

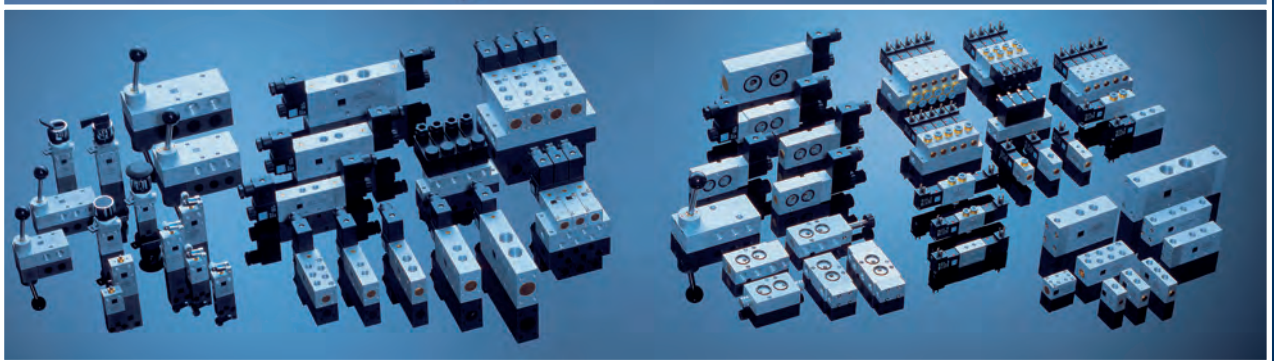
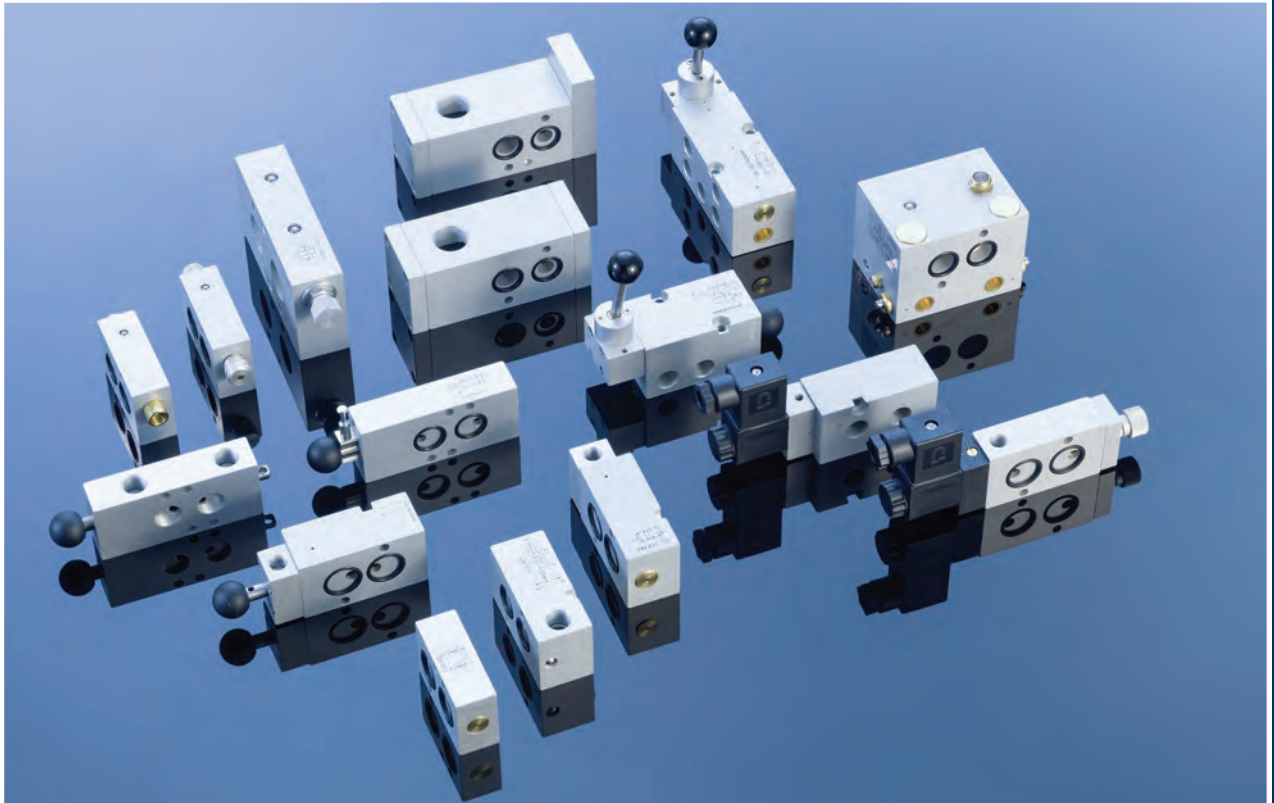


Professionals in Flow & Fluid Technology
Mens, Meetwerk & Techniek

HAFNER

Pneumatiek ventielen

2016



Valves 2016



CERTIFICATE

EN ISO 9001 : 2008
Quality Management System

**AIB-VINÇOTTE
INTERNATIONAL Ltd,**
Brussels - Belgium

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

is located at **Püski út 3.
9228 Halászi
Hungary**

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

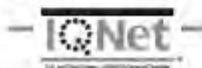
**Design, manufacturing and sales of pneumatic as well as electro-pneumatic
components and systems.
Accessories for industrial and process automation and other applications.**

This certificate is based on the results of a quality audit documented in the audit report **REP-C-13-01108.**

Certificate number: **13 5240**
Date of issue: **14 October 2013**
This certificate expires on: **13 October 2016**

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

This certificate is issued subject to AIB-Vinçotte's internal regulations.



Signed for the certification body.

Bart Janssens
Chairman Certification Committee



EN ISO 9001 : 2008



**ТАМОЖЕННЫЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ**

Заявитель: Общество с ограниченной ответственностью «Стартерлайн», УНП 191732890
 Место нахождения и фактический адрес: 220035, город Минск, улица Алякс Гатуня, дом 25, помещение 2Н, Республика Беларусь. Телефон: +375 17 312 35 97. Факс: +375 17 312 35 97. Адрес электронной почты: info@starline.by,
 в лице Директора Штефан Пайс Вальдеграйтс

заявляет, что

Автомобильная продукция (марки):
 торговый марку "HAFNER", модели с маркировкой двигателями, модели: BV, BK, BL, BA, BAE, BH, BHP, BHS, BC, BZ, BV, HVB, HVS, HVKN, HVE, HVZ, HMZN, HE, HVREN с комплектацией и вариантами поставки;
 системы с пневмоприводом, модели: P, PD, RP, PN, SJ, SUH, PH;
 системы быстрого сброса, модели: SF, SEJ, SEN, SENG, SEA, DSV, DSVN, UH, CBN;
 обратные клапаны, модели: VNH, VSR;
 пневмоклапаны с обратным клапаном (регуляторы расхода), модели: DRN, DRF, SCU, RCU, SUC, RUC, SCO, RCO, SSC, SVU;
 регуляторы давления (редукционные клапаны), регуляторы давления самозастывающие (пневматические) и самозастывающие устройства (фильтры-регуляторы), модели: FRU, FR, F, R, L, FE, C, D1, C, H, C, 33, R, 01;
 изготовитель: "Hafner-Produkt Kitzinger KG"
 Место нахождения и фактический адрес: Stammheim Strasse 19, 71696 Kitzingen (Germany), Германия

код ТН ВЭД ТС: 8481 80 790 0, 8481 80 719 9, 8481 30 910 8, 8481 30 990 9, 8481 30 050 0, 8481 30 190 8, 8481 30 990

Серийный номер:

соответствует требованиям:

ТР ТС 018/2011 "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 «ДЕМ» ООО «Трансмаксимум», рег. № РОСС RU.0001.21AB61 от 02.06.2011г. по 02.06.2016г.

Дополнительная информация

Схема декларирования Д.

Декларация о соответствии действительна с даты регистрации по 29.07.2018 включительно.

Штефан Пайс Вальдеграйтс

М.П.

Сведения о регистрации декларации о соответствии:

Регистрационный номер декларации о соответствии: ТС № RU.Д.ДЕ.АН03.В.82509

Дата регистрации декларации о соответствии: 30.07.2015



**ТАМОЖЕННЫЙ СОЮЗ
ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ**

Заявитель: Общество с ограниченной ответственностью "Лор-Нор"

140453, Российская Федерация, Московская обл., Коломенский район, пос. Радушный, д. 45В, тел. +74956152094, E-mail: info@lor-nor.ru, ОГРН 1083022003406

в лице Генерального директора Валерия Александровича, Генерального директора ООО "Лор-Нор", действующего на основании Устава.

заявляет, что Оборудование для электромобилей, торговой марки "HAFNER":
 Электромобильные комплекты, серии: M, MO, MD, MDH, MX, MOB, MDS, ME, MI, MOH, MK, MOJ, MBH, MCOH, MCH, MED, MNT, MNH, MNOH, MNK, MHP, MS, MV, MSV, SSV, SGV, с комплектующими и вариантами поставки.

изготовитель: Фирма "Hafner-Produkt Kitzinger KG", Stammheim str. 19, D-71696

Kitzingen, Германия

Код ТН ВЭД ТС: 8481807900

Серийный номер:

соответствует требованиям:

ТР ТС 004/2011 "О безопасности перевозочного оборудования";

ТР ТС 020/2011 "Электромагнитная совместимость технических средств"

Декларация о соответствии принята на основании

Протокол испытаний № 110809/П-014 от 09.08.2015 г. - ИЛ "Национальный Центр сертификации" ООО "Национальный Фонд Сертификации" (Атт. экв. № РОСС RU.0001.21AOC21 от 19.02.2015 г.) 153022, г. Иваново, ул. Станкостроительная, д. 1.

Протокол испытаний № 210B08S-13 от 09.08.2015 г. - ИЛ ЭИ ЭМС ООО "Национальная лаборатория электротехнической продукции ЭМС" (Атт. экв. № РОСС RU.0001.21M343 от 05.05.2014 г.) 141400, Московская обл., г. Химки, Ленинградская ул., д. 28

Дополнительная информация

Декларация о соответствии действительна с даты регистрации по 11.08.2018 включительно.



Генеральный директор
 (подпись и фактически руководящая организация)
 Валерий Александрович
 (подпись и фактически лицо, осуществляющее в качестве индивидуального предпринимателя)

Сведения о регистрации декларации о соответствии:

Регистрационный номер декларации о соответствии: ТС № RU.Д.ДЕ.АН30.В.00061

Дата регистрации декларации о соответствии: 16.08.2014



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58	2.4.2.2	P 510 501/P 510 701/P 510 801 P 511 501/P 511 701/P 511 801	G 1/8" - G 1/4" air spring return G 1/8" - G 1/4" mech. spring
59	2.4.2.3	P 510 101/P 510 121/P 510 181 P 511 101/P 511 121/P 511 181 P 510 121 NPT/P 511 121 NPT	G 3/8" - G 1/2" - G 3/4" air spring return G 3/8" - G 1/2" - G 3/4" mech. spring 1/2" NPT air/mech. spring return
60	2.4.2.4	P 510 501 G/P 510 701 G/P 510 121 G P 511 501 G/P 511 701 G/P 511 121 G P 510 701 G NPT/P 511 701 G NPT	G 1/8" - G 1/4" - G 1/2" air spring, dual G 1/8" - G 1/4" - G 1/2" mech. spring, dual 1/4" NPT air/mech. spring, dual
61	2.4.2.5	P 520 302/P 520 502	M5 - G 1/8" double pilot
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80	2.5.1.1.5	MH 311 014/MOH 311 014/MH 311 019/MX 311 019	G 1/8" - G 1/4" 3/2 way banjo PA
81	2.5.1.1.6	MH 311 013/MH 311 017	G 1/8" - G 1/4" 3/2 way banjo alu
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83	2.5.1.1.8	MD 310 301/MOD 310 301 MD 310 341/MOD 310 341	M5 single solenoid pif 4 mm single solenoid
84	2.5.1.1.9	MD 310 401/MOD 310 401 MD 310 461/MOD 310 461	G 1/8" single solenoid pif 6 mm single solenoid
85	2.5.1.1.10	MH 310 302/MOH 310 302 MH 310 502/MOH 310 502	M5 single solenoid G 1/8" single solenoid
86	2.5.1.1.11	MH 210 501/MH 210 701	G 1/8" - G 1/4" 2/2 way single solenoid
87	2.5.1.1.12	MH 310 501/MOH 310 501 MH 310 701/MOH 310 701 MH 310 801/MOH 310 801	G 1/8" single solenoid G 1/4" single solenoid G 1/4" single solenoid
88	2.5.1.1.13	MH 310 101/MOH 310 101 MH 310 121/MOH 310 121 MH 310 181/MOH 310 181 MH 310 121 NPT/MOH 310 121 NPT	G 3/8" single solenoid G 1/2" single solenoid G 3/4" single solenoid 1/2" NPT single solenoid
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90	2.5.1.1.15	MH 310 101 G/MOH 310 101 G MH 310 121 G/MOH 310 121 G	G 3/8" single solenoid, dual G 1/2" single solenoid, dual
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95	2.5.1.2.2	MH 312/MH 315/MX 315 MH 314/MH 316	M5 - G 1/8" direct actuated pif 4 mm / 6 mm direct actuated
96	2.5.1.2.3	MH 339/MH 239/R 33 R/R 33 L	G 1/4" direct modular
97	2.5.1.2.4	MD 310 343/MOD 310 343 MD 310 403/MOD 310 403 MD 310 463/MOD 310 463	pif 4 mm single solenoid G 1/8" single solenoid pif 6 mm single solenoid
98	2.5.1.2.5	MD 310 304/MOD 310 304 MD 310 404/MOD 310 404	all ports in plate single solenoid all ports in plate single solenoid
	2.5.1.3	3/3 way valves	
99	2.5.1.3	MH 331 701 G/MH 331 121 G	G 1/4" - G 1/2"
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101	2.5.2.1.1	MD 510 301/MD 510 341 MD 510 401/MD 510 461	M5 - pif 4 mm single solenoid G 1/8" - pif 6 mm single solenoid
102	2.5.2.1.2	MH 510 302/MH 510 502	M5 - G 1/8" single solenoid
103	2.5.2.1.3	MH 510 501/MH 510 701/MH 510 801	G 1/8" - G 1/4" single solenoid
104	2.5.2.1.4	MH 510 101/MH 510 121/MH 510 181 MH 510 121 NPT	G 3/8" - G 1/2" - G 3/4" single solenoid 1/2" NPT single solenoid

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106	2.5.2.1.6	MH 510 101 G/MH 510 121 G	G 3/8" - G 1/2"	single solenoid, dual
107	2.5.2.1.7	MD 520 301/MD 520 341 MD 520 401/MD 520 461	M5 - pif 4 mm G 1/8" - pif 6 mm	double solenoid double solenoid
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109	2.5.2.1.9	MH 520 501/MH 520 701/MH 520 801	G 1/8" - G 1/4"	double solenoid
110	2.5.2.1.10	MH 520 101/MH 520 121/MH 520 181 MH 520 121 NPT	G 3/8" - G 1/2" - G 3/4" 1/2" NPT	double solenoid double solenoid
111	2.5.2.1.11	MH 520 501 G/MH 520 701 G MH 520 701 G NPT	G 1/8" - G 1/4" 1/4" NPT	double solenoid, dual double solenoid, dual
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114	2.5.2.2.2	MH 510 503/MH 510 703/MH 510 803	G 1/8" - G 1/4"	single solenoid
115	2.5.2.2.3	MD 510 304/MD 510 404	all ports in the plate	single solenoid
116	2.5.2.2.4	MH 510 304/MH 510 504/MH 510 704 MH 510 104	all ports in the plate	single solenoid
117	2.5.2.2.5	MD 520 303/MD 520 343 MD 520 403/MD 520 463	M5 - pif 4 mm G 1/8" - pif 6 mm	double solenoid double solenoid
118	2.5.2.2.6	MH 520 503/MH 520 703/MH 520 803	G 1/8" - G 1/4"	double solenoid
119	2.5.2.2.7	MD 520 304/MD 520 404	all ports in the plate	double solenoid
120	2.5.2.2.8	MH 520 304/MH 520 504/MH 520 704 MH 520 104	all ports in the plate	double solenoid
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122	2.5.3.1.2	MH 53_ 501/MH 53_ 701/MH 53_ 801	G 1/8" - G 1/4"	
123	2.5.3.1.3	MH 53_ 101/MH 53_ 121/MH 53_ 181 MH 53_ 121 NPT	G 3/8" - G 1/2" - G 3/4" 1/2" NPT	
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155	2.7.2.9	RB 5__ 704 K1 R 5 704 K1R/R 5 704 K1L/R 5 704 K1	For low temp. solenoids of page 2.11.4.3.1, 2.11.4.3.2
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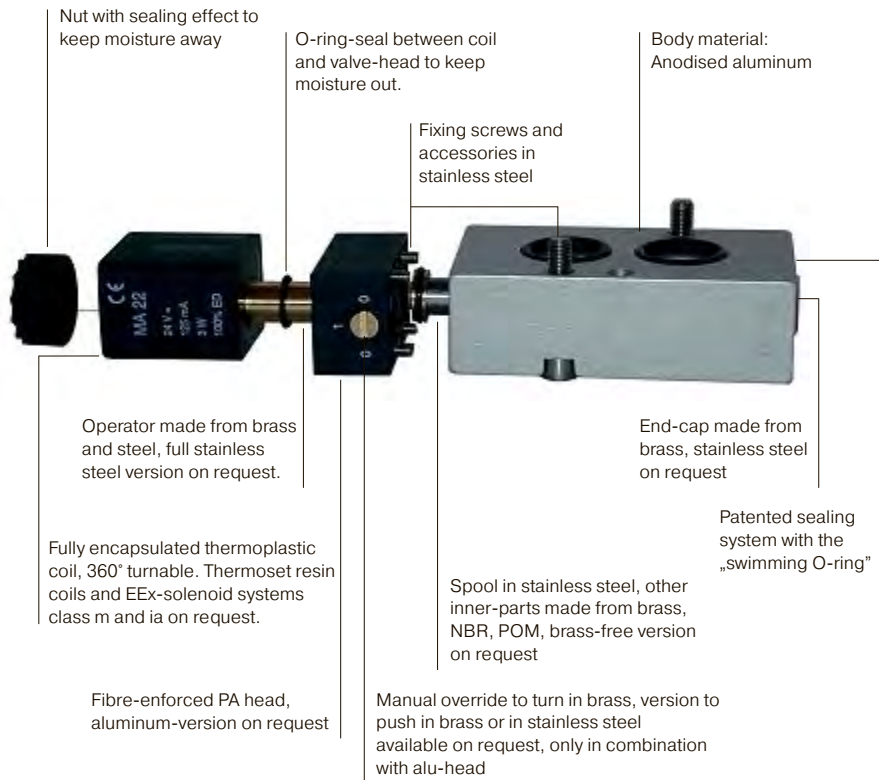
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Besides maximum flow of 1.250 NI/min at compact design there are 11 more competitive advantages of the Hafner valve series 701.



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



Series MHD

Manual override to push plus detent position by turning:

- Direct acting valves
- 16 mm wide valves
- 22+ mm wide valves

22+ mm



M-Version

Without manual override.

- An option for all 22 mm + wide valves



Type numbering system on the basis of MNH 510 701 24DC

MNH

Block 1

510

Block 2

Actuation

M	Solenoid valve	Without manual override
MMD	Solenoid valve with momentary manual override	10 mm
MD	Solenoid valve with momentary manual override	normally 16 mm
MOD	Solenoid valve with momentary manual override	normally 16 mm
MH	Solenoid valve with bistable manual override	2- and 3-way n.o. normally 22 mm plus
MOH	Solenoid valve with bistable manual override	2- and 3-way n.o. normally 22 mm plus
MEH	Solenoid valve with bistable manual override	With external pilot feed
MNH	Solenoid valve with bistable manual override	NAMUR-interface
MNOH	Solenoid valve with bistable manual override	NAMUR-interface 2- and 3-way n.o.
MK	Solenoid valve with momentary manual override	Low power
MNK	Solenoid valve with momentary manual override	Low power NAMUR-interface
P	Pneumatically actuated valve	
HV	Lever actuated valve with spring return	
HVR	Lever actuated valve indexed	
BV/BG	Stem actuated valve	
BZ	Stem actuated valve, actuation by pulling the stem	
BR	Roller lever valve	
BL	Roller lever valve with idle return	
BA	Valve for panel mounting	
BH	Push-pull button valve for panel mounting	
BHP	Push-pull button valve with pneumatic reset	
VA	OR-gate	
ES	AND-gate	
SE	Quick-exhaust valve	
DR	Flow regulator, uni-directional	
D	Flow regulator, bi-directional	
DRN	Flow regulator with NAMUR-interface	
UB	Air-recirculation block with NAMUR-interface	
SENR	Quick-Exhaust block with NAMUR-interface	
BHN	Block and block / block and bleed valves with NAMUR-interface	
ZVP	Plates for cylinder-valve combinations	
ZPN	Various accessory plates	

Function

First number:	2 = 2-way, 3 = 3-way or 5 = 5-way valve
Second number:	1 = actuation by permanent signal, 2 = actuated by impulse 3 = 3-way valves 53_ = 5/3-way valves 33_ = 3/3-way valves
Third number:	For 5/3-way and 3/3-way valves: 1 = middle position closed 2 = middle position exhausted 3 = middle position pressurized
	Other valves: 0 = pneumatical spring 1 = mechanical spring (MH-, MNH- and PN-valves have a combined spring)
210	2/2-way Pneumatic spring return
310	3/2-way Pneumatic spring return
311	3/2-way Combined / mechanical spring return (depends on type)
320	3/2-way Double solenoid
510	5/2-way Pneumatic spring return
511	5/2-way Combined / mechanical spring return (depends on type)
520	5/2-way Double solenoid
531	5/3-way Centre closed
532	5/3-way Centre exhausted
533	5/3-way Centre pressurized

The Hafner valve type numbering system consists of at least 3 blocks.
 Block 4 to be used for voltage indication or special suffixes.
 Please note: This overview is not intended to be exhaustive.

701

Block 3

24DC

Block 4

Size & Position of Ports

In-line valves:

	Orifice size	Ports	Position of Ports
201	2 mm	M5	Standard
202	2 mm	M5	On one side
243	2 mm	Pif 4 mm	Side of valve
301	3 mm	G 1/8"	Standard
302	3 mm	M5	On one side
341	3 mm	Pif 4 mm	Standard
401	4 mm	G 1/8"	Standard
461	4 mm	Pif 6 mm	Standard
442	4 mm	Pif 4 mm	On one side
462	4 mm	Pif 6 mm	On one side
501	5 mm	G 1/8"	Standard
502	5 mm	G 1/8"	On one side
701	7 mm	G 1/4"	Standard
711	7 mm	G 1/4"	Ports swapped (NAMUR valves only)
801	8 mm	G 1/4"	Standard
101	10 mm	G 3/8"	Standard
121	12 mm	G 1/2"	Standard
181	18 mm	G 3/4"	Standard

Direct acting valves:

	Orifice size	Ports	Position of Ports
010	1 mm	M5	Standard
012	1,2 mm	M5	Standard
015	1,2 mm	G 1/8"	Standard
305	3 mm	G 1/8"	Standard
309	3 mm	G 1/4"	Standard
014	1,2 mm	G 1/8"	Banjo-screw (port 2)
019	1,2 mm	G 1/8" – pif 6 mm	Banjo-screw (port 2)
013	1,2 mm	G 1/8"	Banjo-screw (port 2)
017	1,2 mm	G 1/8" – G 1/4"	Banjo-screw (port 2)
313	3 mm	G 1/8"	Banjo-screw (port 2)
317	3 mm	G 1/8" – G 1/4"	Banjo-screw (port 2)

Valves for manifold assembly:

	Orifice size	Ports	Position of Ports
105	1,2 mm	G 1/4" – G 1/8"	Modular system, direct acting
239	3 mm	G 1/4"	Modular system, direct acting
339	3 mm	G 1/4"	Modular system, direct acting
304	3 mm	Flange for manifold	All on one side
503	5 mm	G 1/8"	
		Flange for manifold	1,3,5 on one side as flange
504	5 mm	Flange for manifold	All on one side
703	7 mm	G 1/8"	
		Flange for manifold	1,3,5 on one side as flange
704	7 mm	Flange for manifold	All on one side
104	10 mm	Flange for manifold	All on one side

Suffixes

Block 4 is to be used to indicate the voltage at solenoid valves or to give further information on special executions. Block 4 can consist of several suffixes.

Voltages	6VDC, 12VDC, 24VDC, 48DC, 24VAC, 110AC, 230AC
O.S.	without coil
NPT	NPT threads
TT	Low temperature
HT	High temperature
VES	Full stainless steel
KES	Stainless steel with PA pilot-head
G	Valves can be used in-line and also on manifold plates
Ex	ATEX-approved non-electrical valve
Ex ia	ATEX-approved for Ex ia coils
Ex m	ATEX-approved for Ex m coils
Ex nA	ATEX-approved for Ex nA coils
Ex e mb	ATEX-approved for Ex e mb coils
Ex dm	ATEX-approved for Ex dm coils
Ex d	ATEX-approved for Ex d coils
EDS	Brass-free to the outside
BMF	Entirely brass-free

Please note: Valves type "G" (e.g. 701 G) can be used as an in-line valve as well as for manifold assembly.



Quick Finder for Manifold Systems

We offer a large variety of manifold systems. In order to choose the appropriate combination of manifold plate and solenoid valves please consult the list below.

The different valves which can be assembled to one type of manifold plate are described in the same row.

Manifold systems that can be equipped with our D-Sub-terminal system are indicated by a **T** in the last column.

Valves that can be used in-line and on manifold plates are indicated by a **G**.

Modular Manifold-System indicated by a **B**.

3 way solenoid valves

position of ports			port size			manifold		3/2 way single sol.			3/2 way double sol.		comment	
1	2	3	1	2	3	type	page	type n.c.	type n.o.	page	type	page		
plate	plate	valve	G 1/8"	M5	operator	RD 3__104	2.5.1.2.1	MD 311 104	n.a.	2.5.1.2.1	n.a.	n.a.	direct acting	T
plate	plate	valve	G 1/8"	pif 4 mm	operator	RD 3__144	2.5.1.2.1	MD 311 104	n.a.	2.5.1.2.1	n.a.	n.a.	direct acting	T
plate	valve	valve	G 1/4"	M5	operator	R __	2.7.1.1	MH 312	n.a.	2.5.1.2.2	n.a.	n.a.	direct acting	
plate	valve	valve	G 1/4"	G 1/8"	operator	R __	2.7.1.1	MH 315	n.a.	2.5.1.2.2	n.a.	n.a.	direct acting	
plate	valve	valve	G 1/4"	pif 4 mm	operator	R __	2.7.1.1	MH 314	n.a.	2.5.1.2.2	n.a.	n.a.	direct acting	
plate	valve	valve	G 1/4"	pif 6 mm	operator	R __	2.7.1.1	MH 316	n.a.	2.5.1.2.2	n.a.	n.a.	direct acting	
plate	plate	valve	G 1/4"	G 1/4"	G 1/8"	R 33	2.5.1.2.3	MH 339	n.a.	2.5.1.2.3	n.a.	n.a.	direct acting	B
plate	valve	plate	G 1/8"	pif 4 mm	G 1/8"	RD 3__303	2.7.1.2	MD 310 343	MOD 310 343	2.5.1.2.4	n.a.	n.a.	3/2 way valves	T
plate	valve	plate	G 1/4"	pif 6 mm	G 1/4"	RD 3__403	2.7.1.2	MD 310 463	MOD 310 463	2.5.1.2.4	n.a.	n.a.	3/2 way valves	T
plate	valve	plate	G 1/4"	G 1/8"	G 1/4"	RD 3__403	2.7.1.2	MD 310 403	MOD 310 403	2.5.1.2.4	n.a.	n.a.	3/2 way valves	T
plate	plate	plate	G 3/8"	pif 4 mm	G 3/8"	RM 5__344	2.6.2.4		MMD 23_304	2.6.2.1			double 3/2 way valves	T
plate	plate	plate	G 1/4"	pif 4 mm	G 1/4"	RD 3__344	2.7.1.3	MD 310 304	MOD 310 304	2.5.1.2.5	n.a.	n.a.	3/2 way valves	T
plate	plate	plate	G 1/4"	pif 6 mm	G 1/4"	RD 3__464	2.7.1.3	MD 310 404	MOD 310 404	2.5.1.2.5	n.a.	n.a.	3/2 way valves	T
plate	valve	plate	G 1/4"	G 1/8"	G 1/4"	RB 3__503 G	2.7.1.4	MH 310 501 G	MOH 310 501 G	2.5.1.1.14	MH 320 501 G	2.5.1.1.18	3/2 way valves	GB
plate	valve	plate	G 3/8"	G 1/4"	G 3/8"	RB 3__703 G	2.7.1.4	MH 310 701 G	MOH 310 701 G	2.5.1.1.14	MH 320 701 G	2.5.1.1.18	3/2 way valves	GT
plate	valve	plate	G 3/8"	G 1/4"	G 3/8"	RB 3__703 G	2.7.1.4	MH 331 701 G		2.5.1.3			3/3 way valves	G
plate	valve	plate	G 1/2"	G 3/8"	G 1/2"	RB 3__103 G	2.7.1.5	MH 310 101 G	MOH 310 101 G	2.5.1.1.15	MH 320 101 G	2.5.1.1.18	3/2 way valves	GB
plate	valve	plate	G 1/2"	G 1/2"	G 1/2"	R 3__121 G	2.7.1.5	MH 310 121 G	MOH 310 121 G	2.5.1.1.15	MH 320 121 G	2.5.1.1.18	3/2 way valves	G
plate	valve	plate	G 1/2"	G 1/2"	G 1/2"	R 3__121 G	2.7.1.5	MH 331 121 G		2.5.1.3			3/3 way valves	G

5 way solenoid valves

position of ports			port size			manifold		5/2 single sol.		5/2 double sol.		5/3 way		
1	2+4	3+5	1	2+4	3+5	type	page	type	page	type	page	type	page	
plate	valve	plate	G 1/8"	M5	G 1/8"	RD 5__303	2.7.2.1	MD 510 303	2.5.2.2.1	MD 520 303	2.5.2.2.5	MD 53_303	2.5.3.2.1	T
plate	valve	plate	G 1/8"	pif 4 mm	G 1/8"	RD 5__303	2.7.2.1	MD 510 343	2.5.2.2.1	MD 520 343	2.5.2.2.5	MD 53_343	2.5.3.2.1	T
plate	valve	plate	G 1/4"	G 1/8"	G 1/4"	RD 5__403	2.7.2.1	MD 510 403	2.5.2.2.1	MD 520 403	2.5.2.2.5	MD 53_403	2.5.3.2.1	T
plate	valve	plate	G 1/4"	pif 6 mm	G 1/4"	RD 5__403	2.7.2.1	MD 510 463	2.5.2.2.1	MD 520 463	2.5.2.2.5	MD 53_463	2.5.3.2.1	T
plate	valve	plate	G 1/4"	G 1/8"	G 1/4"	RB 5__503 G	2.7.2.2	MH 510 501 G	2.5.2.1.5	MH 520 501 G	2.5.2.1.11	MH 53_501 G	2.5.3.1.4	GB
plate	valve	plate	G 1/4"	G 1/8"	G 1/4"	RB 5__503 G	2.7.2.2	MH 510 503	2.5.2.2.2	MH 520 503	2.5.2.2.6	MH 53_503	2.5.3.2.2	TB
plate	valve	plate	G 3/8"	G 1/4"	G 3/8"	RB 5__703 G	2.7.2.3	MH 510 701 G	2.5.2.1.5	MH 520 701 G	2.5.2.1.11	MH 53_701 G	2.5.3.1.4	GB
plate	valve	plate	G 3/8"	G 1/4"	G 3/8"	RB 5__703 G	2.7.2.3	MH 510 703	2.5.2.2.2	MH 520 703	2.5.2.2.6	MH 53_703	2.5.3.2.2	TB
plate	valve	plate	G 3/8"	G 1/4"	G 3/8"	R 5__803	2.7.2.5	MH 510 803	2.5.2.2.2	MH 520 803	2.5.2.2.6	MH 53_803	2.5.3.2.2	
plate	valve	plate	G 1/2"	G 3/8"	G 1/2"	RB 5__103 G	2.7.2.4	MH 510 101 G	2.5.2.1.6	MH 520 101 G	2.5.2.1.12	MH 53_101 G	2.5.3.1.5	GB
plate	valve	plate	G 1/2"	G 1/2"	G 1/2"	R 5__121 G	2.7.2.5	MH 510 121 G	2.5.2.1.6	MH 520 121 G	2.5.2.1.12	MH 53_121 G	2.5.3.1.5	G
plate	plate	plate	G 3/8"	pif 4 mm	G 3/8"	RM 5__344	2.6.2.4	MMD 510 304	2.6.2.2	MMD 520 304	2.6.2.2	MMD 53_304	2.6.2.3	T
plate	plate	plate	G 1/8"	pif 4 mm	G 1/8"	RD 5__344	2.7.2.6	MD 510 304	2.5.2.2.3	MD 520 304	2.5.2.2.7	MD 53_304	2.5.3.2.3	T
plate	plate	plate	G 1/4"	pif 6 mm	G 1/4"	RD 5__464	2.7.2.6	MD 510 404	2.5.2.2.3	MD 520 404	2.5.2.2.7	MD 53_404	2.5.3.2.3	T
plate	plate	plate	G 1/4"	G 1/8"	G 1/4"	R 5__304	2.7.2.7	MH 510 304	2.5.2.2.4	MH 520 304	2.5.2.2.8	MH 53_304	2.5.3.2.4	T
plate	plate	plate	G 1/4"	G 1/8"	G 1/4"	R 5__504	2.7.2.7	MH 510 504	2.5.2.2.4	MH 520 504	2.5.2.2.8	MH 53_504	2.5.3.2.4	T
plate	plate	plate	G 3/8"	G 1/4"	G 3/8"	R 5__704	2.7.2.8	MH 510 704	2.5.2.2.4	MH 520 704	2.5.2.2.8	MH 53_704	2.5.3.2.4	T
plate	plate	plate	G 3/8"	pif 8 mm	G 3/8"	R 5__784	2.7.2.8	MH 510 704	2.5.2.2.4	MH 520 704	2.5.2.2.8	MH 53_704	2.5.3.2.4	T
plate	plate	plate	G 3/8"	G 1/4"	G 3/8"	RB 5__704 K1	2.7.2.9	MH 510 704	2.5.2.2.4	MH 520 704	2.5.2.2.8	MH 53_704	2.5.3.2.4	T
plate	plate	plate	G 1/2"	G 3/8"	G 1/2"	RB 5__104 K1	2.7.2.10	MH 510 104	2.5.2.2.4	MH 520 104	2.5.2.2.8	MH 53_104	2.5.3.2.4	T

General Technical Information for Hafner Valves

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
MMD	-10°C to +50°C
TT	-50°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 cm³ / min
- External leakage: 2 cm³ / min

For TT-valves only:

At temperatures below - 40°C the internal leakage can increase to 10 cm³ / 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 msec.

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 VES / KES chapter 12.	anodised aluminum 1.4404
Spool		stainless steel 1.4104, operator tube 1.4305
Sealing-system	standard low temperature chapter 11. 1/4" VES / KES chapter 12. 1/2" VES chapter 12.	brass & NBR brass & PUR stainless steel, operator tube 1.4305 & PUR stainless steel, operator tube 1.4305 & FKM
Other inner parts	standard low temperature chapter 11. VES / KES chapter 12.	brass, POM, NBR brass, POM, NBR stainless steel, operator tube 1.4305 POM, FKM
Actuation elements	BA-valves HV BH BHP	PA 6.6 30 % glass filled Duroplast PF31 P/PA Duroplast PF31 P/PA ABS-plastic
Upper part solenoids	series 500 and 700 other series VES KES	PA 6.6 30 % glass filled, brass anodised aluminum, brass 1.4404 PA 6.6 30 % glass filled, stainless steel, operator tube 1.4305

PA	Polyamide
1.4404	high graded stainless steel
POM	Polyoxymethylene
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.

Manufacturing Facility Halászi – Hungary



Hafner pneumatika Kft. Halászi – Hungary



1.600 m² of manufacturing area.



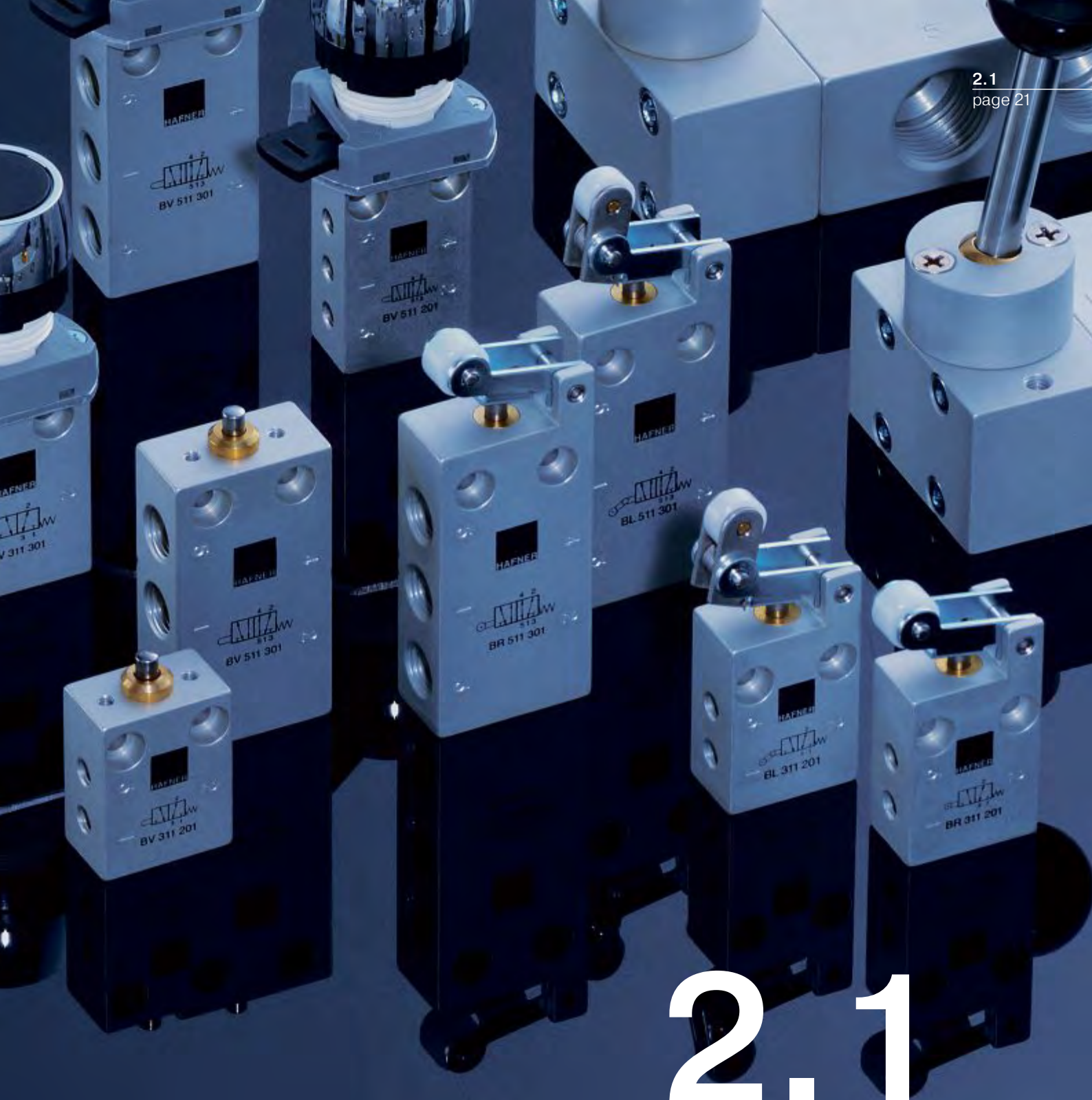
Latest CNC-equipment ...



... and tools.



Work-place in assembly area.



2.1

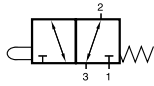
Mechanically Actuated Valves

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

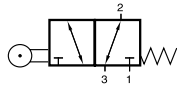


Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.11.

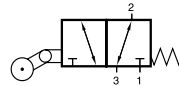
BV/BR/BL 311 201



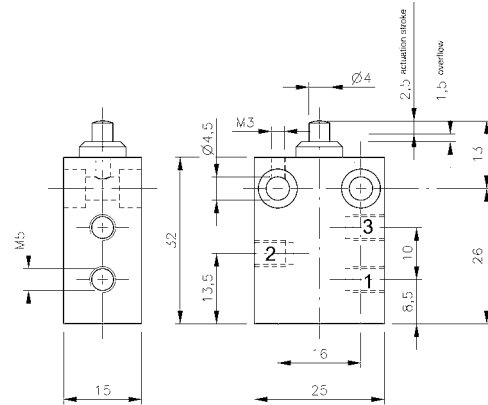
BV 311 201



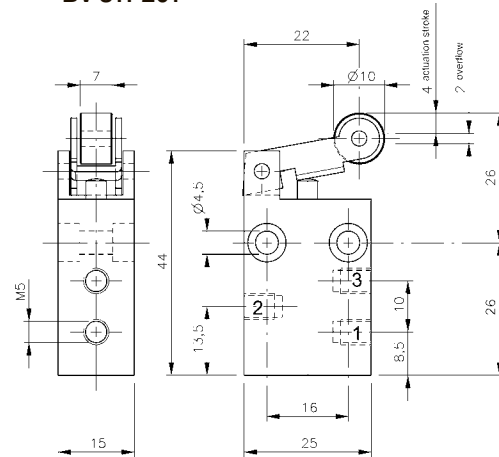
BR 311 201



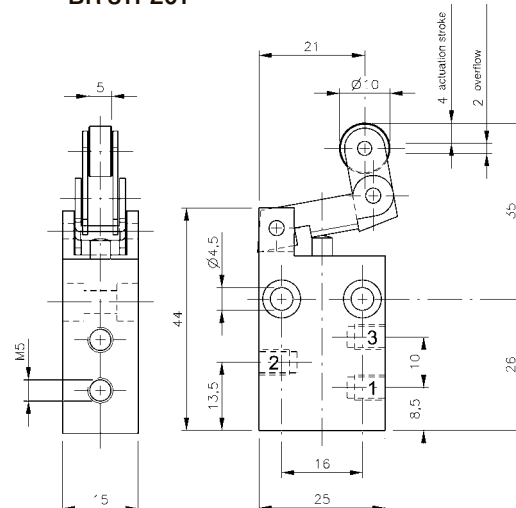
BL 311 201



BV 311 201



BR 311 201



BL 311 201

Mechanically actuated 3/2-way spool valve with mechanical spring. All ports are on the side of the valve.

