701 VES/KES NPT



3/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4“ NAMUR-standard, with exhaust air recirculation (purge).

Type MNH 310 701 with pneumatic spring return. Type MNH 311 701 with combined spring assuring a fail-safe function in case of cut-off of pressure supply.

Body parts are made from stainless steel 316L / 1.4404. Customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.

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

NAMUR 2 (1/2”) on request.

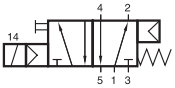
Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM

Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight	
MNH 310 701 VES	air-spring	G 1/4”	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 310 701 KES	air-spring	G 1/4”	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 311 701 VES	comb. spring	G 1/4”	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 311 701 KES	comb. spring	G 1/4”	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 310 701 VES NPT	air-spring	1/4” NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 310 701 KES NPT	air-spring	1/4” NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 311 701 VES NPT	comb. spring	1/4” NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 311 701 KES NPT	comb. spring	1/4” NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	

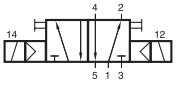
HAFNER

MNH 510 701 VES/MNH 510 701 KES
MNH 511 701 VES/MNH 511 701 KES
MNH 520 701 VES/MNH 520 701 KES

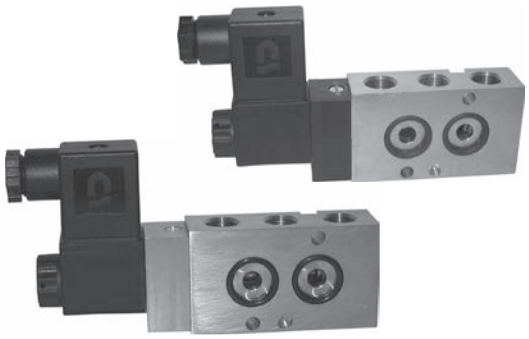
MNH 510 701 VES
MNH 510 701 KES
MNH 510 701 VES NPT
MNH 510 701 KES NPT



MNH 511 701 VES
MNH 511 701 KES
MNH 511 701 VES NPT
MNH 511 701 KES NPT



MNH 520 701 VES
MNH 520 701 KES
MNH 520 701 VES NPT
MNH 520 701 KES NPT



5/2-way solenoid valve.

Type MNH 510 _ _ _ single solenoid actuated by permanent signal and equipped with air spring return.

Type MNH 520 _ _ _ double solenoid actuated by impulse. Position is kept until an electric signal is applied to the opposite side even when not attached to an electrical source.

Body parts are made from stainless steel 316L / 1.4404. Customer has the choice between two versions VES and KES, for details refer to the table below.

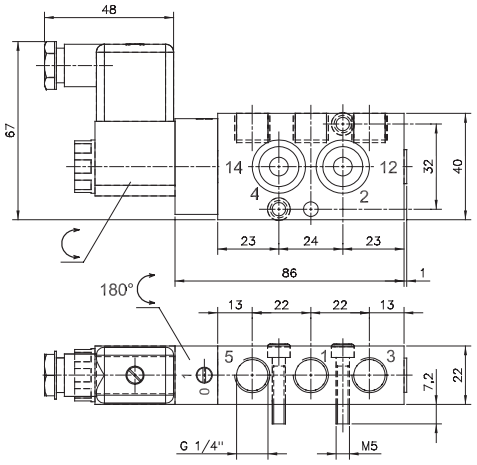
Available with solenoid operators :
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

Valves are equipped with manual override to be turned.

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

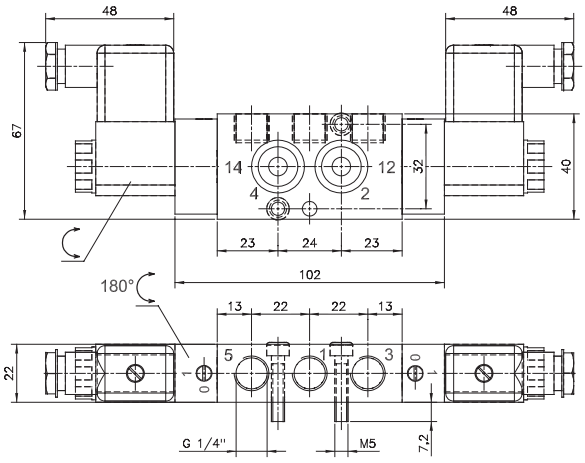
5/3-way valves and NAMUR 2 (1/2") on request.

Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM



MNH 510 701 VES/KES
MNH 511 701 VES/KES

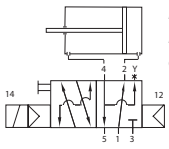
MNH 510 701 VES/KES NPT
MNH 511 701 VES/KES NPT



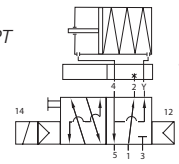
MNH 520 701 VES/KES
MNH 520 701 VES/KES NPT

Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight	
MNH 510 701 VES	air-spring	G 1/4"	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 510 701 KES	air-spring	G 1/4"	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 511 701 VES	comb. spring	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 511 701 KES	comb. spring	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 520 701 VES	double sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,67 kg	❄ Ex
MNH 520 701 KES	double sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,58 kg	
MNH 510 701 VES NPT	air-spring	1/4" NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 510 701 KES NPT	air-spring	1/4" NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 511 701 VES NPT	comb. spring	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 511 701 KES NPT	comb. spring	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 520 701 VES NPT	double sol.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,67 kg	❄ Ex
MNH 520 701 KES NPT	double sol.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,58 kg	

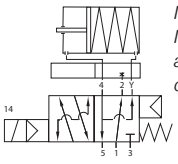
MNH 350 701 VES/MNH 350 701 KES
MNH 351 701 VES/MNH 351 701 KES



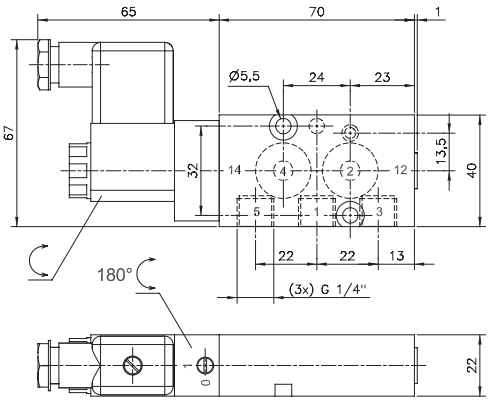
MNH 350 701 VES/KES
MNH 350 701 VES/KES NPT
on double acting act.



MNH 350 701 VES/KES
MNH 350 701 VES/KES NPT
and Flex-Pack
on single acting act.

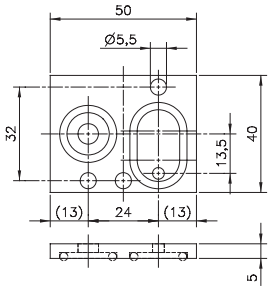


MNH 351 701 VES/KES
MNH 351 701 VES/KES NPT
and Flex-Pack
on single acting act.

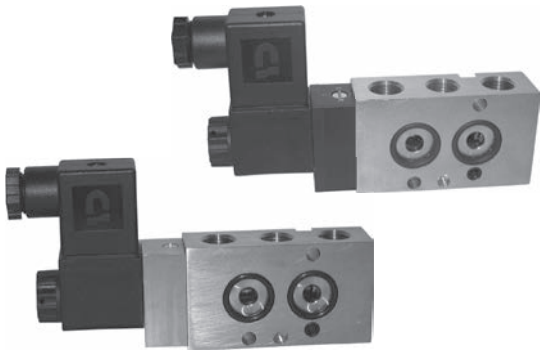


MNH 350 701 VES/KES
MNH 351 701 VES/KES

MNH 350 701 VES/KES NPT
MNH 351 701 VES/KES NPT



FP 701 K/FP 701 VES



5/2-way solenoid valve, actuated by permanent signal.
Interface according to 1/4“ NAMUR-standard.
Adding the **„Flex-Pack“**, converts the valve into a 3/2-way NAMUR-valve with exhaust-air recirculation (“purge”).

MNH 350 701 with pneumatic spring return,
MNH 351 701 with combined spring.

Body parts are made from stainless steel 316L / 1.4404.
Customer has the choice between two versions VES and KES, for details refer to the table below.

Valves are available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=

Valves are generally equipped with manual override.

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

Instead of the Flex-Pack the **„Flex-regulator“** Type DRF 601 converts the function of the valve and offers the possibility to control opening- and closing-speed of a spring-return actuator independently.

Delivery of FP 701 K includes longer screws, seals as well as a plug to close port 3 of the valve.
Delivery of FP 701 VES includes longer screws and seals.

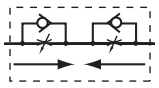
Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM

Type	Material	Orifice 4	Orifice 2-3	Weight
FP 701 K	PA	7 mm	4 mm	0,012 kg
FP 701 VES	1.44.04	7 mm	4 mm	0,025 kg

Type	Function	Port size	Air flow	Oper. press.	Power Cons.	Weight	
MNH 350 701 VES	air-spring	G 1/4”	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 350 701 KES	air-spring	G 1/4”	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 351 701 VES	comb. spring	G 1/4”	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 351 701 KES	comb. spring	G 1/4”	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 350 701 VES NPT	air-spring	1/4” NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄ Ex
MNH 350 701 KES NPT	air-spring	1/4” NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	
MNH 351 701 VES NPT	comb. spring	1/4” NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg	❄
MNH 351 701 KES NPT	comb. spring	1/4” NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg	

HAFNER

DRN 3 611 VES/DRN 5 611 VES
DRF 3 611 VES



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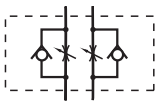
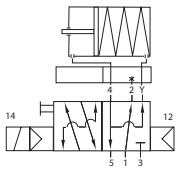
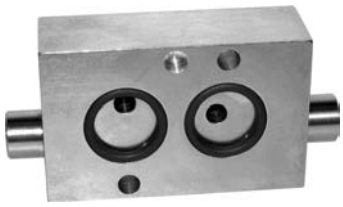


DRN 5 611 VES



MNH 350 701
and Flex Regulator
DRF 3 611 VES



Block form flow regulator as intermediate plate, interface according to 1/4" NAMUR-standard.

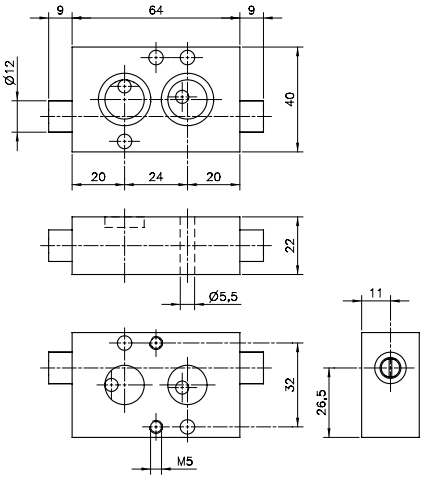
Type DRN 3 611 VES:
For 3/2-way valves with exhaust air recirculation. To regulate the forward stroke of a single acting pneumatic actuator and to regulate the exhaust air going into the spring return unit.

Type DRN 5 611 VES:
For 5/2 and 5/3 way valves only. To regulate the forward- and backward-stroke of a double acting pneumatic actuator.

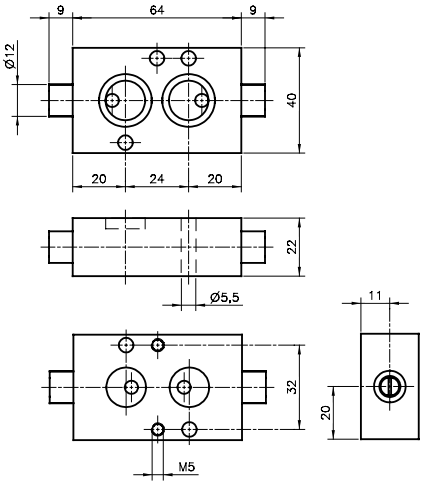
Type DRF 3 611 VES:
For the Hafner NAMUR-Flex valve. To regulate the forward stroke of a single acting actuator and to regulate the exhaust air going into the spring return unit.

To be operated with a screwdriver.

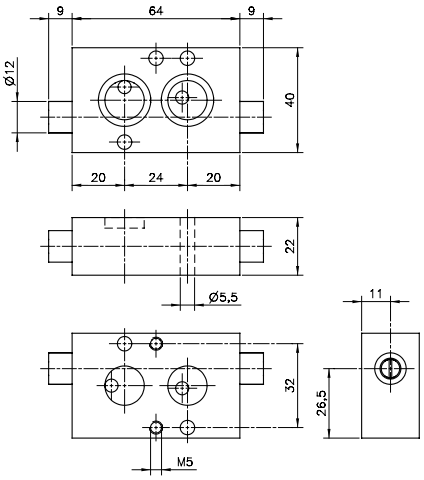
Delivery includes 1 pin, 2 screws, 2 O-Rings.



DRN 3 611 VES

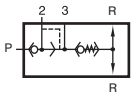


DRN 5 611 VES

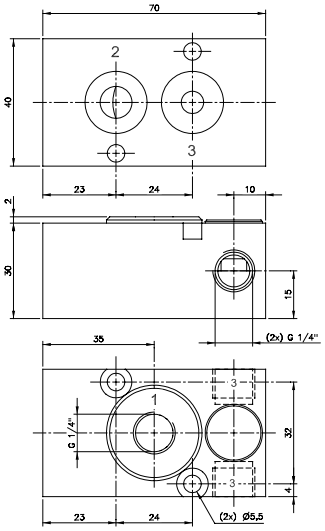


DRF 3 611 VES

Type	Function	Port size	Max. air flow	Operating press.	Weight	
DRN 3 611 VES	3-way valves	Ø 5mm	650 l/min	0,5 - 10 bar	0,42 kg	❄
DRN 5 611 VES	5-way valves	Ø 5mm	650 l/min	0,5 - 10 bar	0,42 kg	❄
DRF 3 611 VES	3-way NAMUR-Flex	Ø 5mm	650 l/min	0,5 - 10 bar	0,42 kg	



UB 701 VES



UB 701 VES

The Hafner air-recirculation block absolutely guarantees, that only exhausting air from the actuation chamber is going into the spring chamber and for sure no ambient atmosphere.

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

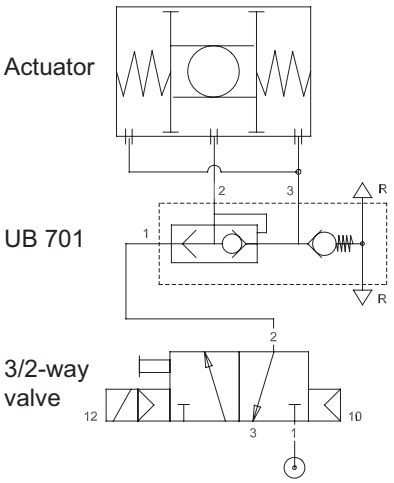
Standard with G 1/4" pilot port. Materials being used:

Body:	Stainless steel 1.4404
Membrane:	NBR
Other inner parts:	Stainless steel 1.4404, 1.4310, 1.4031

One of the two exhaust ports 3 to be closed by a plug. Plug is not included.

Delivery includes 2 screws, 2 O-Rings.

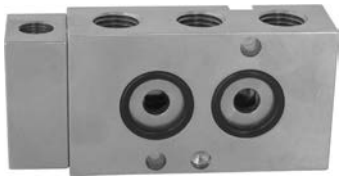
Function:



Type	NAMUR	Port size	Air flow	Operating pressure
UB 701 VES	1/4"	G 1/4"	1250 l/min	1 - 10 bar

HAFNER

Pneumatically actuated valves in stainless steel with NAMUR-interface



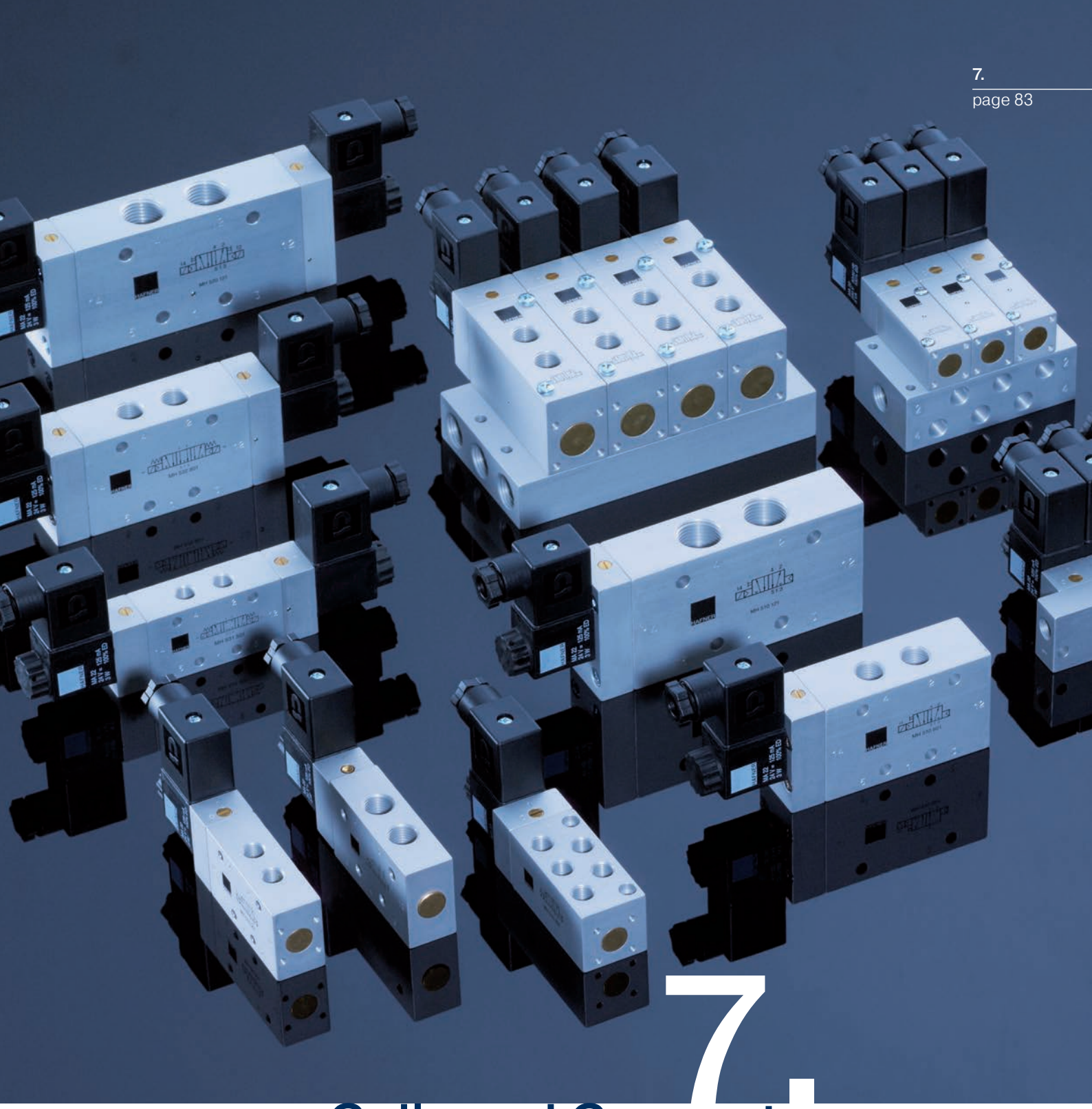
Dimensions can be taken from chapter 2.2 as technical drawings are identical to the products in aluminum.

Selected products displayed on this page are also available NPT ported.

For 1/4“-size: Due to the specific design of the internal parts pressure has to be applied to port 1.

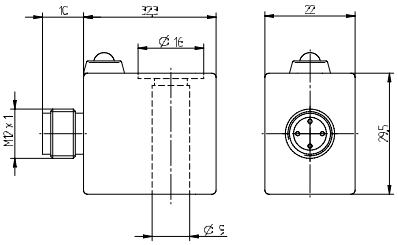
For type PN 531 701 VES: pressure at port 1 has to be >= pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

Type	NAMUR	Port size	Function	Air flow	Oper. press.	Act. press.
PN 310 701 VES	1/4”	G 1/4” - G 1/8”	3/2-way air ret.	1250 l/min	1,5 - 10 bar	the same
PN 311 701 VES	1/4”	G 1/4” - G 1/8”	3/2-way spring ret.	1250 l/min	3 - 10 bar	2,5 - 10 bar
PN 510 701 VES	1/4”	G 1/4” - G 1/8”	5/2-way air ret.	1250 l/min	1,5 - 10 bar	the same
PN 511 701 VES	1/4”	G 1/4” - G 1/8”	5/2-way spring ret.	1250 l/min	3 - 10 bar	2,5 - 10 bar
PN 520 701 VES	1/4”	G 1/4” - G 1/8”	5/2-way double pil.	1250 l/min	1 - 10 bar	the same
PN 531 701 VES	1/4”	G 1/4” - G 1/8”	5/3-way	1250 l/min	3 - 10 bar	3 - 10 bar

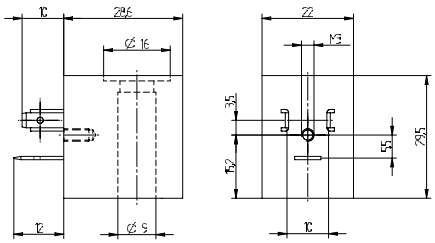


7. Coils and Connectors

MA 22 D M12/MA 22 DIN/MA 30/ST 22 M12



MA 22 D M12

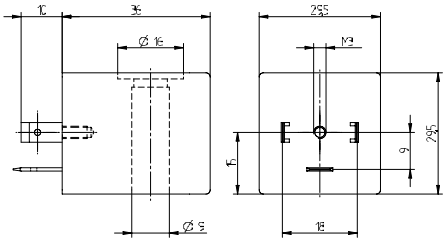


MA 22 DIN

Coils for solenoid valves of type MH and MNH.

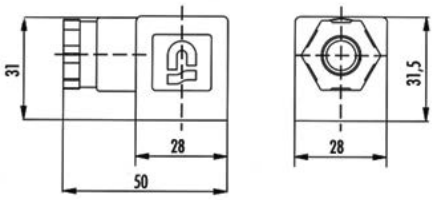
MA 22 D M12x1
Housing made from Epoxy. Isolation class F.
Wire class H.
Connection M12x1 according to DIN EN 60947-5-2.
Coil with yellow LED.

MA 22 DIN
Housing made from heat resistant thermoplastic polyester material 30% glass filled. Isolation class F.
Wire class H.
Form B according to EN 175301-803. Equipped with appropriate connector, solenoid offers IP 65.



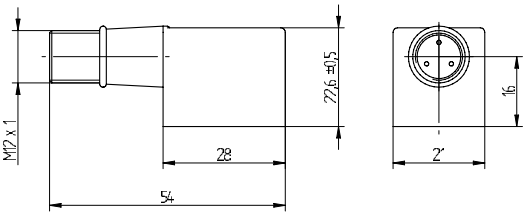
MA 30

MA 30
Housing made from heat resistant thermoplastic polyester material 30% glass filled. Isolation class F.
Wire class H.
Form A according to EN 17301-803. Equipped with appropriate connector, solenoid offers IP 65.
Suitable connector: ST 30.



ST 30

ST 22 M12
Connector with M12 x 1 connection which can be used with the standard Hafner MA 22 coils.
Connector is without LED in order to be more flexible regarding different voltages.

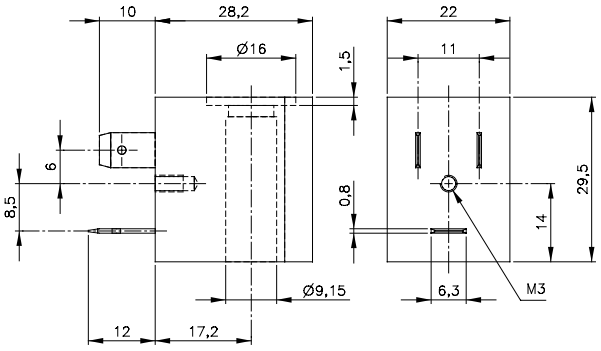


ST 22 M12

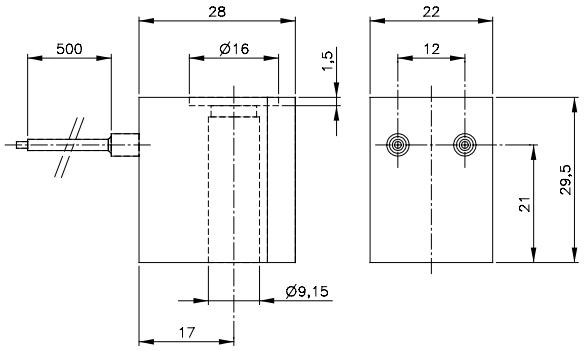
AC-coils can be operated at 50 Hz and 60 Hz.

Type	Voltage	Tolerance	Ampere	Max. current	Power cons.	LED	Connection
MA 22 D 24DC M12	24 V=	±10 %	175 mA		4,2 W	yellow	M12x1
ST 22 M12	0 - 250 V			4 A		no	Industrial B - M12x1
MA 22 24DC DIN		±10 %	110 mA		2,6 W		Form B - EN 175301-803
MA 22 230AC DIN	230 V~	±10 %	26 mA		6 VA		Form B - EN 175301-803
MA 30 24DC	24 V~	±10 %	83 mA		2 W		Form A - EN 175301-803
MA 30 110AC	110 V~	±10 %	27 mA		3 VA		Form A - EN 175301-803
MA 30 230AC	230 V~	±10 %	13 mA		3 VA		Form A - EN 175301-803
ST 30	0 - 250 V			6 A		no	M20x1,5; 6-8 mm

MA 22/MA 22 L/MA 22 D/MA 22 U



MA 22/MA 22 D/MA 22 U



MA 22 L

22 mm wide coils for solenoid valves of MH-type, 22 mm, 30 mm and 40 mm wide.

MA 22
Housing made from heat resistant thermoplastic polyester material 30 % glass filled.
Interface industryform B (DIN / ISO 436 50), connectors are displayed on page 7.3.
Equipped with appropriate connector, solenoid offers IP 65. Isolation class F. Wire class H.

MA 22 L (Flying leads version)
Housing made from heat resistant thermoplastic polyester material with 30 % glass filled.
Standard cable length of 500 mm, others are available on request. The coils are not grounded, please take national safety regulations into consideration! Isolation class F. Wire class H.

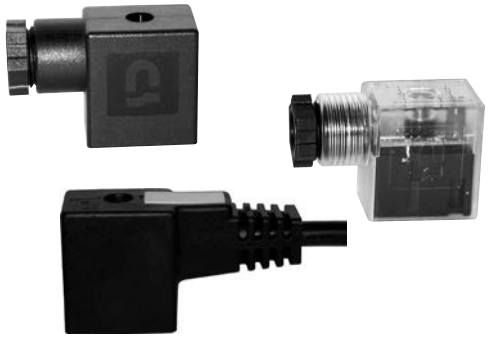
MA 22 D (Epoxy version)
Housing made from Epoxy, interface industryform B (DIN/ISO 436 50). Isolation class F. Wire class H.
Equipped with connector ST 22 and ST 222 V (please refer to page 7.3) solenoid system offers IP 65.
Equipped with connector ST 22 L 500 and additional O-rings the system offers IP 67.

MA 22 U
Same as MA 22 but with UL-certification.

AC-coils can be operated at 50 Hz and 60 Hz.