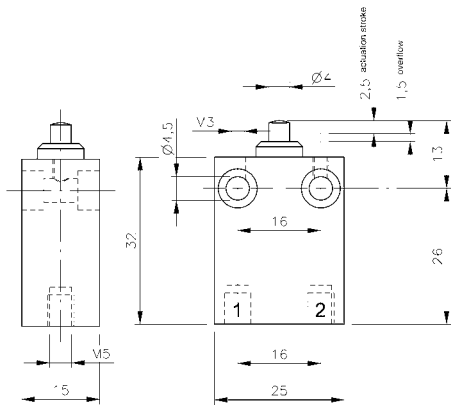
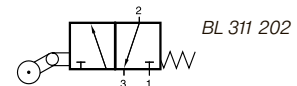
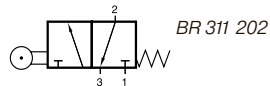
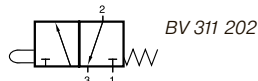
If pressure is applied to port 1 the function is normally closed.
If pressure is applied to port 3 the function is normally open.

The use of the ports is interchangeable.

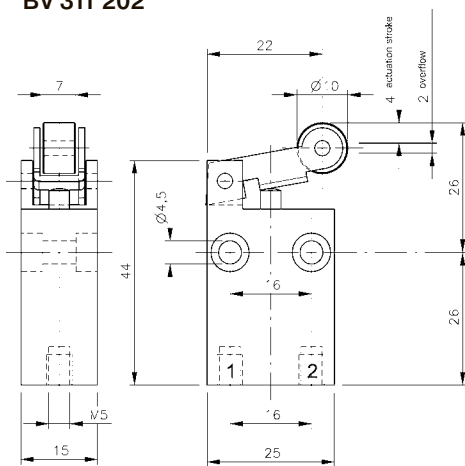
Exhaust can be throttled.

Valves can be used for technical vacuum too.

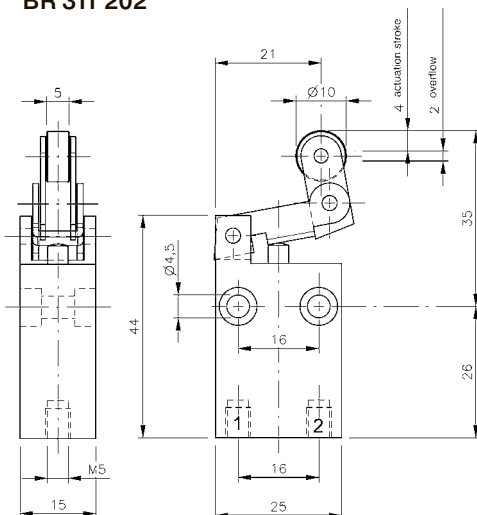
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,033 kg
BR 311 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,041 kg
BL 311 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,044 kg



BV 311 202



BR 311 202



BL 311 202



Mechanically actuated 3/2-way spool valve with mechanical spring.

All ports are at the bottom of the valve.

Function is normally closed. When operated the valve opens from 1 to 2.

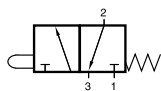
Exhaust through stem.

Normally open versions can be delivered on request.

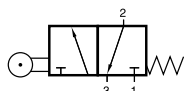
Valves can be used for technical vacuum too.

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 202	M5	115 l/min	-0,9 - 10 bar	14 N	0,033 kg
BR 311 202	M5	115 l/min	-0,9 - 10 bar	9 N	0,041 kg
BL 311 202	M5	115 l/min	-0,9 - 10 bar	9 N	0,044 kg

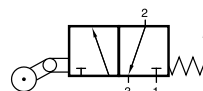
BV/BR/BL 311 243



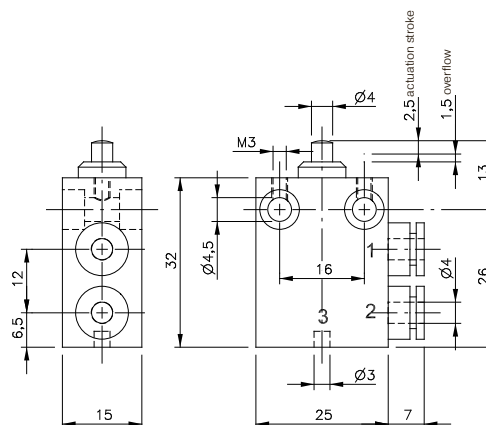
BV 311 243



BR 311 243



BL 311 243



BV 311 243

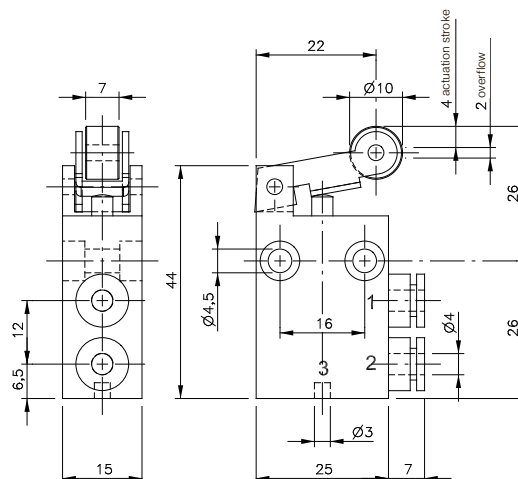
Mechanically actuated 3/2-way spool valve with mechanical spring. Ports 1 and 2 are on one side of the valve, equipped with 4 mm push-in fittings.

Function is normally closed. When operated the valve opens from 1 to 2.

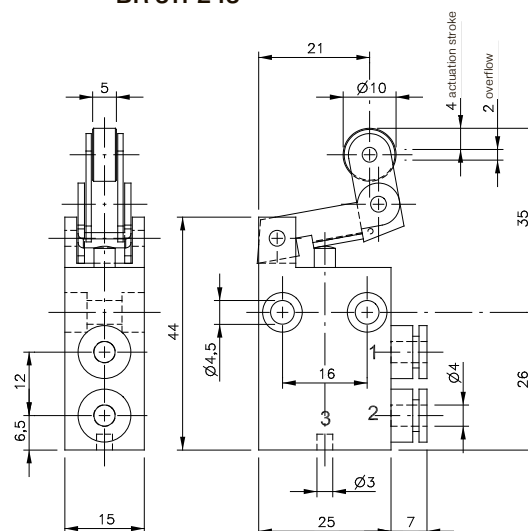
Exhaust through endcap.

Normally open versions can be delivered on request.

Valves can be used for technical vacuum too.

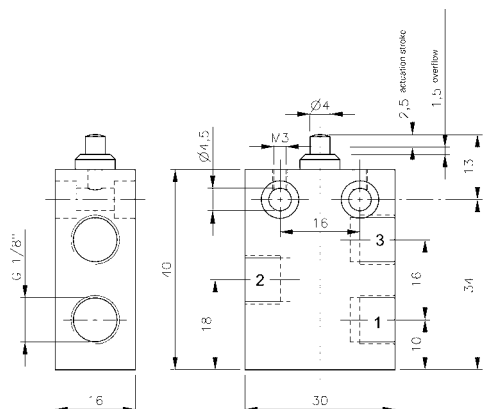
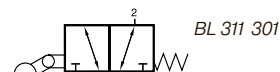
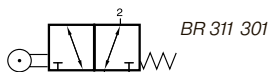
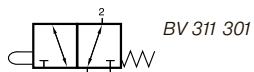


BR 311 243

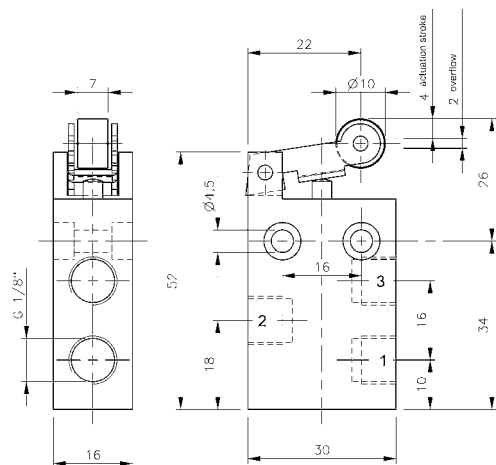


BL 311 243

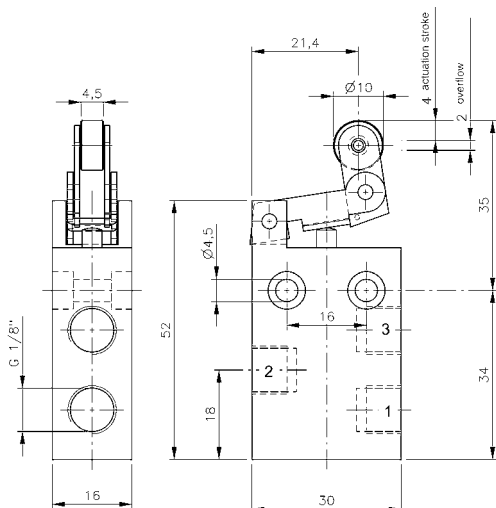
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	14 N	0,033 kg
BR 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	9 N	0,041 kg
BL 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	9 N	0,044 kg



BV 311 301



BR 311 301



BL 311 301



Mechanically actuated 3/2-way spool valve with mechanical spring. All ports are on the side of the valve.

If pressure is applied to port 1 the function is normally closed.

If pressure is applied to port 3 the function is normally open.

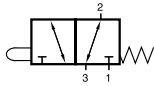
The use of the ports is interchangeable.

Exhaust can be throttled.

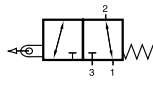
Valves can be used for technical vacuum too.

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 301	G 1/8"	280 l/min	-0,9 - 10 bar	14 N	0,047 kg
BR 311 301	G 1/8"	280 l/min	-0,9 - 10 bar	10 N	0,059 kg
BL 311 301	G 1/8"	280 l/min	-0,9 - 10 bar	10 N	0,061 kg

BG 311 401/BG 311 701/BZ 311 401



BG 311 401
BG 311 701



BZ 311 401



BG 311 401 stem actuated 3/2-way spool valve with mechanical spring, G 1/8".

BG 311 701 heavy duty stem actuated 3/2-way spool valve with mechanical spring, G 1/4".

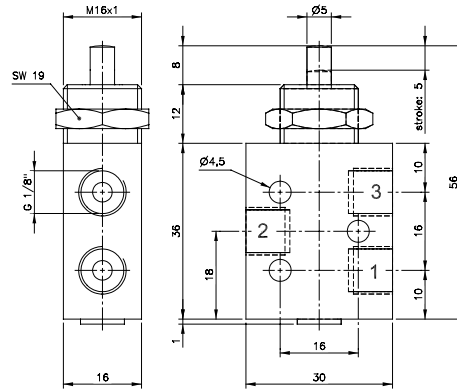
BZ 311 401 manually or mechanically actuated G 1/8" 3/2-way valve with mechanical spring. Actuated by pulling the stem.

If pressure is applied to port 1 the function is normally closed.
If pressure is applied to port 3 the function is normally open.

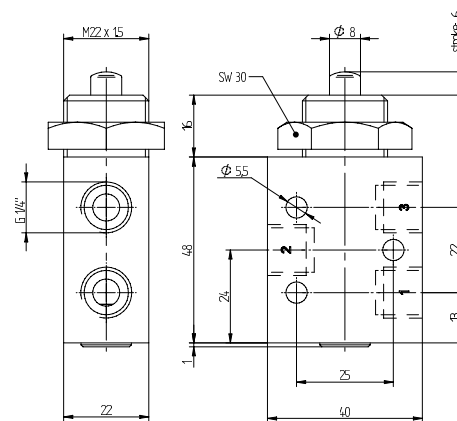
Suitable for wall or panel mounting. Nut for panel mounting M16 x 1 for G 1/8"-valves or M22 x 1,5 for G 1/4"-valves are included.

The use of the ports is interchangeable.

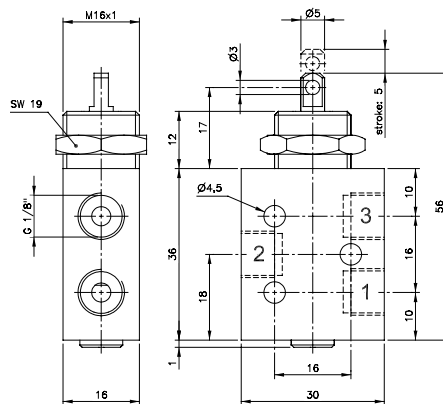
Exhaust can be throttled.



BG 311 401

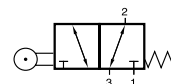


BG 311 701

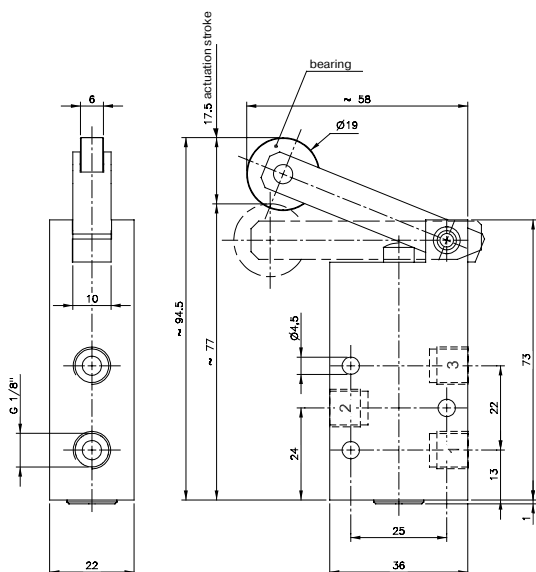


BZ 311 401

Type	Actuation	Port size	Air flow	Operating press.	Actuating force	Weight
BG 311 401	push	G 1/8"	450 l/min	2 - 10 bar	11 N	0,56 kg
BG 311 701	push	G 1/4"	1250 l/min	-0,9 - 10 bar	17 N	0,13 kg
BZ 311 401	pull	G 1/8"	450 l/min	2 - 10 bar	12 N	0,56 kg



BR 311 501
BR 311 701



BR 311 501



Heavy-duty 3/2-way roller-lever spool valve with mechanical spring. High flow. Lever-construction has proven capabilities in rough environmental applications for decades.

If pressure is applied to port 1 the function is normally closed.
If pressure is applied to port 3 the function is normally open.

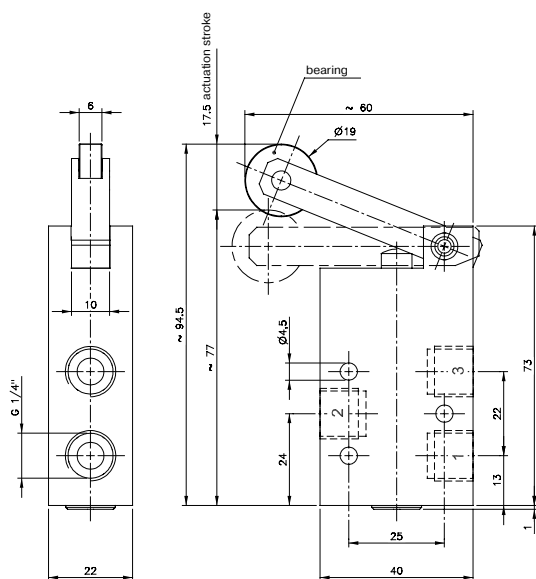
The use of the ports is interchangeable.

Exhaust can be throttled.

On request:
Roller-lever valves with idle return.

Low temperature version:
In this case the ports are not interchangeable, standard: Pressure at port 1 = normally closed, normally open version to be ordered separately.

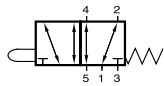
Valves can be used for technical vacuum too.



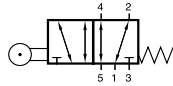
BR 311 701

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BR 311 501	G 1/8"	650 l/min	-0,9 - 10 bar	3,5 N	0,19 kg ❄️
BR 311 701	G 1/4"	1250 l/min	-0,9 - 10 bar	3,5 N	0,20 kg ❄️

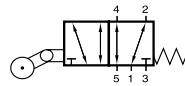
BV/BR/BL 511 201



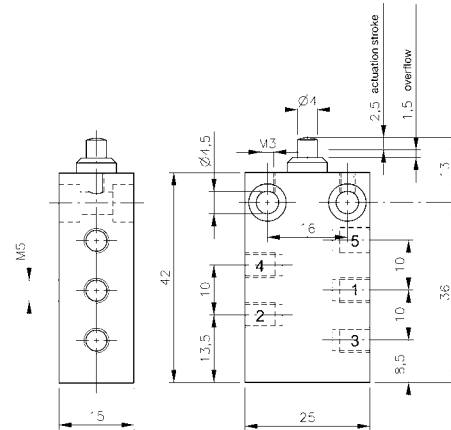
BV 511 201



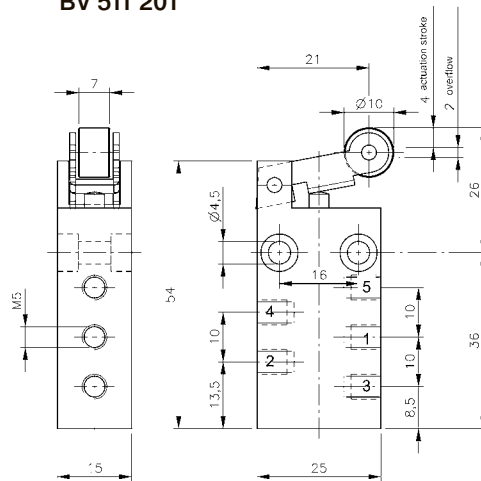
BR 511 201



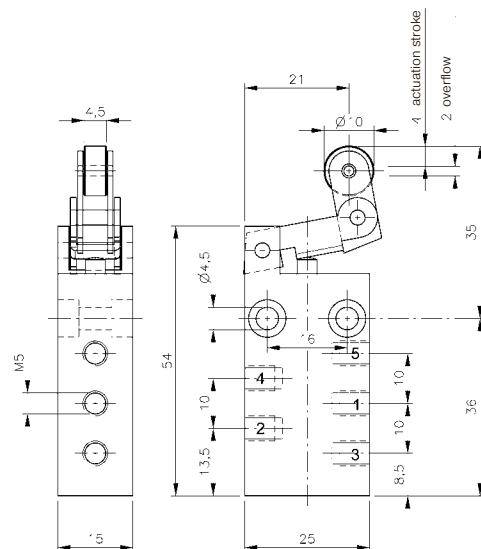
BL 511 201



BV 511 201



BR 511 201



BL 511 201

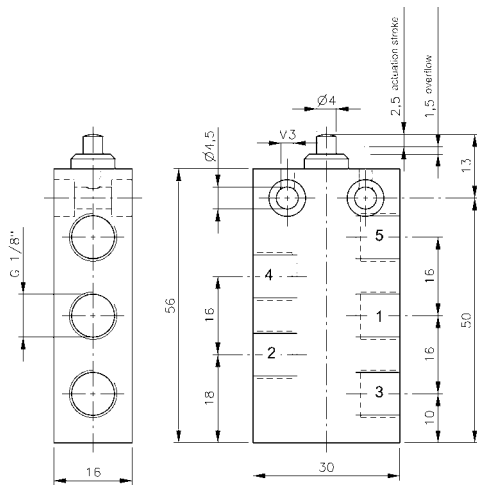
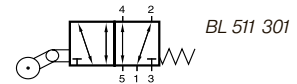
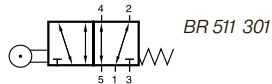
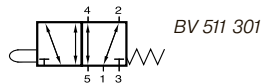
Mechanically actuated 5/2-way spool valve with mechanical spring.

Normally open from 1 to 2 and from 4 to 5. Operated open from 1 to 4 and 2 to 3.

Exhaust can be throttled.

Valves can be used for technical vacuum too.

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 511 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,043 kg
BR 511 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,051 kg
BL 511 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,054 kg



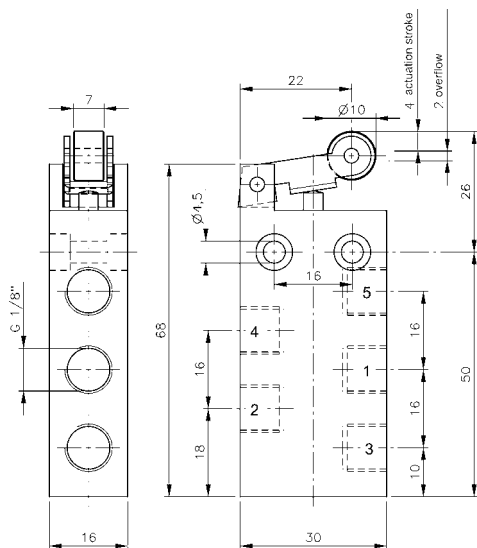
BV 511 301

Mechanically actuated 5/2-way spool valve with mechanical spring.

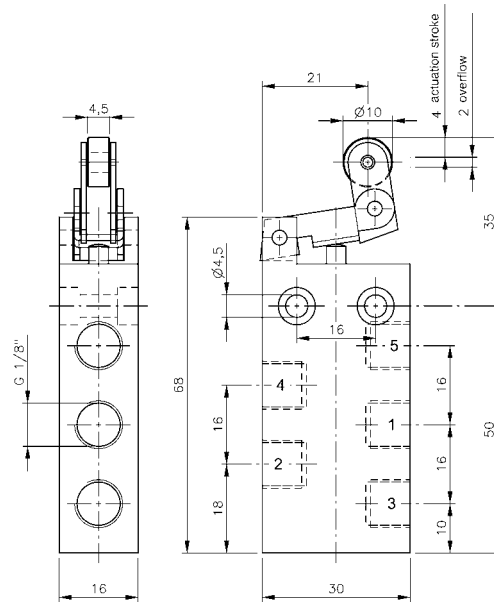
Normally open from 1 to 2 and from 4 to 5.
Operated open from 1 to 4 and 2 to 3.

Exhaust can be throttled.

Valves can be used for technical vacuum too.



BR 511 301

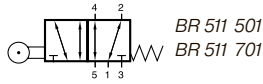


BL 511 301

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 511 301	G 1/8"	280 l/min	-0,9 - 10 bar	14 N	0,065 kg
BR 511 301	G 1/8"	280 l/min	-0,9 - 10 bar	10 N	0,077 kg
BL 511 301	G 1/8"	280 l/min	-0,9 - 10 bar	10 N	0,079 kg



BR 511 501/BR 511 701



Heavy-duty 5/2-way roller-lever spool valve with mechanical spring. High flow especially for the trucking and railway industry. Lever-construction has proven capabilities in railway applications for decades.

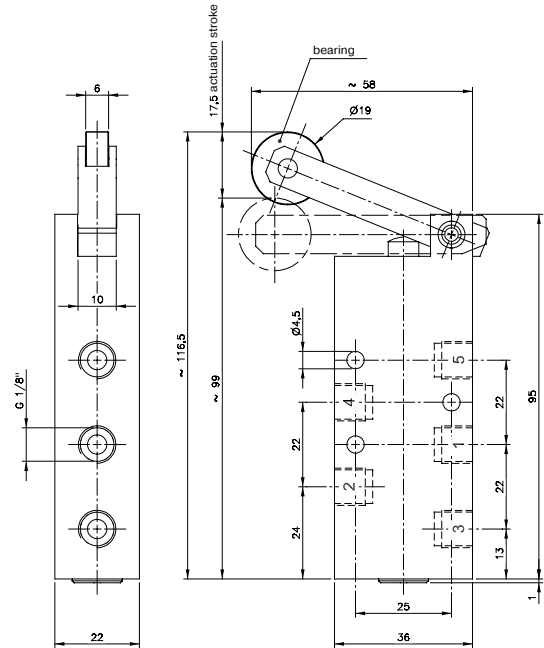
Normally open from 1 to 2 and 4 to 5.
Operated open from 1 to 4 and 2 to 3.

Exhaust can be throttled.

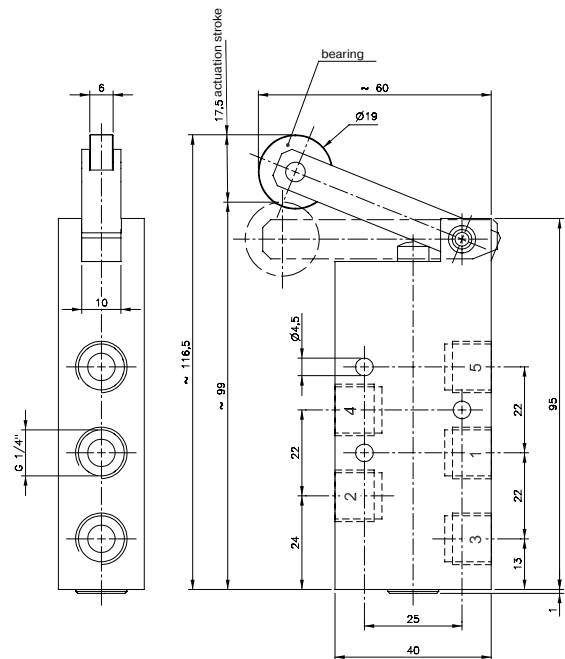
On request:
Roller-lever valves with idle return.

Low temperature version:
In this case the ports are not interchangeable, standard: Pressure at port 1 = normally closed, normally open version to be ordered separately.

Valves can be used for technical vacuum too.



BR 511 501



BR 511 701

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BR 511 501	G 1/8"	650 l/min	-0,9 - 10 bar	3,5 N	0,23 kg
BR 511 701	G 1/4"	1250 l/min	-0,9 - 10 bar	3,5 N	0,25 kg





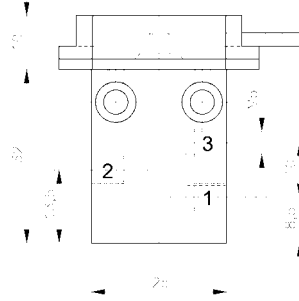
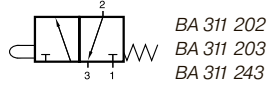
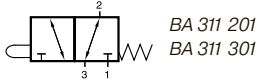
Valves for Panel Mounting

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

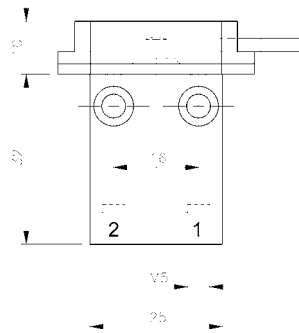


Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.11.

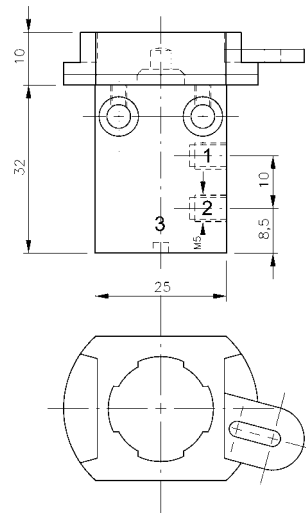
BA 311 201/BA 311 202/BA 311 203 BA 311 243/BA 311 301



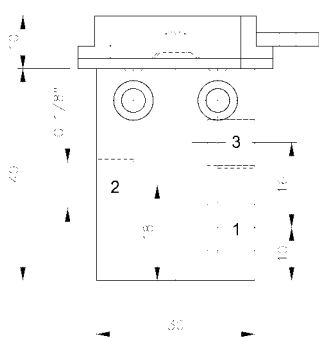
BA 311 201



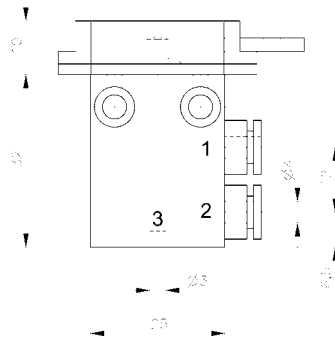
BA 311 202



BA 311 203



BA 311 301



BA 311 243

3/2-way spool valve with mechanical spring for panel mounting.

Valves with ports 1 - 3 on the side (type 201 and 301) are similar to those described on page 2.1.1.1. and 2.1.1.4.

For the valve with the ports on the bottom (type 202) please refer to page 2.1.1.2.

Valves BA 311 203 and BA 311 243 have port 1 and 2 at one side and exhaust through the end-cap. BA 311 243 offers 4 mm push-in fittings at ports 1 and 2.

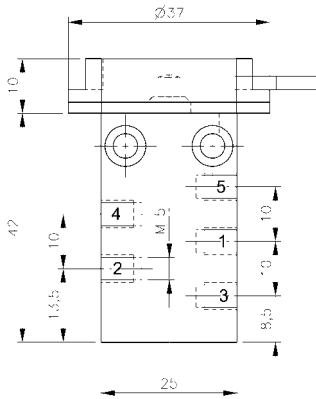
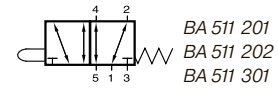
Normally open versions of BA 311 203 and BA 311 243 can be delivered on request.

The actuating elements are displayed on page 2.2.3.

Selected valves can be used for technical vacuum too.

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BA 311 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,043 kg
BA 311 202	M5	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 203	M5	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 243	pif 4 mm	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 301	G 1/8"	280 l/min	-0,9 - 10 bar	14 N	0,057 kg

BA 511 201/BA 511 202/BA 511 301



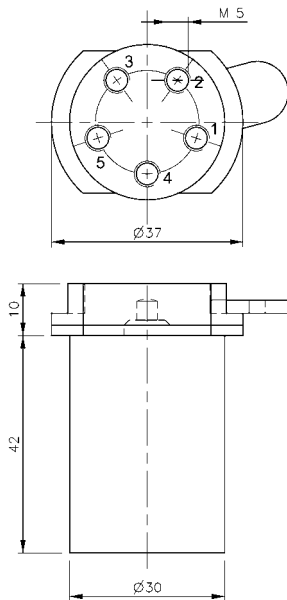
BA 511 201

5/2-way spool valve with mechanical spring for panel mounting.

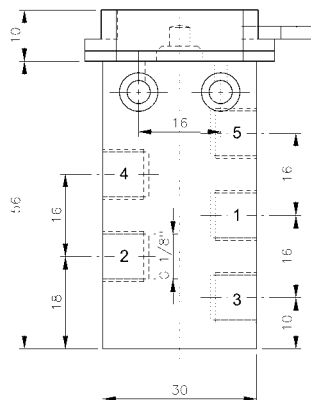
Actuating elements are displayed on page 2.2.3.

Exhaust can be throttled.


Selected valves can be used for technical vacuum too.



BA 511 202



BA 511 301

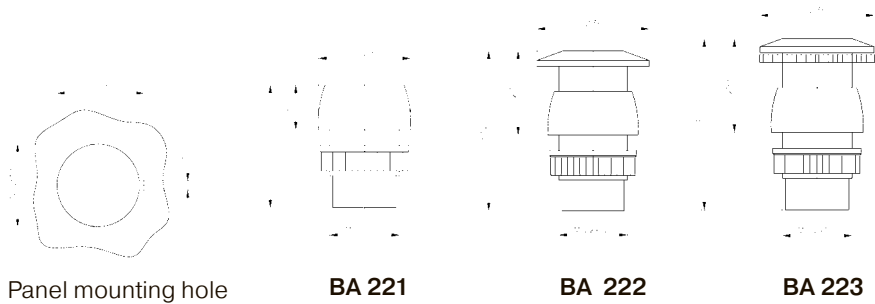
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BA 511 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,053 kg
BA 511 202	M5	125 l/min	0 - 10 bar	14 N	0,095 kg
BA 511 301	G 1/8"	280 l/min	-0,9 - 10 bar	14 N	0,075 kg 

Ø 22 mm Actuators for Panel Mounting

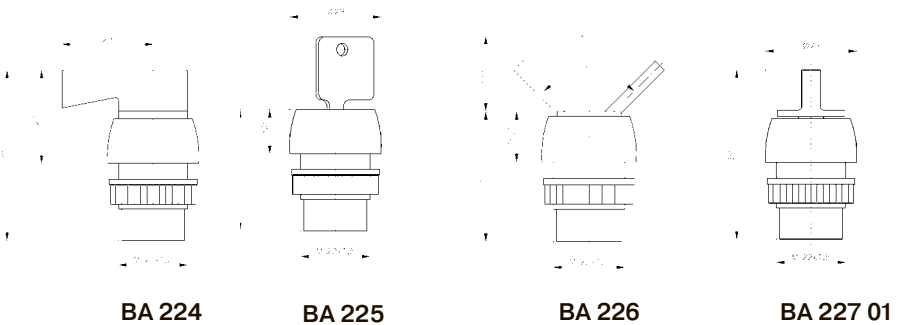


Actuating elements for valves displayed on page 2.2.1 and 2.2.2.

Declaration of manufacturer that actuation elements have no intrinsic ignition source can be supplied on request.



BA 221 SSK



BA 224

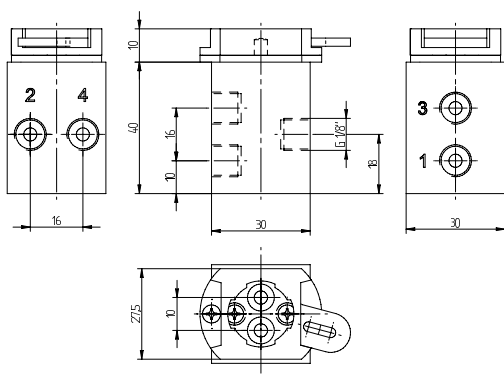
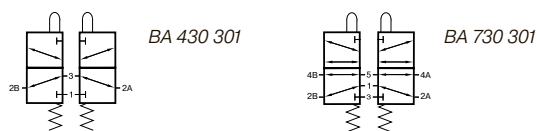
BA 225

BA 226

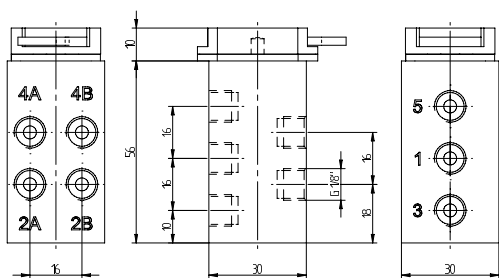
BA 227 01

Type	Actuation	Colour	Actuating force	Weight
BA 221 01	Push button	black	16 N	0,014 kg
BA 221 02	Push button	red	16 N	0,014 kg
BA 221 03	Push button	green	16 N	0,014 kg
BA 221 04	Push button	yellow	16 N	0,014 kg
BA 221 05	Push button	blue	16 N	0,014 kg
BA 221 06	Push button	white	16 N	0,014 kg
BA 222 01	Palm button	black	16 N	0,020 kg
BA 223 02*	Palm button w. detend	red	27 N	0,026 kg
BA 224 01	Rotary lever long	black	42 N/cm	0,021 kg
BA 225 00	Locking switch		25 N	0,080 kg
BA 226 01	Switch	black	16 N/cm	0,019 kg
BA 227 01	Rotary lever short	black	16 N/cm	0,018 kg
BA 221 SSK	Transparent dust protection cap for BA 221 __			0,009 kg

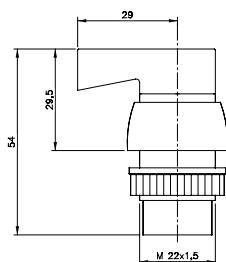
* available on request: for 30 mm panel mouting hole.



BA 430 301



BA 730 301



BA 334 01



BA 430 301

4/3-way spool valve for panel mounting. Middle position exhausted. Typical application: for controlling two single-acting actuators.

BA 730 301

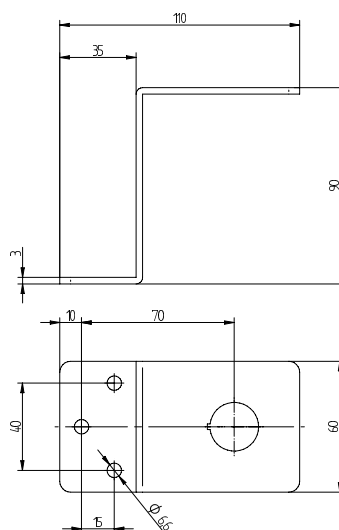
7/3-way spool valve for panel mounting. Typical application: for controlling two double-acting actuators.

BA 334 01

3-position rotary lever long with detent. Please note: Although the valves have a mechanic spring inside, the actuator is with detent.

BW BA 22

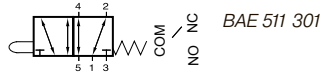
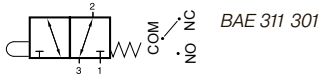
Mounting bracket to install a panel mounting valve without a control panel.



BW BA 22

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
BA 430 301	double 3/2-way	G 1/8"	280 l/min	0 - 10 bar	14 N	0,110 kg
BA 730 301	double 5/2-way	G 1/8"	280 l/min	0 - 10 bar	14 N	0,150 kg
BA 334 01	Rotary lever long	-	-	-	42 N/cm	0,021 kg
BW BA 22	Mounting bracket	-	-	-	-	0,265 kg

BAE 311 301/BAE 511 301



The BAE 311 301 is a 3/2-way spool valve with mechanical spring for panel mounting that can either be used normally closed (pressure at port 1) or normally open (pressure at port 3).

The BAE 511 301 is a 5/2-way spool valve with mechanical spring for panel mounting.

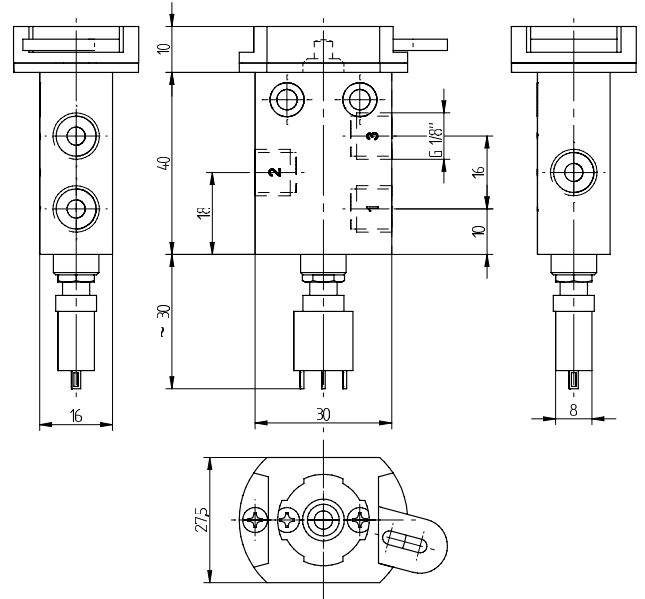
The valves include an electric switch that is actuated at the same time.

The electrical switch can be used up to 6 A /125 VAC. Switch can be connected in two ways either normally open or normally closed.

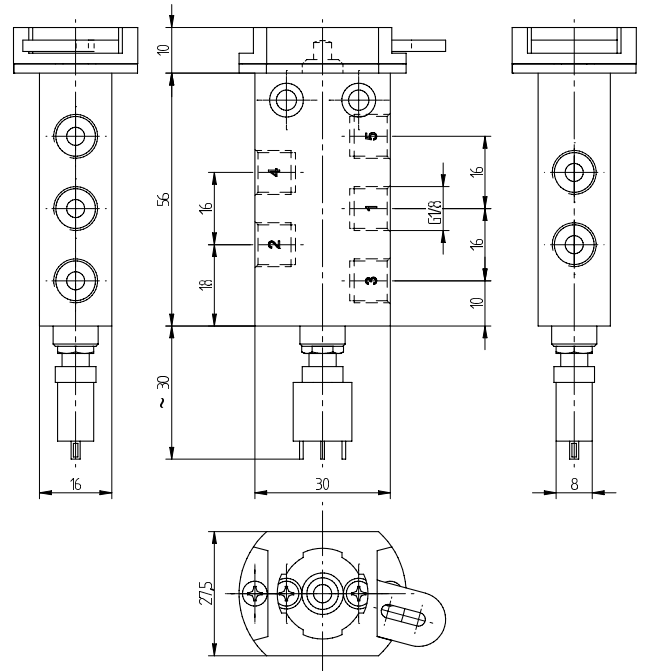
The electrical switch can also be combined with BA 311 201 and BA 511 201 on demand.

All the actuation-elements displayed on page 2.2.3 can be combined with the valve.

Please order including actuation element.



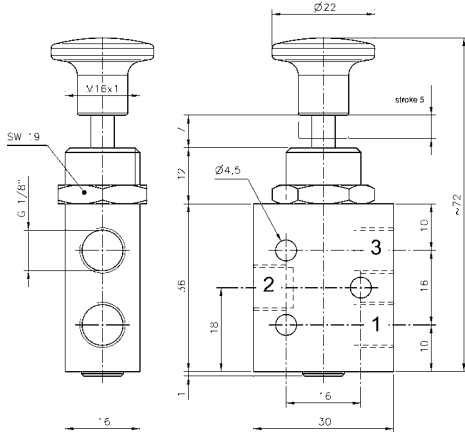
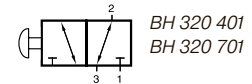
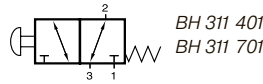
BAE 311 301



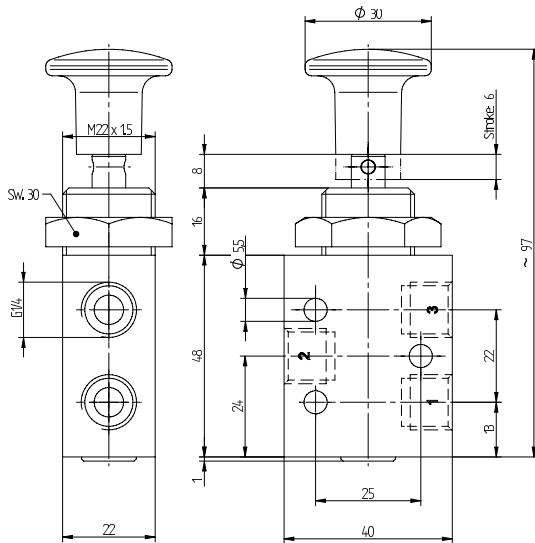
BAE 511 301

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BAE 311 301	G 1/8"	280 l/min	0 - 10 bar	17 N	0,08 kg
BAE 511 301	G 1/8"	280 l/min	0 - 10 bar	17 N	0,097 kg

BH 311 401/BH 320 401 BH 311 701/BH 320 701



BH 311 401/BH 320 401



BH 311 701/BH 320 701



Manually actuated 3/2-way spool valve either with spring return to outer position (type 311) or with two stable positions (type 320).