Type	Voltage	Tolerance	Ampere	Power cons.	Connection
MA 22 12 DC	12 V=	±10 %	250 mA	3 W	Industryform B (DIN 436 50)
MA 22 24DC	24 V=	±10 %	125 mA	3 W	Industryform B (DIN 436 50)
MA 22 L700 24DC	24 V=	±10 %	125 mA	3 W	Flying leads 700 mm long
MA 22 48DC	48 V=	±10 %	62 mA	3 W	Industryform B (DIN 436 50)
MA 22 220DC	220 V=	±10 %	14 mA	3 W	Industryform B (DIN 436 50)
MA 22 24AC	24 V~	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 110AC	110 V~	±10 %	45 mA	5 VA	Industryform B (DIN 436 50)
MA 22 L500 110AC	110 V~	±10 %	45 mA	5 VA	Flying leads 500 mm long
MA 22 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)
MA 22 L500 230AC	230 V~	±10 %	22 mA	5 VA	Flying leads 500 mm long
MA 22 D 24DC	24 V=	±10 %	125 mA	3 W	Industryform B (DIN 436 50)
MA 22 D 24AC	24 V=	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 D 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 24DC	24 V=	±10 %	125 mA	3 W	Industryform B (DIN 436 50)
MA 22 U 24AC	24 V=	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 110AC	110 V~	±10 %	45 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)

ST 16/ST 22/ ST 22 L 5000/ST 222 V _ _L 1500
ST 22 Ex/ST 30 Ex nA/ST 30 Ex ia



Connectors as accessories for Hafner valves.

Type ST 16 and ST 22
Using the enclosed flat seal and fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

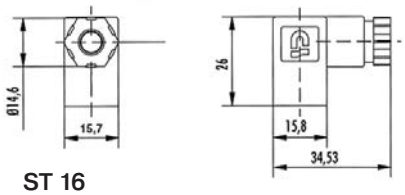
Type ST 22 L 5000/ST 222 V _ _ L1500
In combination with MA 22 D, using the enclosed flat seal, adding 2 O-rings at the top of the solenoid system and fastening screw and nut appropriately the system reaches protection class IP 67 in accordance to IEC 60 529.

Type ST 22 Ex
Connector to be used in combination with MA 22 Ex nA. Connector is classified for zone 2 and 22 cat. IIG/D. Includes flat seal.

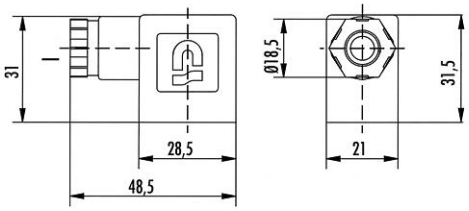
Type ST 30 Ex ia
Connector which is to be used in combination with the coil type MA 30 Ex ia tD II CT6 24DC. Connector has no separate ATEX certification. Connector is classified for zone 21, cat. IID. Can also be used in combination with intrinsically safe coils in zone 1 (cat. IIG). Includes flat silicon seal.

Type ST 30 Ex nA
Connector to be used in combination with MA 30 Ex na. Connector is classified for zone 2 and 22, cat. IIIG and IIID. Includes profiled NBR seal.

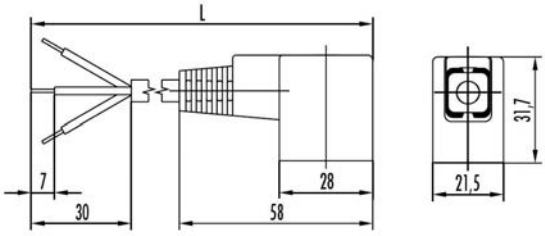
Other connectors are available on request.



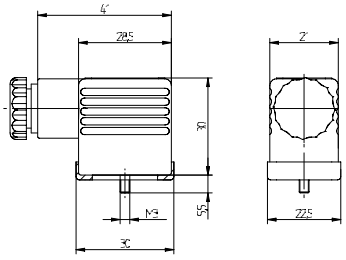
ST 16



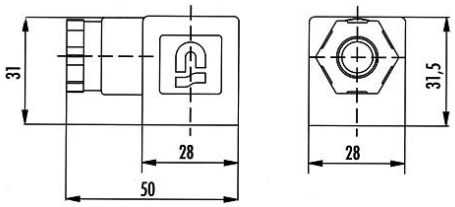
ST 22



ST 22 L 5000/ ST 222 V _ _ L 1500

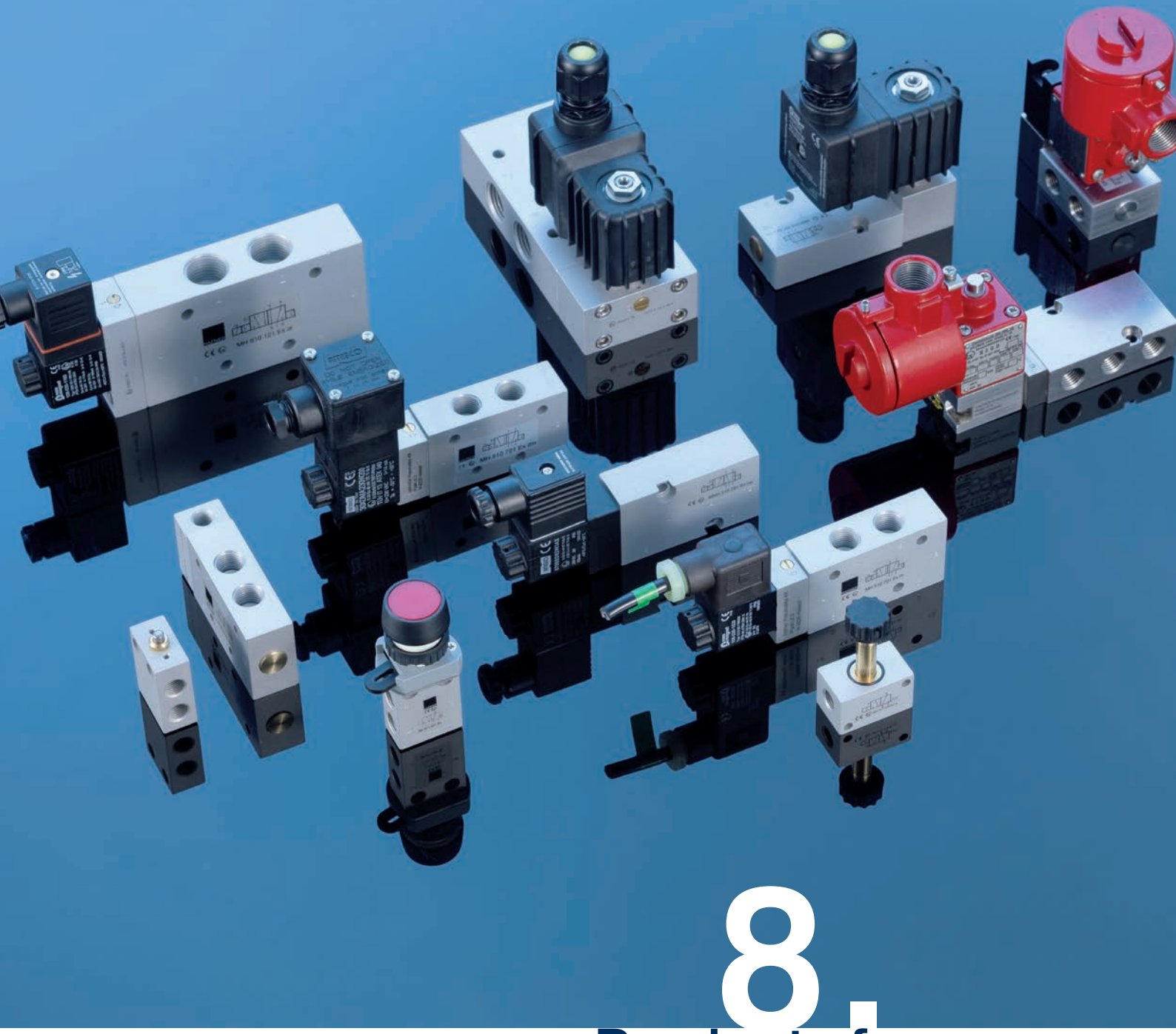


ST 22 Ex



ST 30 Ex nA/ ST 30 Ex ia

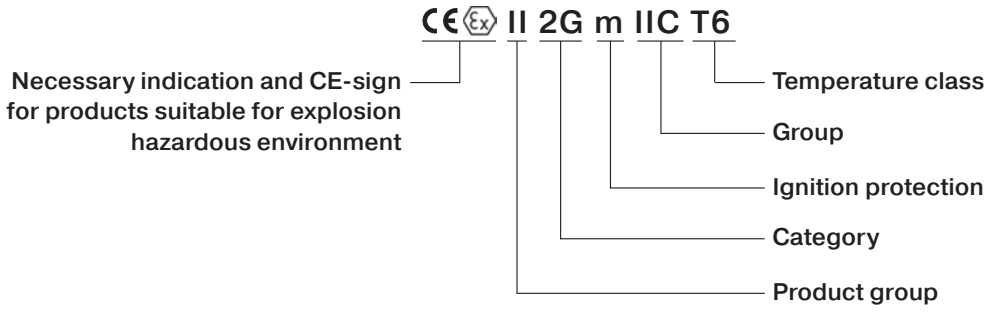
Type	Form	LED	VAR	Operat. voltage	Max. current	Cable diameter	Cable length [mm]	Cable material
ST 16	C, ISO 15219	no	no	0 - 250 V	6 A	5 - 6,5 mm		
ST 162 V 24	C, ISO 15219	red	yes	24 V ±10 %	6 A	5 - 6,5 mm		
ST 162 V 230	C, ISO 15219	red	yes	230 V ±10 %	6 A	5 - 6,5 mm		
ST 22	Industrial	no	no	0 - 250 V	10 A	6 - 8 mm		
ST 222 V 24	Industrial	red	yes	24 V ±10 %	10 A	6 - 8 mm		
ST 222 V 230	Industrial	red	yes	230 V ±10 %	10 A	6 - 8 mm		
ST 22 L 5000	Industrial	no	no	0 - 250 V	6 A	6,5 mm	5.000	PVC
ST 222 V 24 L 1500	Industrial	red	yes	24 V ±10 %	6 A	6,5 mm	1.500	PUR
ST 222 V110 L1500	Industrial	red	yes	110 V ±10 %	6 A	6,5 mm	1.500	PVC
ST 222 V230 L1500	Industrial	red	yes	230 V ±10 %	6 A	6,5 mm	1.500	PVC
ST 22 Ex	Industrial	no	no	0 - 250 V	10 A	6 - 8 mm		
ST 30 Ex ia	A, ISO 4400	no	no	0 - 250 V	10 A	6 - 8 mm		
ST 30 Ex nA	A, ISO 4400	no	no	0 - 250 V	10 A	4 - 8 mm		



8. Products for Explosion Hazardous Environment

General information on Hafner products for explosion hazardous environment

Example marking of an electric product for explosion hazardous environment:

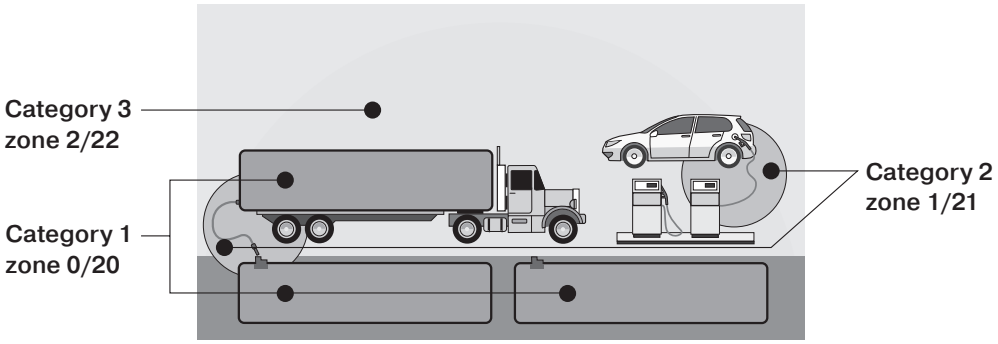


Product group:

Product group I
Products from product group I are distinguished between M1 and M2. Both are suitable for mining applications. They are not in our focus as Hafner does not offer suitable equipment.

Product group II
All other products for explosion hazardous environment are in this group.

Category:



Category I
An area in which an explosive mixture is continuously present or present for long periods >1000 hours/year.

Category II
An area in which an explosive mixture is occasionally present 10 – 1000 hours/year.

Category III
An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time <10 hours/year.

General information on Hafner products for explosion hazardous environment

	Zones for Gases	Zones for Dust
Category 1	Zone O Area in which an explosion hazardous atmosphere consisting of air and inflammable gases, vapors or fog is present constantly or over a longer period of time. > 1000 hours/year	Zone 20 Area in which an explosion hazardous atmosphere consisting of a dust-cloud or a mix of air and dust is present constantly or over a longer period of time. > 1000 hours/year
Category 2	Zone 1 Area in which there is a probability that under normal conditions an explosion hazardous atmosphere consisting of air and inflammable gases, vapors or fog can be present. 10 – 1000 hours/year	Zone 21 Area in which there is a probability that under normal conditions an explosion hazardous atmosphere consisting of a dust-cloud or a mix of air and dust can be present. 10 – 1000 hours/year
Category 3	Zone 2 Area in which once and a while an explosion hazardous atmosphere consisting of air and inflammable gases, steam or vapors can be present. < 10 hours/year	Zone 22 Area in which once and a while an explosion hazardous atmosphere consisting of a dust-cloud or a mix of air and dust can be present. < 10 hours/year

☐ Covered by the Hafner product range

Ignition protection (examples):

	General definition:	For Hafner products:
c	Constructional safety	general protection for mechanical ATEX
i	Intrinsic safety	called ia for solenoids
na	Non sparking	
m	Encapsulation	with cable
me	Encapsulation enhanced safety	called Ex emb with junction box
d	Flameproof enclosure	with junction box
dm	Flameproof encapsulation	with junction box

Group:

For various substances the explosive and spark ignition capability of a potentially explosive mixture are characteristics. Vapors and gases are classified in groups. The criteria for the subdivision are the maximum experimental safe gap and the minimum ignition current. Those are determined under precisely defined test conditions for various vapors and gases. Please refer to IEC60079-1A and IEC60079-3.