If pressure is applied to port 1 the function is normally closed.

If pressure is applied to port 3 the function is normally open.

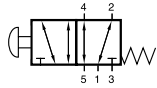
Exhaust can be throttled.

Suitable for wall or panel mounting. Nut for panel mounting, M16 x 1 for G 1/8"-valves or M22 x 1,5 for G 1/4"-valves is included.

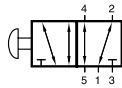
Selected valves can be used for technical vacuum too.

Type	Port size	Air flow	Operating press.	Actuating force	Weight
BH 311 401	G 1/8"	450 l/min	1 - 10 bar	11 N	0,064 kg
BH 320 401	G 1/8"	450 l/min	1 - 10 bar	12 N	0,064 kg
BH 311 701	G 1/4"	1250 l/min	-0,9 - 10 bar	17 N	0,140 kg ❄️
BH 320 701	G 1/4"	1250 l/min	-0,9 - 10 bar	18 N	0,140 kg ❄️

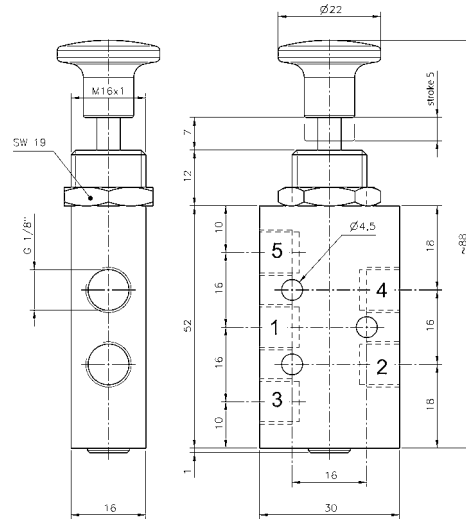
BH 511 401/BH 520 401 BH 511 701/BH 520 701



BH 511 401
BH 511 701



BH 520 401
BH 520 701



BH 511 401/BH 520 401

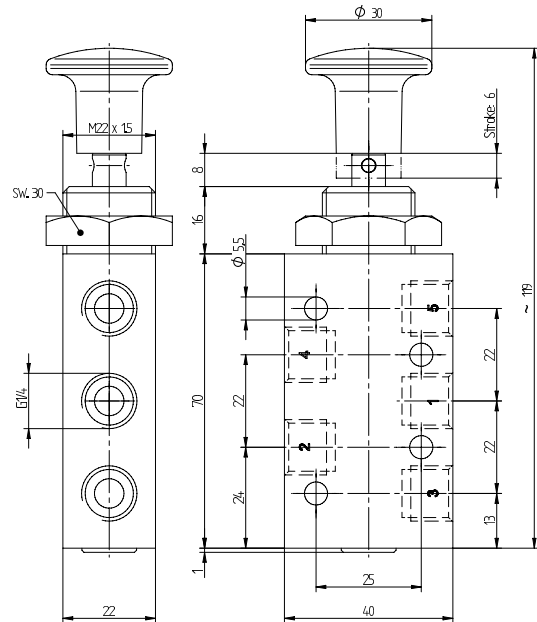
Manually actuated 5/2-way spool valve either with spring return to outer position (type 511) or with two stable positions (type 520).

Normally open from port 1 to 2 and from port 4 to 5.
Operated open from port 1 to 4 and port 2 to 3.

Exhaust can be throttled.

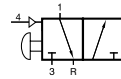
Suitable for wall or panel mounting. Nut for panel mounting, M16 x 1 for G 1/8"-valves or M22 x 1,5 for G 1/4"-valves is included.

Selected valves can be used for technical vacuum too.

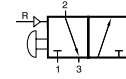


BH 511 701/BH 520 701

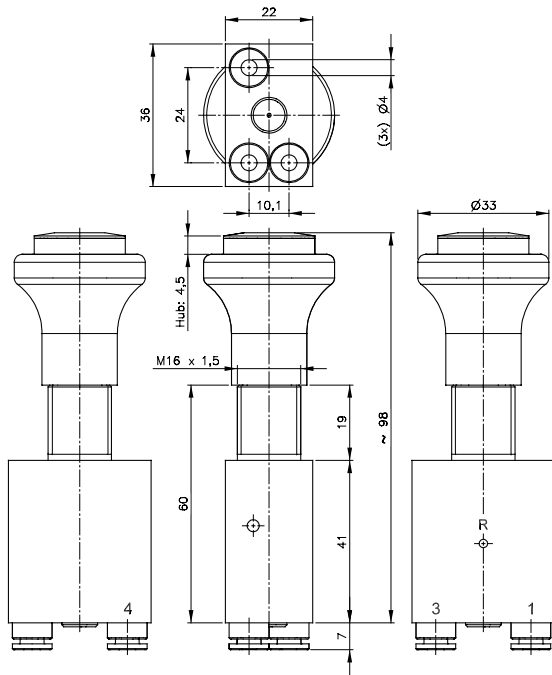
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BH 511 401	G 1/8"	450 l/min	1 - 10 bar	11 N	0,080 kg
BH 520 401	G 1/8"	450 l/min	1 - 10 bar	12 N	0,080 kg
BH 511 701	G 1/4"	1250 l/min	-0,9 - 10 bar	17 N	0,180 kg ❄️
BH 520 701	G 1/4"	1250 l/min	-0,9 - 10 bar	18 N	0,180 kg ❄️



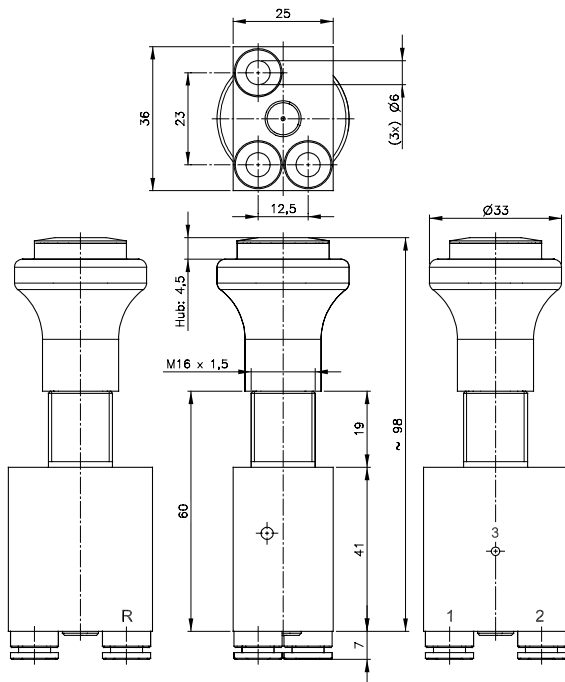
BHP 320 442



BHP 320 462



BHP 320 442



BHP 320 462



Manually actuated 3/2-way spool valve with 2 stable positions and pneumatic reset.

Ports on the bottom of the valve are equipped with integrated push-in fittings. Exhaust is undeducted. Valve is equipped with FKM seals.

If pressure is applied to port 4 (pneumatic reset-port) the stem is pulled in. The knob carries an indicator ring that sticks out when the valve is pulled = actuated.

The following knob-colours are available:

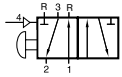
Colour code	Colour of knob	Colour of indicator
1	black	white
2	red	white
3	green	red
4	yellow	white
5	blue	white

If requested we add fixing nut DIN 439 BM 16 x 1 material: steel zinc plated.

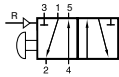
Type	Function	Ports	Air flow	Operating press.	Reset press.	Weight
BHP 320 442	3/2-way	pif 4 mm	300 l/min	1 - 16 bar	5 bar	0,13 kg
BHP 320 462	3/2-way	pif 6 mm	300 l/min	1 - 16 bar	5 bar	0,13 kg

Please add one digit for color of knob.

BHP 520 442/BHP 520 462



BHP 520 442



BHP 520 462



Manually actuated 5/2-way spool valve with 2 stable positions and pneumatic reset.

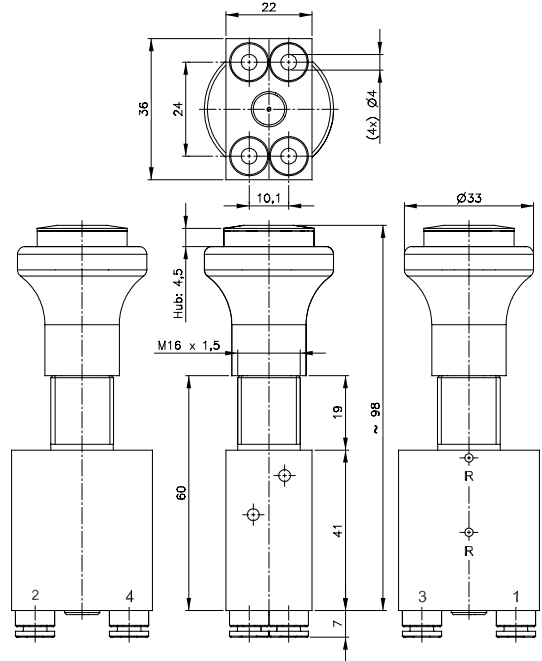
Ports on the bottom of the valve are equipped with integrated push-in fittings. Exhaust is undeducted. Valve is equipped with FKM seals.

If pressure is applied to port 4 (pneumatic reset-port) the stem is pulled in. The knob carries an indicator ring that sticks out when the valve is pulled = actuated.

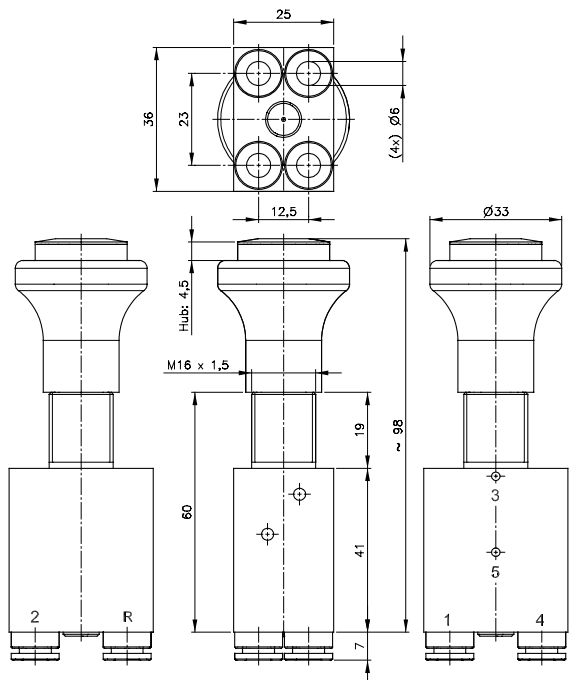
The following knob-colours are available:

Colour code	Colour of knob	Colour of indicator
1	black	white
2	red	white
3	green	red
4	yellow	white
5	blue	white

If requested we add fixing nut DIN 439 BM 16 x 1 material: steel zinc plated.



BHP 520 442



BHP 520 462

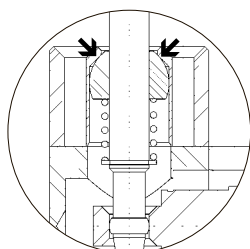
Type	Function	Ports	Air flow	Operating press.	Reset press.	Weight
BHP 520 442 _	5/2-way	pif 4 mm	300 l/min	1 - 16 bar	5 bar	0,13 kg
BHP 520 462 _	5/2-way	pif 6 mm	300 l/min	1 - 16 bar	5 bar	0,13 kg



2.3

Lever Actuated Valves

Selected valves can be used for technical vacuum too.



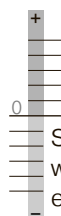
Instead of a rubber-gaitor that never lasts long, Hafner seals all the lever valves with a metallic seal.



Selected models are available for low temperature application.
Temperature-range: - 50° C to + 50° C.
For detailed information refer to chapter 2. 11.

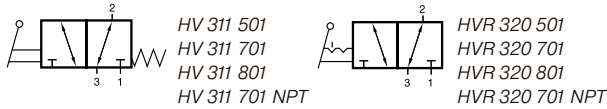


316 Selected models are available in stainless steel.
For detailed information refer to chapter 2. 12.



Selected models can be equipped with FKM seals for high temperature environment up to 120 °C.

HV 311 501/HV 311 701/HV 311 801 HVR 320 501/HVR 320 701/HVR 320 801



Lever actuated 3/2-way spool valve.

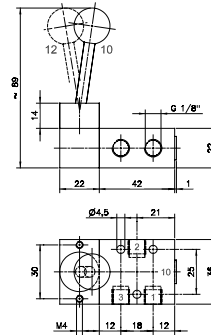
Type HV spring return
Type HVR indexed

If pressure is applied to port 1 the function is normally closed.

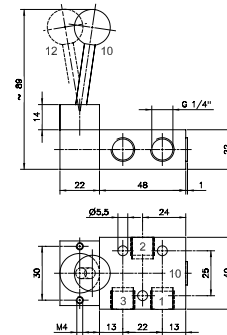
If pressure is applied to port 3 the function is normally open.

The lever is sealed by using a metal ball.

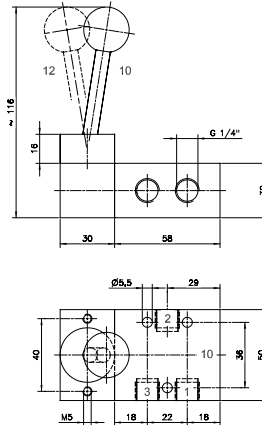
Exhaust can be throttled.



HV 311 501/HVR 320 501



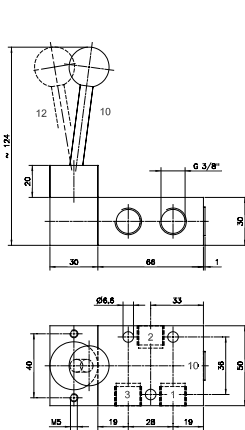
**HV 311 701/HVR 320 701
HV 311 701 NPT/HVR 320 701 NPT**



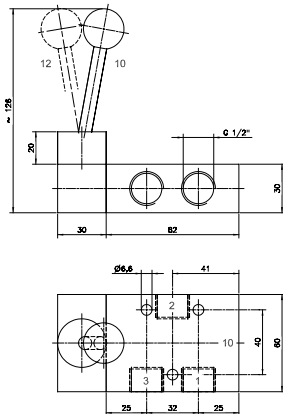
HV 311 801/HVR 320 801

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 311 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg ❄️
HV 311 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg ❄️ 🏠
HV 311 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,46 kg
HVR 320 501	indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg ❄️
HVR 320 701	indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg ❄️ 🏠
HVR 320 801	indexed	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,46 kg
HV 311 701 NPT	spring ret.	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,20 kg
HVR 320 701 NPT	indexed	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,20 kg

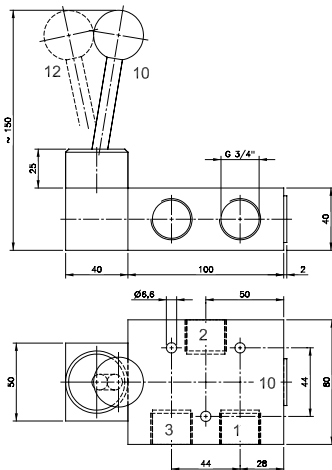
HV 311 101/HV 311 121/HV 311 181 HVR 320 101/HVR 320 121/HVR 320 181



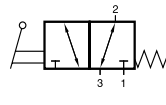
HV 311 101/HVR 320 101



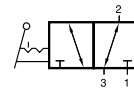
**HV 311 121/HVR 320 121
HV 311 121 NPT/HVR 320 121 NPT**



HV 311 181/HVR 320 181



HV 311 101
HV 311 121
HV 311 181
HV 311 121 NPT



HVR 320 101
HVR 320 121
HVR 320 181
HVR 320 121 NPT



Lever actuated 3/2-way spool valve.

Type HV spring return
Type HVR indexed

If pressure is applied to port 1 the function is normally closed.

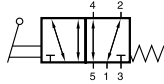
If pressure is applied to port 3 the function is normally open.

The lever is sealed by using a metal ball.

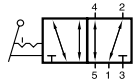
Exhaust can be throttled.

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 311 101	spring ret.	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,49 kg
HV 311 121	spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,69 kg
HV 311 181	spring ret.	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,31 kg
HVR 320 101	indexed	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,49 kg
HVR 320 121	indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,69 kg
HVR 320 181	indexed	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,31 kg
HV 311 121 NPT	spring ret.	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,69 kg
HVR 320 121 NPT	indexed	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,69 kg

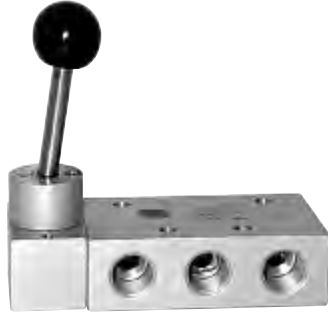
HV 511 501/HV 511 701/HV 511 801 HVR 520 501/HVR 520 701/HVR 520 801



HV 511 501
HV 511 701
HV 511 801
HV 511 701 NPT



HVR 520 501
HVR 520 701
HVR 520 801
HVR 520 701 NPT

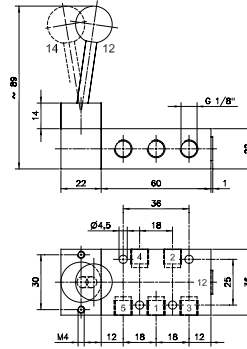


Lever actuated 5/2-way spool valve.

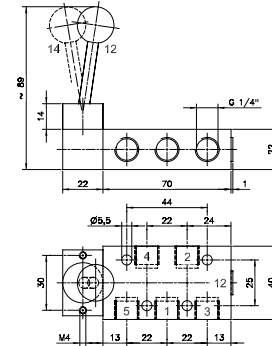
Type HV spring return
Type HVR indexed

The lever is sealed by using a metal ball.

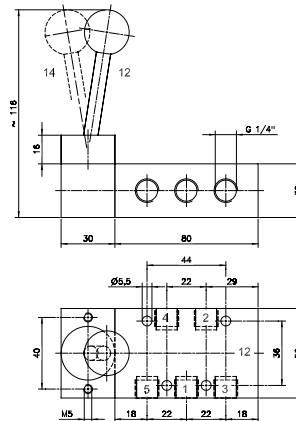
Exhaust can be throttled.



HV 511 501/HVR 520 501



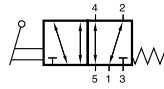
HV 511 701/HVR 520 701
HV 511 701 NPT/HVR 520 701 NPT



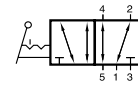
HV 511 801/HVR 520 801

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 511 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 511 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HV 511 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HVR 520 501	indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HVR 520 701	indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 520 801	indexed	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HV 511 701 NPT	spring ret.	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 520 701 NPT	indexed	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,24 kg

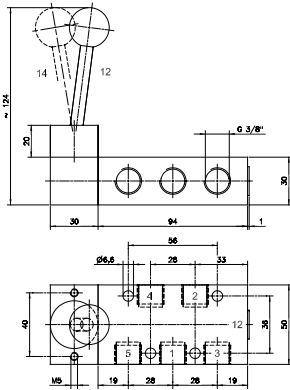
HV 511 101/HV 511 121/HV 511 181 HVR 520 101/HVR 520 121/HVR 520 181



HV 511 101
HV 511 121
HV 511 181
HV 511 121 NPT



HVR 520 101
HVR 520 121
HVR 520 181
HVR 520 121 NPT



HV 511 101/HVR 520 101

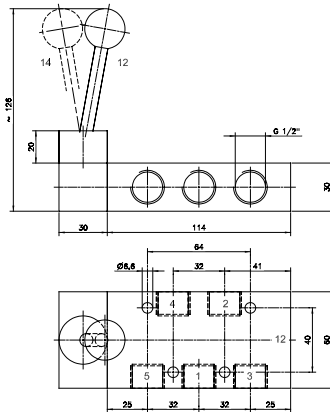


Lever actuated 5/2-way spool valve.

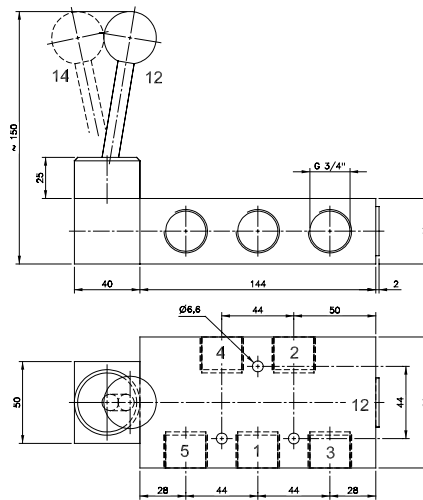
Type HV spring return
Type HVR indexed

The lever is sealed by using a metal ball.

Exhaust can be throttled.



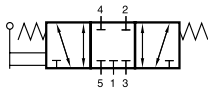
**HV 511 121/HVR 520 121
HV 511 121 NPT/HVR 520 121 NPT**



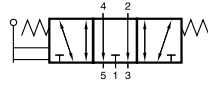
HV 511 181/HVR 520 181

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 511 101	spring ret.	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,60 kg
HV 511 121	spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg
HV 511 181	spring ret.	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,64 kg
HVR 520 101	indexed	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,60 kg
HVR 520 121	indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,79 kg
HVR 520 181	indexed	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,64 kg
HV 511 121 NPT	spring ret.	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,79 kg
HVR 520 121 NPT	indexed	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,79 kg

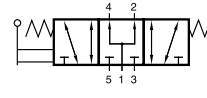
HV 53_ 501/HV 53_ 701/HV 53_ 801 HVR 53_ 501/HVR 53_ 701/ HVR 53_ 801



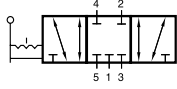
HV 531 501
HV 531 701
HV 531 801
HV 531 701 NPT



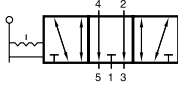
HV 532 501
HV 532 701
HV 532 801
HV 532 701 NPT



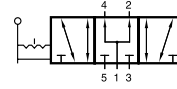
HV 533 501
HV 533 701
HV 533 801
HV 533 701 NPT



HVR 531 501
HVR 531 701
HVR 531 801
HVR 531 701 NPT



HVR 532 501
HVR 532 701
HVR 532 801
HVR 532 701 NPT



HVR 533 501
HVR 533 701
HVR 533 801
HVR 533 701 NPT



Lever actuated 5/3-way spool valve.

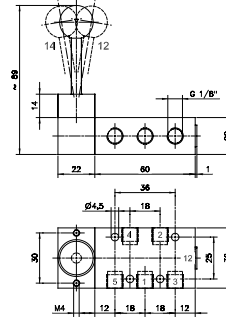
Type HV spring return to middle position
Type HVR indexed

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

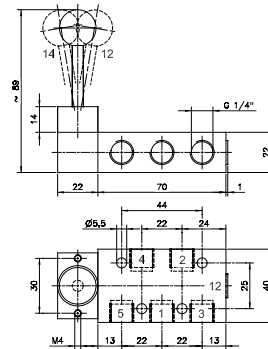
When ordering please complete the type number by 1, 2 or 3 according to the type required.

The lever is sealed by using a metal ball.

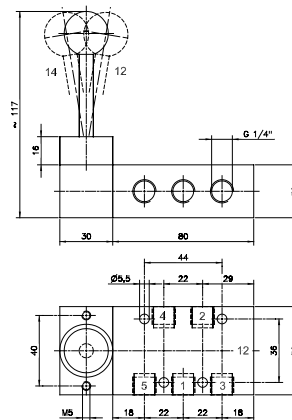
Exhaust can be throttled.



HV 53_ 501/HVR 53_ 501



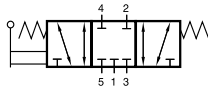
HV 53_ 701/HVR 53_ 701
HV 53_ 701 NPT/HVR 53_ 701 NPT



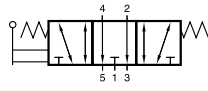
HV 53_ 801/HVR 53_ 801

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 53_ 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 53_ 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HV 53_ 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HVR 53_ 501	indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HVR 53_ 701	indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 53_ 801	indexed	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HV 53_701 NPT	spring ret.	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 53_ 701 NPT	indexed	1/4" NPT	1250 l/min	1 - 10 bar	20 N	0,24 kg

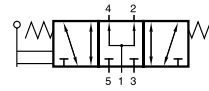
HV 53_ 101/HV 53_ 121/HV 53_ 181 HVR 53_ 101/HVR 53_ 121/HVR 53_ 181



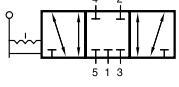
HV 531 101
HV 531 121
HV 531 181
HV 531 121 NPT



HV 532 101
HV 532 121
HV 532 181
HV 532 121 NPT



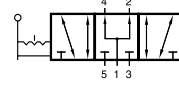
HV 533 101
HV 533 121
HV 533 181
HV 533 121 NPT



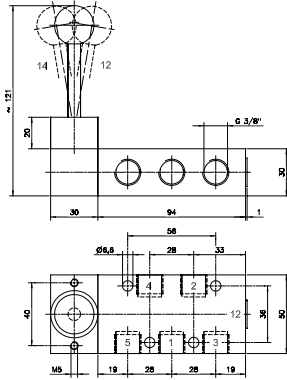
HVR 531 101
HVR 531 121
HVR 531 181
HVR 531 121 NPT



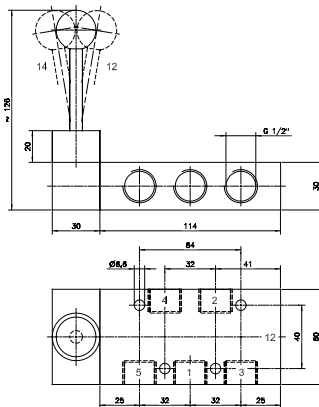
HVR 532 101
HVR 532 121
HVR 532 181
HVR 532 121 NPT



HVR 533 101
HVR 533 121
HVR 533 181
HVR 533 121 NPT



HV 53_ 101/HVR 53_ 101



HV 53_ 121/HVR 53_ 121
HV 53_ 121 NPT/HVR 53_ 121 NPT



Lever actuated 5/3-way spool valve with.

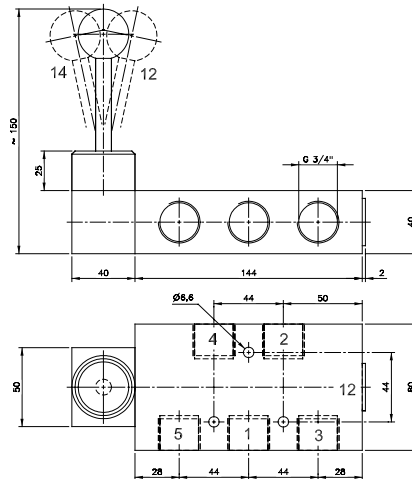
Type HV spring return to middle position
Type HVR indexed

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

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

The lever is sealed by using a metal ball.

Exhaust can be throttled.



HV 53_ 181/HVR 53_ 181

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 53_ 101	spring ret.	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,60 kg
HV 53_ 121	spring ret.	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,80 kg
HV 53_ 181	spring ret.	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,64 kg
HVR 53_ 101	indexed	G 3/8"	2250 l/min	1 - 10 bar	25 N	0,60 kg
HVR 53_ 121	indexed	G 1/2"	3000 l/min	1 - 10 bar	32 N	0,80 kg
HVR 53_ 181	indexed	G 3/4"	6000 l/min	1 - 10 bar	40 N	1,64 kg
HV 53_ 121 NPT	spring ret.	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,80 kg
HVR 53_ 121 NPT	indexed	1/2" NPT	3000 l/min	1 - 10 bar	32 N	0,80 kg

Special Products for the Paper and Railway Industry



Image source: Voith GmbH

Solenoid valve cabinet 8 stations.



Image source: Voith GmbH

Air distributor cabinet.

Paper Industry



Block form flow regulators with 3/4" ports, offering 6.000 l/min air-flow.



HVR 520 701 L

Lever actuated 5/2-way spool valve, indexed. The user can put a padlock through the 5 mm hole of the extended spool and hereby lock the valve. Temperature range: 0°C to 120°C. Seals made from FKM.



KNORR-pneumatic series – Valves for the railway industry and commercial vehicles as well as for heavy duty applications.



Railway Industry



2.4

Pilot Actuated Valves

Selected valves can be used for technical vacuum too.



Selected models are available for low temperature application.
Temperature-range: - 50° C to + 50° C.
For detailed information refer to chapter 2.11.

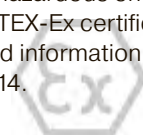


Selected models can be equipped with FKM seals for high temperature environment up to 120 °C.

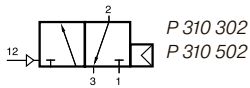


316 Selected models are available in stainless steel.
For detailed information refer to chapter 2.12.

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



P 310 302/P 310 502



Pneumatically actuated 3/2-way spool valve with air spring return.

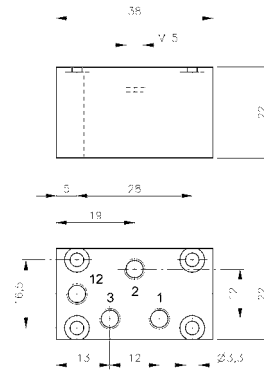
If pressure is attached to port 1 the function is normally closed.

If pressure is applied to port 3 the function is normally open.

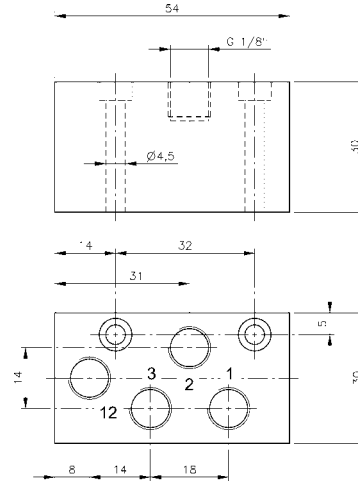
Do not attach pressure at port 2.

Operating pressure and actuating pressure should be at the same level.

Exhaust can be throttled.



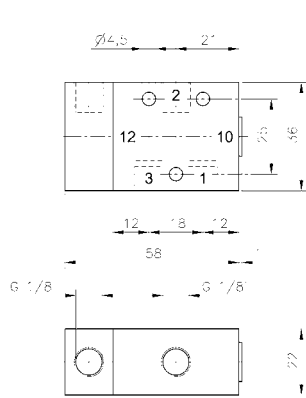
P 310 302



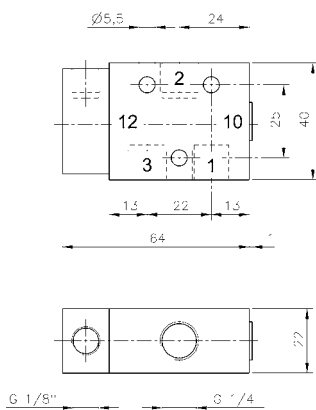
P 310 502

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 302	M5	180 l/min	2 - 10 bar	the same	0,05 kg
P 310 502	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg

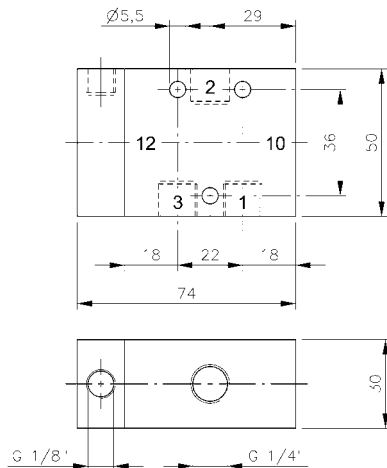
P 310 501/P 310 701/P 310 801 P 311 501/P 311 701/P 311 801



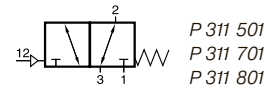
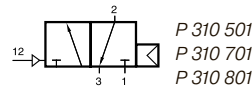
P 310 501/P 311 501



P 310 701/P 311 701



P 310 801/P 311 801



Pneumatically actuated 3/2-way spool valve.

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

Type P 311 ___ with mechanical spring return.

If pressure is attached to port 1 the function is normally closed.

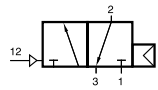
If pressure is applied to port 3 the function is normally open.

Pressure can only be attached to port 2 if valve has a mechanical spring (type P 311 ___).

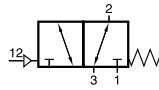
Exhaust can be throttled.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 501	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg
P 310 701	G 1/4"	1250 l/min	2 - 10 bar	the same	0,14 kg
P 310 801	G 1/4"	1450 l/min	1,5 - 10 bar	the same	0,29 kg
P 311 501	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,13 kg
P 311 701	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,14 kg
P 311 801	G 1/4"	1450 l/min	1 - 10 bar	3 - 10 bar	0,29 kg

P 310 101/P 310 121/P 310 181 P 311 101/P 311 121/P 311 181



P 310 101
P 310 121
P 310 181
P 310 121 NPT



P 311 101
P 311 121
P 311 181
P 311 121 NPT



Pneumatically actuated 3/2-way spool valve.

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

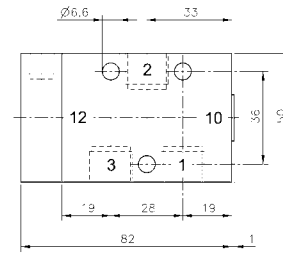
Type P 311 ___ with mechanical spring return.

If pressure is attached to port 1 the function is normally closed.

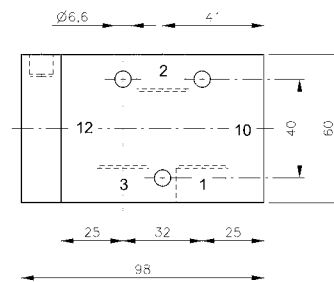
If pressure is applied to port 3 the function is normally open.

Pressure can only be attached to port 2 if valve has a mechanical spring (type P 311___).

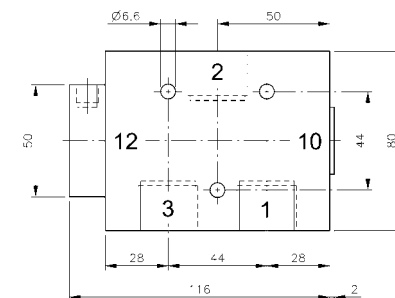
Exhaust can be throttled.



P 310 101/P 311 101



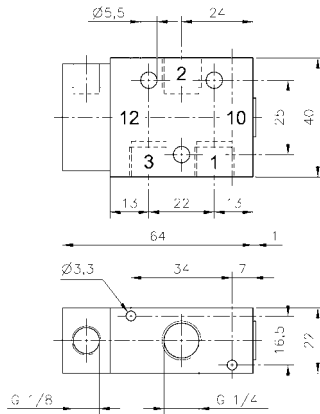
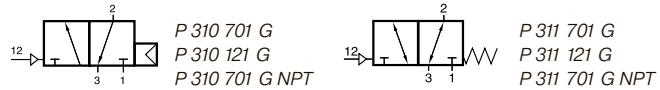
**P 310 121/P 311 121
P 310 121 NPT/P 311 121 NPT**



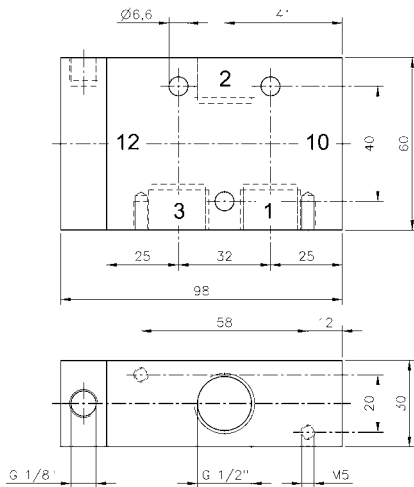
P 310 181/P 311 181

Type	Port size	Air flow	Operating press.	Actuating press.	Weight	
P 310 101	G 3/8"	2250 l/min	1 - 10 bar	the same	0,32 kg	Ex
P 310 121	G 1/2"	3000 l/min	1 - 10 bar	the same	0,45 kg	Ex 316
P 310 181	G 3/4"	6000 l/min	1 - 10 bar	the same	0,85 kg	
P 311 101	G 3/8"	2250 l/min	1 - 10 bar	3 - 10 bar	0,32 kg	
P 311 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,45 kg	316
P 311 181	G 3/4"	6000 l/min	1 - 10 bar	3 - 10 bar	0,85 kg	
P 310 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	the same	0,45 kg	Ex 316
P 311 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 - 10 bar	0,45 kg	316

P 310 701 G/P 311 701 G P 310 121 G/P 311 121 G



**P 310 701 G/P 311 701 G
P 310 701 G NPT/ P 311 701 G NPT**



P 310 121 G/P 311 121 G



Pneumatically actuated 3/2-way spool valve.

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

Type P 311 ___ with mechanical spring return.

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

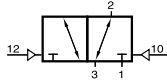
Valves can either be used in-line or on a manifold plate. Plates are displayed on page 2.7.1.4 and 2.7.1.5.

Take into consideration that G 1/2" valves have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

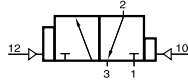
Exhaust can be throttled.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 701 G	G 1/4"	1250 l/min	2 - 10 bar	the same	0,14 kg ❄️
P 310 121 G	G 1/2"	3000 l/min	1 - 10 bar	the same	0,45 kg
P 311 701 G	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,14 kg ❄️
P 311 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,45 kg
P 310 701 G NPT	1/4" NPT	1250 l/min	2 - 10 bar	the same	0,14 kg
P 311 701 G NPT	1/4" NPT	1250 l/min	1 - 10 bar	3 - 10 bar	0,14 kg

P 320 302/P 320 502 P 322 302/P 322 502



P 320 302
P 320 502



P 322 302
P 322 502



Pneumatically actuated 3/2-way spool valve actuated by impulse.

Type P 320 ___ double pilot

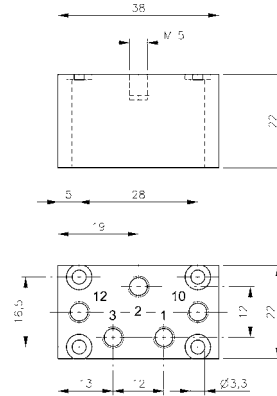
Type P 322 ___ double pilot dominating at port 12

If signal is applied to 12 the valve is open from 1 to 2 and 3 is blocked.

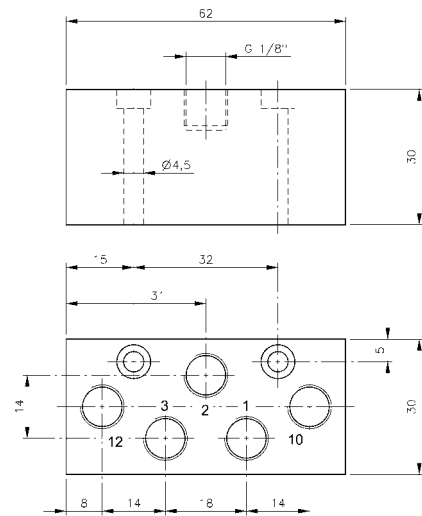
If signal is applied at 10 the valve is open from 2 to 3.

Position is kept until next pneumatic signal is applied.


Exhaust can be throttled.



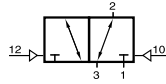
P 320 302/P 322 302



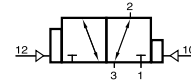
P 320 502/P 322 502

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 320 302	M5	180 l/min	1 - 10 bar	2,5 - 10 bar	0,05 kg
P 320 502	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,13 kg 
P 322 302	M5	180 l/min	1 - 10 bar	2,5 - 10 bar	0,05 kg
P 322 502	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,13 kg

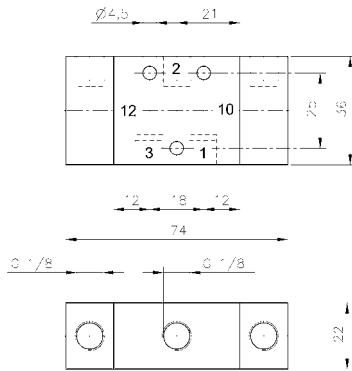
P 320 501/P 320 701 G/ P 320 801 P 322 501/P 322 701 G



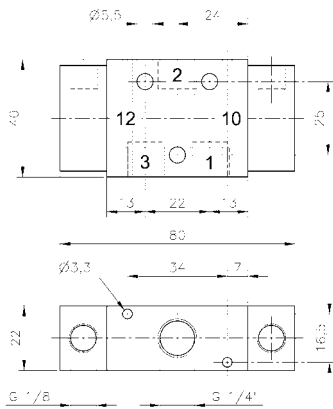
P 320 501
P 320 701 G
P 320 801



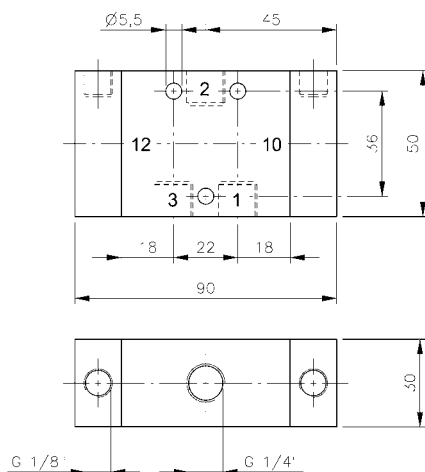
P 322 501
P 322 701 G



P 320 501/P 322 501



P 320 701 G/P 322 701 G



P 320 801

Pneumatically actuated 3/2-way spool valve actuated by impulse.

- Type P 320 ___ double pilot
 - Type P 322 ___ double pilot dominating at port 12
 - Type P 3 __ 701 G dual use, in-line and on manifold.
- Plates are displayed on page 2.7.1.4.

If signal is applied to 12 the valve is open from 1 to 2 and 3 is blocked.

If signal is applied at 10 the valve is open from 2 to 3.