The hazard increases from group IIA to IIC, therefore the requirements applicable to electrical equipment become more strict. Consequently products classified IIC can also be used in IIB and IIA.

Temperatur classes:

Temperature class	Max. permitted surface temperature of equipment
T1	450 °C
T2	300 °C
T3	200 °C
T4	135 °C
T5	100 °C
T6	85 °C

T6 contains all other temperature classes

General information on Hafner products for explosion hazardous environment

Specific requirements for Dust atmospheres:

When products are to be used in dust atmosphere (zones 20, 21, 22) the following rules have to be obeyed:

1 Maximum surface temperature has to be indicated on the product.
2. For mechanic products (such as valves) the temperature-range for which the product is suitable has to be indicated on the item.
3. The IP-protection class has to be indicated.

Example of print-on on a Hafner-valve suitable for dust atmosphere:

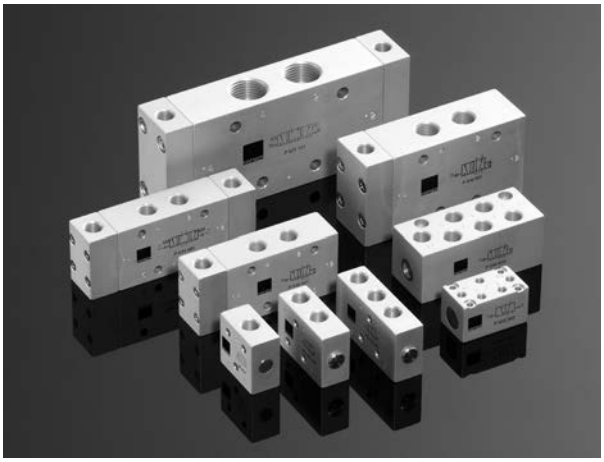
CE Ex II 2D c T4 -10° < Ta < 50°C

Example of print-on on a coil suitable for dust atmosphere:

CE Ex II 2D IP 65 T130°C

Non-electric valves for explosion hazardous environment:

Apart from solenoid valves also manually, mechanically and pneumatically actuated valves are part of our range. These valves are available for the use in zones 1, 21, 21, 22 gas and dust atmosphere.



ATEX-certified pneumatically actuated valves for low-temperature applications as well as stainless steel products are available on request.

Solenoid valves for explosion hazardous environment
General information – overview

Our customers have the choice between numerous solenoid systems of different ignition protection types. Those can be combined with valves made from aluminum or stainless steel designed for different temperature classes.

Valve	Temp.-range	Ignition protection type		
		Ex na (non-sparking)	Ex ia (intrinsically safe)	Ex m (encapsulation)
				
Aluminum	-10°C ... + 50°C	✓	✓	✓
Stainless steel 316	-10°C ... + 50°C	✓	✓	✓
Aluminum	-40°C ... + 50°C ❄	n.a.	✓	n.a.
Stainless steel 316	-40°C ... + 50°C ❄	n.a	✓	n.a
Zone		2, 22	1, 21, 2, 22	1, 21, 2, 22
IEC-Ex rated			✓	✓
Reference:		8.2.4	8.2.3	8.2.2

Valve	Temp.-range	Ignition protection class		
		Ex e mb (encapsulation with junction box)	Ex dm (flameproof with junction box)	Ex d (flameproof with junction box)
				
Aluminum	-10°C ... + 50°C	✓	✓	✓
Stainless steel 316	-10°C ... + 50°C	✓	✓	✓
Aluminum	-40°C ... + 50°C ❄	✓	✓	✓
Stainless steel 316	-40°C ... + 50°C ❄	✓	✓	✓
Zone		1, 21, 2, 22	1, 21, 2, 22	1, 21, 2, 22
IEC-Ex rated		✓		✓
Reference:		8.2.5	8.2.7	8.2.6

ATEX-approved valves – **Ex m** – standard temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex m (encapsulation)
Temperature class:	T4

Marking on valve CE Ex II2G/D c T4 -10°C ≤ Ta ≤ 50°C

A low temperature version for -20°C ... +50°C is also available on request. Please notice that the system is restricted by the minimum ambiente temperature for the coil of -20°C.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 Ex m	3/2-way direct acting	M5	in-line	4.2
MH 311 015 Ex m	3/2-way direct acting	G 1/8"	in-line	4.2
MH 311 013 Ex m	3/2-way direct acting	G 1/8"	banjo screw	4.6
MH 311 017 Ex m	3/2-way direct acting	G 1/4"	banjo screw	4.6
Valves with interface according to NAMUR-standard				
MNH 350 701 Ex m	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.3
MNH 310 701 Ex m	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.1.1
MNH 310 711 Ex m	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.1.1
MNH 310 121 Ex m	3/2-way, single sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.1.2
MNH 510 701 Ex m	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.2.1
MNH 510 711 Ex m	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.2.1
MNH 510 121 Ex m	5/2-way, single sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.2.2
MNH 520 701 Ex m	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.2.3
MNH 520 121 Ex m	5/2-way, double sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.2.3
MNH 53_ 701 Ex m	5/3-way, different versions	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.4
MNH 531 121 Ex m	5/3-way, centre closed	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.4

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.2.4

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex m** – standard temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex m (encapsulation)
Temperature class:	T4

Marking on valve CE Ex II2G/D c T4 -10°C ≤ Ta ≤ 50°C

A low temperature version for -20°C ... +50°C is also available on request. Please notice that the system is restricted by the minimum applicable temperature of the coil of -20°C.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES Ex m	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MOH 310 701 VES Ex m	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MH 310 121 VES Ex m	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	6.2.3
MH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.4
MH 510 121 VES Ex m	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	6.2.4
MH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	6.2.5
MH 520 121 VES Ex m	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	6.2.5
MH 53_ 701 VES Ex m	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	6.2.6
MH 53_ 121 VES Ex m	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES Ex m	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2

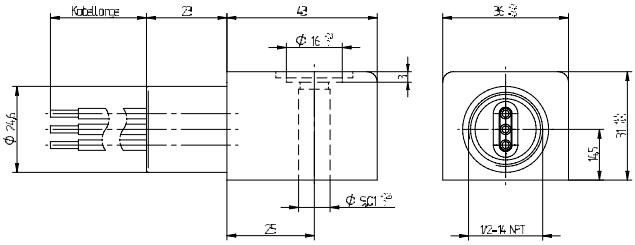
Solenoids are described on page 8.2.2.4

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

MA 36 EEx m II T4 CSA FM

CSA / FM approved encapsulated coils for gas and dust explosion-hazardous environment with 60 cm flying leads.

Voltage:	Delivery on request: 12VDC, 24VDC, 110VAC, 220VAC, 240VAC
Voltage tolerance:	- 10...+ 10%
Relative duty cycle:	100 %
Temperature range:	-20°C ... +60°C
Protection according to EN 60529:	IP 65
Material solenoid coil:	Thermoplasticpolyester
Coil rating according to DIN VDE 0580:	Class H
Conduit:	1/2“ NPT



MA 36 EEx m II T4 CSA FM

As the coil is 36 mm wide, a spacer plate called “ZPN 8” has to be used, in case of combination with our NAMUR-valve series 700. If used with NAMUR-valve series 121 a spacer plate called “ZPN 6-5” has to be used. You can find both plates on page 3.17.

CSA/FM approval is only valid as long as the associated components are used.

Please notice:
The coil is not approved according to ATEX.

Hazardous Locations:

Ex m II T4 and Division 1

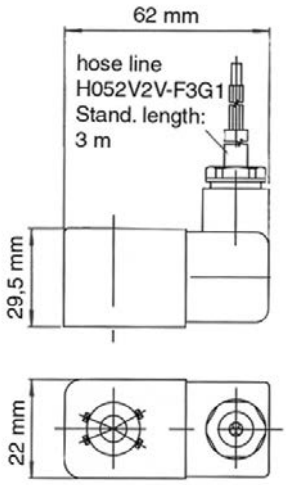
Specifications in accordance to CSA certificate:
Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III
Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate:
Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C
encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C
dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C
Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C
Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

The current standards can be found in the certificates.

Type	Voltage	Operating press.	Power cons.	Temperature class
MA 36 EEx M II T4 CSA FM 12=	12 V=	max. 10 bar	4,5 Watt	T4 (135° C)
MA 36 EEx M II T4 CSA FM 24=	24 V=	max. 10 bar	4,6 Watt	T4 (135° C)
MA 36 EEx M II T4 CSA FM 110~	110 V~	max. 10 bar	6,8 VA	T4 (135° C)
MA 36 EEx M II T4 CSA FM 220~	220 V~	max. 10 bar	7,7 VA	T4 (135° C)
MA 36 EEx M II T4 CSA FM 240~	240 V~	max. 10 bar	7,7 VA	T4 (135° C)

When this solenoid system is used in combination with „ATEX certified“ mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1, 2, 21 and 22.



MA 22 EEx m II T4

ATEX approved encapsulated coils for gas and dust explosion-hazardous environment.

System is also IEC-Ex approved.

The standard cable length is 3 meter, others on request.

Voltage tolerance:	-10...+10 %
Relative duty cycle:	100 %
Temperature range:	-20°...+50° C
Insulation class of insulating materials according to DIN VDE 0580:	F
Protection with mounted plug-in connector according to IEC 529:	IP 65
Moulding material:	Thermoplasticpolyester
Marking on coil:	CE Ex II 2G Ex mb IIC T4 Gb II 2D Ex mb tb IIIC T130°C Db

The ATEX approval is only valid as long as the associated components are used.

Type	Operating press.	Power consumption	Temperature class
MA 22 EEx M II T4 24=	max. 10 bar	5,0 Watt	T4 (135° C)
MA 22 EEx M II T4 110~	max. 10 bar	4,5 VA	T4 (135° C)
MA 22 EEx M II T4 230~	max. 10 bar	5,1 VA	T4 (135° C)

ATEX-approved valves – **Ex ia** – standard temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex ia (intrinsically safe)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -10°C ≤ Ta ≤ 50°C

Please notice:
Maximum operating pressure for valves with Ex ia solenoid system is 8 bar!

Coil is 30 mm wide!

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 Ex ia	3/2-way direct acting	M5	in-line	4.2
MH 311 015 Ex ia	3/2-way direct acting	G 1/8"	in-line	4.2
Valves with interface according to NAMUR-standard				
MNH 350 701 Ex ia	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.3
MNH 310 701 Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.1.1
MNH 310 711 Ex ia	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.1.1
MNH 310 121 Ex ia	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.1.2
MNH 510 701 Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.1
MNH 510 711 Ex ia	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.2.1
MNH 510 121 Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.2
MNH 520 701 Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.3
MNH 520 121 Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.3
MNH 53_ 701 Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.4
MNH 53_ 121 Ex ia	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.4

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.3.5.

Delivery contains valve with the appropriate operator system, coil, connector, manual and declaration of conformity.

ATEX-approved valves – **Ex ia** – low temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-40°C ... +50°C ❄
Ignition protection type:	Ex ia (intrinsically safe)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -40°C ≤ Ta ≤ 50°C

Please notice:
Maximum operating pressure for valves with Ex ia solenoid system is 8 bar!

Coil is 30 mm wide!

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 TT Ex ia	3/2-way direct acting	M5	in-line	5.2.1
MH 311 015 TT Ex ia	3/2-way direct acting	G 1/8"	in-line	5.2.1
MH 310 501 TT Ex ia	3/2-way, single sol.	G 1/8"	in-line	5.2.2
MOH 310 501 TT Ex ia	3/2-way, n.o. single sol.	G 1/8"	in-line	5.2.2
MH 310 701 GTT Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	dual use*	5.2.2
MOH 310 701 GTT Ex ia	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	dual use*	5.2.2
MH 320 501 TT Ex ia	3/2-way, double sol.	G 1/8"	in-line	5.2.2
MH 320 701 GTT Ex ia	3/2-way, double sol.	G 1/4"	dual use*	5.2.2
MH 510 501 GTT Ex ia	5/2-way, single sol.	G 1/8"	dual use*	5.2.4
MH 510 701 GTT Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	dual use*	5.2.4
MH 520 501 GTT Ex ia	5/2-way, double sol.	G 1/8"	dual use*	5.2.5
MH 520 701 GTT Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	dual use*	5.2.5
MH 53_ 501 GTT Ex ia	5/3-way, different versions	G 1/8"	dual use*	5.2.5
MH 53_ 701 GTT Ex ia	5/3-way, different versions	G 1/4"-1/4" NPT	dual use*	5.2.5
Valves with interface according to NAMUR-standard				
MNH 350 701 TT Ex ia	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	contact manufacturer
MNH 310 701 TT Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.1
MNH 510 701 TT Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNH 510 711 TT Ex ia	5/2-way, single sol.	G 1/4"	1/4" NAMUR	5.3.2
MNH 520 701 TT Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3
MNH 531 701 TT Ex ia	5/3-way, centre closed	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.3.5.
Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

HAFNER

ATEX-approved valves – **Ex ia** – standard temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex ia (intrinsically safe)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -10°C ≤ Ta ≤ 50°C

Please notice:
Maximum operating pressure for valves with Ex ia solenoid system is 8 bar!

Coil is 30 mm wide!

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES Ex ia	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	in-line	6.2.2
MOH 310 701 VES Ex ia	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	in-line	6.2.2
MH 310 121 VES Ex ia	3/2-way, single sol.	G 1/2"	in-line	6.2.3
MH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	in-line	6.2.4
MH 510 121 VES Ex ia	5/2-way, single sol.	G 1/2"-1/2" NPT	in-line	6.2.4
MH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	in-line	6.2.5
MH 520 121 VES Ex ia	5/2-way, double sol.	G 1/2"-1/2" NPT	in-line	6.2.5
MH 53_ 701 VES Ex ia	5/3-way, different versions	G 1/4"-1/4" NPT	in-line	6.2.6
MH 53_ 121 VES Ex ia	5/3-way, different versions	G 1/2"-1/2" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES Ex ia	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.3.5.

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex ia** – low temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-40°C ... +50°C
Ignition protection type:	Ex ia (intrinsically safe)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -40°C ≤ Ta ≤ 50°C

Please notice:
Maximum operating pressure for valves with Ex ia solenoid system is 8 bar!

Coil is 30 mm wide!

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES TT Ex ia	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES TT Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	in-line	6.2.2
MOH 310 701 VES TT Ex ia	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	in-line	6.2.2
MH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	in-line	6.2.4
MH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	in-line	6.2.5
MH 53_ 701 VES TT Ex ia	5/3-way, different versions	G 1/4"-1/4" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES TT Ex ia	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES TT Ex ia	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.3.5.

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

MA 30 Ex ia tD II CT6 24 DC

ATEX approved intrinsic safety coil and connector for gas and dust explosion-hazardous environment. System is also IEC-Ex approved. Electrical connection according to DIN EN 175301-803-A / ISO 4400.

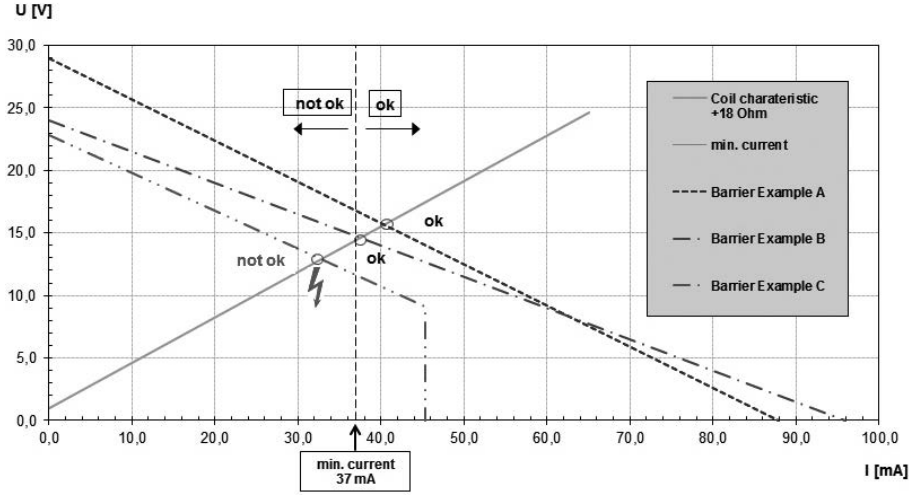
Coil:

Electrical characteristics:	21,6... 28 V DC >37 mA final temperature rise 18 K 275 Ohm +/-8 %
Relative duty cycle:	100 %
Temperature range:	-40°... +50° C
Insulation class of insulating materialsaccording to DIN VDE 0580:	F
Protection level with connector according to EN 60529:	IP 65
Moulding material:	Thermoset resin (Epoxy)
Marking on coil:	CE Ex II 2G Ex ia IIB/IIC T6 II 2D Ex tb IIIC T80°C

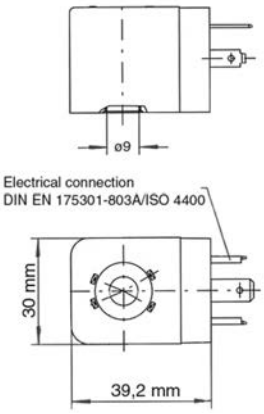
Barrier:

Electrical characteristics:	21,6... 28 V DC
Admissible peak value:	28 V DC 115 mA 1,6 W

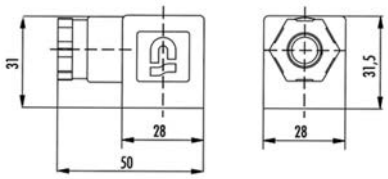
How to select a suitable barrier:
I/U Characteristics supply units/solenoid coil



When this solenoid system is used in combination with „ATEX certified“ mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1, 2, 21 and 22.



MA 30 Ex ia tD II CT6 24 DC



ST 30 Ex ia

Order Code: MA 30 Ex ia tD II CT6 24 DC
As the coil is 30 mm wide, a spacer plate called „ZPN 5“ has to be used, in case of combination with our NAMUR-valve series 700 refer to page 3.17.

ST 30 Ex ia is an ATEX approved connector, especially designed for being used in combination with the intrinsic safety coil. For dust approval (zone 21), this original connector is mandatory.
Delivery includes connector ST 30 Ex ia, flat nitril gasket and fixing screw (zinc-plated steel). Form according to A - ISO 4400, no LED, no varistor, operating voltage 0 – 250 V, max. current 10 A, cable diameter 6 – 8 mm.

The ATEX approval is only valid as long as the associated components are used.

ATEX-approved valves – **Ex nA** – standard temperature range – aluminum

Material:	Aluminum, anodized, head PA
Zone:	2, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex nA (non-sparking)
Temperature class:	T5

Marking on valve CE Ex II3G/D c T5 -10°C ≤ Ta ≤ 50°C
II3G/D c T6 -10°C ≤ Ta ≤ 50°C

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 Ex nA	3/2-way direct acting	M5	in-line	4.2
MH 311 015 Ex nA	3/2-way direct acting	G 1/8"	in-line	4.2
MH 311 013 Ex nA	3/2-way direct acting	G 1/8"	banjo screw	4.6
MH 311 017 Ex nA	3/2-way direct acting	G 1/4"	banjo screw	4.6
Valves with interface according to NAMUR-standard				
MNH 350 701 Ex nA	3/2-way & 5/2-way	G 1/4" - NPT	1/4" NAMUR	2.1.3
MNH 310 701 Ex nA	3/2-way, single sol.	G 1/4" - NPT	1/4" NAMUR	2.1.1.1
MNH 310 711 Ex nA	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.1.1
MNH 310 121 Ex nA	3/2-way, single sol.	G 1/2" - NPT	1/2" NAMUR	2.1.1.2
MNH 510 701 Ex nA	5/2-way, single sol.	G 1/4" - NPT	1/4" NAMUR	2.1.2.1
MNH 510 711 Ex nA	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.2.1
MNH 510 121 Ex nA	5/2-way, single sol.	G 1/2" - NPT	1/2" NAMUR	2.1.2.2
MNH 520 701 Ex nA	5/2-way, double sol.	G 1/4" - NPT	1/4" NAMUR	2.1.2.3
MNH 520 121 Ex nA	5/2-way, double sol.	G 1/2" - NPT	1/2" NAMUR	2.1.2.3
MNH 53_ 701 Ex nA	5/3-way, different versions	G 1/4" - NPT	1/4" NAMUR	2.1.4
MNH 531 121 Ex nA	5/3-way, centre closed	G 1/2" - NPT	1/2" NAMUR	2.1.4

* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.4.3

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex nA** – standard temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	2, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex nA (non-sparking)
Temperature class:	T5

Marking on valve CE Ex II3G/D c T5 -10°C ≤ Ta ≤ 50°C
II3G/D c T6 -10°C ≤ Ta ≤ 50°C

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES Ex nA	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MOH 310 701 VES Ex nA	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MH 310 121 VES Ex nA	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	6.2.3
MH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.4
MH 510 121 VES Ex nA	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	6.2.4
MH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	6.2.5
MH 520 121 VES Ex nA	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	6.2.5
MH 53_ 701 VES Ex nA	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	6.2.6
MH 53_ 121 VES Ex nA	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES Ex nA	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.2.2
MNH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.2.2

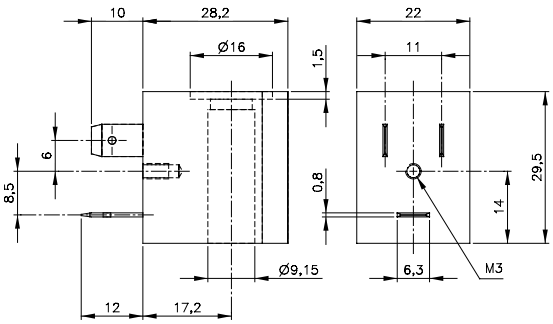
* dual use valves can either be used in-line or on a manifold plate.

Solenoids are described on page 8.2.4.3.

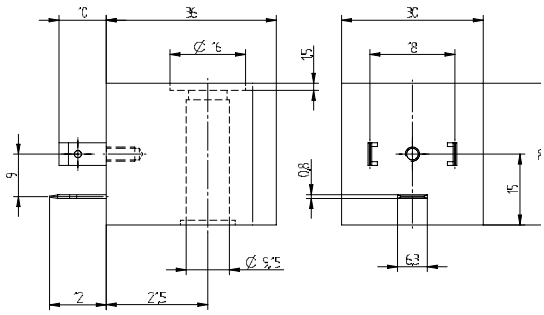
Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

MA 22 EEx nA T5 24DC
MA 30 EEx nA T6 24DC

When this solenoid system is used in combination with "ATEX certified" mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 2 and 22.



MA 22 EEx nA T5 24DC



MA 30 EEx nA T6 24DC

ATEX approved non-sparking coil for gas and dust explosion-hazardous environment.

Coil:

Voltage tolerance:	24 V DC +/-10 %
Relative duty cycle:	100 %
Temperature range:	-15°... +50° C
Insulation class of insulating materialsaccording to DIN VDE 0580:	F
Protection with connector according to EN 60529:	IP 65
Moulding material:	Termoplasticpolyester

Marking on coil:

T5: II 3G Ex nA IIC T5 Gc
II 3D Ex tc IIIC 95°C Dc

T6: II 3G Ex nA IIC T6 Gc
II 3D Ex tc IIIC 80°C Dc

Delivery content without ATEX approved connector.

30 mm wide ATEX connector available, type ST 30 Ex nA.
22 mm wide ATEX connector available, type ST 22 Ex.
Please refer to page 7.3.

The ATEX approval is only valid as long as the associated components are used.

Type	Operating press.	Power cons.	Temp. class	Connection
MA 22 EEx nA T5 24DC	max. 10 bar	3,0 Watt	T5 (100° C)	Industryform B (DW 436 50)
MA 30 EEx nA T6 24DC	max. 10 bar	2,0 Watt	T6 (85° C)	Form A (ISO 440)

Other voltages are available on request.

HAFNER

ATEX-approved valves – **Ex e mb** – standard temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex e mb (encapsulation with junction box)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -10°C ≤ Ta ≤ 50°C

The following **solenoid valves** are available:

Valves with interface according to NAMUR-standard				
Type	**Function**	**Port size**	**Installation**	**Further information on valve on page**
MNH 350 701 Ex e mb	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.3
MNH 310 701 Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.1.1
MNH 310 711 Ex e mb	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.1.1
MNH 310 121 Ex e mb	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.1.2
MNH 510 701 Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.1
MNH 510 711 Ex e mb	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.1.2.1
MNH 510 121 Ex e mb	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.2
MNH 520 701 Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.3
MNH 520 121 Ex e mb	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.3
MNH 53_ 701 Ex e mb	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.4
MNH 531 121 Ex e mb	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.4

Solenoids are described on page 8.2.5.4.

Example drawings including the solenoid are displayed on page 8.2.5.5.

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex e mb** – low temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-40°C ... +50°C ❄
Ignition protection type:	Ex e mb (encapsulation with junction box)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -40°C ≤ Ta ≤ 50°C

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 310 501 TT Ex e mb	3/2-way, single sol.	G 1/8"	in-line	5.2.2
MOH 310 501 TT Ex e mb	3/2-way, n.o. single sol.	G 1/8"	in-line	5.2.2
MH 310 701 GTT Ex e mb	3/2-way, single sol.	G 1/4"-1/4" NPT	in-line	5.2.2
MOH 310 701 GTT Ex e mb	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	in-line	5.2.2
MH 320 501 TT Ex e mb	3/2-way, double sol.	G 1/8"	in-line	5.2.2
MH 320 701 TT Ex e mb	3/2-way, double sol.	G 1/4"	in-line	5.2.2
MH 510 501 GTT Ex e mb	5/2-way, single sol.	G 1/8"	in-line	5.2.4
MH 510 701 GTT Ex e mb	5/2-way, single sol.	G 1/4"-1/4" NPT	in-line	5.2.4
MH 520 501 GTT Ex e mb	5/2-way, double sol.	G 1/8"	in-line	5.2.5
MH 520 701 GTT Ex e mb	5/2-way, double sol.	G 1/4"-1/4" NPT	in-line	5.2.5
MH 53_ 501 GTT Ex e mb	5/3-way, different versions	G 1/8"	in-line	5.2.5
MH 53_ 701 GTT Ex e mb	5/3-way, different versions	G 1/4"-1/4" NPT	in-line	5.2.5
Valves with interface according to NAMUR-standard				
MNH 350 701 TT Ex e mb	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	contact manufacturer
MNH 310 701 TT Ex e mb	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.1
MNH 510 701 TT Ex e mb	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNH 510 711 TT Ex e mb	5/2-way, single sol.	G 1/4"	1/4" NAMUR	5.3.2
MNH 520 701 TT Ex e mb	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3
MNH 531 701 TT Ex e mb	5/3-way, centre closed	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3

Solenoids are described on page 8.2.5.4.

Example drawings including the solenoid are displayed on page 8.2.5.5.