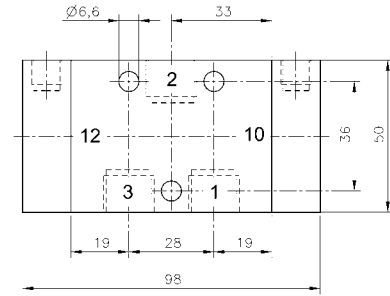
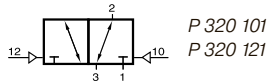
Position is kept until next pneumatic signal is applied.

Operating pressure can also be applied to 2.

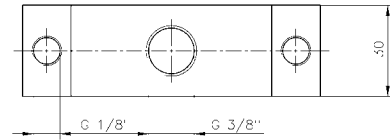
Exhaust can be throttled.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight	
P 320 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,16 kg	⊕ ❄
P 322 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,16 kg	
P 320 701 G	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,17 kg	⊕ ❄
P 322 701 G	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,17 kg	
P 320 801	G 1/4"	1450 l/min	1 - 10 bar	2,5 - 10 bar	0,34 kg	⊕

P 320 101/P 320 121/P 320 181



P 320 101



Pneumatically actuated 3/2-way spool valve actuated by impulse.

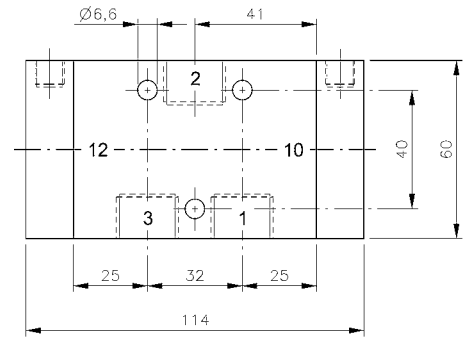
If signal is applied to 12 the valve is open from 1 to 2 and 3 is blocked.

If signal is applied at 10 the valve is open from 2 to 3.

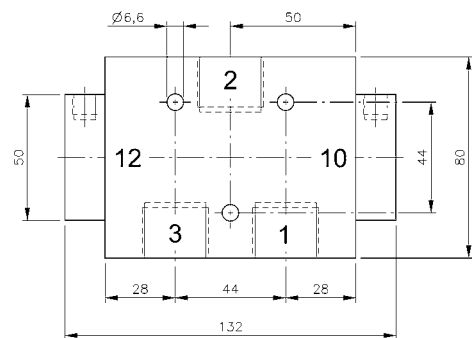
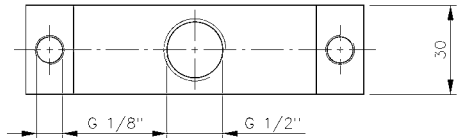
Operating pressure can also be applied to 2.

Position is kept until next pneumatic signal is applied.

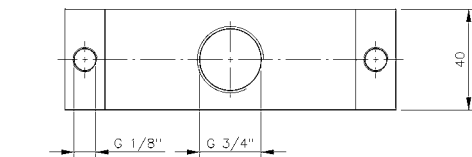
Exhaust can be throttled.



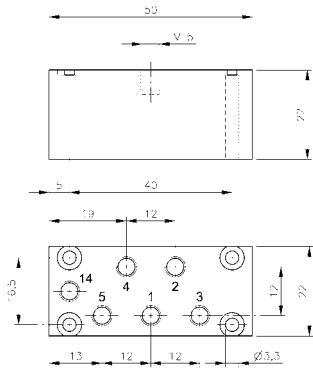
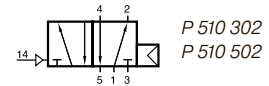
P 320 121



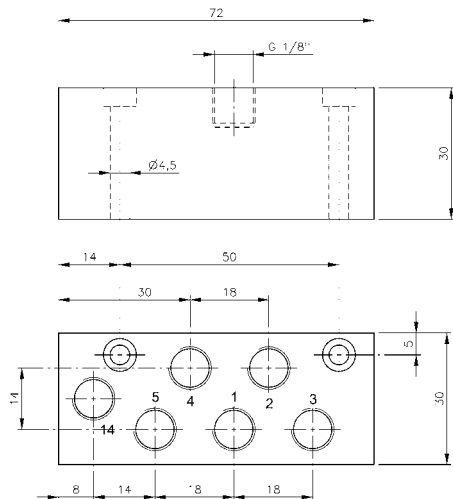
P 320 181



Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 320 101	G 3/8"	2250 l/min	1 - 10 bar	2,5 - 10 bar	0,38 kg
P 320 121	G 1/2"	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,52 kg
P 320 181	G 3/4"	6000 l/min	1 - 10 bar	2 - 10 bar	0,88 kg



P 510 302



P 510 502



Pneumatically actuated 5/2-way spool valve actuated by permanent signal and equipped with air spring return.

Normally open from 1 to 2 and from 4 to 5. If pressure is applied at 14 the valve is open from 1 to 4 and 2 to 3.

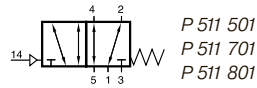
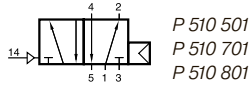
Operating pressure and actuating pressure should be at the same level.

Exhaust can be throttled.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 510 302	M5	180 l/min	2 - 10 bar	the same	0,07 kg
P 510 502	G 1/8"	650 l/min	2 - 10 bar	the same	0,17 kg



P 510 501/P 510 701/P 510 801 P 511 501/P 511 701/P 511 801



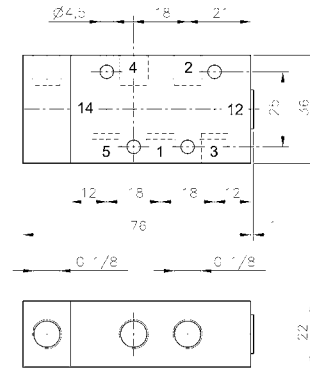
Pneumatically actuated 5/2-way spool valve.

Type P 510 ___ with air-spring-return.
Operating pressure and actuating pressure should be at the same level.

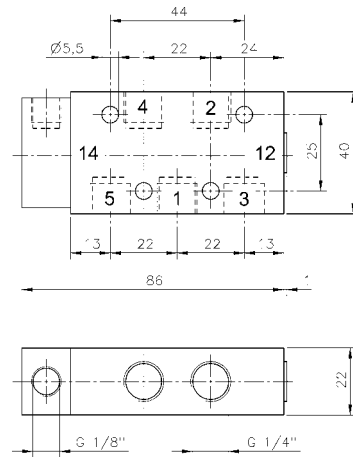
Type P 511 ___ with mechanical spring return.

Normally open from 1 to 2 and from 4 to 5.
If pressure is applied at 14 the valve is open from 1 to 4 and 2 to 3.

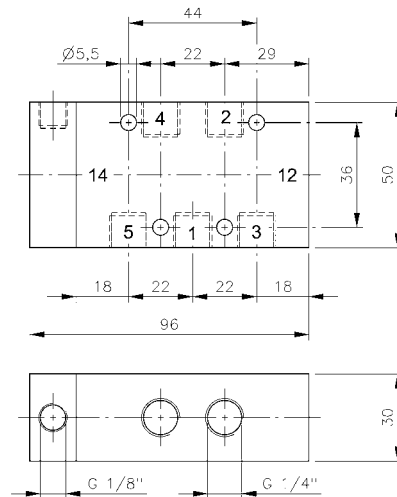
Exhaust can be throttled.



P 510 501/P 511 501



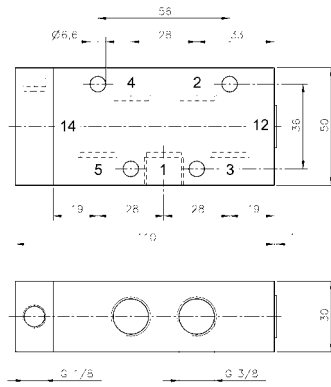
P 510 701/P 511 701



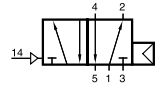
P 510 801/P 511 801

Type	Port size	Air flow	Operating press.	Actuating press.	Weight	
P 510 501	G 1/8"	650 l/min	2 - 10 bar	the same	0,16 kg	Ex
P 510 701	G 1/4"	1250 l/min	2 - 10 bar	the same	0,18 kg	Ex S18
P 510 801	G 1/4"	1450 l/min	1,5 - 10 bar	the same	0,38 kg	Ex
P 511 501	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,16 kg	
P 511 701	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,18 kg	(S18)
P 511 801	G 1/4"	1450 l/min	1 - 10 bar	3 - 10 bar	0,38 kg	

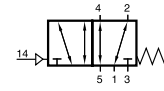
P 510 101/P 510 121/P 510 181 P 511 101/P 511 121/P 511 181



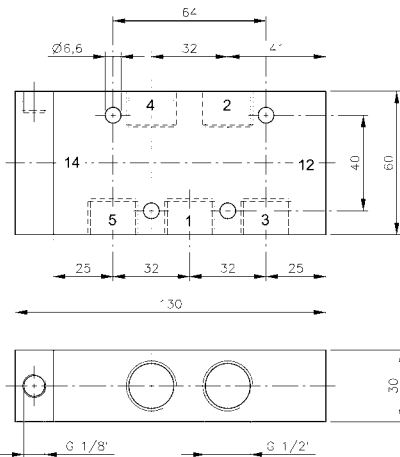
P 510 101/P 511 101



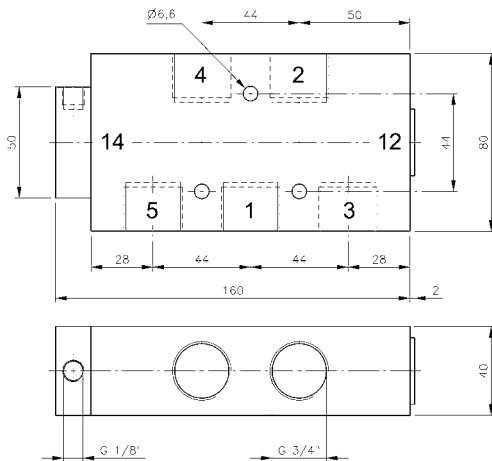
P 510 101
P 510 121
P 510 181
P 510 121 NPT



P 511 101
P 511 121
P 511 181
P 511 121 NPT



**P 510 121/P 511 121
P 510 121 NPT/P511 121 NPT**



P 510 181/P 511 181

Pneumatically actuated 5/2-way spool valve.

Type P 510 ___ with air-spring-return.
Operating pressure and actuating pressure should be at the same level.

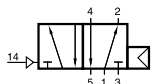
Type P 511 ___ with mechanical spring return.

Normally open from 1 to 2 and from 4 to 5.
If pressure is applied at 14 the valve is open from 1 to 4 and 2 to 3.

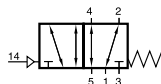
Exhaust can be throttled.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 510 101	G 3/8"	2250 l/min	1,5 - 10 bar	the same	0,42 kg
P 510 121	G 1/2"	3000 l/min	1 - 10 bar	the same	0,59 kg
P 510 181	G 3/4"	6000 l/min	1 - 10 bar	the same	1,18 kg
P 511 101	G 3/8"	2250 l/min	1 - 10 bar	3 - 10 bar	0,42 kg
P 511 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,59 kg
P 511 181	G 3/4"	6000 l/min	1 - 10 bar	3 - 10 bar	1,18 kg
P 510 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	the same	0,59 kg
P 511 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 - 10 bar	0,59 kg

P 510 501 G/P 510 701 G/P 510 121 G P 511 501 G/P 511 701 G/P 511 121 G



P 510 501 G
P 510 701 G
P 510 121 G
P 510 701 G NPT



P 511 501 G
P 511 701 G
P 511 121 G
P 511 701 G NPT



Pneumatically actuated 5/2-way spool valve.

Type P 510 ___ with air-spring-return.
Operating pressure and actuating pressure should be at the same level.

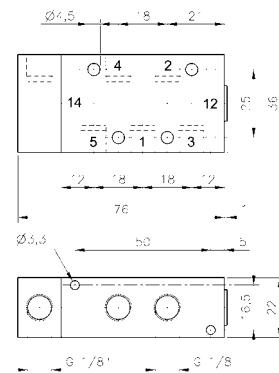
Type P 511 ___ with mechanical spring return.

Normally open from 1 to 2 and from 4 to 5.
If pressure is applied at 14 the valve is open from 1 to 4 and 2 to 3.

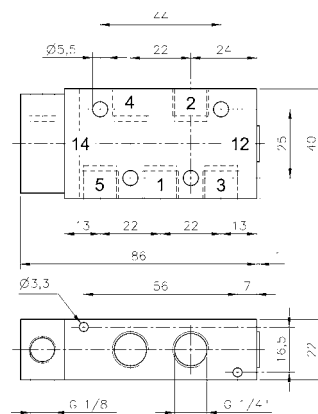
Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3, manifolds for valves type 121 G are displayed on page 2.7.2.5.

Take into consideration, that G 1/2" valves have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

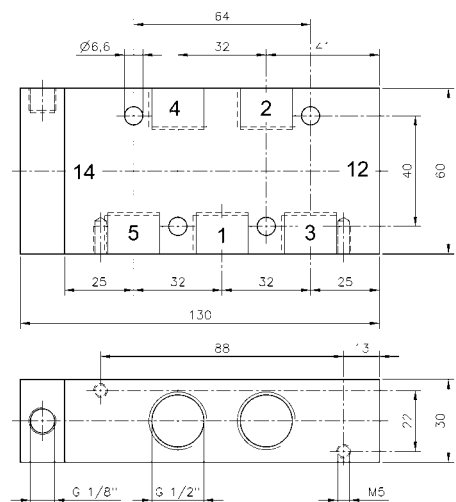
Exhaust can be throttled.



P 510 501 G/P 511 501 G

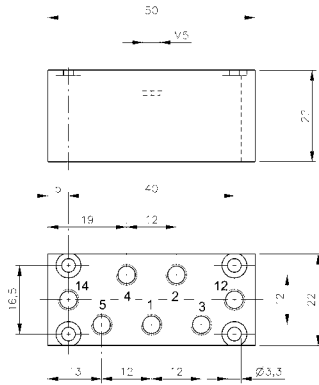
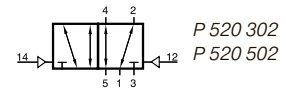


P 510 701 G/P 511 701 G
P 501 701 G NPT/P 511 701 G NPT

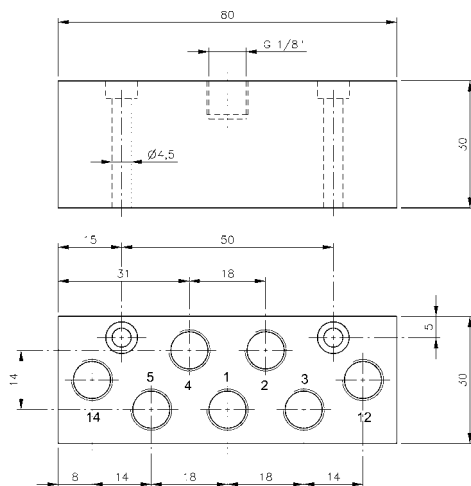


P 510 121 G/P 511 121 G

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 510 501 G	G 1/8"	650 l/min	2 - 10 bar	the same	0,16 kg ❄️
P 510 701 G	G 1/4"	1250 l/min	2 - 10 bar	the same	0,18 kg ❄️
P 510 121 G	G 1/2"	3000 l/min	1 - 10 bar	the same	0,59 kg
P 511 501 G	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,16 kg ❄️
P 511 701 G	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,18 kg ❄️
P 511 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,59 kg
P 510 701 G NPT	1/4" NPT	1250 l/min	2 - 10 bar	the same	0,18 kg
P 511 701 G NPT	1/4" NPT	1250 l/min	1 - 10 bar	3 - 10 bar	0,18 kg



P 520 302



P 520 502



Pneumatically actuated 5/2-way spool valve actuated by impulse.

If signal is applied to 14 the valve is open from 1 to 4 and 2 to 3, 5 is closed.

If signal is applied to 12 the valve is open from 1 to 2 and 4 to 5.

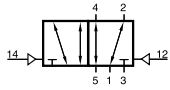
Position is kept until next pneumatic signal is applied.

Exhaust can be throttled.

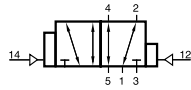
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 520 302	M5	180 l/min	1 - 10 bar	2,5 - 10 bar	0,07 kg
P 520 502	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,17 kg



P 520 501/P 520 701/P 520 801 P 522 501/P 522 701



P 520 501
P 520 701
P 520 801



P 522 501
P 522 701



Pneumatically actuated 5/2-way spool valve.

Type P 520 ___ double pilot

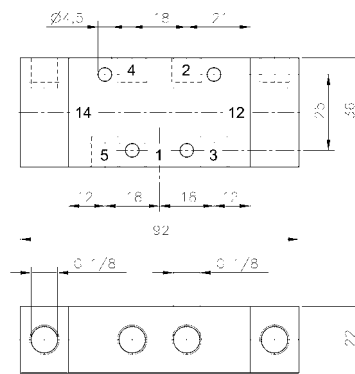
Type P 522 ___ double pilot dominating at port 14

If signal is applied to 14 the valve is open from 1 to 4 and 2 to 3, 5 is closed.

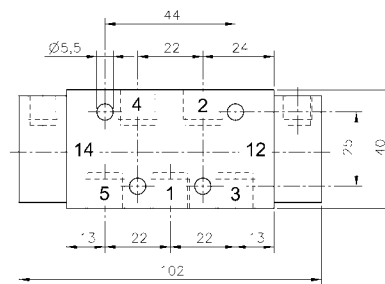
If signal is applied to 12 the valve is open from 1 to 2 and 4 to 5.

Position is kept until next pneumatic signal is applied.

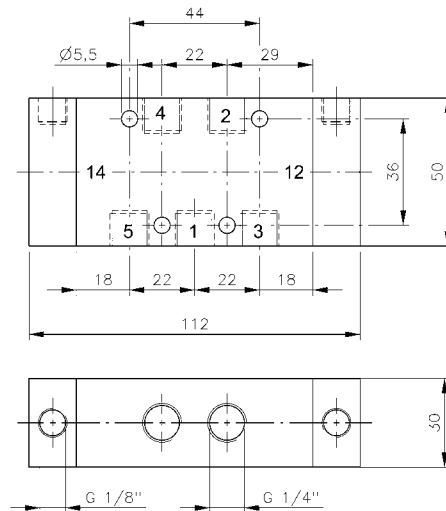
Exhaust can be throttled.



P 520 501/P 522 501

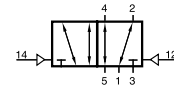


P 520 701/P 522 701

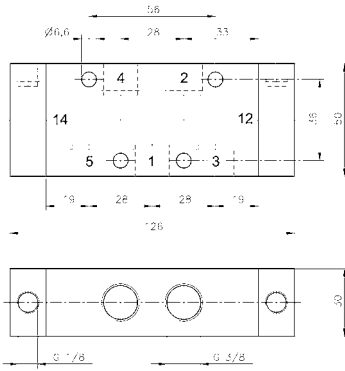


P 520 801

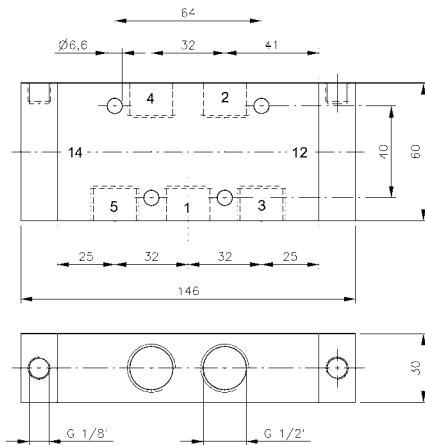
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 520 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg
P 522 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg
P 520 701	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg
P 522 701	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg
P 520 801	G 1/4"	1450 l/min	1 - 10 bar	2,5 - 10 bar	0,44 kg



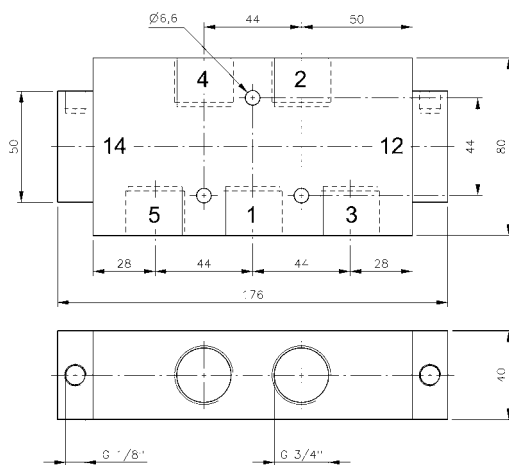
P 520 101
P 520 121
P 520 181
P 520 121 NPT



P 520 101



P 520 121/P 520 121 NPT



P 520 181



Pneumatically actuated 5/2-way spool valve actuated by impulse.

If signal is applied to 14 the valve is open from 1 to 4 and 2 to 3, 5 is closed.

If signal is applied to 12 the valve is open from 1 to 2 and 4 to 5.

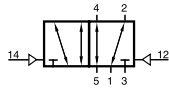
Position is kept until next pneumatic signal is applied.

Exhaust can be throttled.

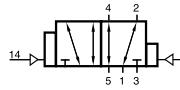
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 520 101	G 3/8"	2250 l/min	1 - 10 bar	2,5 - 10 bar	0,48 kg
P 520 121	G 1/2"	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,67 kg
P 520 181	G 3/4"	6000 l/min	1 - 10 bar	2 - 10 bar	1,22 kg
P 520 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,67 kg



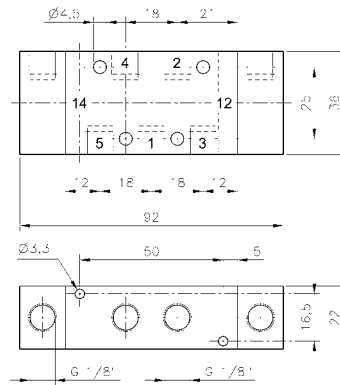
P 520 501 G/P 520 701 G/P 520 121 G P 522 501 G/P 522 701 G



P 520 501 G
P 520 701 G
P 520 121 G
P 520 701 G NPT



P 522 501 G
P 522 701 G



P 520 501 G/P 522 501 G

Pneumatically actuated 5/2-way spool valve.

Type P 520 ___ double pilot

Type P 522 ___ double pilot dominating at port 14

If signal is applied to 14 the valve is open from 1 to 4 and 2 to 3, 5 is closed.

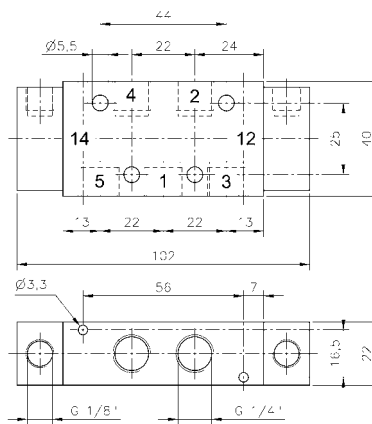
If signal is applied to 12 the valve is open from 1 to 2 and 4 to 5.

Position is kept until next pneumatic signal is applied.

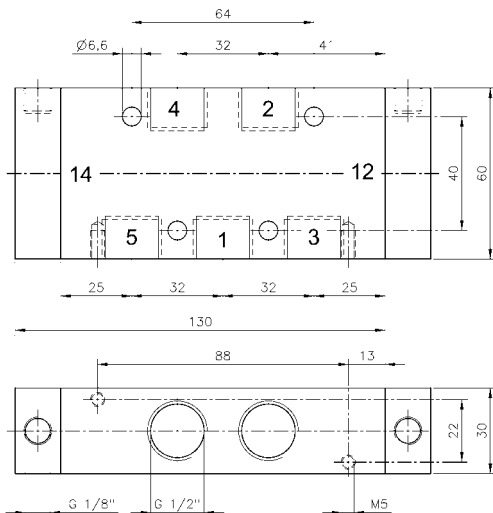
Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3, manifolds for valves type 121 G are displayed on page 2.7.2.5.

Take into consideration, that G 1/2" valves have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

Exhaust can be throttled.

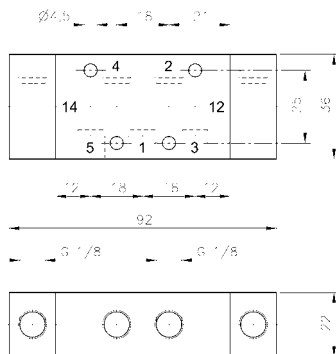
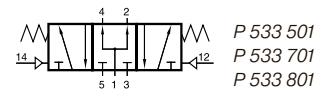
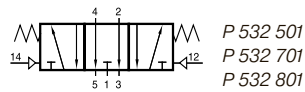
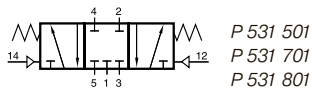


**P 520 701 G/P 522 701 G
P 520 701 G NPT**



P 520 121 G

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 520 501 G	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg ❄️
P 522 501 G	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg
P 520 701 G	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg ❄️
P 522 701 G	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg
P 520 121 G	G 1/2"	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,67 kg
P 520 701 G NPT	1/4" NPT	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg



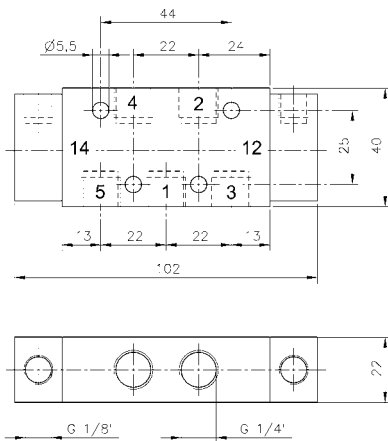
P 53_ 501

Pneumatically actuated 5/3-way spool valve with spring return to middle position.

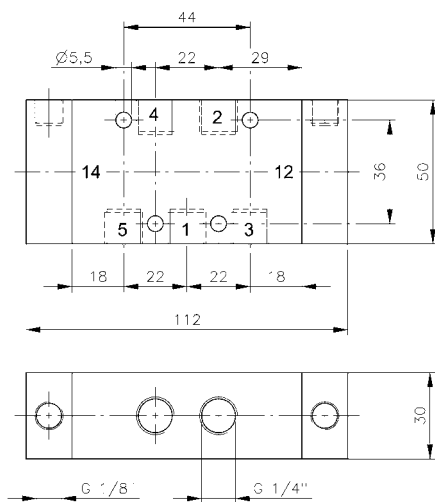
- Type 531 centre closed
- Type 532 centre exhausted
- Type 533 centre pressurised

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

Exhaust can be throttled.



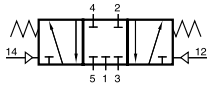
P 53_ 701



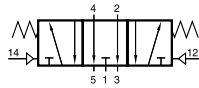
P 53_ 801

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 53_ 501	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,20 kg
P 53_ 701	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,22 kg
P 53_ 801	G 1/4"	1450 l/min	1 - 10 bar	3 - 10 bar	0,44 kg

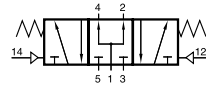
P 53_ 101/P 53_ 121/P 53_ 181



P 531 101
P 531 121
P 531 181
P 531 121 NPT



P 532 101
P 532 121
P 532 181
P 532 121 NPT



P 533 101
P 533 121
P 533 181
P 533 121 NPT

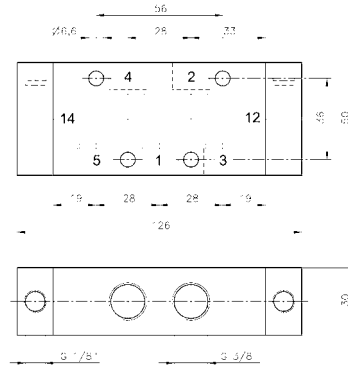


Pneumatically actuated 5/3-way spool valve with spring return to middle position.

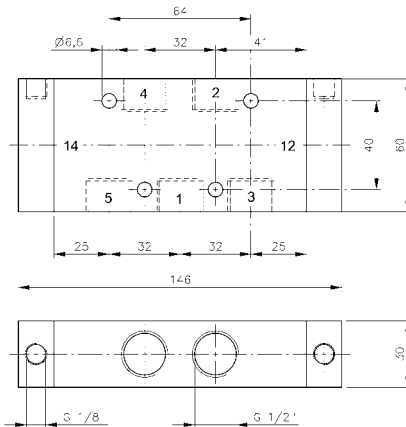
- Type 531 centre closed
- Type 532 centre exhausted
- Type 533 centre pressurised

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

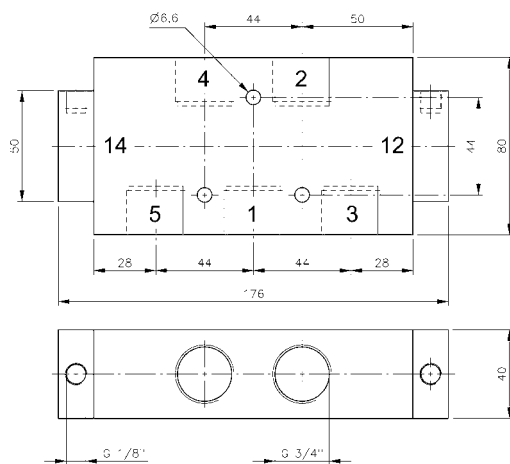
Exhaust can be throttled.



P 53_ 101

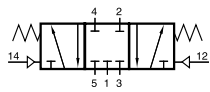


P 53_ 121/P 53_ 121 NPT

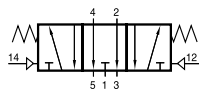


P 53_ 181

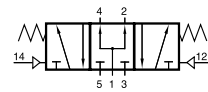
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 53_ 101	G 3/8"	2250 l/min	1 - 10 bar	3 - 10 bar	0,49 kg
P 53_ 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,69 kg
P 53_ 181	G 3/4"	6000 l/min	1 - 10 bar	3 - 10 bar	1,22 kg
P 53_ 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 - 10 bar	0,69 kg



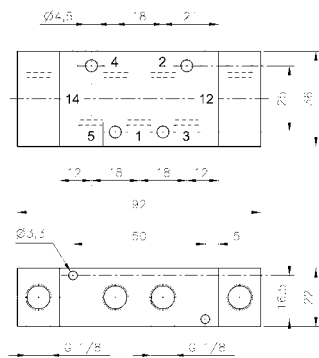
P 531 501 G
P 531 701 G
P 531 121 G
P 531 701 G NPT



P 532 501 G
P 532 701 G
P 532 121 G
P 532 701 G NPT



P 533 501 G
P 533 701 G
P 533 121 G
P 533 701 G NPT



P 53_ 501 G



Pneumatically actuated 5/3-way spool valve with spring return to middle position.

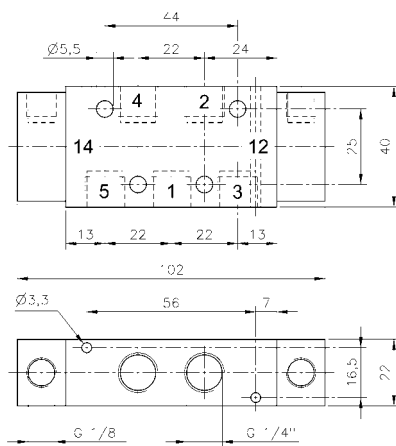
- Type 531 centre closed
- Type 532 centre exhausted
- Type 533 centre pressurised

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

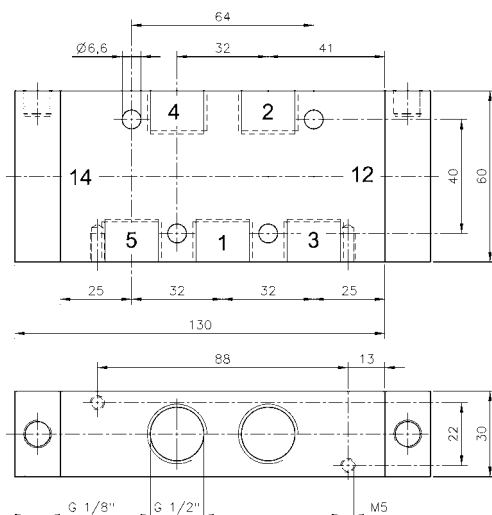
Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3, manifolds for valves type 121 G are displayed on page 2.7.2.5.

Take into consideration, that G 1/2" valves have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

Exhaust can be throttled.



P 53_ 701 G/P 53_ 701 G NPT



P 53_ 121 G

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 53_ 501 G	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,20 kg ❄️
P 53_ 701 G	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,22 kg ❄️
P 53_ 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,69 kg
P 53_ 701 G NPT	1/4" NPT	1250 l/min	1 - 10 bar	3 - 10 bar	0,22 kg

VA 341/VA 401 ES 341/ES 401



VA 341/VA 401: OR-gate

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

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

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

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

ES 341/ES 401: AND-gate

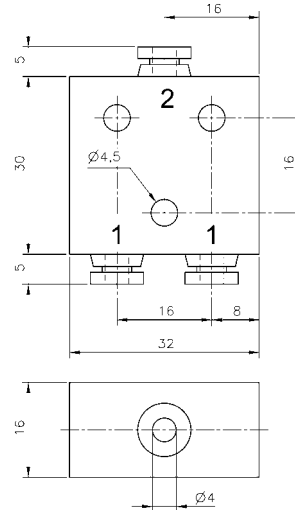
The AND-gate has two inputs 1 and one output 2.

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

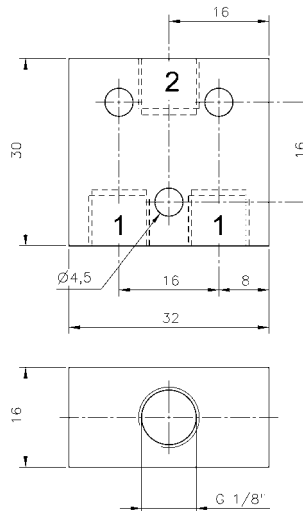
Function: Only when both inputs are pressurised output 2 is pressurised.

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

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

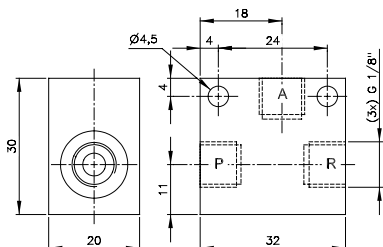
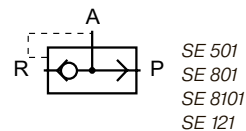


VA 341/ES 341



VA 401/ES 401

Type	Function	Port size	Air flow	Operating press.	Weight
VA 341	OR	pif 4 mm	280 l/min	1 - 10 bar	0,04 kg
VA 401	OR	G 1/8"	280 l/min	1 - 10 bar	0,04 kg
ES 341	AND	pif 4 mm	280 l/min	1 - 10 bar	0,04 kg
ES 401	AND	G 1/8"	280 l/min	1 - 10 bar	0,04 kg



SE 501



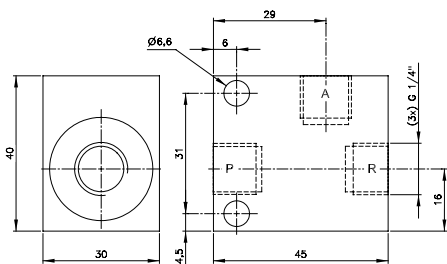
Quick-exhaust valve which can also be used as non-return valve as well as or-gate.

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

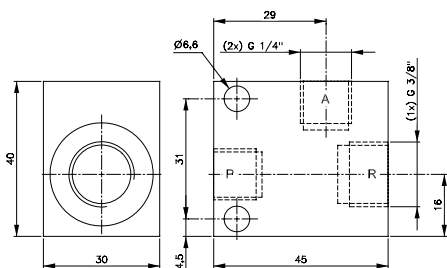
If used as an or-gate connect pressure to P and R. Port A is outlet.

Temperature range: -20° C to +80° C

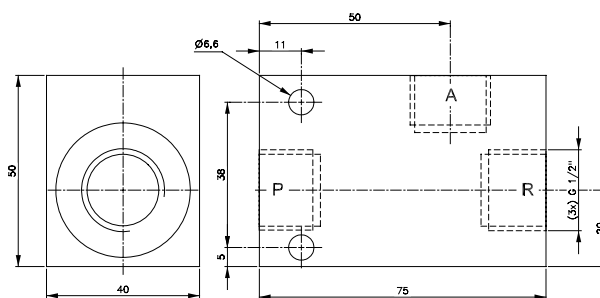
Stainless steel version as well as low temperature version (-40° C) available on request.



SE 801



SE 8101

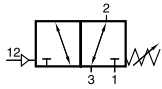


SE 121

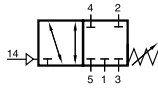
Type	Port size A + P	Port size R	Air flow from A to R	Operating press.	Weight
SE 501	G 1/8"	G 1/8"	564 l/min	0,3 - 10 bar	0,06 kg
SE 801	G 1/4"	G 1/4"	1188 l/min	0,2 - 10 bar	0,18 kg
SE 8101	G 1/4"	G 3/8"	1188 l/min	0,2 - 10 bar	0,18 kg
SE 121	G 1/2"	G 1/2"	3600 l/min	0,5 - 10 bar	0,26 kg



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



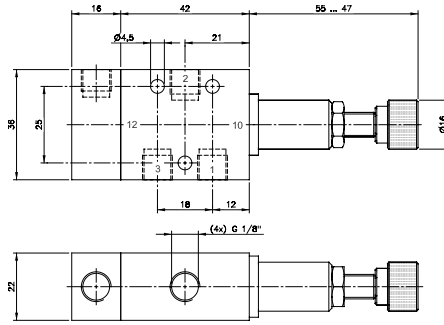
P311 501 SR



P 411 701 SR
P 411 701 SR NPT



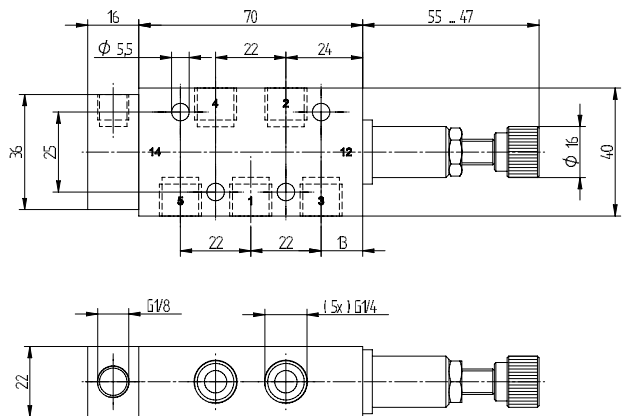
P 311 501 SR pneumatically actuated 3/2-way valve with mechanical spring return. Valve can be used normally closed (pressure at port 1) and normally open (pressure at port 3). Can also be used as 2/2-way valve. Unused port to be closed with a silencer or plug.



P 311 501 SR

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.

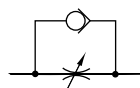
Valve can be used as an **adjustable pneumatic pressure switch**. By turning the hand-wheel the required minimum actuation pressure can be set between 3 and 6 bar. Adjustment is not independent from operation pressure.



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	Ex
P 411 701 SR	G 1/4"	1250 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,21 kg	Ex
P 411 701 SR NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 - 6 bar	10 bar	0,21 kg	

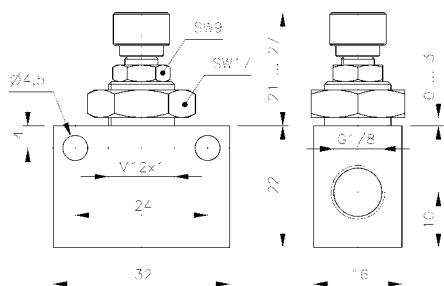
DR 501/DR 801/DR 101 D 501/D 801/D 101



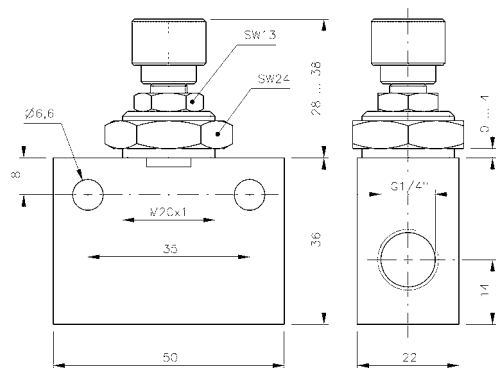
DR 501
DR 801
DR 101



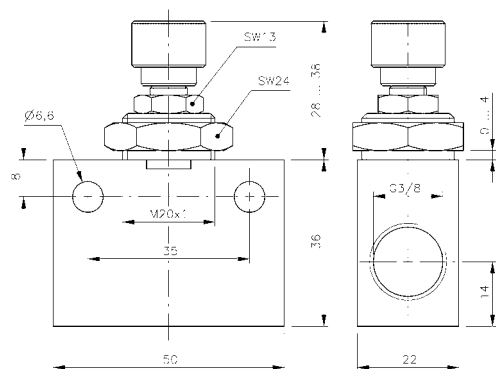
D 501
D 801
D 101



DR 501/D 501



DR 801/D 801



DR 101/D 101



Block form flow regulator.

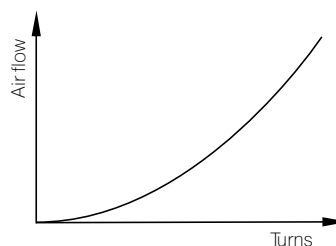
Type DR
uni-directional block form flow regulator.
Air streaming in the direction of the throttle can be regulated by turning the spindle. In the opposite direction air streams unthrottled.

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

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

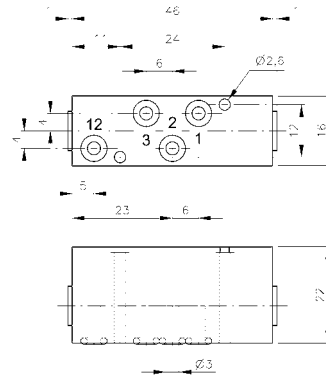
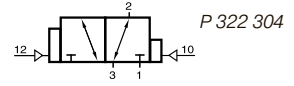
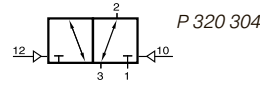
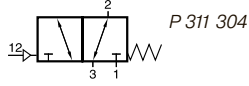
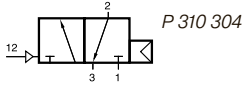
Adjustment can be locked.

Suitable for wall and panel mounting.
Nut is included.

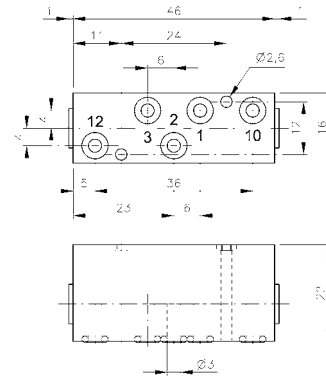


Type	Port size	Air flow	Airflow in opposite direction	Operating press.	Weight
D 501	G 1/8"	450 l/min	450 l/min	0,5 - 10 bar	0,04 kg
D 801	G 1/4"	1150 l/min	1150 l/min	0,5 - 10 bar	0,13 kg
D 101	G 3/8"	1450 l/min	1450 l/min	0,5 - 10 bar	0,13 kg
DR 501	G 1/8"	450 l/min	450 l/min	2 - 10 bar	0,04 kg
DR 801	G 1/4"	1150 l/min	1150 l/min	2 - 10 bar	0,13 kg
DR 101	G 3/8"	1450 l/min	1450 l/min	2 - 10 bar	0,13 kg

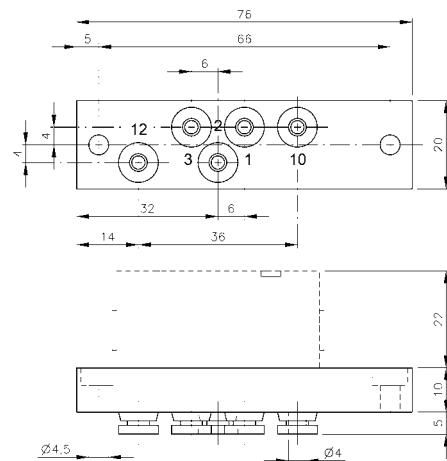
P 310 304/P 311 304 P 320 304/P 322 304/RP 3 344



P 310 304/P 311 304



P 320 304/P 322 304



RP 3 344

Pneumatically actuated 3/2-way spool valves.
To be assembled to plate RP 3 344.

Four different versions are offered:

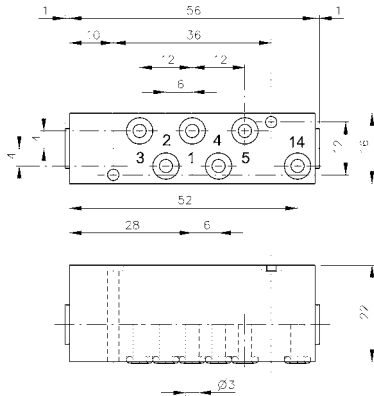
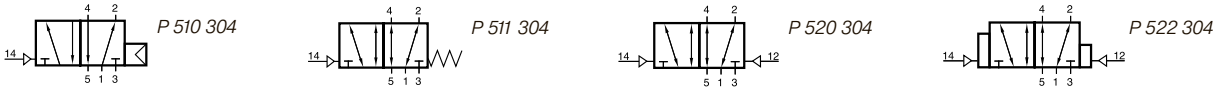
- P 310 304 valve with air-spring return.
- P 311 304 valve with mechanical spring return.
- P 320 304 double pilot valve
- P 322 304 double pilot valve dominating at port 12.

For P 310 304 the operating and actuating pressure should be at the same level.

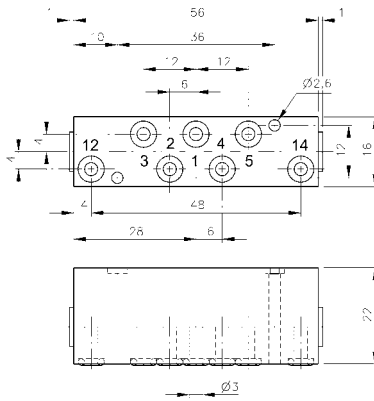
RP 3 344 is designed for carrying one 3/2-way valve type P 310 304, P 311 304, P 320 304 or P 322 304. The plate is equipped with 5 push-in fittings for 4 mm tube.

Type	Port size	Air flow	Operating press.	Actuating press	Weight
P 310 304	\varnothing 3 mm	280 l/min	2 - 10 bar	the same	0,04 kg
P 311 304	\varnothing 3 mm	280 l/min	2 - 10 bar	3 - 10 bar	0,04 kg
P 320 304	\varnothing 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,04 kg
P 322 304	\varnothing 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,04 kg
RP 3 344	pif 4 mm				0,04 kg

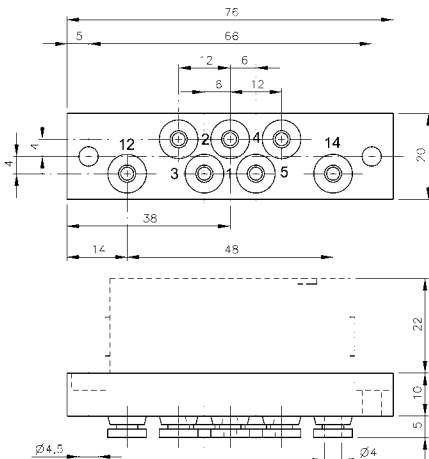
P 510 304/P 511 304 P 520 304/P 522 304/RP 5 344



P 510 304/P 511 304



P 520 304/P 522 304



RP 5 344



Pneumatically actuated 5/2-way spool valves.
To be assembled to plate RP 5 344.

Four different versions are offered:

- P 510 304 valve with air-spring return.
- P 511 304 valve with mechanical spring return.
- P 520 304 double pilot valve
- P 522 304 double pilot valve dominating at port 14.

5/3-way valves are available on request.

For P 510 304 the operating and actuating pressure should be at the same level.

RP 5 344 is designed for carrying one piece 5-way valve type P 510 304, P 511 304, P 520 304 or P 522 304.

3/2-way valves can also be assembled to that plate. The plate is equipped with 7 push-in fittings for 4 mm tube.

Type	Port size	Air flow	Operating press.	Actuating press	Weight
P 510 304	Ø 3 mm	280 l/min	2 - 10 bar	the same	0,06 kg
P 511 304	Ø 3 mm	280 l/min	2 - 10 bar	3 - 10 bar	0,06 kg
P 520 304	Ø 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,06 kg
P 522 304	Ø 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,06 kg
RP 5 344	pif 4 mm				0,04 kg

VA 304/ES 304/RP 2 344



VA 304: OR-gate

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

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

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

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

ES 304: AND-gate

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

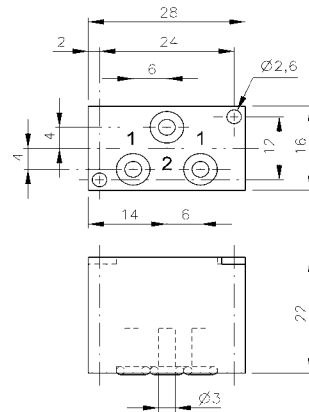
The dual-pressure valve is used when at least 2 signals are required before a signal is passed on.

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

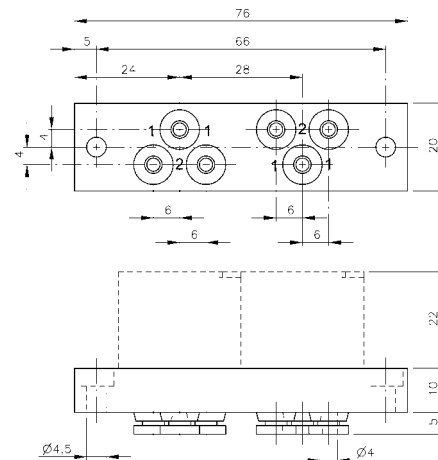
If two different pressures are applied the lower pressure is fed to output 2.

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

Both elements can be assembled to RP 2 344. Plate can carry 2 pieces AND- or OR-gates. Both types can be mixed on the plate. The plate is equipped with 6 push-in fittings for 4 mm tube.

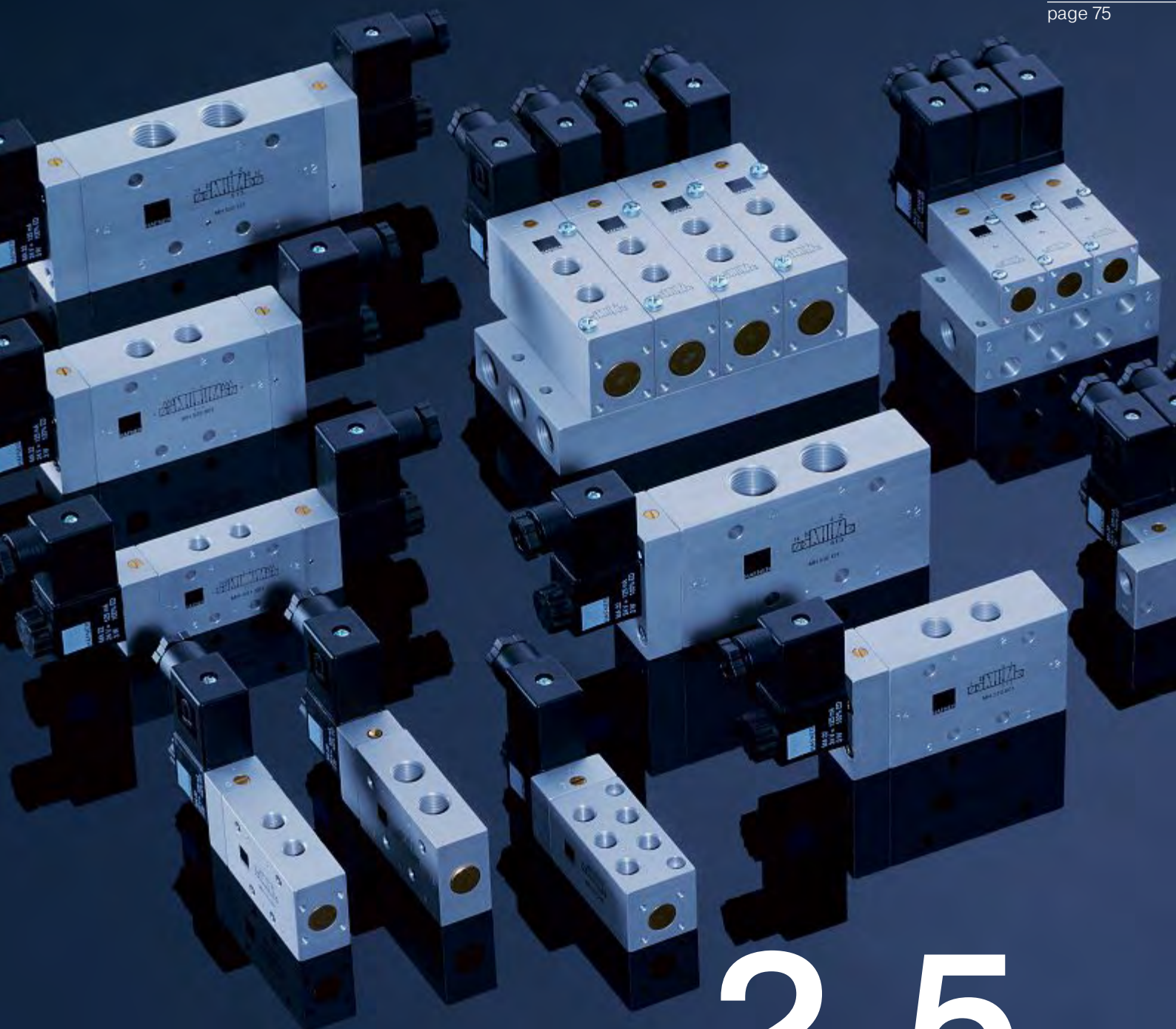


VA 304/ES 304



RP 2 344

Type	Function	Port size	Air flow	Operating press.	Weight
VA 304	OR	Ø 3 mm	280 l/min	1 - 10 bar	0,03 kg
ES 304	AND	Ø 3 mm	280 l/min	1 - 10 bar	0,03 kg
RP 2 344	plate	pif 4 mm			0,04 kg



2.5

Solenoid Valves



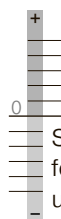
Selected models are available for low temperature application.
Temperature-range: - 50° C to + 50° C.
For detailed information refer to chapter 2.11.



Selected models are available with high flow and low power consumption. For detailed information refer to page 100.

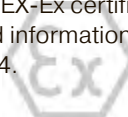


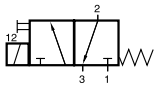
Selected models are available in stainless steel.
For detailed information refer to chapter 2.12.



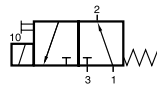
Selected models can be equipped for high temperature environments up to 80 °C, DC only!

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

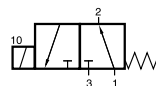




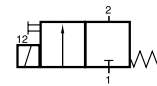
MH 311 012
MH 311 015



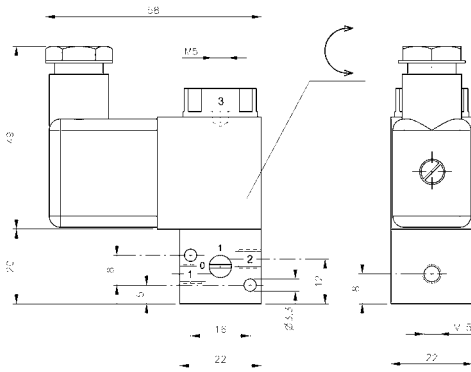
MOH 311 012
MOH 311 015



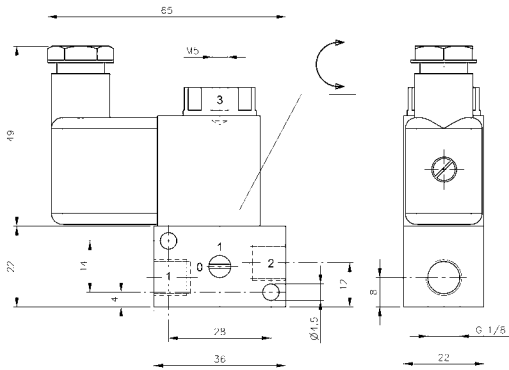
MX 311 012
MX 311 015



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.

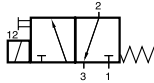
Available with solenoid operators:

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

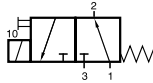
Valves can be used for technical vacuum too.

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

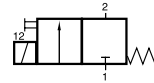
MH 311 305/MH 311 309/MOH 311 305 MOH 311 309/MH 211 305/MH 211 309



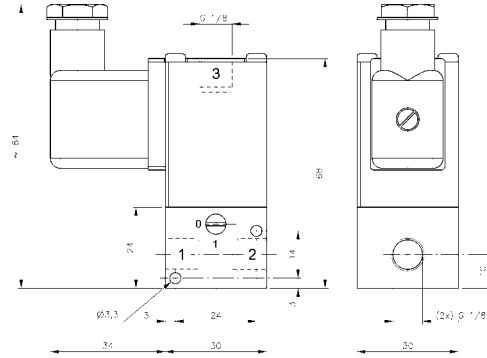
MH 311 305
MH 311 309



MOH 311 305
MOH 311 309



MH 211 305
MH 211 309



MH 311 305/MOH 311 305/MH 211 305

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

Type MH 311 ___

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

Type MOH 311 ___

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

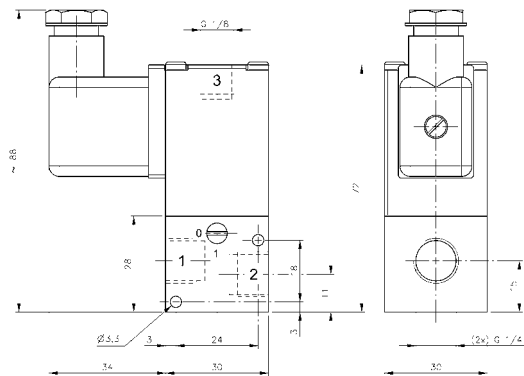
Type MH 211 ___

2/2-way valve n.c.

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=.

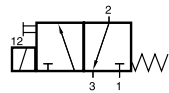


MH 311 309/MOH 311 309/MH 211 309

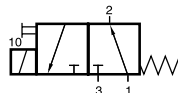
Valves are generally equipped with manual override.

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

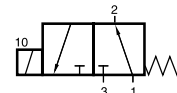
Type	Ways	Function	Port size			Air flow	Operating pressure	Power consumption	Weight
			1	2	3				
MH 311 305	3/2	n.c.	G 1/8"	G 1/8"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,17 kg
MH 311 309	3/2	n.c.	G 1/4"	G 1/4"	G 1/8"	200 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,18 kg
MOH 311 305	3/2	n.o.	G 1/8"	G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



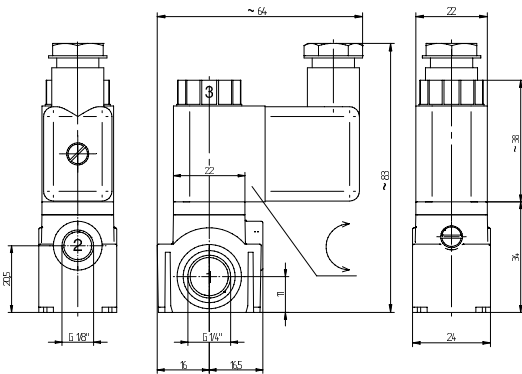
MH 311 105



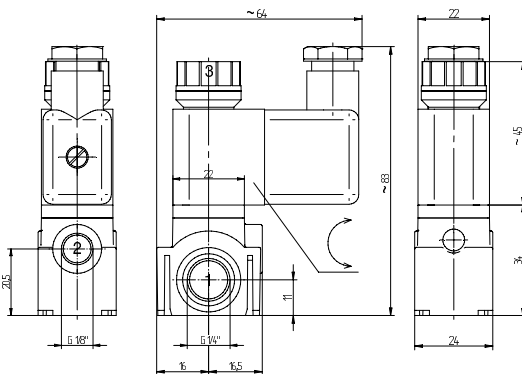
MOH 311 105



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

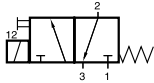
Set to connect two valves consisting of two brass clamping brackets and a NBR O-ring.

3015 – 1/4

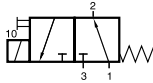
Plug to close one side of the two supply ports in the valve, brass, nickel plated G1/4" with O-ring seal.

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

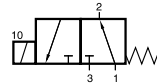
MH 311 014/MOH 311 014 MH 311 019/MX 311 019



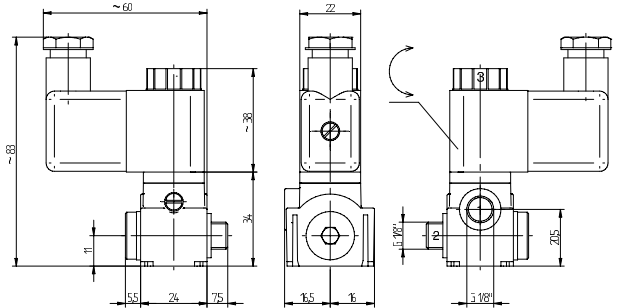
MH 311 014
MH 311 019



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.

Type MH 311 014:

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

Type MH 311 019 __:

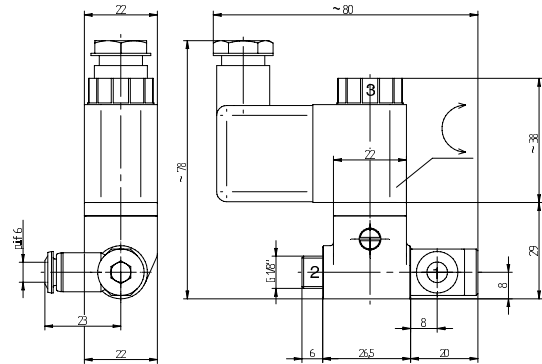
Normally closed, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system with manual override.

Type MOH 311 014:

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

Type MX 311 019 __:

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



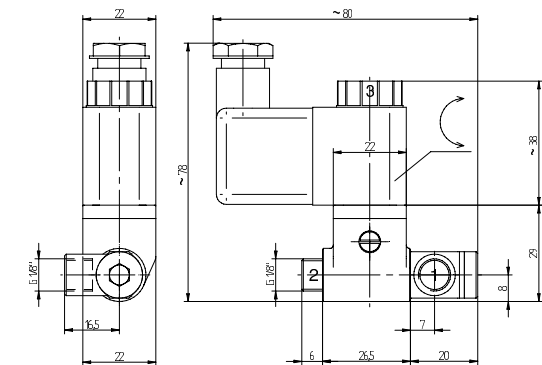
MH 311 019 6/MX 311 109 6

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

Available and useful accessory:

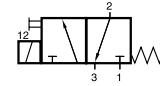
KV SET 02

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

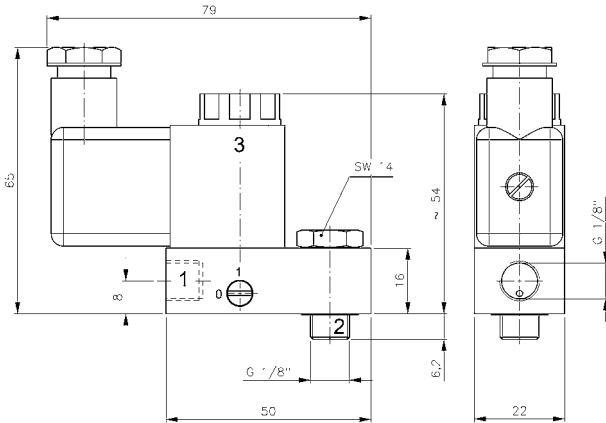


MH 311 019 1/8 / MX 311 019 1/8

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



MH 311 013
MH 311 017



MH 311 013



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.

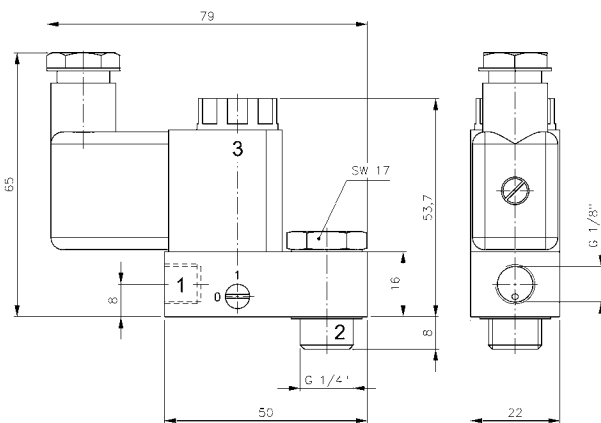
Products normally open on request.

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.

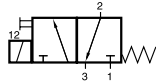
When assembling this type of valve to a spring-return actuator, please take into consideration that there is no exhaust air recirculation ("purge").

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.

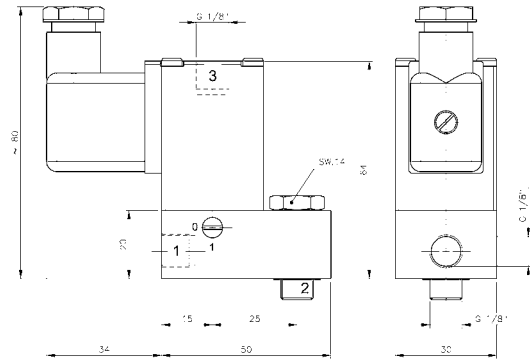
Port 2 is a banjo that can be screwed directly into the actuator that is to be controlled.

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

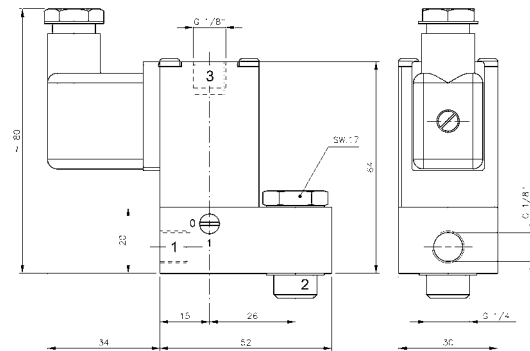
Available with solenoid operators:
230V/50Hz, 24V/50Hz, 24V=.

Valves are generally equipped with manual override.

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



MH 311 313



MH 311 317

MH 311 313 and MH 311 317 are designed for pilot-
ing angle seat valves or small spring-return actu-
ators.

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

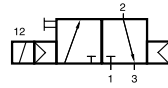
Instead of the standard banjo-screw, the valve can
also be equipped with a flow-regulating banjo-
screw.

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).

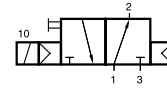


Type	Function	Port			Air flow	Operating pressure	Power consumption	Weight
		1	2 banjo	3				
MH 311 313	n.c.	G 1/8"	G 1/8"	G 1/8"	150 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,21 kg
MH 311 317	n.c.	G 1/8"	G 1/4"	G 1/8"	150 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,22 kg

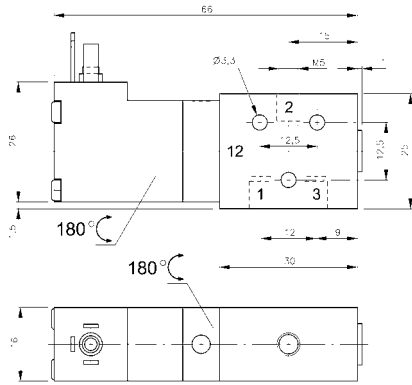
MD 310 301/MD 310 341 MOD 310 301/MOD 310 341



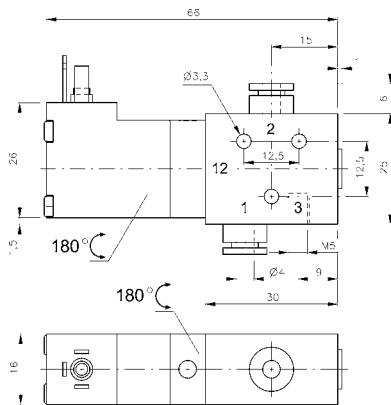
MD 310 301
MD 310 341



MOD 310 301
MOD 310 341



MD 310 301/MD 310 301



MD 310 341/MD 310 341



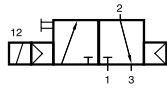
3/2-way solenoid valve normally closed (MD) or normally open (MOD) actuated by permanent signal and equipped with air spring return.

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

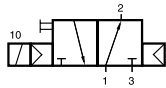
Valves are generally equipped with manual
override to push.

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

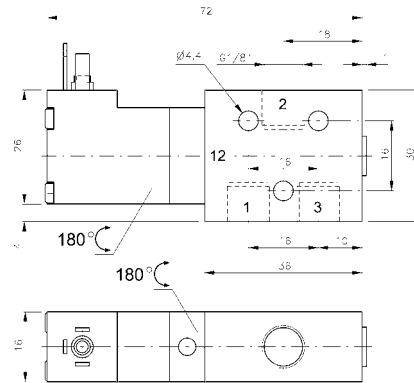
MD 310 401/MD 310 461 MOD 310 401/MOD 310 461



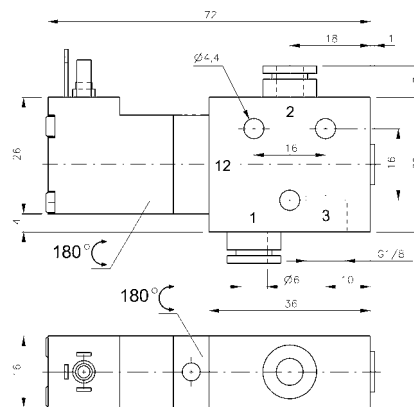
MD 310 401
MD 310 461



MOD 310 401
MOD 310 461



MD 310 401/MOD 310 401



MD 310 461/MOD 310 461

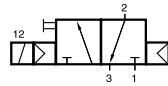
3/2-way solenoid valve normally closed (MD) or normally open (MOD) actuated by permanent signal and equipped with air spring return.

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

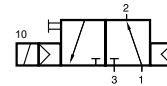
Valves are generally equipped with manual
override to push.

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

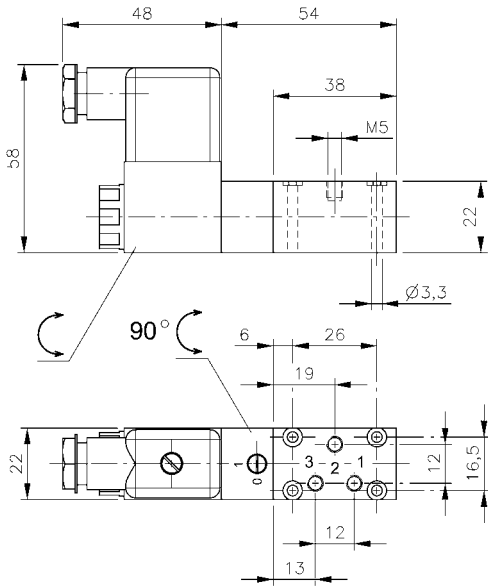
MH 310 302/MH 310 502 MOH 310 302/MOH 310 502



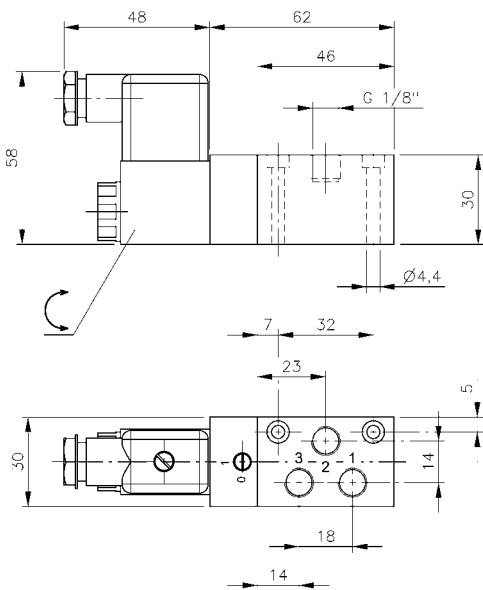
MH 310 302
MH 310 502



MOH 310 302
MOH 310 502



MH 310 302/MOH 310 302



MH 310 502/MOH 310 502



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

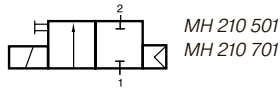
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

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

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

Type	Function	Port size 1 and 2	Air flow	Operating pressure	Power consumption	Weight
MH 310 302	n.c.	M5	180 l/min	2 - 10 bar	3 W = / 5 VA ~	0,18 kg
MH 310 502	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg
MOH 310 302	n.o.	M5	180 l/min	2 - 10 bar	3 W = / 5 VA ~	0,18 kg
MOH 310 502	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg

MH 210 501/MH 210 701

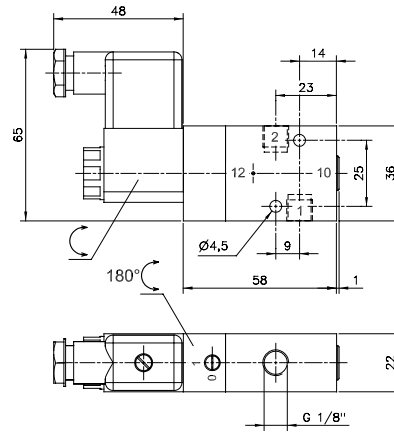


2/2-way solenoid valve, normally closed, actuated by permanent signal and equipped with air spring return.

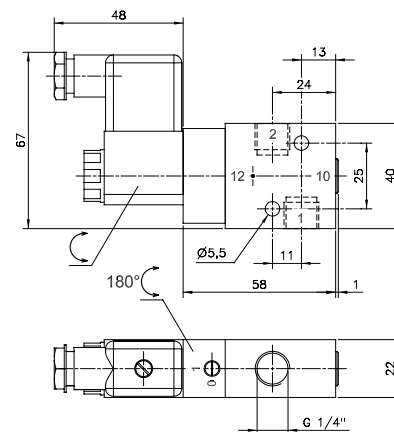
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

Valves are generally equipped with manual override.

Normally open version (MOH) on request.



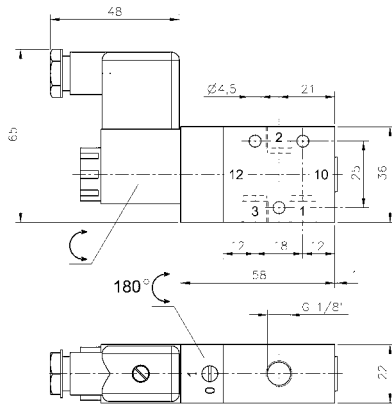
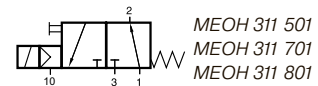
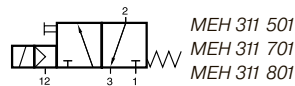
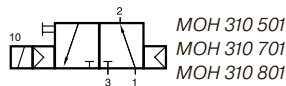
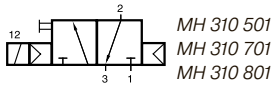
MH 210 501



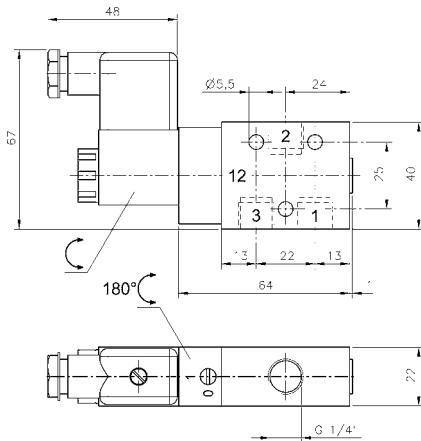
MH 210 701

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

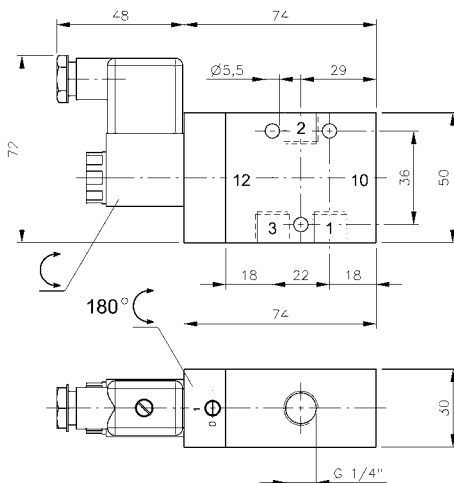
MH 310 501/MH 310 701/MH 310 801 MOH 310 501/MOH 310 701/MOH 310 801



MH 310 501/MOH 310 501



MH 310 701/MOH 310 701



MH 310 801/MOH 310 801



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

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

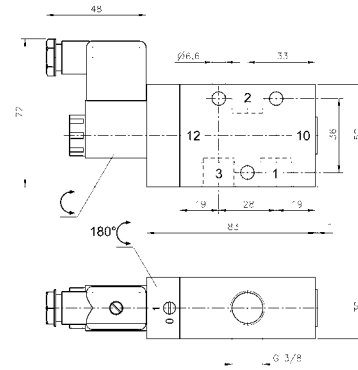
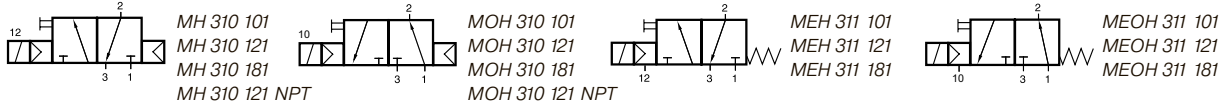
Valves are generally equipped with manual override.
If requested without manual override please order
M 310 ___ / MO 310 ___

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

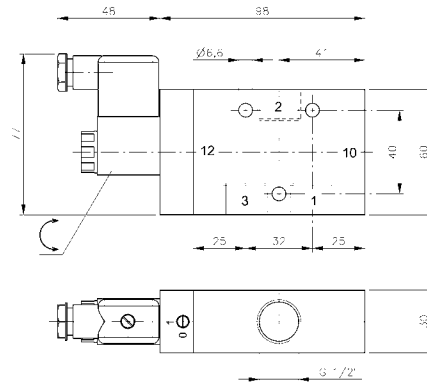
Please notice:
Do not close port 3 to convert into a 2-way valve.

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

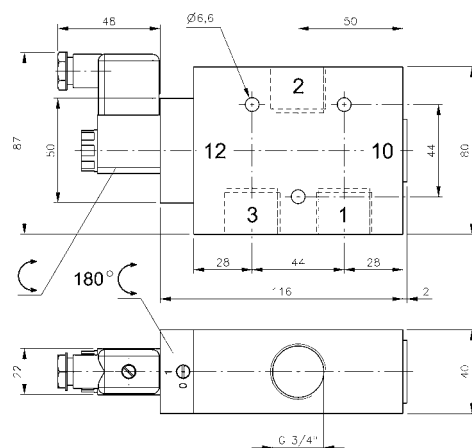
MH 310 101/MH 310 121/MH 310 181 MOH 310 101/MOH 310 121/MOH 310 181



MH 310 101/MOH 310 101



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



MH 310 181/MOH 310 181

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

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

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

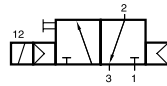
Valves are also available with external pilot feed.
Type: MEH 311 ___ (n.c.) or MEOH 311 ___ (n.o.).
Port 12: G 1/8".

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

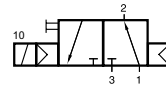
Please notice:
Do not close port 3 to convert into a 2-way valve.

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

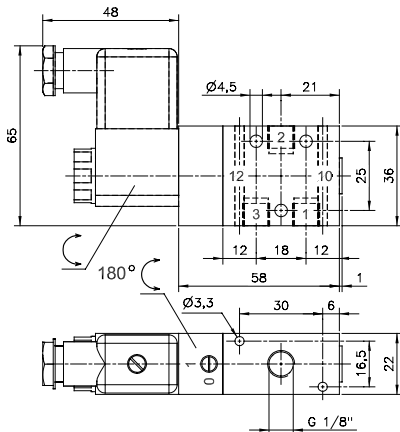
MH 310 501 G/MH 310 701 G MOH 310 501 G/MOH 310 701 G



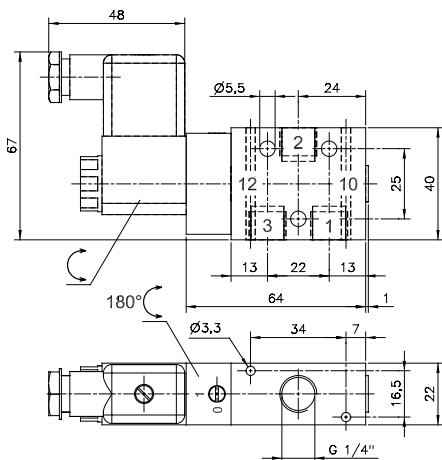
MH 310 501 G
MH 310 701 G
MH 310 701 G NPT



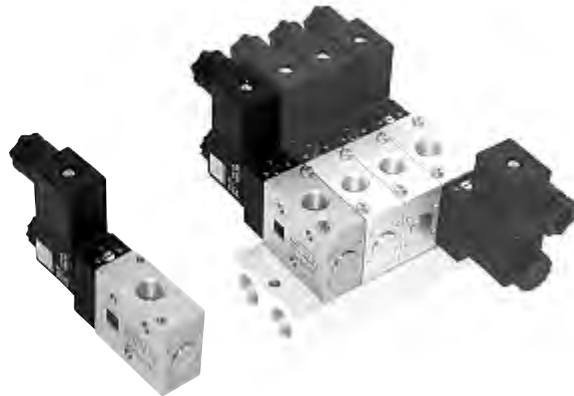
MOH 310 501 G
MOH 310 701 G
MOH 310 701 G NPT



MH 310 501 G/MOH 310 501 G



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



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

Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds are displayed on page 2.7.1.4.

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

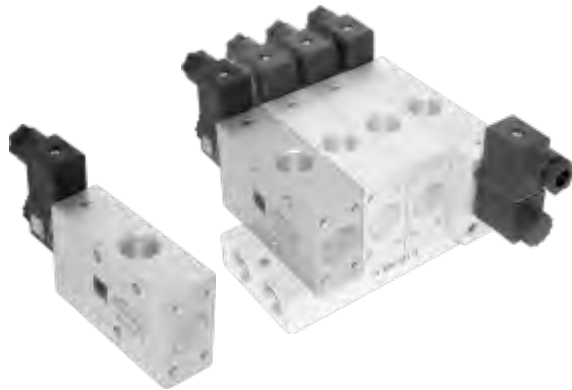
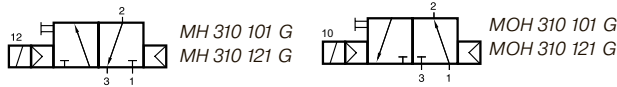
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

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

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

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



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

Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds are displayed on page 2.7.1.5.

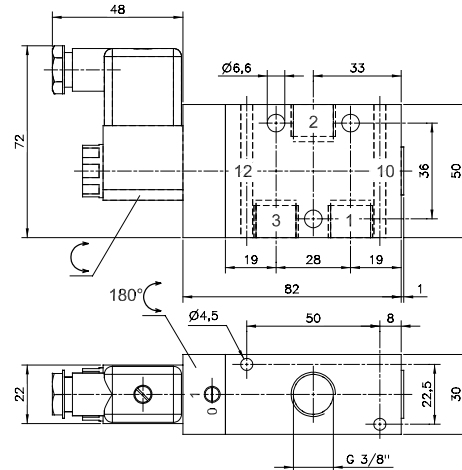
Normally open and normally closed products can be mixed on one plate.