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex e mb** – low temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-40°C ... +50°C
Ignition protection type:	Ex e mb (encapsulation with junction box)
Temperature class:	T6

Marking on valve CE Ex II2G/D c T6 -40°C ≤ Ta ≤ 50°C

The following **solenoid valves** are available:

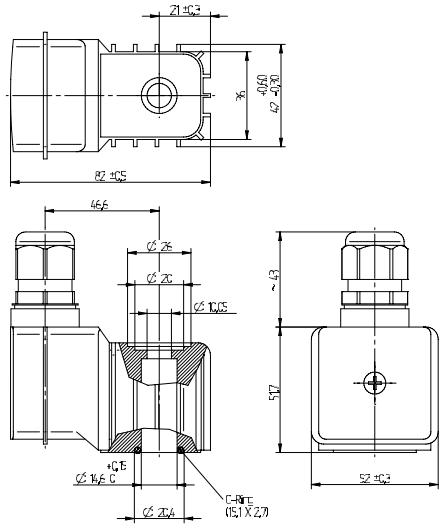
Type	Function	Port size	Installation	Further information on valve on page
MH 310 701 VES TT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MOH 310 701 VES TT Ex e mb	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MH 510 701 VES TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.4
MH 520 701 VES TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	6.2.5
MH 53_ 701 VES TT Ex e mb	5/3-way, different version	G 1/4" - 1/4" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES TT Ex e mb	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES TT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2

Solenoids are described on page 8.2.5.4.

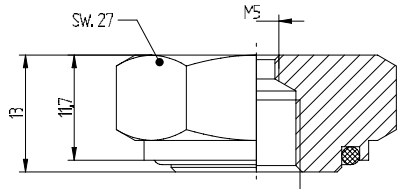
Example drawings including the solenoid are displayed on page 8.2.5.5.

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity. 1/2" stainless steel valves in standard temperature range on request.

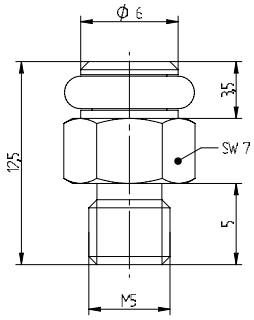
When this solenoid system is used in combination with "ATEX certified" mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1, 2, 21 and 22.



MA 52 EEx e mb IIC T6



M G1/8 M5



ESR M5

Details of junction box

ATEX approved encapsulated coil with junction box for gas and dust explosion-hazardous environment.

Voltage tolerance:	- 10...+ 10%
Relative duty cycle:	100 %
Temperature range:	-40°C...+50°C
Insulation class of insulating Materials according to DIN VDE 0580:	F
Protection according to EN 60529: (IP 67 with nut type M G1/8 M5 in combination with exhaust protection fitting type ESR M5)	IP 65
Moulding material:	Thermoplasticpolyester
Cable Gland:	M20 x 1,5 for cable diameters 6 – 13 mm

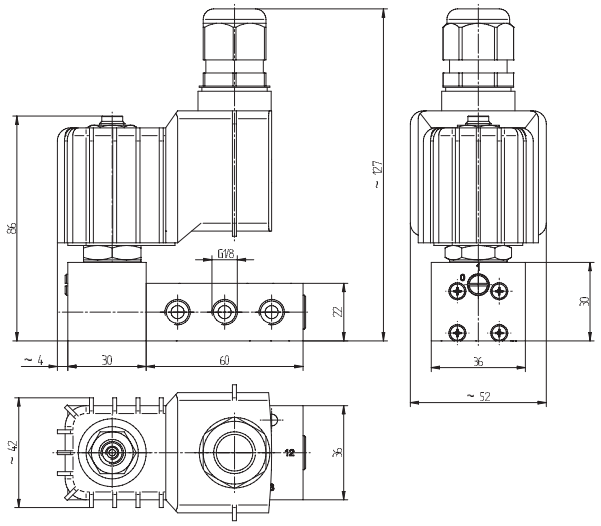
Please note:
Same coil for DC and AC.

Marking on coil: CE Ex II 2G Ex e mb IIC T6 Gb
II 2D Ex tb mb IIIC T80°C Db

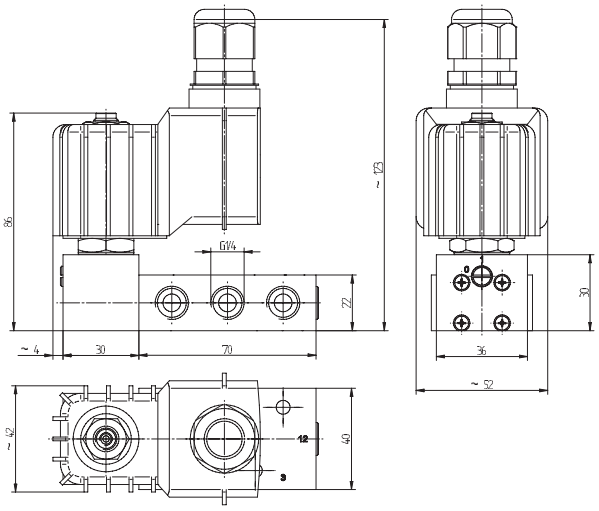
The ATEX approval is only valid as long as the associated components are used.

Type	Operating press.	Power cons.	Temperature class
MA 52 EEx e mb IIC T6 24	max. 10 bar	4,8 Watt	T6 (85° C)
MA 52 EEx e mb IIC T6 110	max. 10 bar	4,8 Watt	T6 (85° C)
MA 52 EEx e mb IIC T6 230	max. 10 bar	4,8 Watt	T6 (85° C)

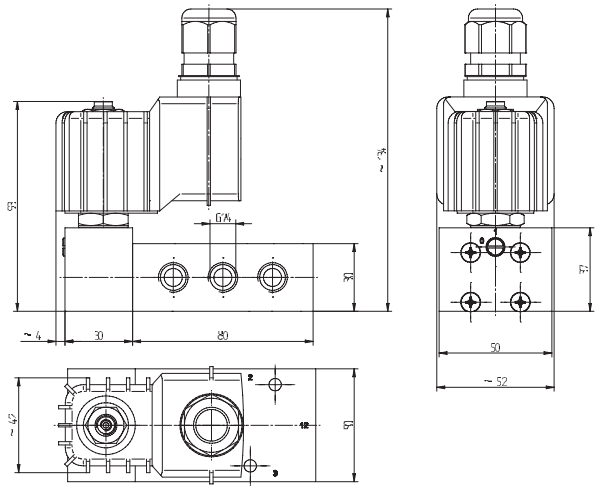
Example drawings of solenoid valves with **Ex e mb** solenoid system



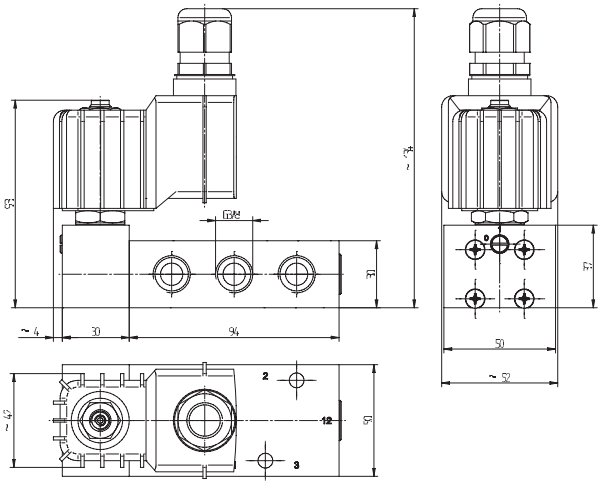
MH 510 501 Ex e mb IIC T6



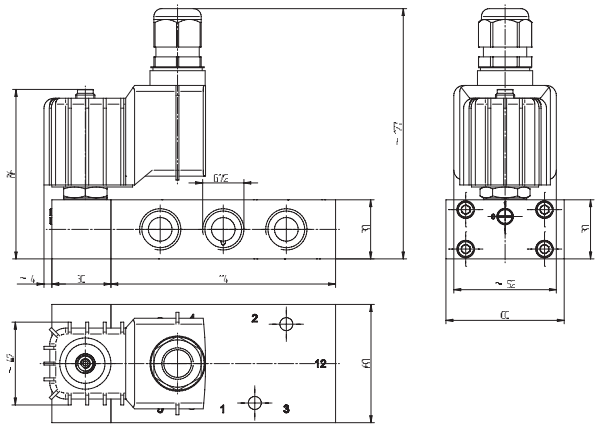
MH 510 701 Ex e mb IIC T6 /
MNH 510 701 EX e mb IIC T6



MH 510 801 Ex e mb IIC T6



MH 510 101 Ex e mb IIC T6



MH 510 121 Ex e mb IIC T6 /
MNH 510 121 Ex e mb IIC T6

ATEX-approved valves – **Ex d** – standard temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C Solenoid coil limited to +40°C
Ignition protection type:	Ex d – flameproof
Temperature class:	T6 (solenoid)

Marking on valve CE Ex II2G/D c T6 -10°C ≤ Ta ≤ 40°C

Interface between valve body and solenoid system according to CNOMO, therefore the types are called MC.

Base plate assembly due to solenoid coil is not possible.

Flameproof solenoids are displayed on page 8.2.6.5.

Example drawings including the solenoid are displayed on page 8.2.6.6.

The following **solenoid valves** are available:

Valves with interface according to NAMUR-standard				
Type	**Function**	**Port size**	**Installation**	**Further information on valve on page**
MNC 350 701 Ex d	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.3
MNC 310 701 Ex d	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.1.1
MNC 310 711 Ex d	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.1.1
MNC 310 121 Ex d	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.1.2
MNC 510 701 Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.1
MNC 510 711 Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.1
MNC 510 121 Ex d	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.2
MNC 520 701 Ex d	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.2.3
MNC 520 121 Ex d	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.2.3
MNC 53_ 701 Ex d	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" NAMUR	2.1.4
MNC 53_ 121 Ex d	5/3-way, different versions	G 1/2" - 1/2" NPT	1/2" NAMUR	2.1.4

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex d** – low temperature range – aluminium

Material:	Aluminum, anodized	Interface between valve body and solenoid system according to CNOMO, therefore the types are called MC.
Zone:	1, 2, 21, 22	
Temperature range:	-50°C ... +50°C ❄ Solenoid coil limited to -40°C ... +40°C, solenoids for -65°C on request	Base plate assembly due to solenoid coil is not possible.
Ignition protection type:	Ex d – flameproof	
Temperature class:	T6 (solenoid)	Flameproof solenoids type MA 52 EEx d IIC T6 24DC VES are displayed on page 8.2.6.5.
Marking on valve	CE ⟨Ex⟩ II2G/D c T6 -50°C ≤ Ta ≤ 40°C	Example drawings including the solenoid are displayed on page 8.2.6.6.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MC 310 501 GTT Ex d	3/2-way, n.c. single sol..	G 1/8"	in-line	5.2.2
MOC 310 501 GTT Ex d	3/2-way, n.o. single sol.	G 1/8"	in-line	5.2.2
MC 310 701 GTT Ex d	3/2-way, n.c. single sol.	G 1/4"	in-line	5.2.2
MOC 310 701 GTT Ex d	3/2-way, n.o. single sol..	G 1/4"	in-line	5.2.2
MC 320 501 GTT Ex d	3/2-way, double sol.	G 1/8"	in-line	5.2.2
MC 320 701 GTT Ex d	3/2-way, double sol.	G 1/4"	in-line	5.2.2
MC 510 501 GTT Ex d	5/2-way, single sol.	G 1/8"	in-line	5.2.4
MC 510 701 GTT Ex d	5/2-way, single sol.	G 1/4"	in-line	5.2.4
MC 520 501 GTT Ex d	5/2-way, double sol.	G 1/8"	in-line	5.2.5
MC 520 701 GTT Ex d	5/2-way, double sol.	G 1/4"	in-line	5.2.5
MC 53_ 501 GTT Ex d	5/3-way, different version	G 1/8"	in-line	5.2.5
MC 53_ 701 GTT Ex d	5/3-way, different version	G 1/4"	in-line	5.2.5
Valves with interface according to NAMUR-standard				
MNC 350 701 TT Ex d	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	contact manufacturer
MNC 310 701 TT Ex d	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.1
MNC 510 701 TT Ex d	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNC 510 711 TT Ex d	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNC 520 701 TT Ex d	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3
MNC 531 701 TT Ex d	5/3-way, different version	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex d** – standard temperature range – stainless steel

Interface between valve body and solenoid system according to CNOMO, therefore the types are called MC.

Base plate assembly due to solenoid coil is not possible.

Flameproof solenoids type MA 52 EEx d IIC T6 24DC VES are displayed on page 8.2.6.5.

Example drawings including the solenoid are displayed on page 8.2.6.6.

Material:	Stainless steel, 316L 316
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C Solenoid coil limited to +40°C
Ignition protection type:	Ex d – flameproof
Temperature class:	T6 solenoid

Marking on valve CE Ex II2G/D c T6 -10°C ≤ Ta ≤ 40°C

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MC 310 701 VES Ex d	3/2-way, n.c. single sol..	G 1/4"-1/4" NPT	in-line	6.2.2
MOC 310 701 VES Ex d	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	in-line	6.2.2
MC 310 121 VES Ex d	3/2-way, n.c. single sol.	G 1/2"-1/2" NPT	in-line	6.2.3
MC 510 701 VES Ex d	5/2-way, single sol.	G 1/4"-1/4" NPT	in-line	6.2.4
MC 510 121 VES Ex d	5/2-way, single sol.	G 1/2"-1/2" NPT	in-line	6.2.4
MC 520 701 VES Ex d	5/2-way, double sol.	G 1/4"-1/4" NPT	in-line	6.2.5
MC 520 121 VES Ex d	5/2-way, double sol.	G 1/2"-1/2" NPT	in-line	6.2.5
MC 53_ 701 VES Ex d	5/3-way, different version	G 1/4"-1/4" NPT	in-line	6.2.6
MC 53_ 121 VES Ex d	5/3-way, different version	G 1/2"-1/2" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNC 350 701 VES Ex d	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.3
MNC 310 701 VES Ex d	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.1
MNC 510 701 VES Ex d	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.2.2
MNC 520 701 VES Ex d	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.2.2

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

HAFNER

ATEX-approved valves – **Ex d** – low temperature range – stainless steel

Material:	Stainless steel, 316L	Interface between valve body and solenoid system according to CNOMO, therefore the types are called MC.
Zone:	1, 2, 21, 22	
Temperature range:	-50°C ... +50°C Solenoid coil limited to -40°C ... +40°C, solenoids for -65°C on request	Base plate assembly due to solenoid coil is not possible.
Ignition protection type:	Ex d – flameproof	
Temperature class:	T6 (solenoid)	Flameproof solenoids type MA 52 EEx d IIC T6 24DC VES are displayed on page 8.2.6.5.
Marking on valve	CE Ex II2G/D c T6 -50°C ≤ Ta ≤ 40°C	Example drawings including the solenoid are displayed on page 8.2.6.6.