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

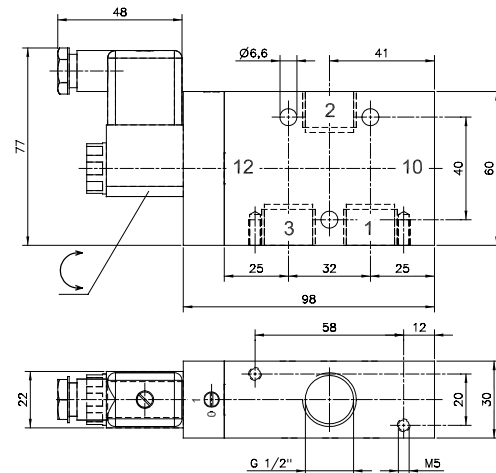
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

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

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



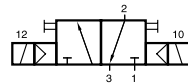
MH 310 101 G/MOH 310 101 G



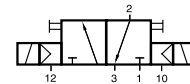
MH 310 121 G/MOH 310 121 G

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

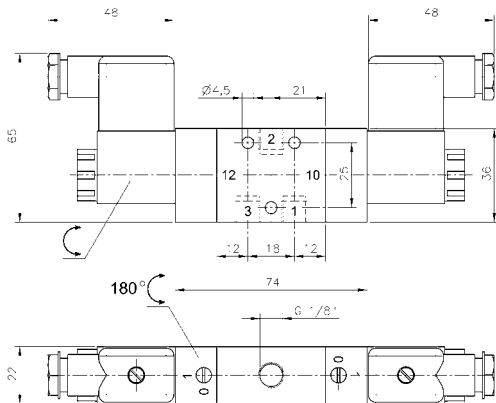
MH 320 501/MH 320 701/MH 320 801



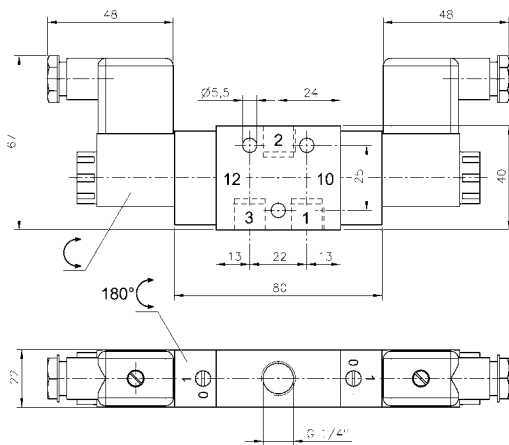
MH 320 501
MH 320 701
MH 320 801



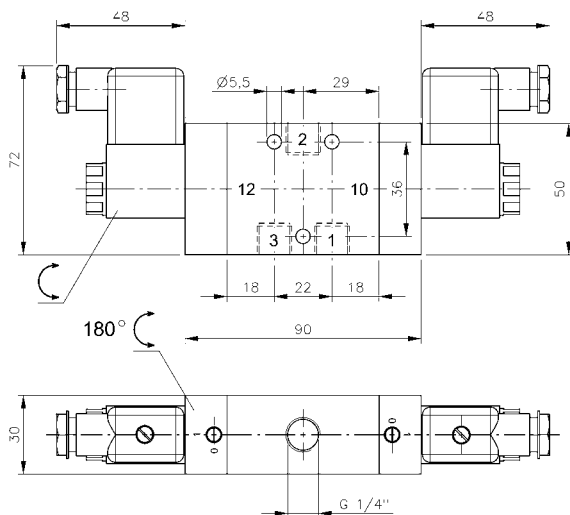
MEH 320 501
MEH 320 701
MEH 320 801



MH 320 501



MH 320 701



MH 320 801



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

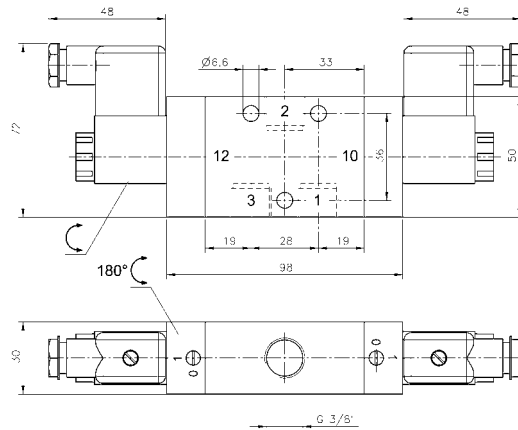
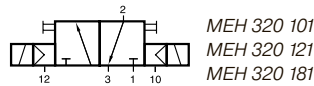
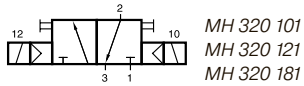
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

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

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

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

MH 320 101/MH 320 121/MH 320 181



MH 320 101

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

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

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

Valves are also available with external pilot feed.

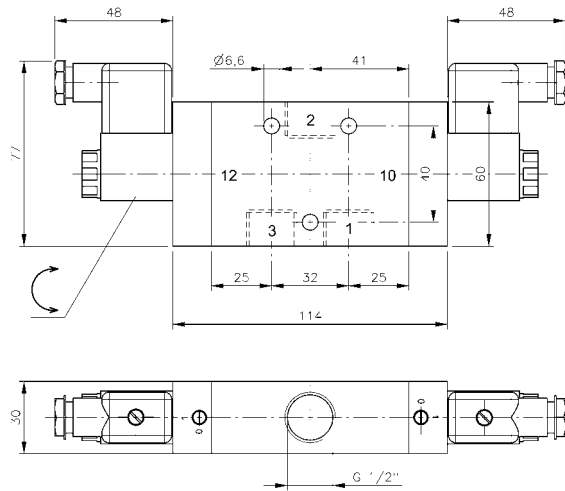
Type: MEH 320 ____.

Port 12: G 1/8".

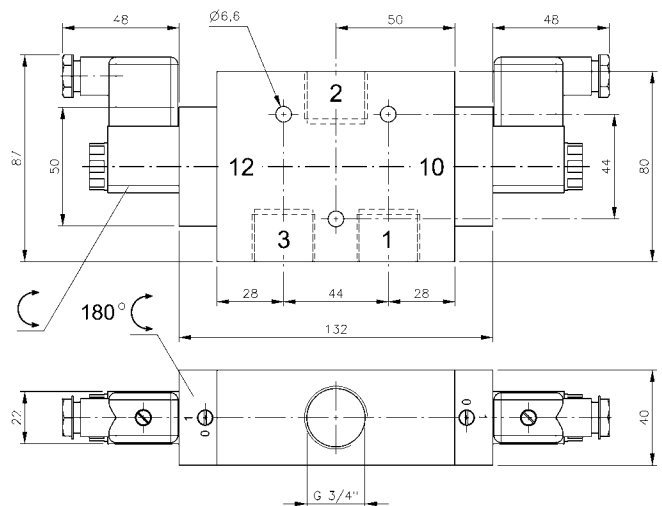
Minimum actuation pressure: 2,5 bar.

Operating pressure: 0 - 10 bar.

Version for vacuum on request.



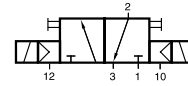
MH 320 121



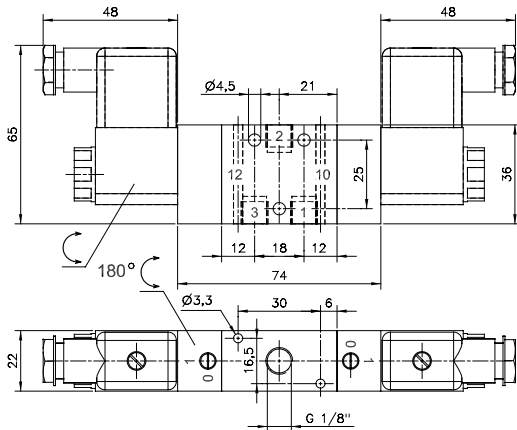
MH 320 181

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

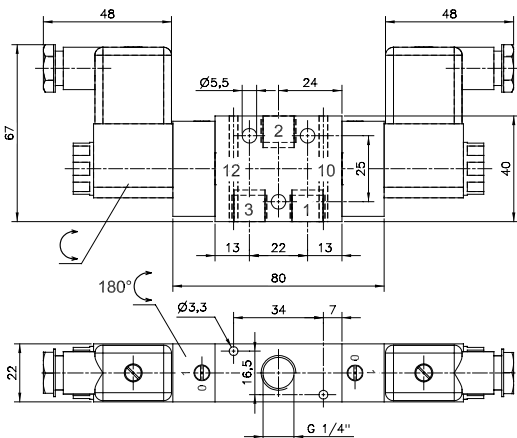
MH 320 501 G/MH 320 701 G MH 320 101 G/MH 320 121 G



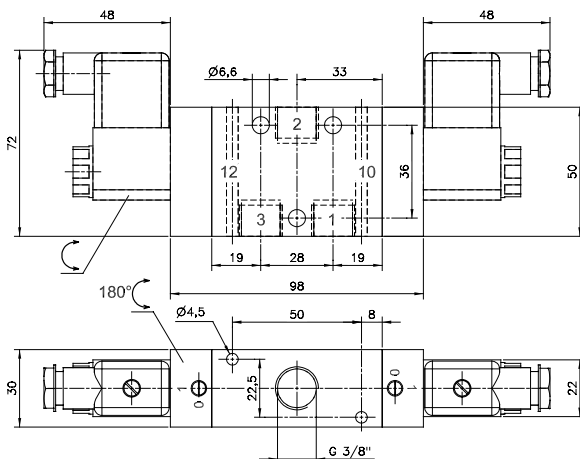
MH 320 501 G
MH 320 701 G
MH 320 101 G
MH 320 121 G



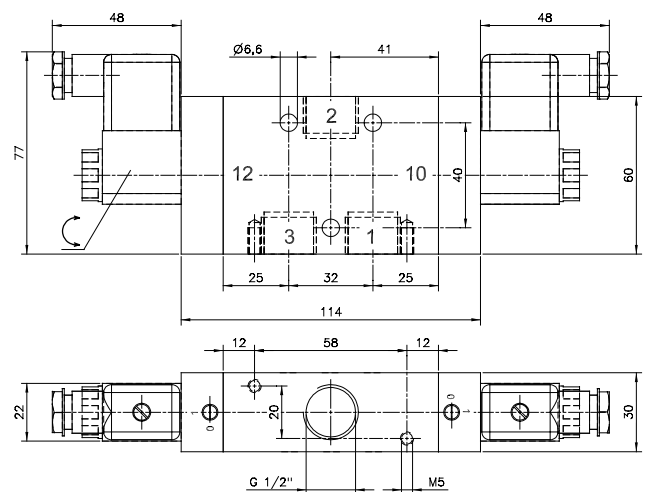
MH 320 501 G



MH 320 701 G



MH 320 101 G



MH 320 121 G

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

Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds for valves type 501 G and 701 G are displayed on page 2.7.1.4, manifolds for valves type 101 G and 121 G are displayed on page 2.7.1.5.

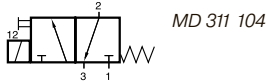
Please notice: Valves G 1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

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

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

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

MD 311 104/RD 3__ 104/RD 3__ 144



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

Valves

Type MD 311 104:

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

Type MD 311 104 L:

with flying leads standard length 500 mm

Available with solenoid operators:

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

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

Valves are generally equipped with manual override to push.

Plates

RD 3__ 104:

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

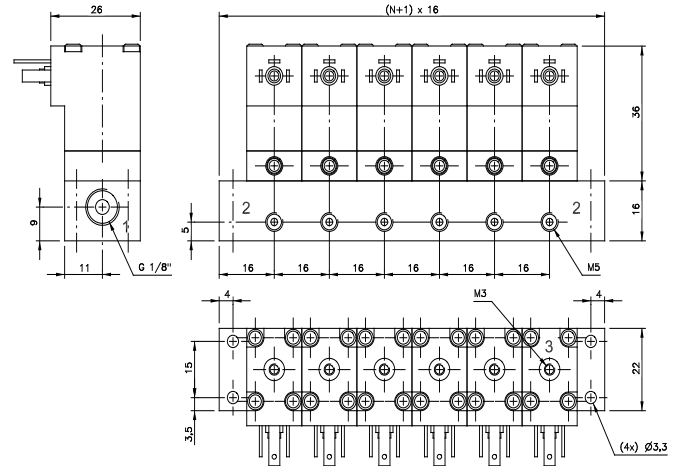
RD 3__ 144:

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

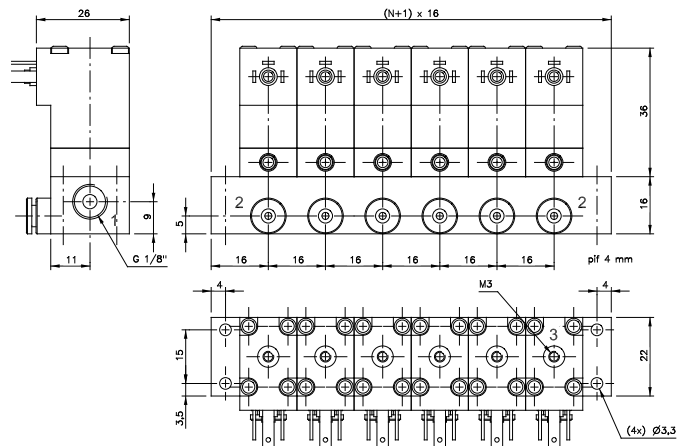
Plates are available with 2, 3, 4, 5, 6, 8, 10 and 12 positions, others on request.

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

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



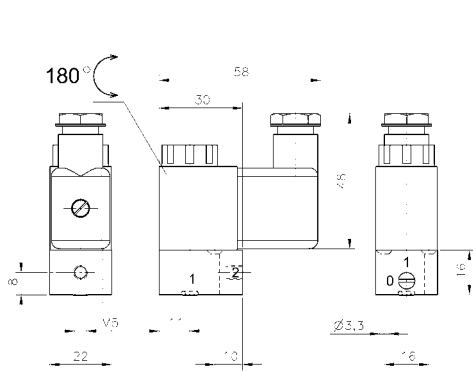
MD 311 104/RD 3__ 104



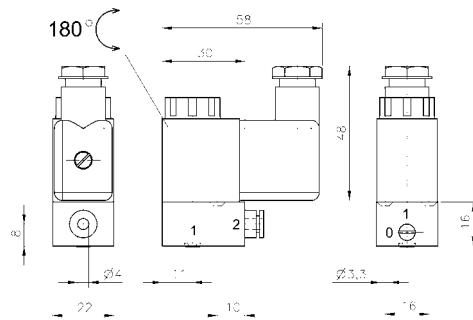
MD 311 104/RD 3__ 144

Valves can be used for technical vacuum too.

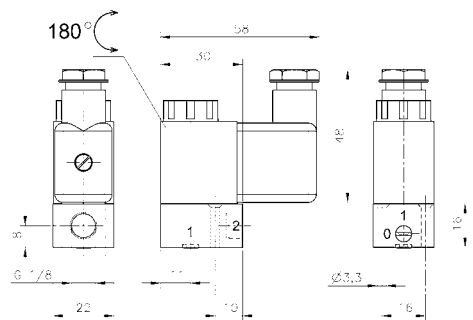
Type	Electric interface	Air flow	Operating press.	Power consumption	Weight
MD 311 104	form C, 8 mm pin	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,06 kg
MD 311 104 L	flying leads	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,07 kg



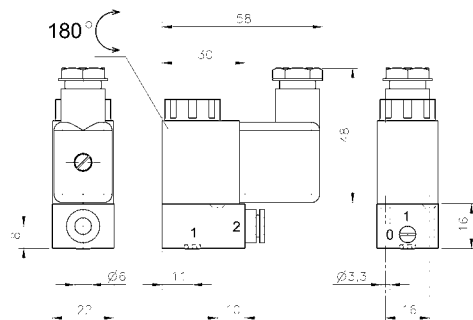
MH 312



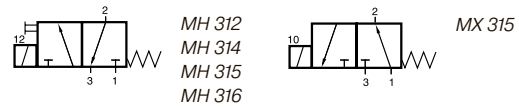
MH 314



MH 315/MX 315



MH 316



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

Type MH:

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

Type MX:

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

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

Different types of valves can be mixed on one plate.

Manifolds are displayed on page 2.7.1.1.

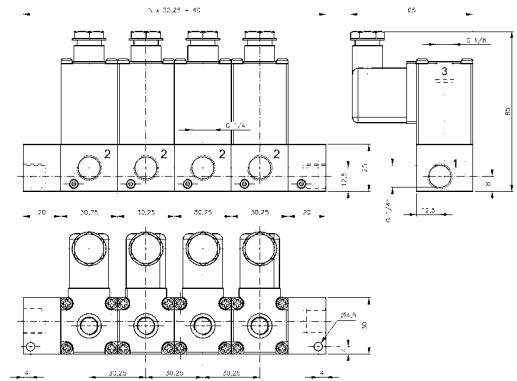
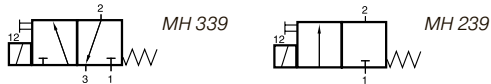
Blanking plates are also available: Type no. BP 3.

Mounting screws and seals are included.

Valves can be used for technical vacuum too.

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

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



Modular system MH 339/MH 239

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

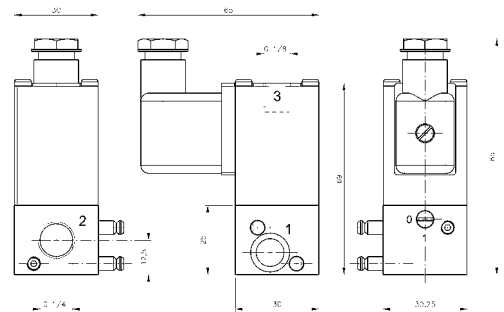
By opening 2 hexagonsocket screws at the bodies the system can be taken apart at any point and valves can be added or taken away.

Valves:

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

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

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



Individual valve MH 339/MH 239

Available with solenoid operators:

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

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

Valves are generally equipped with manual override.

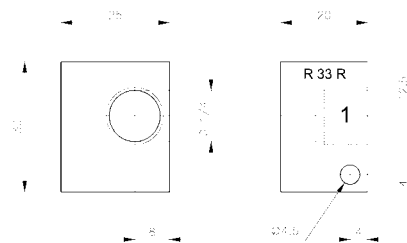
The system consists of:

End-plate right type R 33 R

End-plate left type R 33 L

Individual valve 3/2-way type MH 339

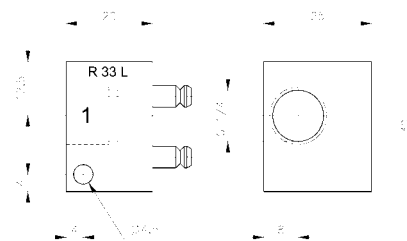
Individual valve 2/2-way type MH 229



End-plate right R 33 R

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

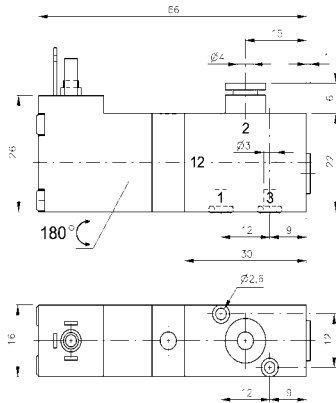
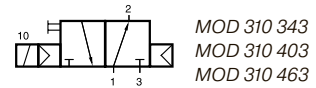
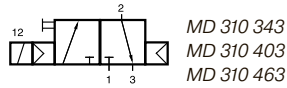
Products are to be ordered individually but system can be delivered fully assembled.



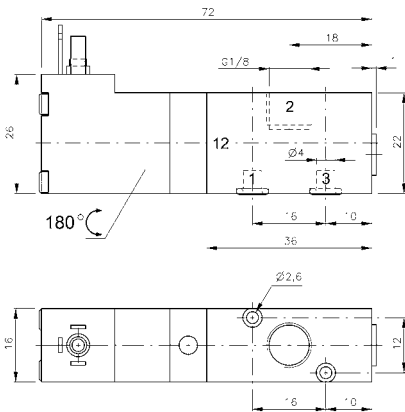
End-plate left R 33 L

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

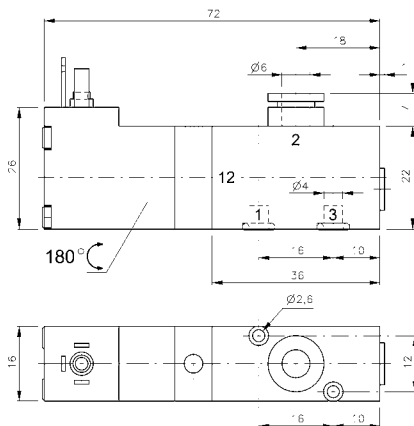
MD 310 343/MD 310 403/MD 310 463 MOD 310 343/MOD 310 403/MOD 310 463



MD 310 343/MOD 310 343



MD 310 403/MOD 310 403



MD 310 463/MOD 310 463



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

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

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.7.1.2.

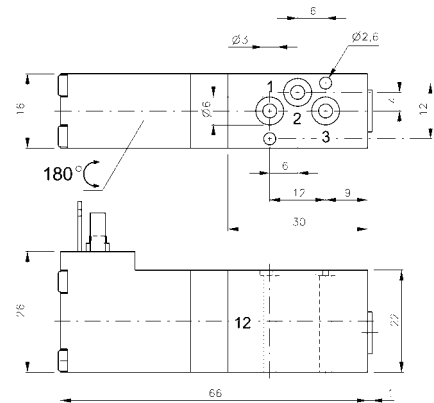
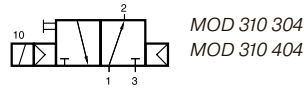
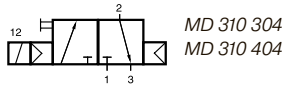
Valves normally open and normally closed can be mixed on one manifold plate!

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

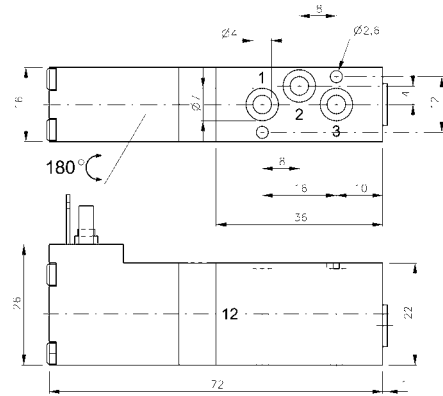
Mounting screws and seals are included.

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

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



MD 310 304/MOD 310 304



MD 310 404/MOD 310 404

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

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

Valves are generally equipped with manual override to push.

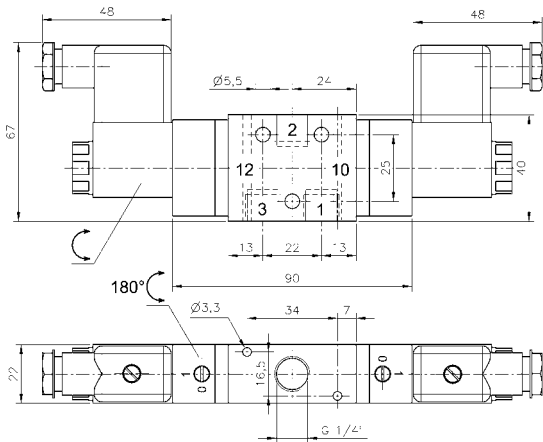
Manifolds are displayed on page 2.7.1.3.

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

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

Mounting screws and seals are included.

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



MH 331 701 G



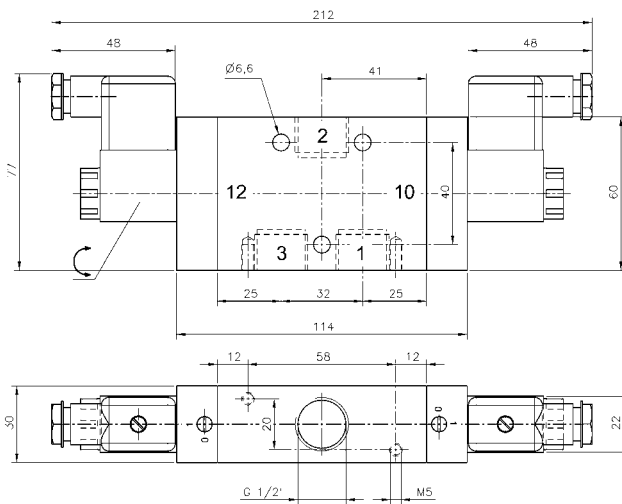
3/3-way solenoid valve with spring return to middle position, actuated by permanent signal. Valve is to be used when a single acting cylinder or any other single acting actuator such as a lifting bag or car-suspension needs to be held in an intermediate position.

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

Valves can be used in-line or on manifold plate, plates are displayed on page 2.7.1.5.

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

Valves are generally equipped with manual override to turn.



MH 331 121 G

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

MK

The MK- series is a combination of the 1.8 Watt / 3.0 VA solenoid-system MD 401 (detailed information on page 2.13.1) and the G 1/4" valves of the 700-series with a flow of 1.250 NL/min. The following valves are available:



MK 310 701	3/2-way single solenoid, n.c.	in-line	description on page 2.5.1.1.12
MOK 310 701	3/2-way single solenoid, n.o.	in-line	page 2.5.1.1.12
MK 310 701 G	3/2-way single solenoid, n.c.	dual use	page 2.5.1.1.14
MOK 310 701 G	3/2-way single solenoid, n.o.	dual use	page 2.5.1.1.14
MK 320 701	3/2-way single solenoid	in-line	page 2.5.1.1.16
MK 320 701 G	3/2-way single solenoid	dual use	page 2.5.1.1.18
MK 510 701	5/2-way single solenoid	in-line	page 2.5.2.1.3
MK 520 701	5/2-way double solenoid	in-line	page 2.5.2.1.9
MK 531 701	5/3-way centre closed	in-line	page 2.5.3.1.2
MK 532 701	5/3-way centre exhausted	in-line	page 2.5.3.1.2
MK 533 701	5/3-way centre pressurized	in-line	page 2.5.3.1.2
MK 510 701 G	5/2-way single solenoid	dual use	page 2.5.2.1.5
MK 520 701 G	5/2-way double solenoid	dual use	page 2.5.2.1.11
MK 531 701 G	5/3-way centre closed	dual use	page 2.5.3.1.4
MK 532 701 G	5/3-way centre exhausted	dual use	page 2.5.3.1.4
MK 533 701 G	5/3-way centre pressurized	dual use	page 2.5.3.1.4
MK 510 703	5/2-way single solenoid	manifold	page 2.5.2.2.2
MK 520 703	5/2-way double solenoid	manifold	page 2.5.2.2.6
MK 531 703	5/3-way centre closed	manifold	page 2.5.3.2.2
MK 532 703	5/3-way centre exhausted	manifold	page 2.5.3.2.2
MK 533 703	5/3-way centre pressurized	manifold	page 2.5.3.2.2
MK 510 704	5/2-way single solenoid	manifold	page 2.5.2.2.4
MK 520 704	5/2-way double solenoid	manifold	page 2.5.2.2.8
MK 531 704	5/3-way centre closed	manifold	page 2.5.3.2.4
MK 532 704	5/3-way centre exhausted	manifold	page 2.5.3.2.4
MK 533 704	5/3-way centre pressurized	manifold	page 2.5.3.2.4

as well as valves with Namur interface, please refer to chapter 2.9.

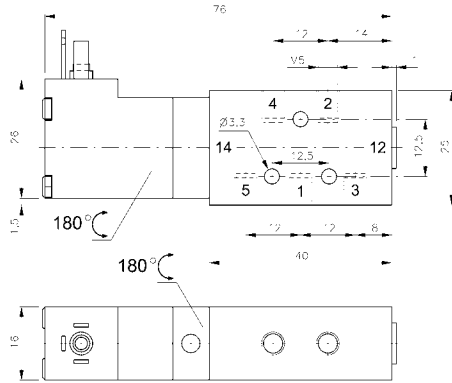
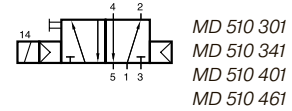


- ## Advantages
- High flow
 - Compact design
 - Low power consumption

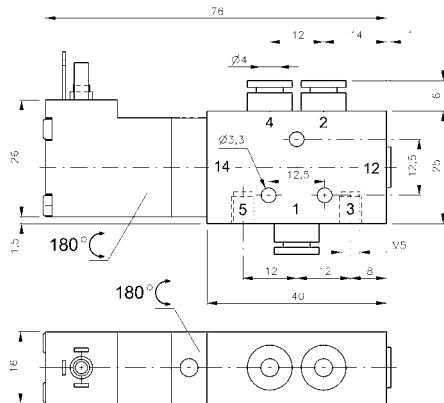


The valves are also used for the **22 mm terminals**, described in chapter 2.8.

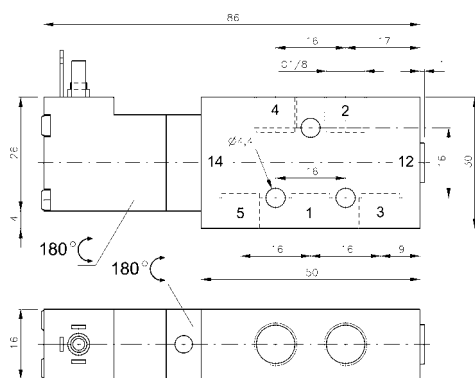
MD 510 301/MD 510 341 MD 510 401/MD 510 461



MD 510 301



MD 510 341



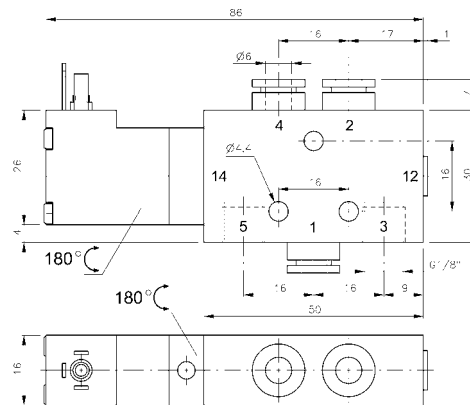
MD 510 401



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

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

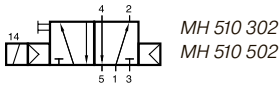
Valves are generally equipped with manual override
to push.



MD 510 461

Type	Ports 1, 2, 4	Air flow	Operating press.	Powerconsumption	Weight
MD 510 301	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 510 341	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MD 510 401	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MD 510 461	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,12 kg

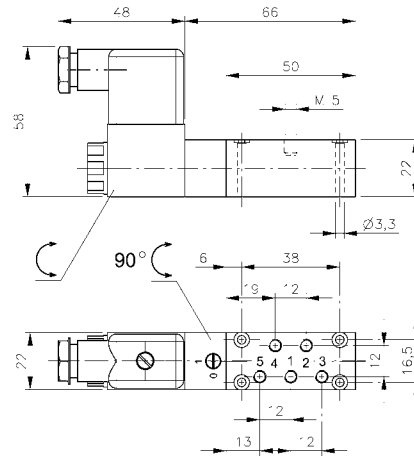
MH 510 302/MH 510 502



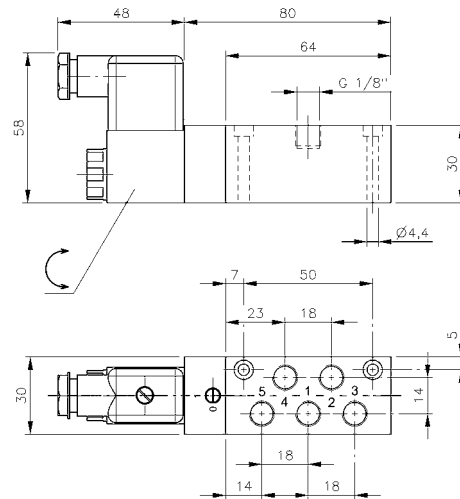
5/2-way solenoid valve actuated by permanent signal and equipped with air spring return.

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

Valves are generally equipped with manual override.
If requested without manual override please order
M 510 ____.



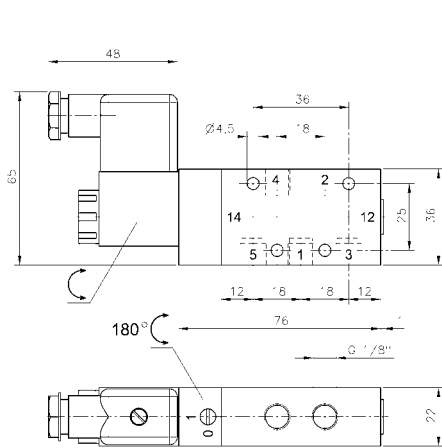
MH 510 302



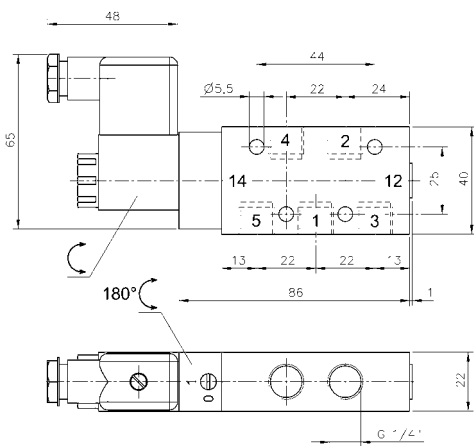
MH 510 502

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 302	M5	180 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MH 510 502	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg

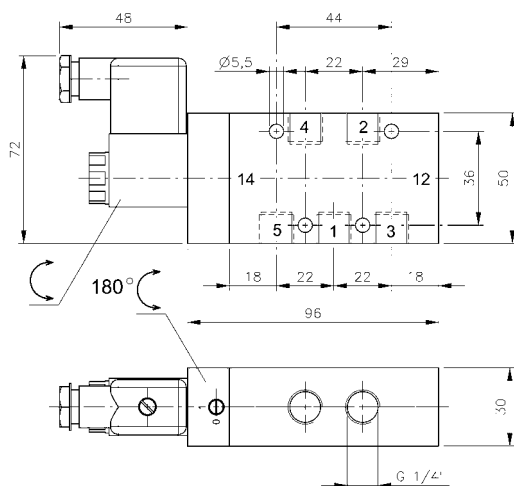
MH 510 501/MH 510 701/MH 510 801



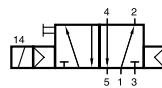
MH 510 501



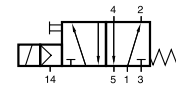
MH 510 701



MH 510 801



MH 510 501
MH 510 701
MH 510 801



MEH 511 501
MEH 511 701
MEH 511 801



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

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

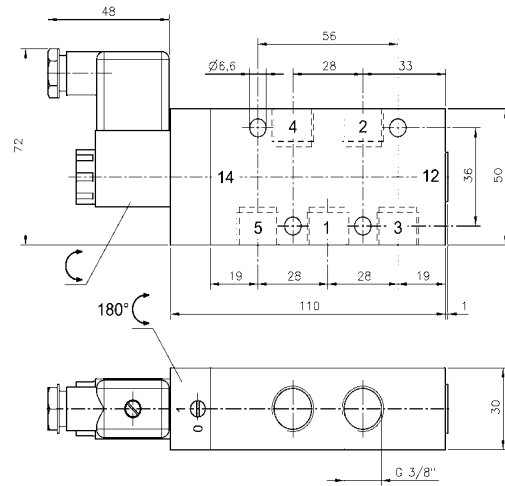
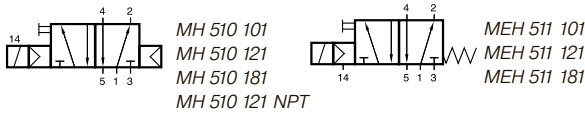
Valves are generally equipped with manual override.
If requested without manual override please order
M 510 ____.

Valves are also available with external pilot feed.
Type: MEH 511 ____.
Port 14 series 501 and 701 M5, series 801 G 1/8".
Minimum actuation pressure: 3 bar.
Operating pressure: 0 - 10 bar.

Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 501	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MH 510 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg MK
MH 510 801	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,48 kg

MH 510 101/MH 510 121/MH 510 181



MH 510 101

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

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

Valves are generally equipped with manual override.
If requested without manual override please order
M 510 ____.

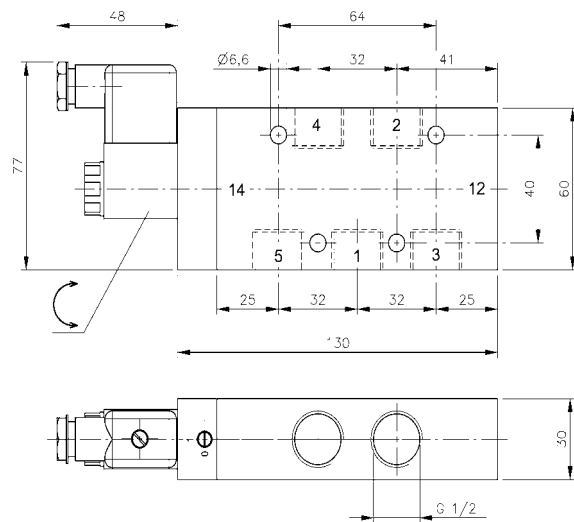
Valves are also available with external pilot feed.
Type: MEH 511 ____.

Port 14: G 1/8\"

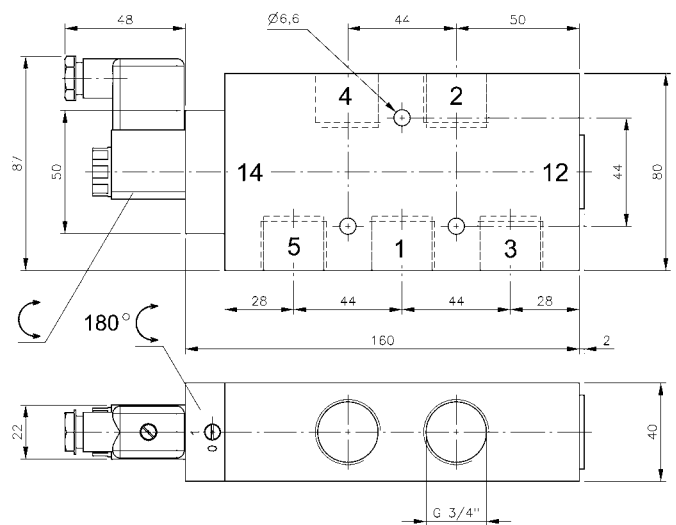
Minimum actuation pressure: 3 bar.

Operating pressure: 0 - 10 bar.

Version for vacuum on request.



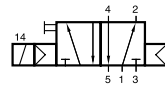
MH 510 121/MH 510 121 NPT



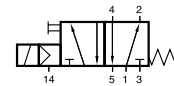
MH 510 181

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 101	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,50 kg
MH 510 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,67 kg
MH 510 181	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,29 kg
MH 510 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,67 kg

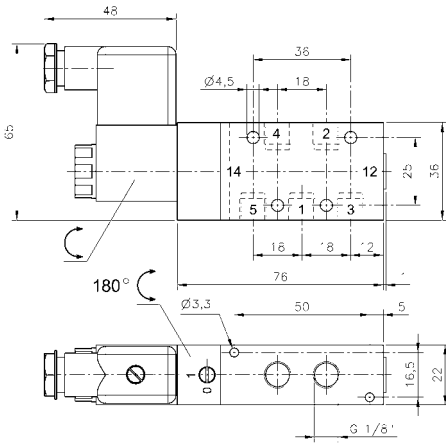
MH 510 501 G/MH 510 701 G



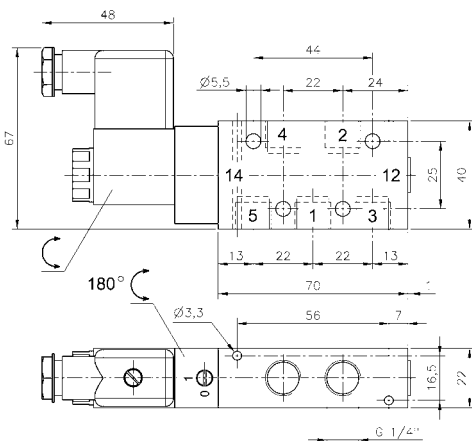
MH 510 501 G
MH 510 701 G
MH 510 701 G NPT



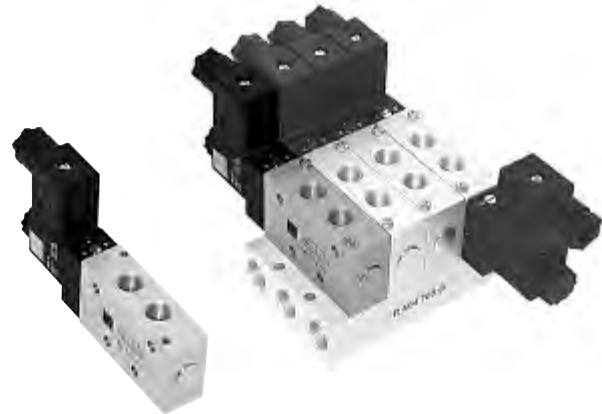
MEH 511 501 G
MEH 511 701 G



MH 510 501 G



MH 510 701 G/MH 510 701 G NPT



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

Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3.

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 510 ____.

Valves are also available with external pilot feed.

Type: MEH 511 ____ G.

Port 14: M5.

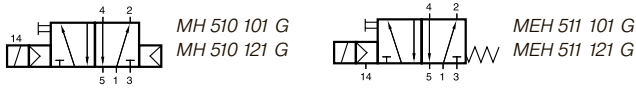
Minimum actuation pressure: 3 bar.

Operating pressure: 0 - 10 bar.

Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 510 501 G	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MH 510 701 G	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg
MH 510 701 G NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg

MH 510 101 G/MH 510 121 G



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

Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds for valves type 101 G are displayed on page 2.7.2.4, manifolds for valves type 121 G are displayed on page 2.7.2.5.

Please notice:

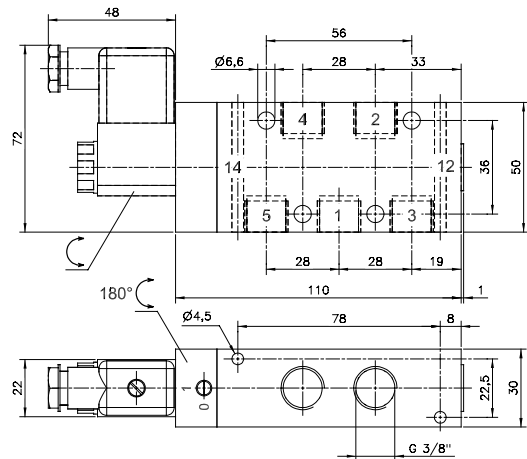
Valves G 1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

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

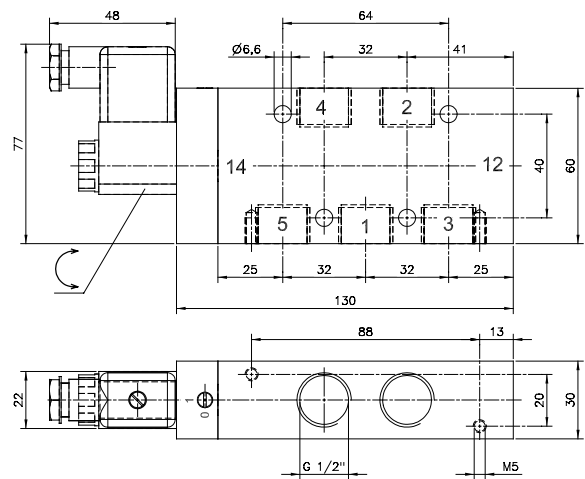
Valves are generally equipped with manual override.
If requested without manual override please order
M 510 ___ G

Valves are also available with external pilot feed.
Type: MEH 511 ___ G.
Port 14: G 1/8".
Minimum actuation pressure: 3 bar.
Operating pressure: 0 - 10 bar.