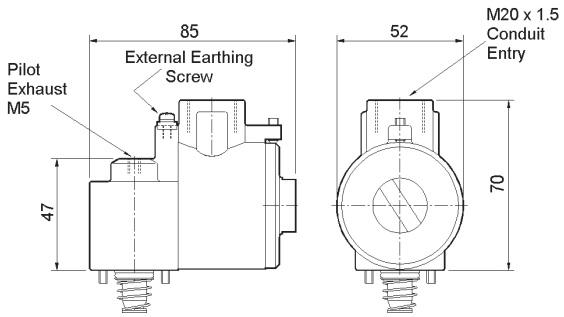
The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MC 310 701 VES TT Ex d	3/2-way, n.c. single sol..	G 1/4" - 1/4" NPT	in-line	6.2.2
MOC 310 701 VES TT Ex d	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MC 510 701 VES TT Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.4
MC 520 701 VES TT Ex d	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	6.2.5
MC 53_ 701 VES TT Ex d	5/3-way, different version	G 1/4" - 1/4" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNC 350 701 VES TT Ex d	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.3
MNC 310 701 VES TT Ex d	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.1
MNC 510 701 VES TT Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2
MNC 520 701 VES TT Ex d	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

MA 52 EEx d IIC T_ /
MA 52 EEx d IIC T_ VES

When this solenoid system is used in combination with "ATEX certified" mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1, 2, 21 and 22.



MA 52 EEx D IIC T6_ _ (VES)

ATEX approved flameproof coil for gas and dust explosion hazardous environment.
Solenoids with IEC-Ex certificate on request.

Voltage:	24VDC, 110VAC, 240VAC
Voltage tolerance:	- 10...+ 10 %
Relative duty cycle:	100 %
Temperature range:	-40°C...+40°C, up to -65°C on request, valve limited to -50°C
Ignition protection type:	flameproof
Protection according to ENBS60529 : 1992 :	IP 66 with appropriate cable gland
Material solenoid coil:	Stainless Steel
Coil rating according to DIN VDE 0580:	Class F
Cable Gland:	M20 x 1.5
Marking on coil:	DC-Version: CE Ex II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T85°C Db AC-Versions: CE Ex II 2G Ex db IIC T4 Gb II 2D Ex tb IIIC T135°C Db

Technical details pilot head :

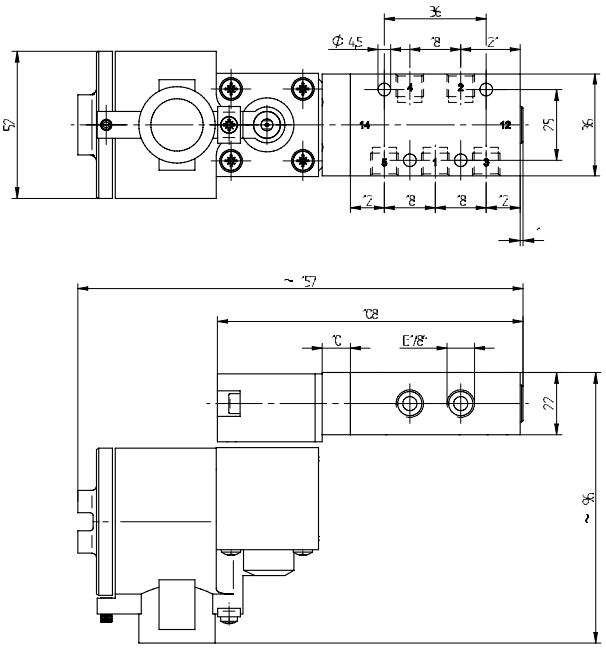
Material :	Standard: Aluminum Type VES: Stainless Steel
Manual override:	bistable to turn, others on request

The ATEX approval is only valid as long as the associated components are used.

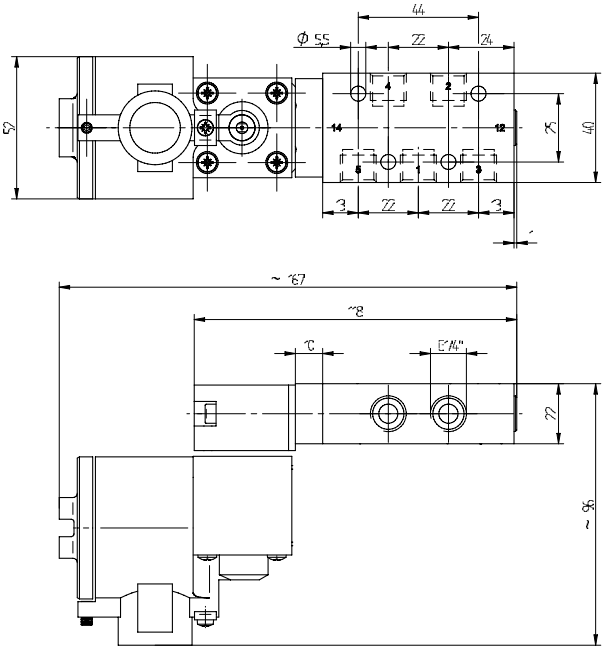
Delivery content without cable gland. Ex d rated cable glands can be supplied on request.

Type	Operating press.	Power cons.	Temperature class
MA 52 EEx d IIC T6 24 DC	max. 10 bar	3,0 Watt	T6 (85° C)
MA 52 EEx d IIC T6 24 DC VES	max. 10 bar	3,0 Watt	T6 (85° C)
MA 52 EEx d IIC T4 110AC	max. 10 bar	9,6 VA	T4 (135° C)
MA 52 EEx d IIC T4 110AC VES	max. 10 bar	9,6 VA	T4 (135° C)
MA 52 EEx d IIC T4 240AC	max. 10 bar	9,6 VA	T4 (135° C)
MA 52 EEx d IIC T4 240AC VES	max. 10 bar	9,6 VA	T4 (135° C)

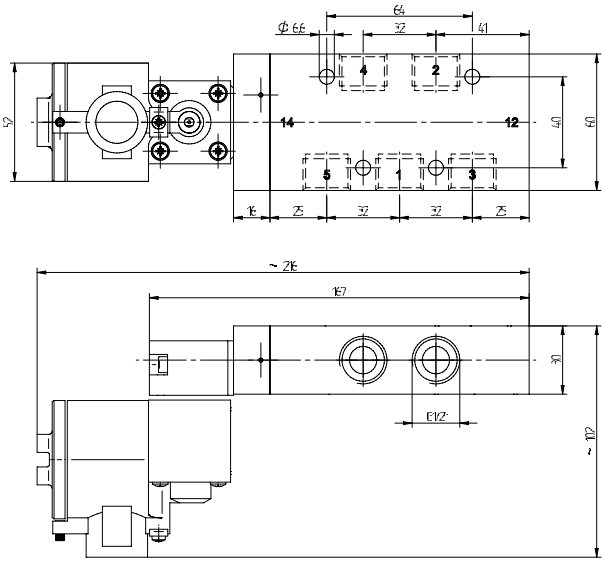
Example drawings of solenoid valves with **Ex d** solenoid system



MC 510 501 Ex d



MC 510 701 Ex d/
MNC 510 701 Ex d



MC 510 121 Ex d/
MNC 510 121 Ex d

ATEX-approved valves – **Ex dm** – standard temperature range – aluminum

Material:	Aluminum, anodized
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex dm (encapsulated-flameproof with junction box)
Temperature class:	T5

Marking on valve: CE Ex II2G/D c T5 -10°C ≤ Ta ≤ 50°C

Base plate assembly due to width of solenoid coil (36 mm) is not possible.

Encapsulated flameproof solenoids are displayed on page 8.2.7.5.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 Ex dm	3/2-way direct acting	M5	in-line	4.2
MH 311 015 Ex dm	3/2-way direct acting	G 1/8"	in-line	4.2
MH 311 013 Ex dm	3/2-way direct acting	G 1/8"	in-line	4.6
MH 311 017 Ex dm	3/2-way direct acting	G 1/4"	in-line	4.6
Valves with interface according to NAMUR-standard				
MNH 350 701 Ex dm	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.3
MNH 310 701 Ex dm	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.1.1
MNH 310 711 Ex dm	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.1.1
MNH 310 121 Ex dm	3/2-way, single sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.1.2
MNH 510 701 Ex dm	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.2.1
MNH 510 711 Ex dm	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.2.1
MNH 510 121 Ex dm	5/2-way, single sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.2.2
MNH 520 701 Ex dm	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.2.3
MNH 520 121 Ex dm	5/2-way, double sol.	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.2.3
MNH 53_ 701 Ex dm	5/3-way, different versions	G 1/4"-1/4" NPT	1/4" NAMUR	2.1.4
MNH 53_ 121 Ex dm	5/3-way, different versions	G 1/2"-1/2" NPT	1/2" NAMUR	2.1.4

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex dm** – low temperature range – aluminum

Material: Aluminum, anodized
Zone: 1, 2, 21, 22
Temperature range: -50°C ... +50°C ❄
Ignition protection type: Ex dm (encapsulated-flameproof with junction box)
Temperature class: T5

Marking on valve: CE Ex II2G/D c T5 -50°C ≤ Ta ≤ 50°C

Base plate assembly due to width of solenoid coil (36 mm) is not possible.

Encapsulated flameproof solenoids are displayed on page 8.2.7.5.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 012 TT Ex dm	3/2-way direct acting	M5	in-line	5.2.1
MH 311 015 TT Ex dm	3/2-way direct acting	G 1/8"	in-line	5.2.1
MH 311 013 TT Ex dm	3/2-way direct acting	G 1/8"	in-line	5.2.1
MH 311 017 TT Ex dm	3/2-way direct acting	G 1/4"	in-line	5.2.1
MH 310 501 GTT Ex dm	3/2-way, n.c. single sol.	G 1/8"	in-line	5.2.2
MOH 310 501 GTT Ex dm	3/2-way, n.o. single sol.	G 1/8"	in-line	5.2.2
MH 310 701 GTT Ex dm	3/2-way, n.c. single sol.	G 1/4"	in-line	5.2.2
MOH 310 701 GTT Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	5.2.2
MH 320 501 GTT Ex dm	3/2-way, double sol.	G 1/8"	in-line	5.2.2
MH 320 701 GTT Ex dm	3/2-way, double sol.	G 1/4"	in-line	5.2.2
MH 510 501 GTT Ex dm	5/2-way, single sol.	G 1/8"	in-line	5.2.4
MH 510 701 GTT Ex dm	5/2-way, single sol.	G 1/4"	in-line	5.2.4
MH 520 501 GTT Ex dm	5/2-way, double sol.	G 1/8"	in-line	5.2.5
MH 520 701 GTT Ex dm	5/2-way, double sol.	G 1/4"	in-line	5.2.5
MH 53_ 501 GTT Ex dm	5/3-way, different versions	G 1/8"	in-line	5.2.5
MH 53_ 701 GTT Ex dm	5/3-way, different versions	G 1/4"	in-line	5.2.5
Valves with interface according to NAMUR-standard				
MNH 350 701 TT Ex dm	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	contact manufactorer
MNH 310 701 TT Ex dm	3/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.1
MNH 510 701 TT Ex dm	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNH 510 711 TT Ex dm	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.2
MNH 520 701 TT Ex dm	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3
MNH 531 701 TT Ex dm	5/3-way, different versions	G 1/4"-1/4" NPT	1/4" NAMUR	5.3.3

Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex dm** – standard temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-10°C ... +50°C
Ignition protection type:	Ex dm (encapsulated-flameproof with junction box)
Temperature class:	T5

Marking on valve: CE Ex II2G/D c T5 -10°C ≤ Ta ≤ 50°C

If the coil will be used with a NAMUR-valve of series 700, an 8 mm distance plate is required. Please contact us.

Encapsulated flameproof solenoids are displayed on page 8.2.7.5.

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES Ex dm	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES Ex dm	3/2-way, n.c. single sol.	G 1/4" – 1/4" NPT	in-line	6.2.2
MOH 310 701 VES Ex dm	3/2-way, n.o. single sol.	G 1/4" – 1/4" NPT	in-line	6.2.2
MH 310 121 VES Ex dm	3/2-way, n.c. single sol.	G 1/2" – 1/2" NPT	in-line	6.2.3
MH 510 701 VES Ex dm	5/2-way, single sol.	G 1/4" – 1/4" NPT	in-line	6.2.4
MH 510 121 VES Ex dm	5/2-way, single sol.	G 1/2" – 1/2" NPT	in-line	6.2.4
MH 520 701 VES Ex dm	5/2-way, double sol.	G 1/4" – 1/4" NPT	in-line	6.2.5
MH 520 121 VES Ex dm	5/2-way, double sol.	G 1/2" – 1/2" NPT	in-line	6.2.5
MH 53_ 701 VES Ex dm	5/3-way, different version	G 1/4" – 1/4" NPT	in-line	6.2.6
MH 53_ 121 VES Ex dm	5/3-way, different version	G 1/2" – 1/2" NPT		6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES Ex dm	3/2-way & 5/2-way	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES Ex dm	3/2-way, n.o. single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES Ex dm	5/2-way, single sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES Ex dm	5/2-way, double sol.	G 1/4"-1/4" NPT	1/4" NAMUR	6.3.2

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

ATEX-approved valves – **Ex dm** – low temperature range – stainless steel

Material:	Stainless steel, 316L
Zone:	1, 2, 21, 22
Temperature range:	-50°C ... +50°C
Ignition protection type:	Ex dm (encapsulated-flameproof with junction box)
Temperature class:	T5

Marking on valve: CE Ex II2G/D c T5 -50°C ≤ Ta ≤ 50°C

If the coil will be used with a NAMUR-valve of series 700, an 8 mm distance plate is required. Please contact us.