Version for vacuum on request.



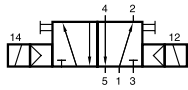
MH 510 101 G



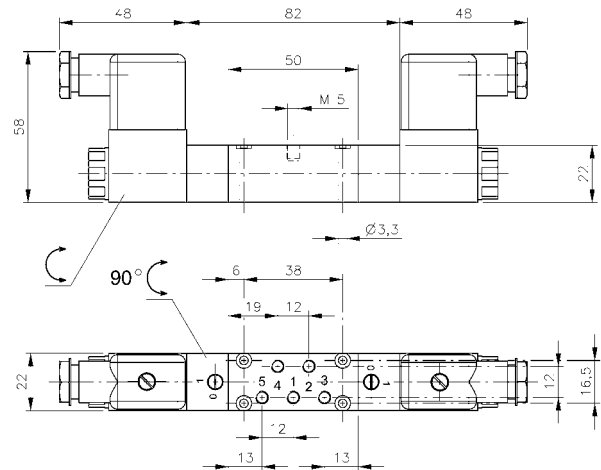
MH 510 121 G

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 101 G	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,52 kg
MH 510 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,70 kg

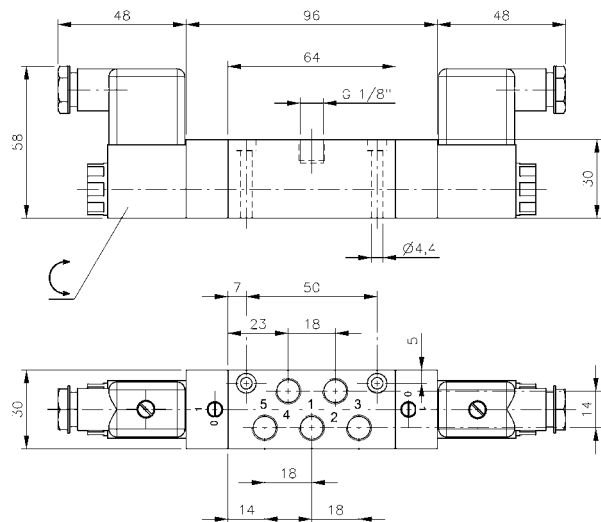
MH 520 302/MH 520 502



MH 520 302
MH 520 502



MH 520 302



MH 520 502

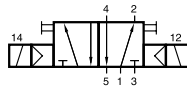
5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source.

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

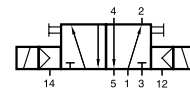
Valves are generally equipped with manual override. If requested without manual override please order M 520 _ _ _.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 302	M5	180 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg
MH 520 502	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,43 kg

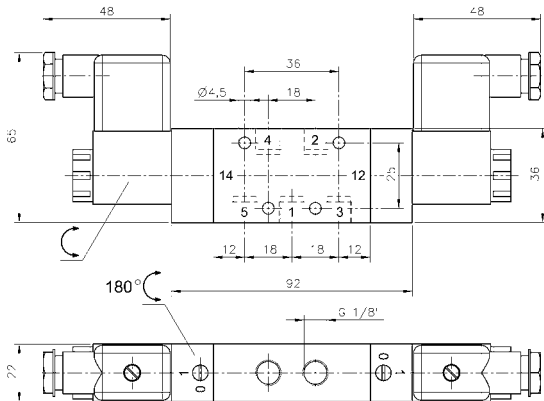
MH 520 501/MH 520 701/MH 520 801



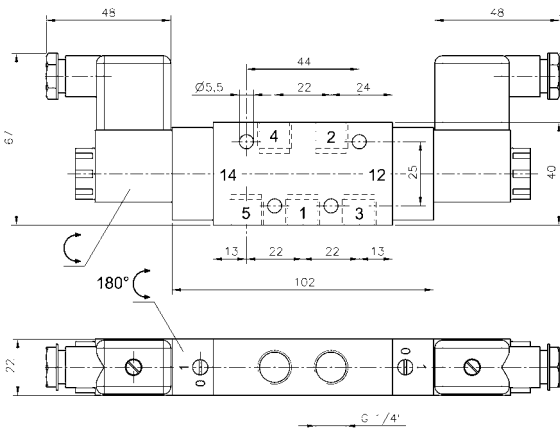
MH 520 501
MH 520 701
MH 520 801



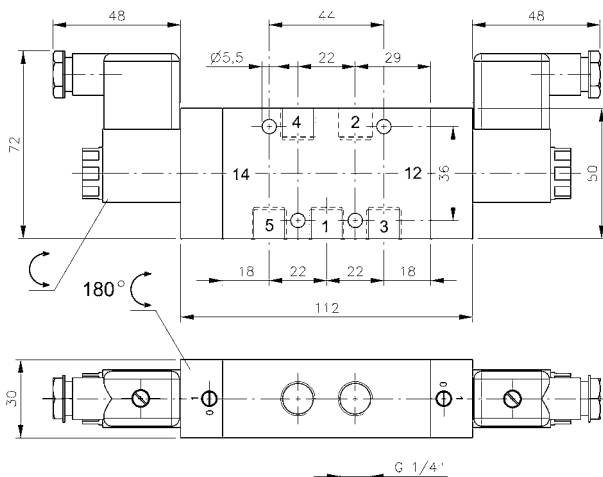
MEH 520 501
MEH 520 701
MEH 520 801



MH 520 501



MH 520 701



MH 520 801



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

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

Valves are generally equipped with manual override. If requested without manual override please order M 520 ____.

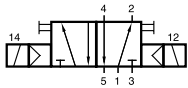
Valves are also available with external pilot feed.
Type: MEH 520 ____.
Ports 12 and 14 series 501 and 701: M5,
series 801: G 1/8\"

Minimum actuation pressure: 2,5 bar.
Operating pressure: 0 - 10 bar.

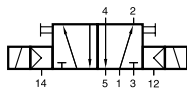
Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 501	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,33 kg
MH 520 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg MK
MH 520 801	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,62 kg

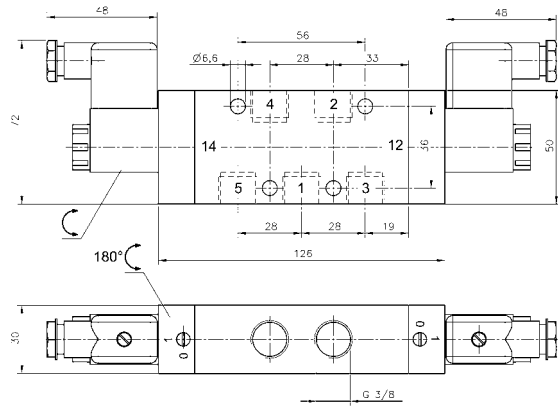
MH 520 101/MH 520 121/MH 520 181



MH 520 101
MH 520 121
MH 520 181
MH 520 121 NPT



MEH 520 101
MEH 520 121
MEH 520 181



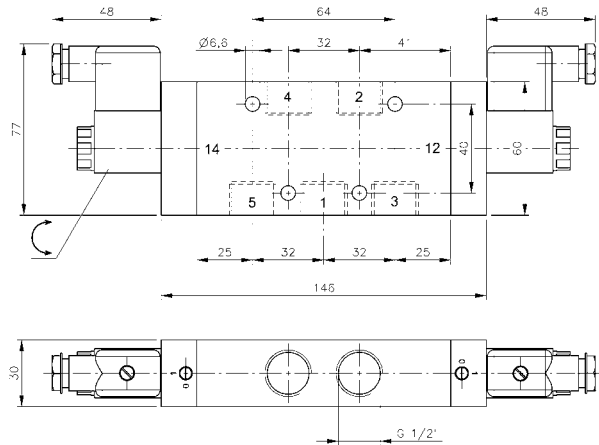
MH 520 101

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

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

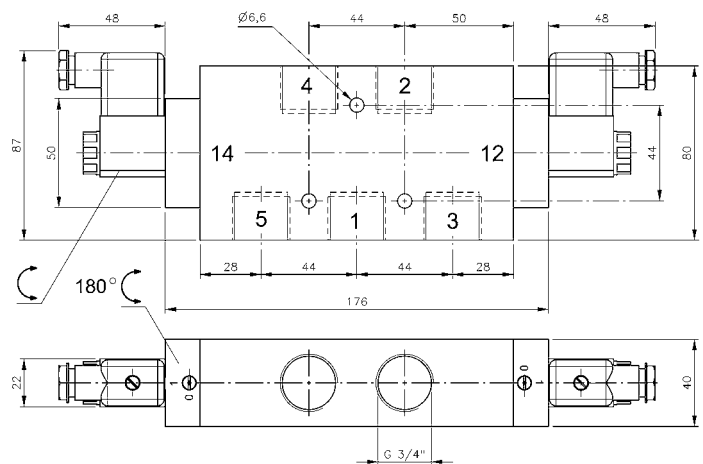
Valves are generally equipped with manual override.
If requested without manual override please order
M 520 _ _ _.

Valves are also available with external pilot feed.
Type: MEH 520 _ _ _.
Ports 12 and 14: G 1/8".
Minimum actuation pressure: 2,5 bar.
Operating pressure: 0 - 10 bar.



MH 520 121/ MH 520 121 NPT

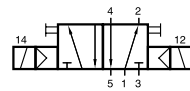
Version for vacuum on request.



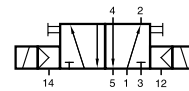
MH 520 181

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 101	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 520 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg
MH 520 181	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,45 kg
MH 520 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg

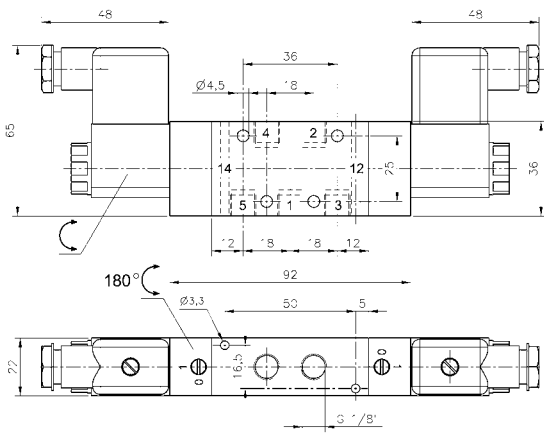
MH 520 501 G/MH 520 701 G



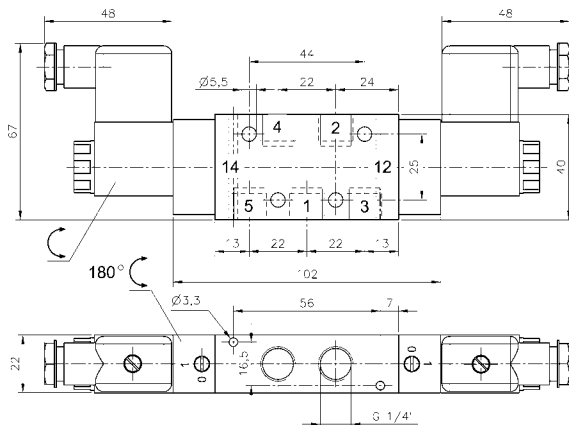
MH 520 501 G
MH 520 701 G



MEH 520 501 G
MEH 520 701 G



MH 520 501 G



MH 520 701 G/MH 520 701 G NPT



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

Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3.

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 520 ____.

Valves are also available with external pilot feed.

Type: MEH 520 ____ G.

Ports 12 and 14: M5.

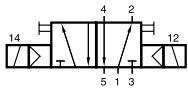
Minimum actuation pressure: 2,5 bar.

Operating pressure: 0 - 10 bar.

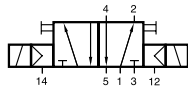
Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 501 G	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,33 kg
MH 520 701 G	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg
MH 520 701 G NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg

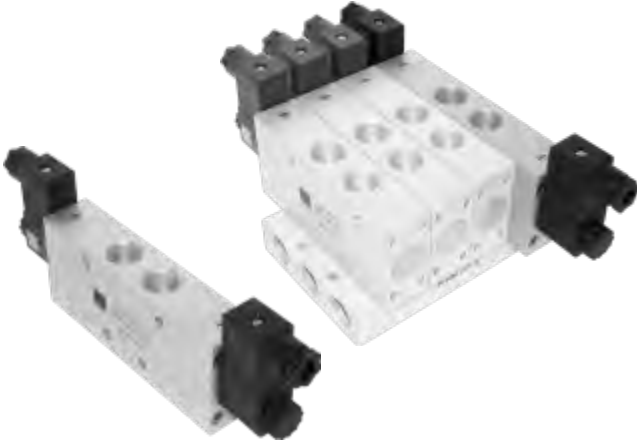
MH 520 101 G/MH 520 121 G



MH 520 101 G
MH 520 121 G



MEH 520 101 G
MEH 520 121 G



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

Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds for valves type 101 G are displayed on page 2.7.2.4, manifolds for valves type 121 G are displayed on page 2.7.2.5.

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

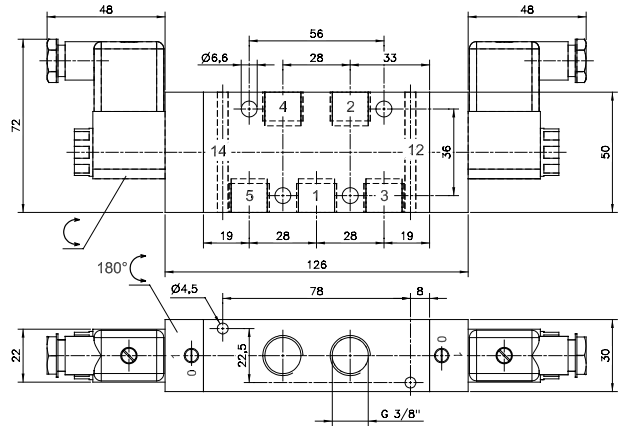
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 520 ___ G

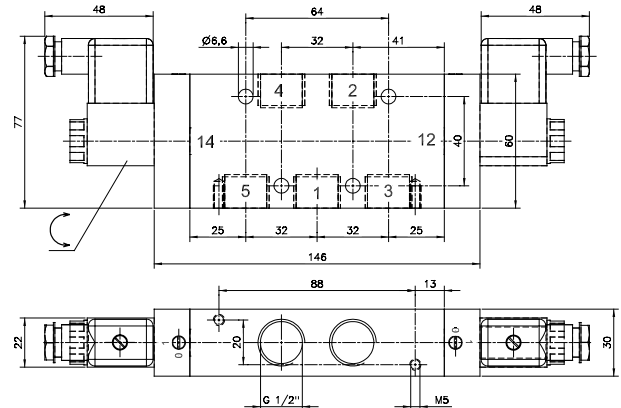
Valves are also available with external pilot feed.
Type: MEH 520 ___ G.
Ports 12 and 14: G 1/8".

Minimum actuation pressure: 2,5 bar.
Operating pressure: 0 - 10 bar.

Version for vacuum on request.



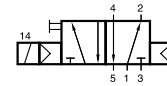
MH 520 101 G



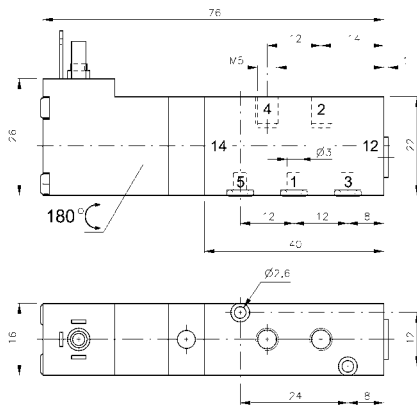
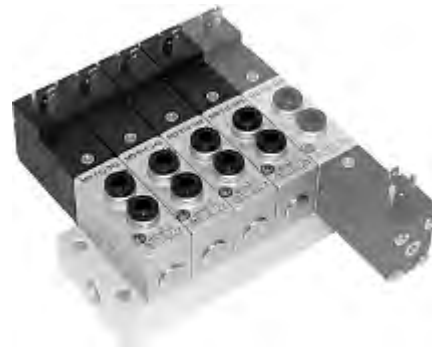
MH 520 121 G

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 101 G	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 520 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg

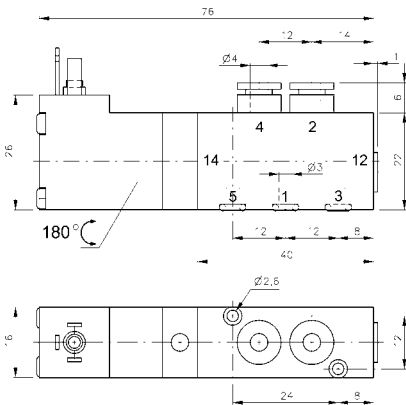
MD 510 303/MD 510 343 MD 510 403/MD 510 463



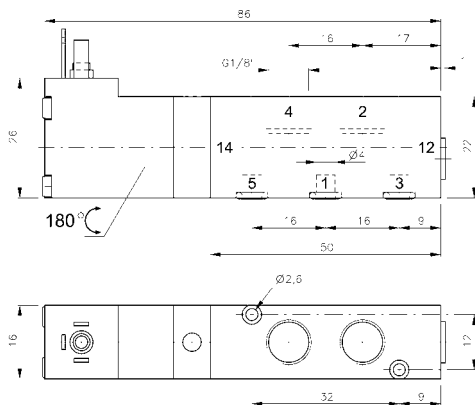
MD 510 303
MD 510 343
MD 510 403
MD 510 463



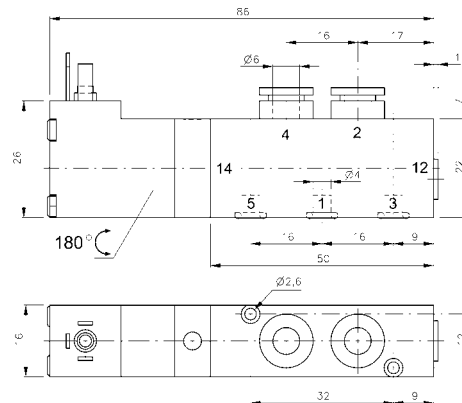
MD 510 303



MD 510 343



MD 510 403



MD 510 463

5/2-way solenoid valve actuated by permanent signal and equipped with air spring return. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

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

Valves are generally equipped with manual override to push.

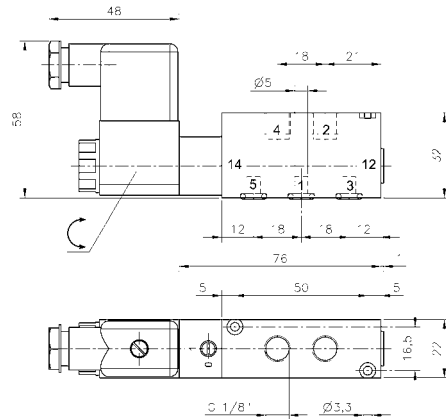
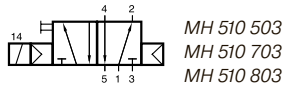
Manifolds are displayed on page 2.7.2.1.

Blanking plates are also available type BP 5 303 or BP 5 403.

Mounting screws and seals are included.

Type	Ports 1, 2, 4	Air flow	Operating press.	Powerconsumption	Weight
MD 510 303	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 510 343	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MD 510 403	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MD 510 463	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,12 kg

MH 510 503/MH 510 703/MH 510 803



MH 510 503

5/2-way solenoid valve actuated by permanent signal and equipped with air spring return. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

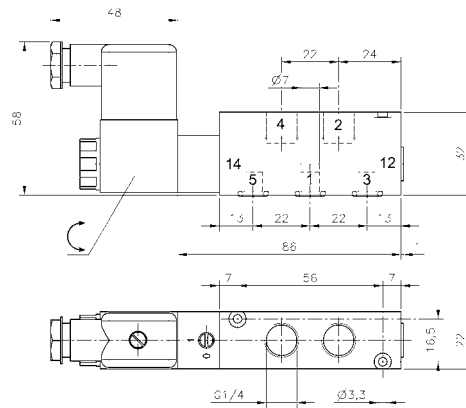
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

Valves are generally equipped with manual override.
If requested without manual override please order
M 510 ____.

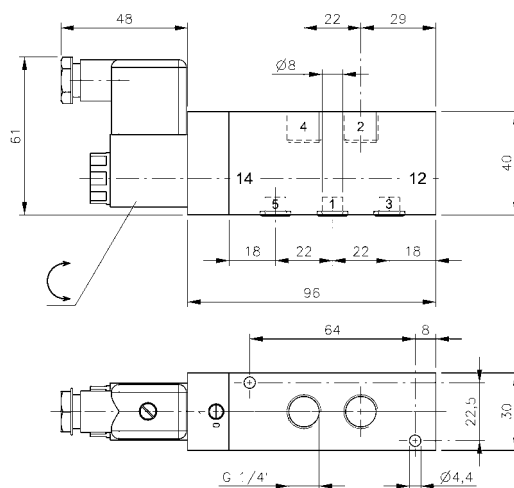
Manifolds for valves type 503 are displayed on
page 2.7.2.2, manifolds for valves type 703 are
displayed on page 2.7.2.3, manifolds for valves
type 803 are displayed on page 2.7.2.5.

Blanking plates are also available type BP 5 503,
BP 5 703 or BP 5 803.

Mounting screws and seals are included.

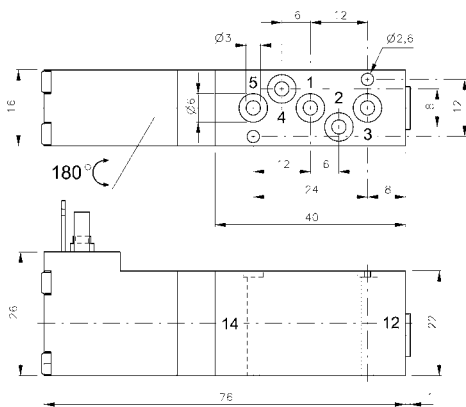
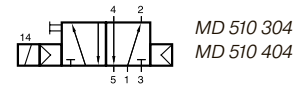


MH 510 703

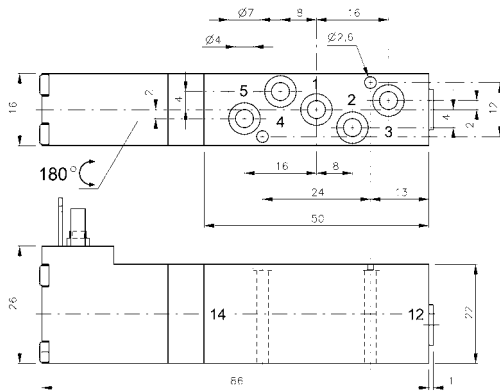


MH 510 803

Type	Ports 2, 4	Air flow	Operating press.	Power consumption	Weight
MH 510 503	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,22 kg MK
MH 510 703	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg MK
MH 510 803	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,42 kg



MD 510 304



MD 510 404



5/2-way solenoid valve actuated by permanent signal and equipped with air spring return. All the ports are in the plate.

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

Valves are generally equipped with manual override
to push.

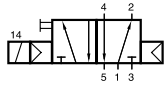
Manifolds are displayed on page 2.7.2.6.

Blanking plates are also available type BP 5 344
or BP 5 464.

Mounting screws and seals are included.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MD 510 304	Ø 3 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 510 404	Ø 4 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg

MH 510 304/MH 510 504 MH 510 704/MH 510 104



MH 510 304 MH 510 704
MH 510 504 MH 510 104



5/2-way solenoid valve actuated by permanent signal and equipped with air spring return. All the ports are in the plate.

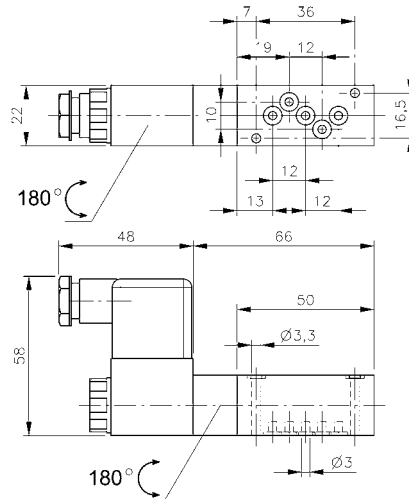
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 510 ____.

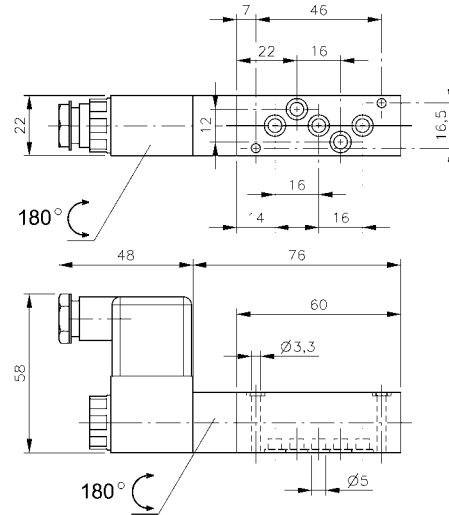
Manifolds for valves type 304 and 504 are displayed on page 2.7.2.7. Manifolds for valves type 704 are displayed on page 2.7.2.8 and 2.7.2.9. Manifolds for valves type 104 are displayed on page 2.7.2.10.

Blanking plates are also available type BP 5 304, BP 5 504 or BP 5 704.

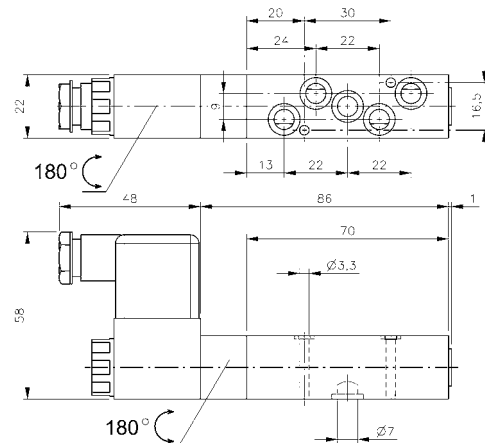
Mounting screws and seals are included.



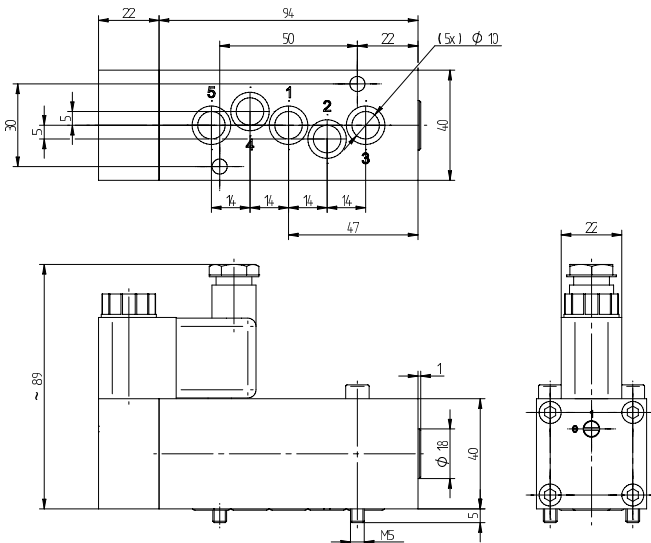
MH 510 304



MH 510 504



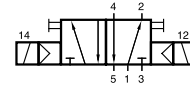
MH 510 704



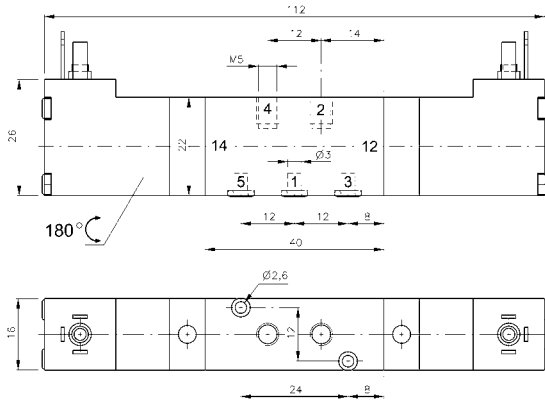
MH 510 104

Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 510 304	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,18 kg ❄️
MH 510 504	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg ❄️MK
MH 510 704	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,20 kg ❄️MK
MH 510 104	Ø 10 mm	2250 l/min	1 - 10 bar	3 W = / 5 VA ~	0,61 kg

MD 520 303/MD 520 343 MD 520 403/MD 520 463



MD 520 303
MD 520 343
MD 520 403
MD 520 463



MD 520 303

5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

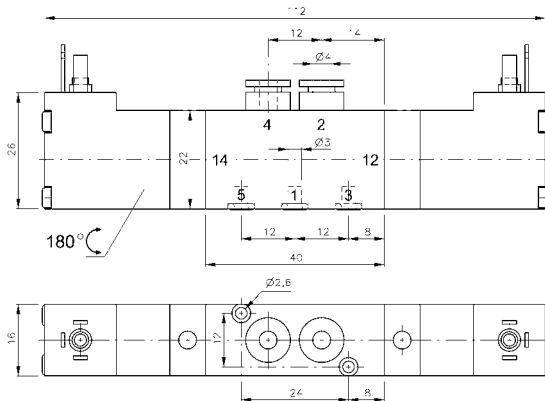
Available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.13.1.

Valves are generally equipped with manual override to push.

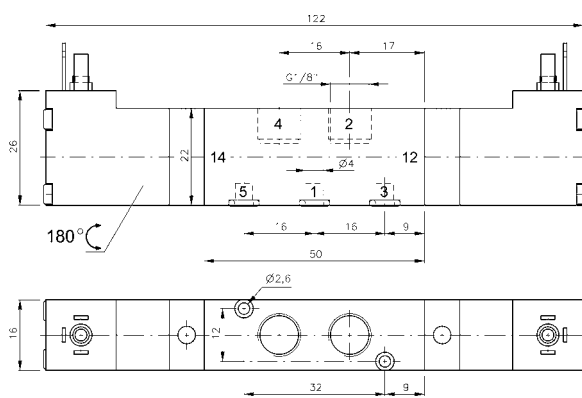
Manifolds are displayed on page 2.7.2.1.

Blanking plates are also available type BP 5 303 or BP 5 403.

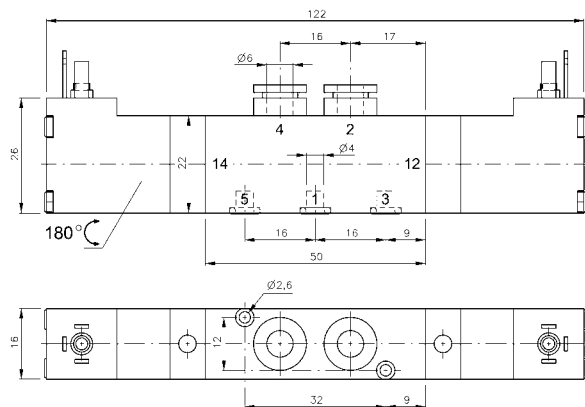
Mounting screws and seals are included.



MD 520 343



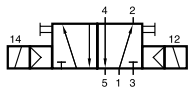
MD 520 403



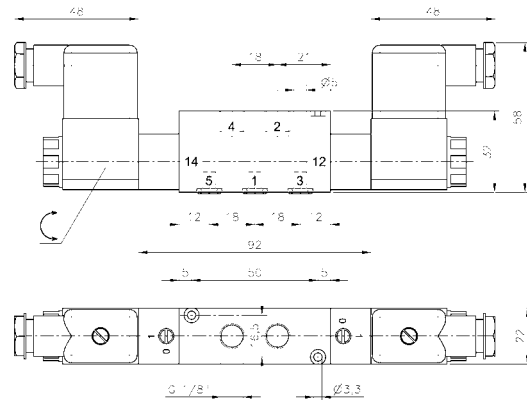
MD 520 463

Type	Ports 1, 2, 4	Air flow	Operating press.	Power consumption	Weight
MD 520 303	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 520 343	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 520 403	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 520 463	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg

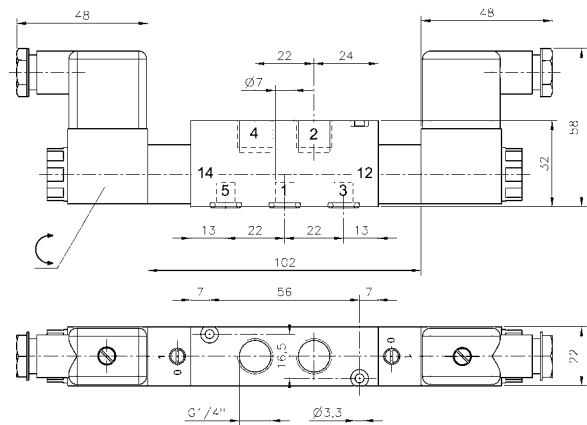
MH 520 503/MH 520 703/MH 520 803



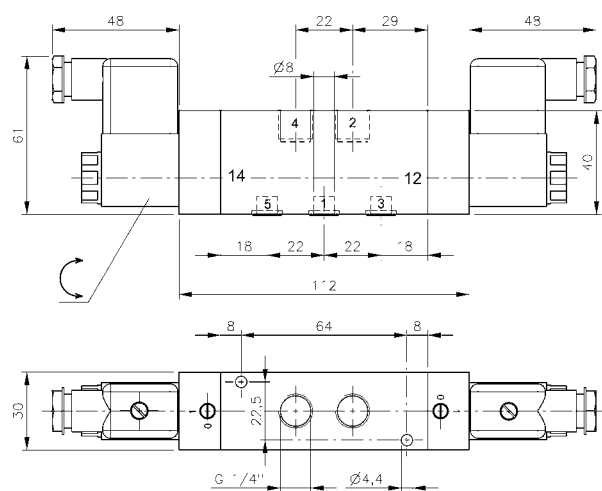
MH 520 503
MH 520 703
MH 520 803



MH 520 503



MH 520 703



MH 520 803

5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

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

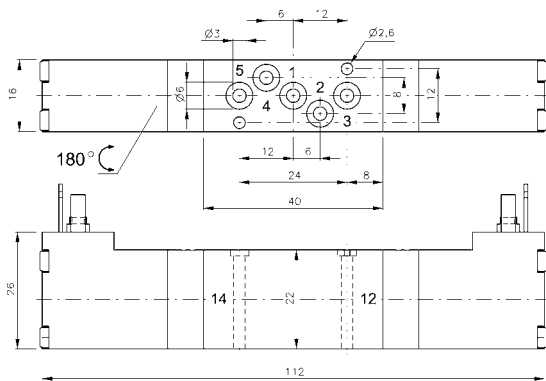
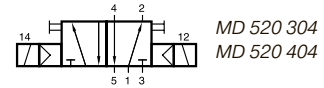
Valves are generally equipped with manual override. If requested without manual override please order M 520 ____.

Manifolds for valves type 503 are displayed on page 2.7.2.2, manifolds for valves type 703 are displayed on page 2.7.2.3, manifolds for valves type 803 are displayed on page 2.7.2.5.

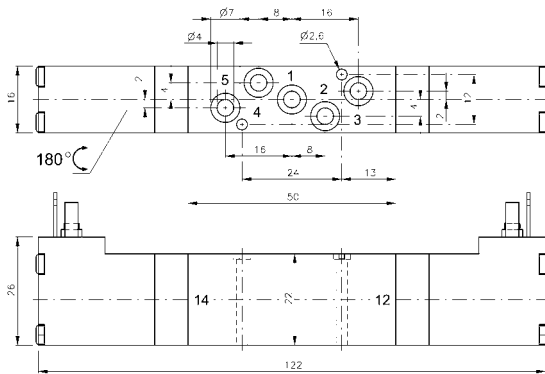
Blanking plates are also available type BP 5 503, BP 5 703 or BP 5 803.

Mounting screws and seals are included.

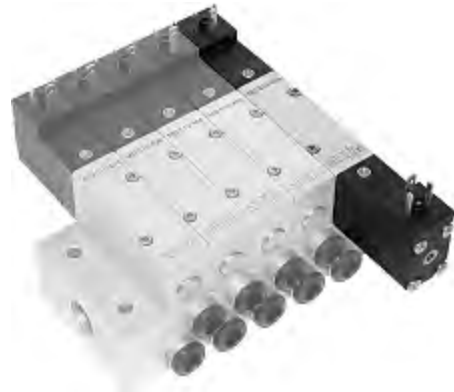
Type	Ports 2, 4	Air flow	Operating press.	Power consumption	Weight
MH 520 503	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,31 kg MK
MH 520 703	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,33 kg MK
MH 520 803	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,56 kg



MD 520 304



MD 520 404



5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source. All the ports are in the plate.

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

Valves are generally equipped with manual override to push.

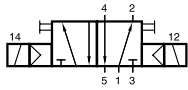
Manifolds are displayed on page 2.7.2.6.

Blanking plates are also available type BP 5 344 or BP 5 464.

Mounting screws and seals are included.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MD 520 304	Ø 3 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 520 404	Ø 4 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg

MH 520 304/MH 520 504 MH 520 704/MH 520 104



MH 520 304 MH 520 704
MH 520 504 MH 520 104



5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source. All the ports are in the plate.

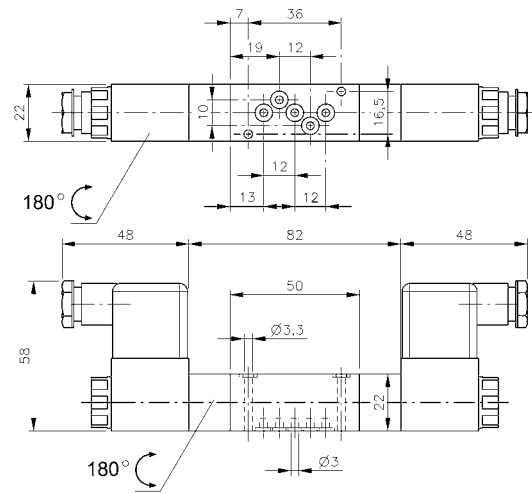
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=
24V=, 12V=.

Valves are generally equipped with manual override. If requested without manual override please order M 520 _ _ _ _.

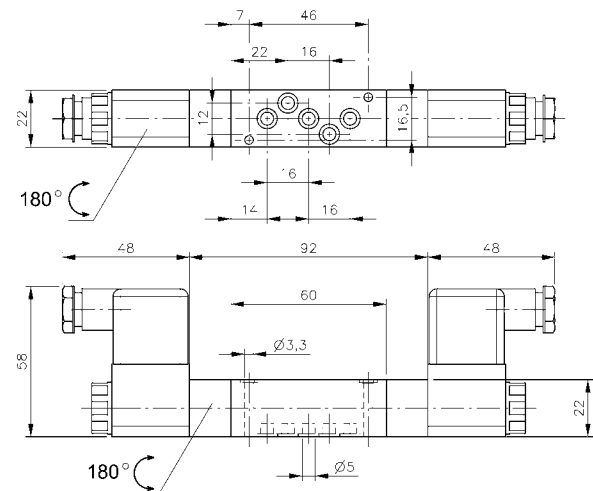
Manifolds for valves type 304 and 504 are displayed on page 2.7.2.7. Manifolds for valves type 704 are displayed on page 2.7.2.8 and 2.7.2.9. Manifolds for valves type 104 are displayed on page 2.7.2.10.

Blanking plates are also available type BP 5 304, BP 5 504 or BP 5 704.

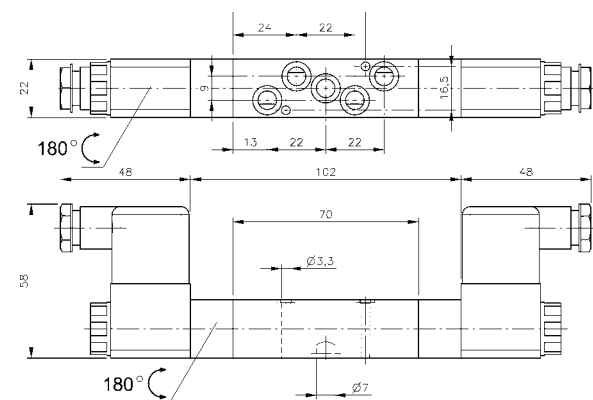
Mounting screws and seals are included.