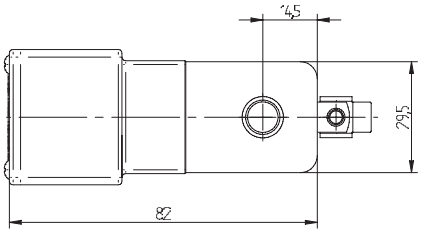
Encapsulated flameproof solenoids are displayed on page 8.2.7.5.

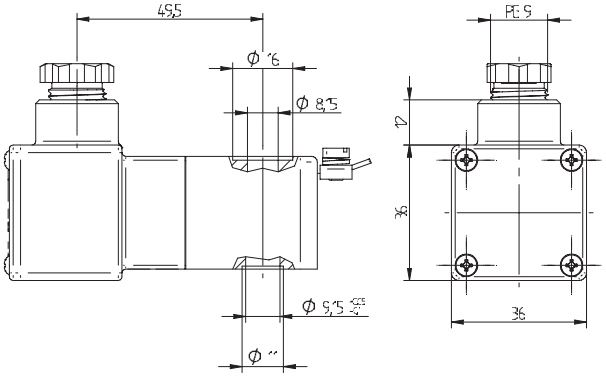
The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 311 015 VES TT Ex dm	3/2-way direct acting	G 1/8"	in-line	6.2.1
MH 310 701 VES TT Ex dm	3/2-way, n.c. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MOH 310 701 VES TT Ex dm	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	6.2.2
MH 510 701 VES TT Ex dm	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	6.2.4
MH 520 701 VES TT Ex dm	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	6.2.5
MH 53_ 701 VES TT Ex dm	5/3-way, different version	G 1/4" - 1/4" NPT	in-line	6.2.6
Valves with interface according to NAMUR-standard				
MNH 350 701 VES TT Ex dm	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.3
MNH 310 701 VES TT Ex dm	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.1
MNH 510 701 VES TT Ex dm	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2
MNH 520 701 VES TT Ex dm	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	6.3.2

Delivery contains valve with appropriate operator system, coil, manual and declaration of conformity.

When this solenoid system is used in combination with "ATEX certified" mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1, 2, 21 and 22.





MA 36 EEx dm IIC T5_ _

ATEX approved encapsulated coil with flameproof junction box for gas and dust explosion-hazardous environment.

Voltages:	12VDC, 24VDC, 24VAC, 110VAC, 230VAC
Voltage tolerance:	- 10...+ 10%
Relative duty cycle:	100 %
Temperature range:	-50°C...+50°C
Ignition protection type:	Coil encapsulated, junction box flameproof
Protection with connector according to EN 60529:	IP 66
Moulding material:	Thermoplasticpolyester
Coil rating according to DIN VDE 0580:	Class F
Cable Gland:	PG 9 DIN 40-430 for cable diameters 6 – 8 mm
Marking on coil:	CE Ex II 2G Ex db mb IIC T5 Gb II 2D Ex tb IIIC T95°C IP66 Db

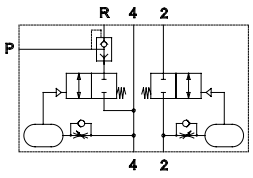
As the coil is 36 mm wide, a spacer plate called "ZPN 8" has to be used, in case of combination with our NAMUR-valve series 700. If used with NAMUR-valve series 121 a spacer plate called "ZPN 6-5" has to be used. You can find both plates on page 3.17.

The ATEX approval is only valid as long as the associated components are used.

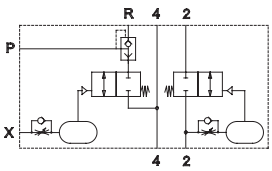
Type	Operating press.	Power cons.	Temperature class
MA 36 EEx dm IIC T5 12 DC	max. 10 bar	3,0 Watt	T5 (100 °C)
MA 36 EEx dm IIC T5 24 DC	max. 10 bar	3,0 Watt	T5 (100 °C)
MA 36 EEx dm IIC T5 24 AC	max. 10 bar	4,8 VA	T5 (100 °C)
MA 36 EEx dm IIC T5 110 AC	max. 10 bar	4,8 VA	T5 (100 °C)
MA 36 EEx dm IIC T5 230 AC	max. 10 bar	4,8 VA	T5 (100 °C)

CBN 700 K Ex/CBN 700 K EB Ex

Controlblock for butterfly valves with inflatable valve-seat



CBN 700 K Ex



CBN 700 K EB Ex

Control block for double acting actuators with interface according to 1/4“ NAMUR-standard, to be used on process-valves with inflatable valve seat.

The control-block receives it‘s signals to open and close from a standard 5/2-way NAMUR-valve.
The block is to be put between the actuator and the NAMUR-valve (flange-version).
The closing-signal is fed through to the actuator, the seal is inflated with time-delay.

When the process-valves is to be closed first the seal is deflated, with time-delay the actuator opens the process-valve.

Opening- and closing-time-delay can be adjusted independently but they are related to the operating pressure.

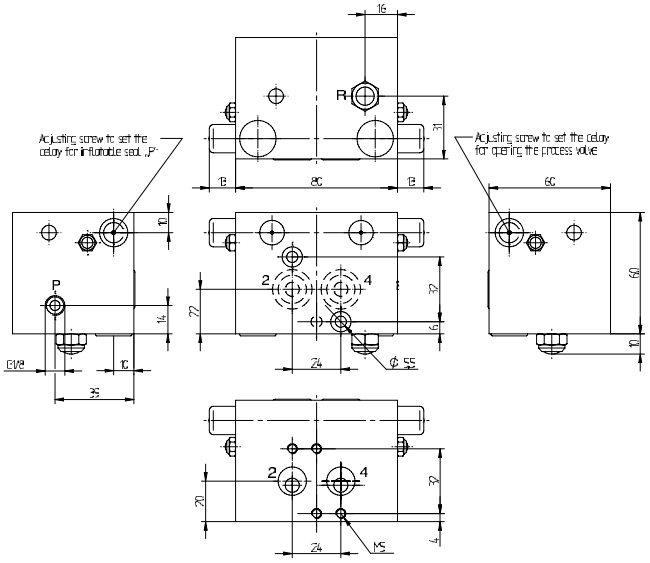
At 6 bar time-delay can be adjusted between 0 and 2 seconds.

Type **CBN 700 K EB Ex** with additional port X: pressurizing of the inflatable seal does not start before a pneumatic signal is received.

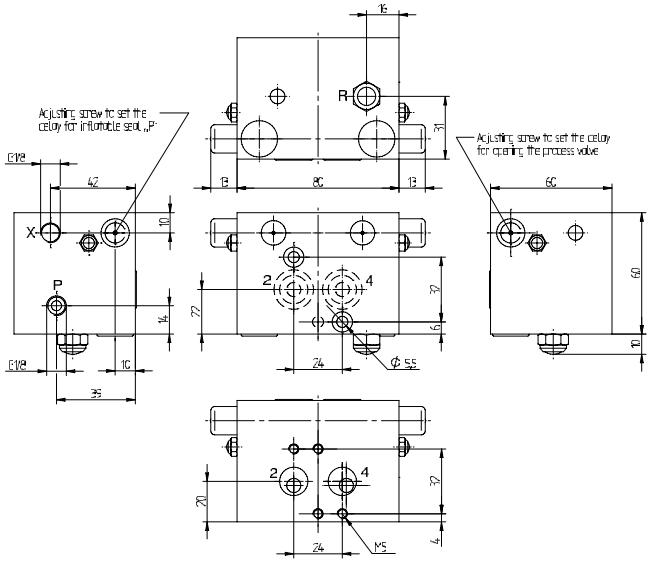
If the valve is required with G 1/4“ ports, plate GPN 1/4 can be added. For details please refer to page 3.17.

Delivery includes 2 screws, 2 O-rings, 2 protection caps.

Please note:
If a pressure regulator is used between the CBN 700 (port P) and the inflatable seal, an additional quick exhaust valve is needed to exhaust te seal.



CBN 700 K Ex



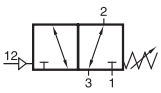
CBN 700 K EB Ex

Marking on valve:

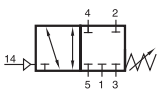
CE Ex II3G/D c T6 -10°C ⩽ Ta ⩽ 50°C

Zone: 2 and 22

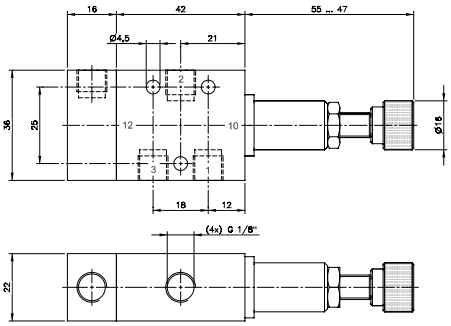
Type	NAMUR	Port P	Port X	Air flow act.	Operating press.	Air flow seal	Weight
CBN 700 K Ex	1/4”	G 1/8”		900 l/min	3 - 10 bar	400 l/min	0,80 kg
CBN 700 K EB Ex	1/4”	G 1/8”	G 1/8”	900 l/min	3 - 10 bar	400 l/min	0,80 kg



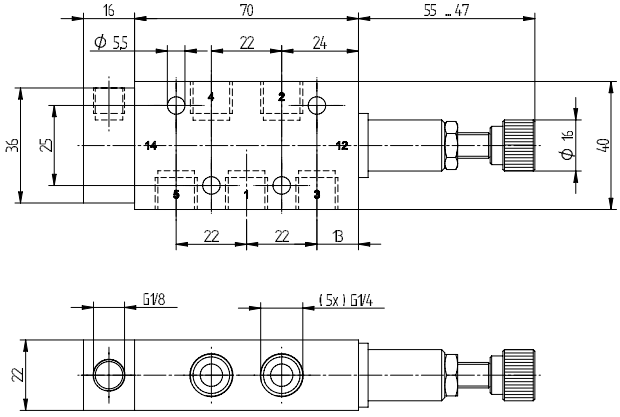
P 311 501 SR Ex



P 411 701 SR Ex



P 311 501 SR Ex



P 411 701 SR Ex

P 311 501 SR pneumatically actuated 3/2-way valve with mechanical spring return.
Valve can be used normally closed (pressure at port 1) and normally open (pressure at port 3).
Can also be used as 2/2-way valve.
Unused port to be closed by silencer or plug.

P 411 701 SR pneumatically actuated 4/2-way valve with mechanical spring return.
Valve either blocks all ports or is open from 1 to 4 and from 3 to 2.
Port 5 is a vent port and should have a silencer installed.

Valve can be used as an **adjustable pneumatic pressure switch**. By turning the hand-wheel the required minimum actuation pressure can be set between 3 and 6 bar. Adjustment is not independent from operation pressure.

Please take care about the hysteresis of the spring.

Marking von valve:

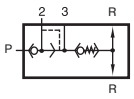
CE Ex II 3G/D c T6 -10°C ⩽ Ta ⩽ 50°C

Zone: 2 and 22

Type	Port size	Air flow	Operating press.	Regulating range act. press.	Max. act. press.	Weight
P 311 501 SR Ex	G 1/8”	650 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,16 kg
P 411 701 SR Ex	G 1/4”	1250 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,21 kg

SENR 207 01 Ex

Quick-exhaust-block with non-return valve



SENR 207 01 Ex

The valve is designed for fast closing of spring-return actuators with 1/4" NAMUR-interface.

Any 3/2-way valve can be used as pilot valve.
The connection towards the pilot valve is G 1/4" ported and for NAMUR-valves with the 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.

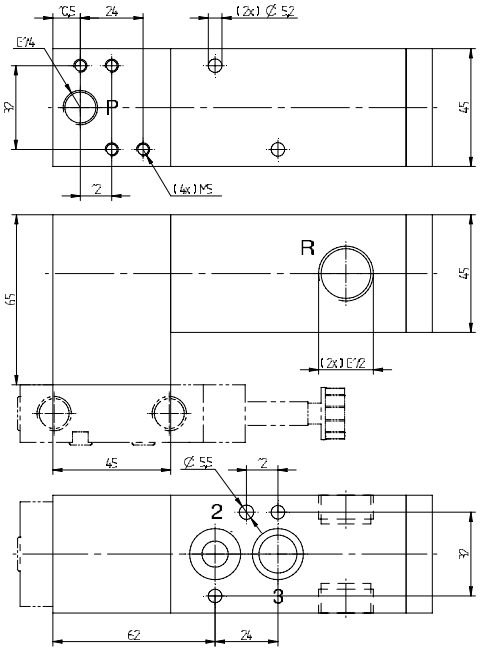
Two exhaust-ports R allow that the product can always be assembled so the silencer faces downwards.

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

Marking von valve:

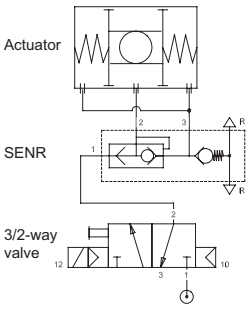
CE Ex II 3G/D c T6 -10°C ⩽ Ta ⩽ 50°C

Zone: 2 and 22



SENR 207 01 Ex

Function:



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

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