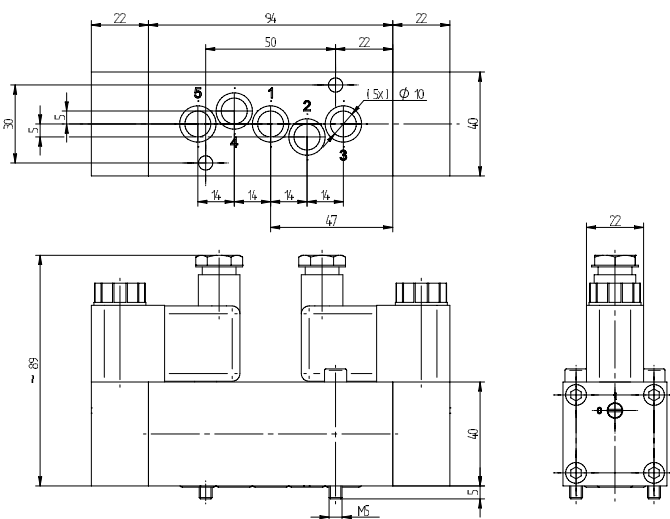
MH 520 304



MH 520 504



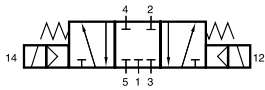
MH 520 704



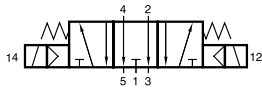
MH 520 104

Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 520 304	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg ❄️
MH 520 504	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,27 kg ❄️MK
MH 520 704	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,29 kg ❄️MK
MH 520 104	Ø 10 mm	2250 l/min	1 - 10 bar	3 W = / 5 VA ~	0,80 kg

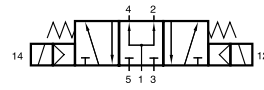
MD 53_301/MD 53_341 MD 53_401/MD 53_461



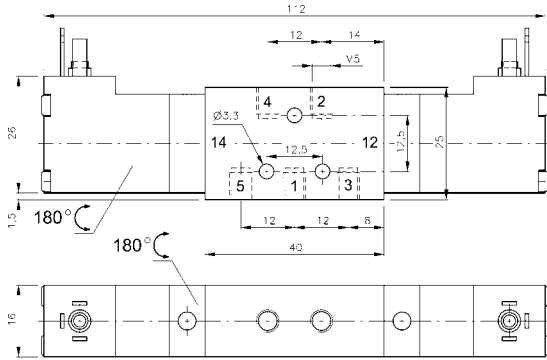
MD 531 301
MD 531 341
MD 531 401
MD 531 461



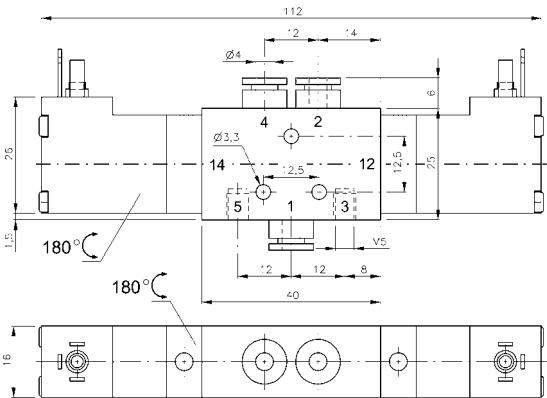
MD 532 301
MD 532 341
MD 532 401
MD 532 461



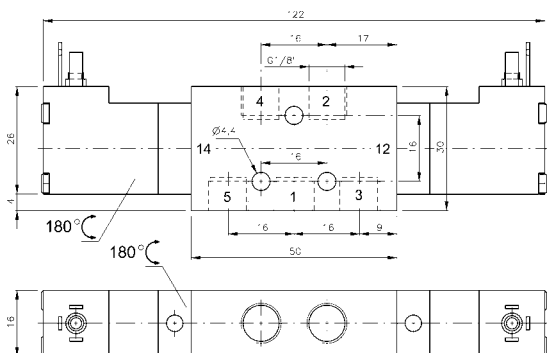
MD 533 301
MD 533 341
MD 533 401
MD 533 461



MD 53_301



MD 53_341



MD 53_401



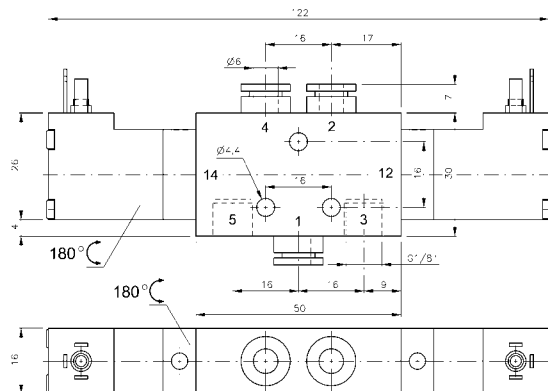
5/3-way solenoid valve with spring return to middle position, actuated by permanent signal.

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

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

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

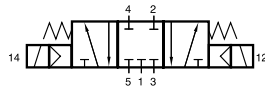
Valves are generally equipped with manual override to push.



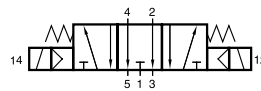
MD 53_461

Type	Ports 1, 2, 4	Air flow	Operating press.	Powerconsumption	Weight
MD 53_301	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 53_341	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_401	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg
MD 53_461	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,16 kg

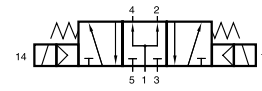
MH 53_ 501/MH 53_ 701/MH 53_ 801



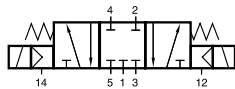
MH 531 501
MH 531 701
MH 531 801



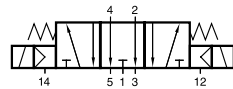
MH 532 501
MH 532 701
MH 532 801



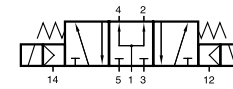
MH 533 501
MH 533 701
MH 533 801



MEH 531 501
MEH 531 701
MEH 531 801



MEH 532 501
MEH 532 701
MEH 532 801



MEH 533 501
MEH 533 701
MEH 533 801



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

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

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

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

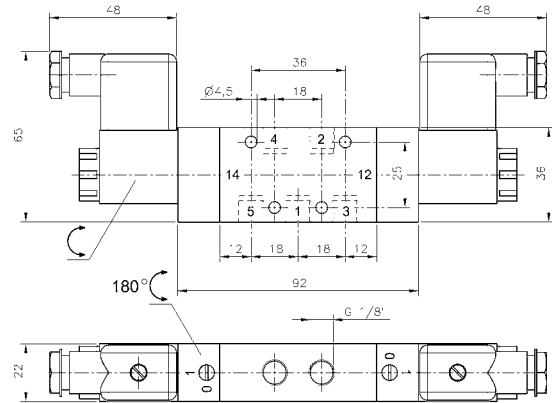
Valves are generally equipped with manual override.
If requested without manual override please order
M 53_ _ _ _.

Valves are also available with external pilot feed.
Type: MEH 53 _ _ _ _ (please add 1 digit for type
and 3 digits for size).

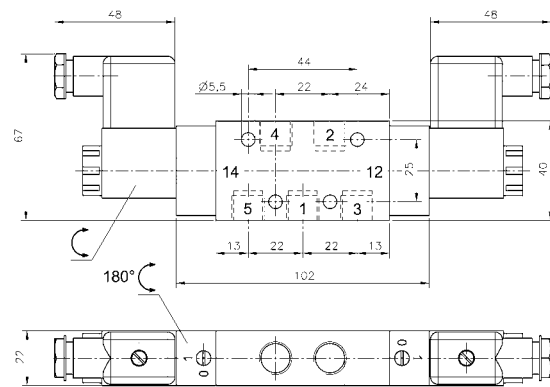
Ports 12 and 14 series 501 and 701: M5,
series 801: G 1/8".

Minimum actuation pressure: 3 bar.
Operating pressure: 0-10 bar.

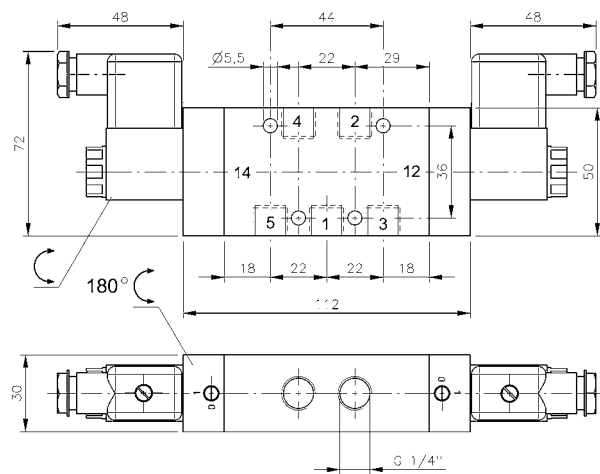
Version for vacuum on request.



MH 53_ 501

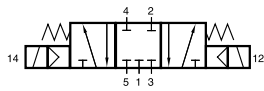


MH 53_ 701

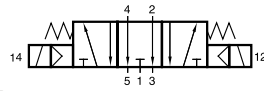


MH 53_ 801

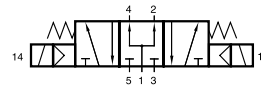
Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 53_ 501	G 1/8"	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,33 kg
MH 53_ 701	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,35 kg
MH 53_ 801	G 1/4"	1450 l/min	3 - 10 bar	3 W = / 5 VA ~	0,62 kg



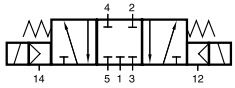
MH 531 101
MH 531 121
MH 531 181
MH 531 121 NPT



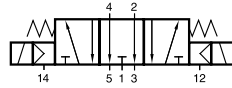
MH 532 101
MH 532 121
MH 532 181
MH 532 121 NPT



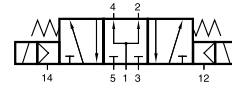
MH 533 101
MH 533 121
MH 533 181
MH 533 121 NPT



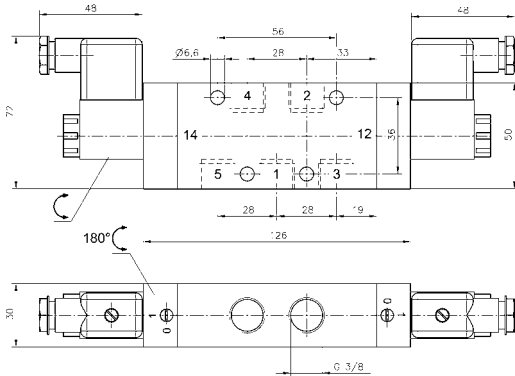
MEH 531 101
MEH 531 121
MEH 531 181



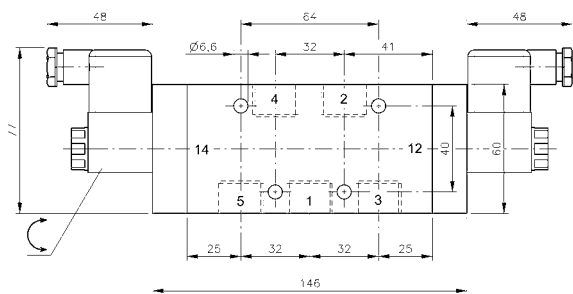
MEH 532 101
MEH 532 121
MEH 532 181



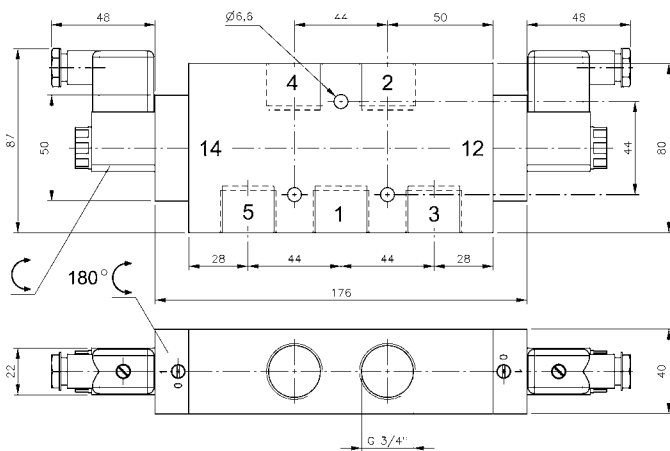
MEH 533 101
MEH 533 121
MEH 533 181



MH 53_101



MH 53_121/MH 53_121 NPT



MH 53_181



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

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

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

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 53_ _ _ _.

Valves are also available with external pilot feed.
Type: MEH 53_ _ _ _ (please add 1 digit for type and 3 digits for size).

Ports 12 and 14: G 1/8".

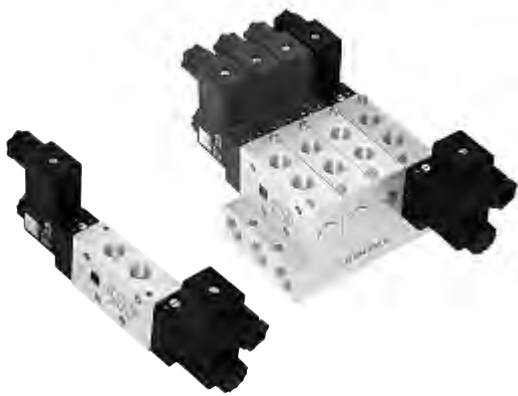
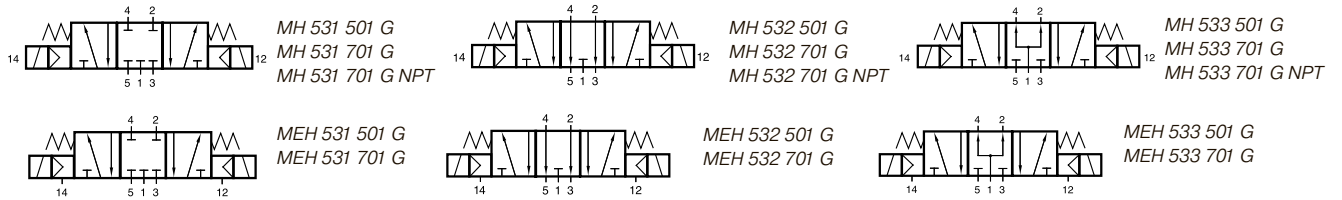
Minimum actuation pressure: 3 bar.

Operating pressure: 0-10 bar.

Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 53_ 101	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 53_ 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg
MH 53_ 181	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,45 kg
MH 53_ 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg

MH 53_ 501 G/MH 53_ 701 G



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

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

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

Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.7.2.2, manifolds for valves type 701 G are displayed on page 2.7.2.3.

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 53_ ___ G.

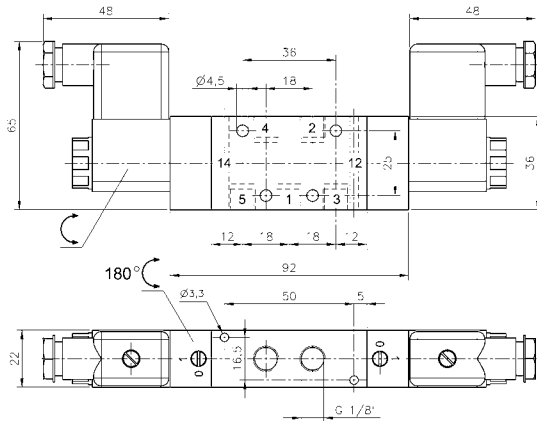
Valves are also available with external pilot feed.
Type: MEH 53 ___ G (please add 1 digit for type and 3 digits for size).

Ports 12 and 14: M5.

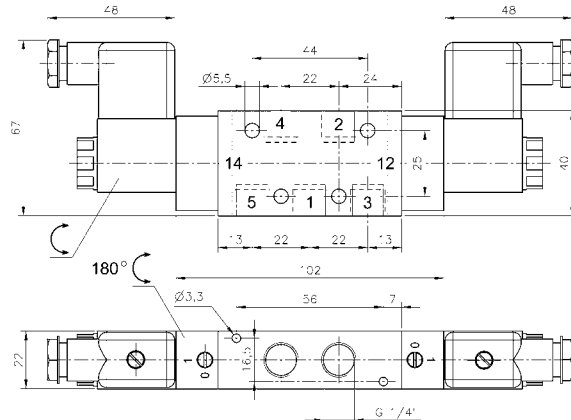
Minimum actuation pressure: 3 bar.

Operating pressure: 0- 10 bar.

Version for vacuum on request.

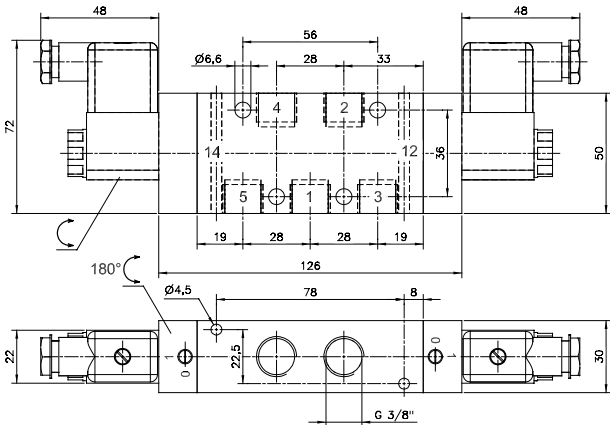
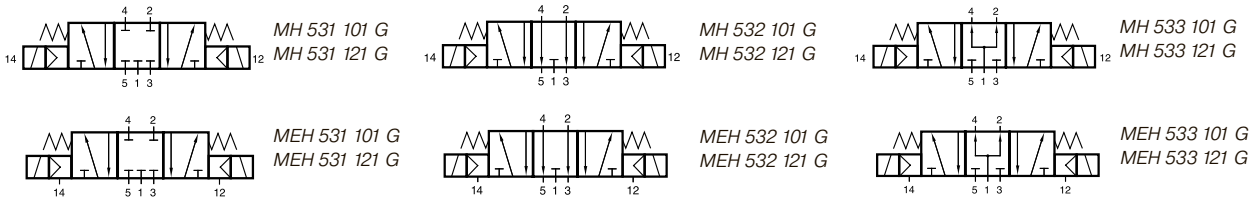


MH 53_ 501 G

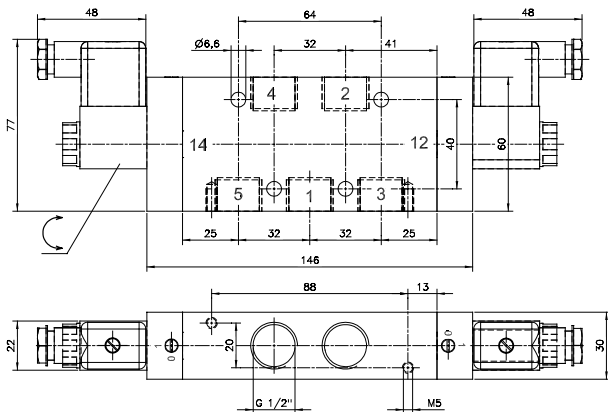


MH 53_ 701 G/MH 53_ 701 G NPT

Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 53_ 501 G	G 1/8"	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,33 kg
MH 53_ 701 G	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,35 kg
MH 53_ 701 G NPT	1/4" NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,35 kg



MH 53_ 101 G



MH 53_121 G



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

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

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

Valves can either be used in-line or on a manifold plate. Manifolds for valves type 101 G are displayed on page 2.7.2.4, manifolds for valves type 121 G are displayed on page 2.7.2.5.

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 53_ ___ G.

Valves are also available with external pilot feed.
Type: MEH 53 _____ G (please add 1 digit for type and 3 digits for size).

Ports 12 and 14: G 1/8".

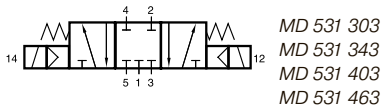
Minimum actuation pressure: 3 bar.

Operating pressure: 0-10 bar.

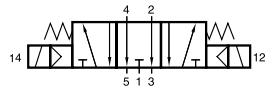
Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 53_ 101 G	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 53_ 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg

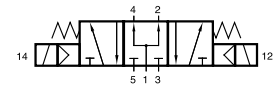
MD 53_303/MD 53_343 MD 53_403/MD 53_463



MD 531 303
MD 531 343
MD 531 403
MD 531 463



MD 532 303
MD 532 343
MD 532 403
MD 532 463



MD 533 303
MD 533 343
MD 533 403
MD 533 463



5/3-way solenoid valve with spring return to middle position, actuated by permanent signal. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

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

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

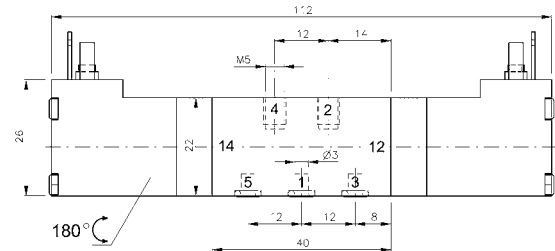
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.13.1.

Valves are generally equipped with manual override to push.

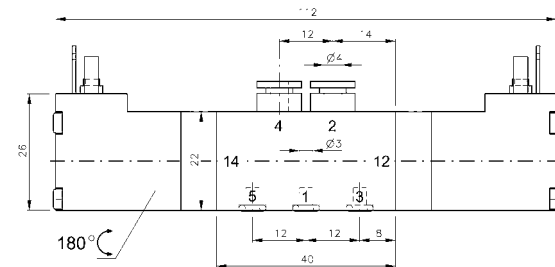
Manifolds are described on page 2.7.2.1.

Blanking plates are also available type BP 5 303
or BP 5 403.

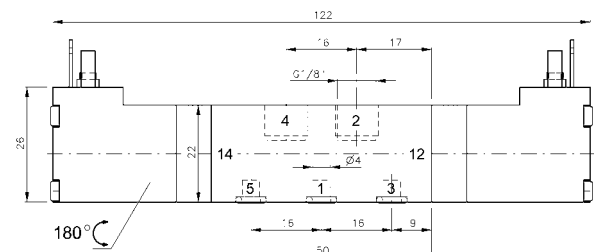
Mounting screws and seals are included.



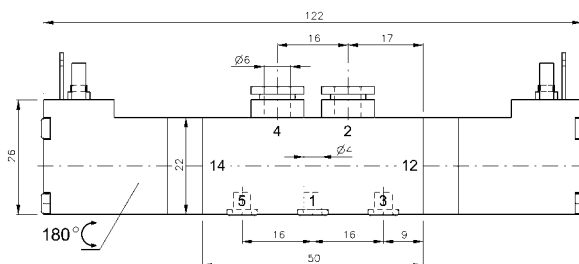
MD 53_303



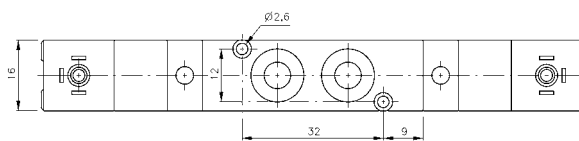
MD 53_343



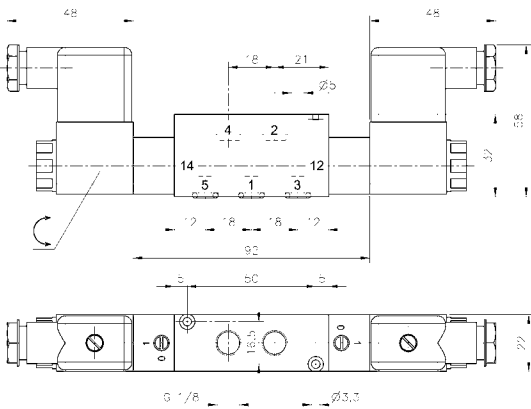
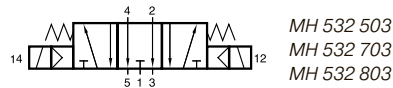
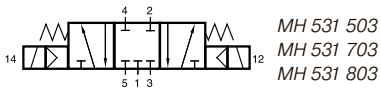
MD 53_403



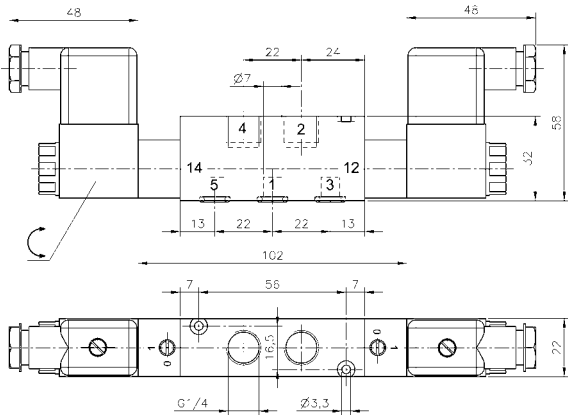
MD 53_463



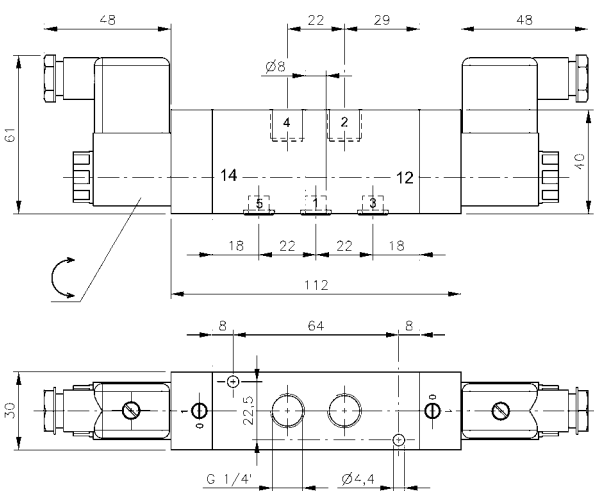
Type	Ports 1, 2, 4	Air flow	Operating press.	Power consumption	Weight
MD 53_303	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 53_343	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_403	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_463	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg



MH 53_503



MH 53_703



MH 53_803



5/3-way solenoid valve with spring return to middle position, actuated by permanent signal. Ports 2 and 4 are in the valve, ports 1, 3 and 5 in the manifold plate.

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

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

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 53_ _ _ (please add 1 digit for type and 3 for size).

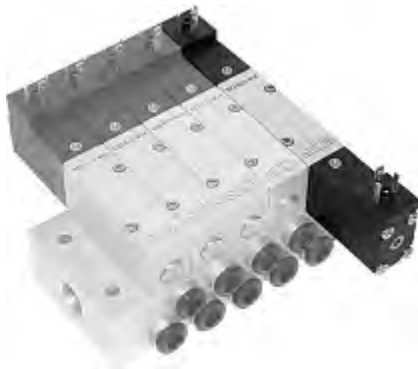
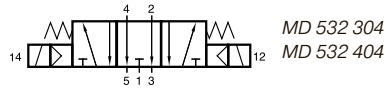
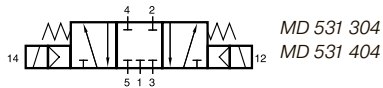
Manifolds for valves type 503 are displayed on page 2.7.2.2, manifolds for valves type 703 are displayed on page 2.7.2.3, manifolds for valves type 803 are displayed on page 2.7.2.5.

Blanking plates are also available type BP 5 503, BP 5 703 or BP 5 803.

Mounting screws and seals are included.

Type	Ports 2, 4	Air flow	Operating press.	Power consumption	Weight
MH 53_ 503	G 1/8"	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,31 kg MK
MH 53_ 703	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,33 kg MK
MH 53_ 803	G 1/4"	1450 l/min	3 - 10 bar	3 W = / 5 VA ~	0,56 kg

MD 53_304/MD 53_404



5/3-way solenoid valve with spring return to middle position, actuated by permanent signal. All the ports are in the plate.

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

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

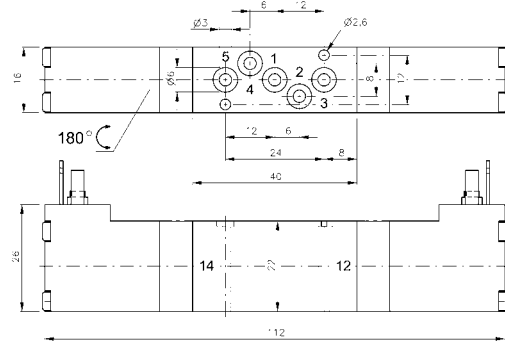
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.13.1.

Valves are generally equipped with manual override to push.

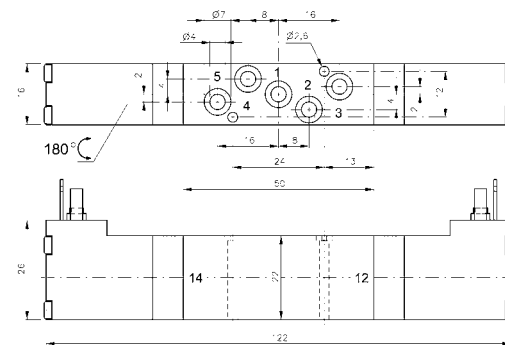
Manifolds are described on page 2.7.2.6.

Blanking plates are also available type BP 5 344
or BP 5 464.

Mounting screws and seals are included.



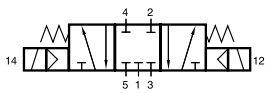
MD 53_304



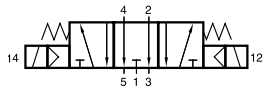
MD 53_404

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MD 53_304	Ø 3 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 53_404	Ø 4 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg

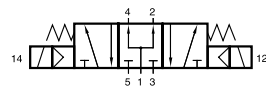
MH 53_304/MH 53_504 MH 53_704/MH 53_104



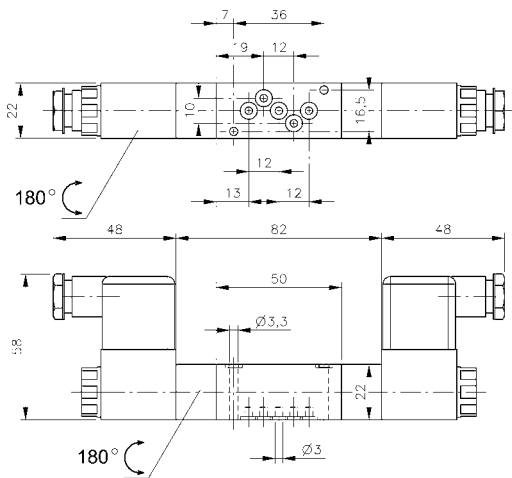
MH 531 304
MH 531 504
MH 531 704
MH 531 104



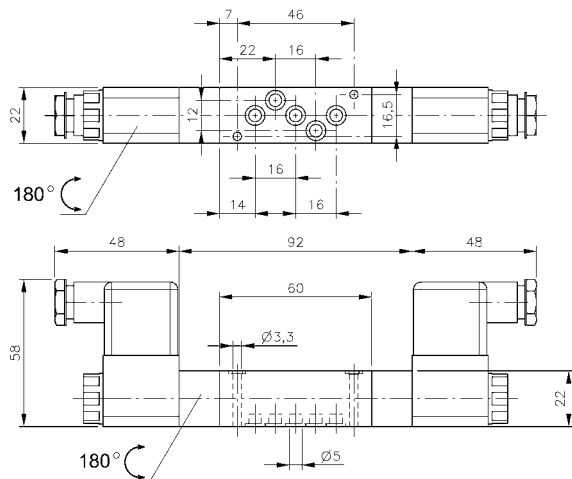
MH 532 304
MH 532 504
MH 532 704
MH 532 104



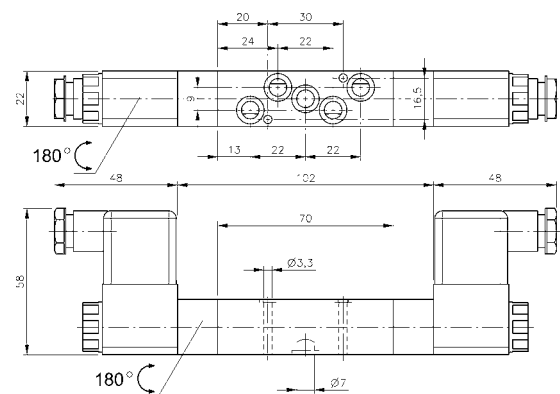
MH 533 304
MH 533 504
MH 533 704
MH 533 104



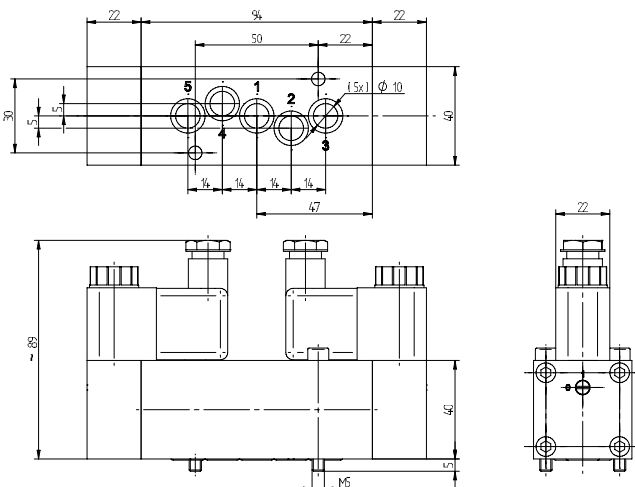
MH 53_304



MH 53_504



MH 53_704



MH 53_104

5/3-way solenoid valve with spring return to middle position, actuated by permanent signal. All the ports are in the plate.

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

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

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 53_ ___ (please add 1 digit for type and 3 for size).

Manifolds for valves type 304 and 504 are displayed on page 2.7.2.7. Manifolds for valves type 704 are displayed on page 2.7.2.8 and 2.7.2.9. Manifolds for valves type 104 are displayed on page 2.7.2.10.

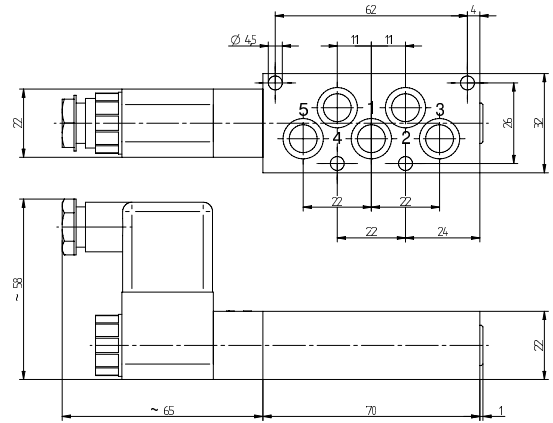
Blanking plates are also available:
Type no. BP 5 304, BP 5 504 or BP 5 704.
Mounting screws and seals are included.

Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 53_304	Ø 3 mm	220 l/min	3 - 10 bar	3 W = / 5 VA ~	0,25 kg ❄️
MH 53_504	Ø 5 mm	650 l/min	3 - 10 bar	3 W = / 5 VA ~	0,27 kg ❄️MK
MH 53_704	Ø 7 mm	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,29 kg ❄️MK
MH 53_104	Ø 10 mm	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,80 kg ❄️MK

Examples for the Cement Industry

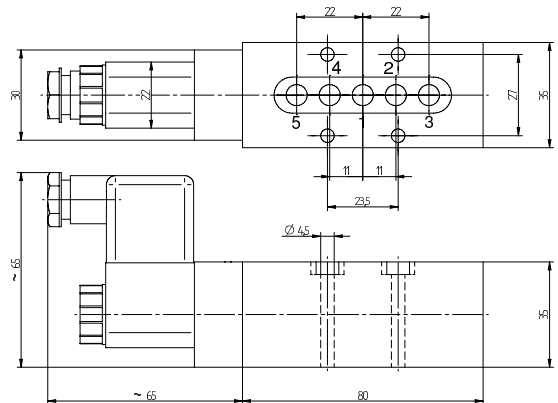
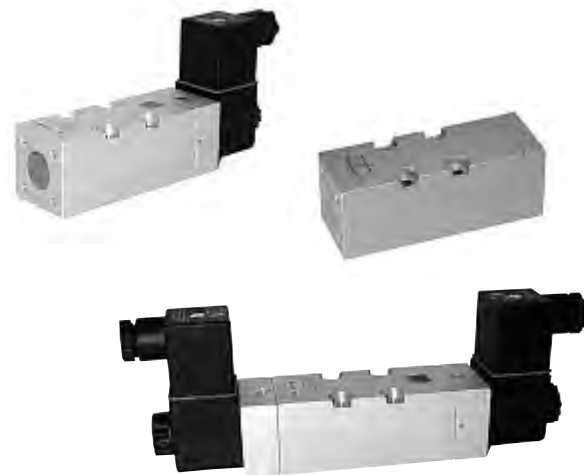
Hafner is offering a series of valves and cylinders to cover the replacement business in the cement industry.

Valves Series 714 B For manifold plates
Valves Series 714 BT For valve terminals



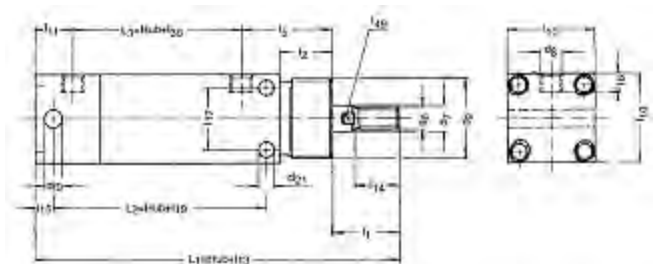
MH 510 714 B

Valve Series 704 J – SIVG – SIMPG



MH 510 704 J

SEJ Single-acting clamping cylinders
SDJ Double-acting clamping cylinders



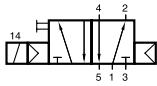
SEJ/SDJ



2.6

10 mm Solenoid Valves

MMD 510 301 24DC/MMD 510 341 24DC



MMD 510 301 24DC
MMD 510 341 24DC



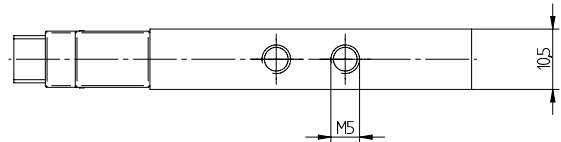
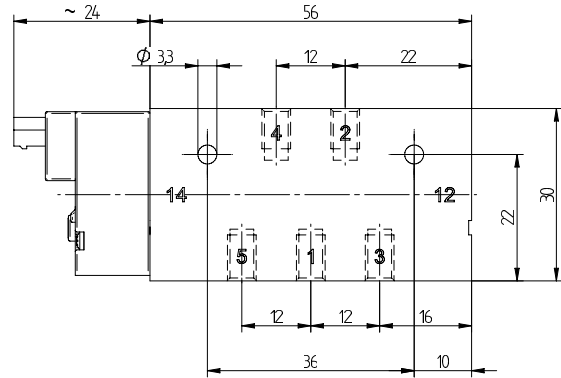
5/2-way solenoid valve actuated by permanent signal and equipped with air spring return.

Available with 24V= solenoid system for connector according to JPC standard.
12V= available on request.

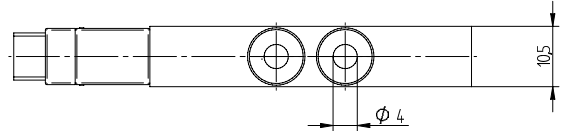
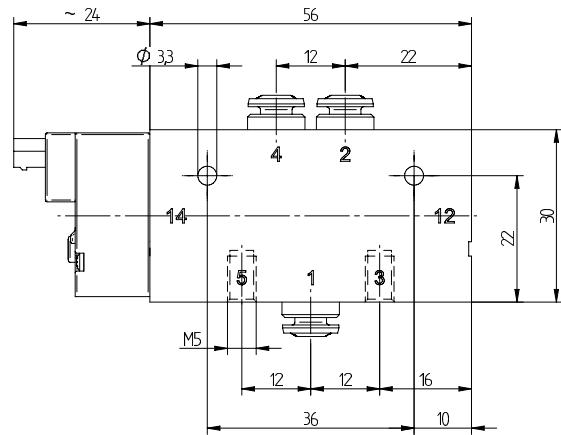
Solenoid with integrated LED and varistor.
Protection class IP 40.

Valves are generally equipped with manual override to push.

Connector according to JPC standard with a cable length of 300 mm is included.



MMD 510 301 24DC

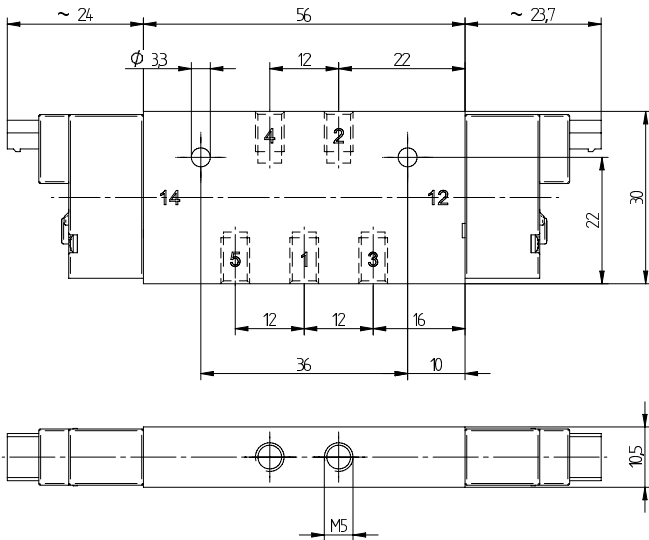
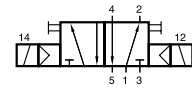


MMD 510 341 24DC

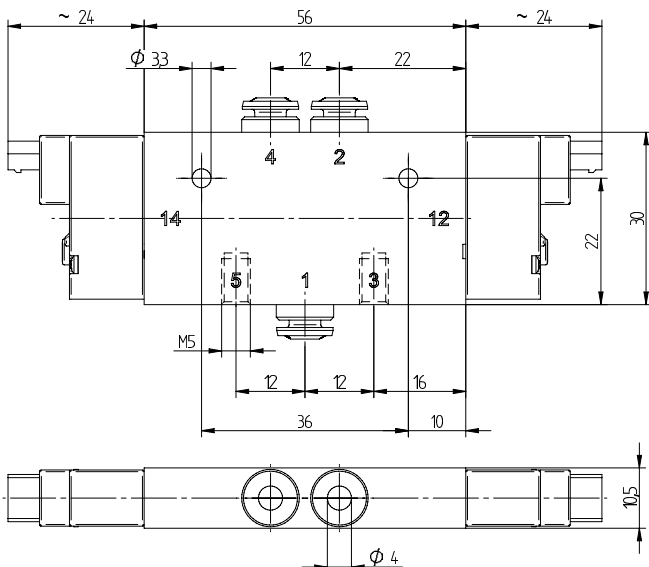
Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 510 301 24DC	M5	230 l/min	3 - 8 bar	0,6 W	0,058 kg
MMD 510 341 24DC	pif 4 mm	230 l/min	3 - 8 bar	0,6 W	0,064 kg

MMD 520 301 24DC/MMD 520 341 24DC

MMD 520 301 24DC
MMD 520 341 24DC



MMD 520 301 24DC



MMD 520 341 24DC



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

Available with 24V= solenoid system for connector according to JPC standard. 12V= available on request.

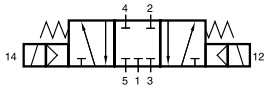
Solenoid with integrated LED and varistor. Protection class IP 40.

Valves are generally equipped with manual override to push.

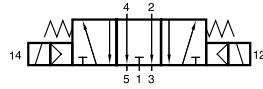
Connectors according to JPC standard with a cable length of 300 mm are included.

Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 520 301 24DC	M5	230 l/min	3 - 8 bar	0,6 W	0,058 kg
MMD 520 341 24DC	pif 4 mm	230 l/min	3 - 8 bar	0,6 W	0,064 kg

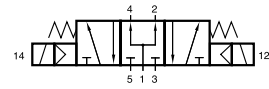
MMD 53_ 301 24DC/MMD 53_ 341 24DC



MMD 531 301 24DC
MMD 531 341 24DC



MMD 532 301 24DC
MMD 532 341 24DC



MMD 533 301 24DC
MMD 533 341 24DC



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

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

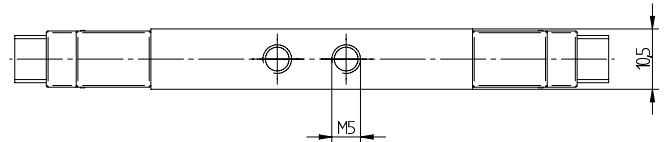
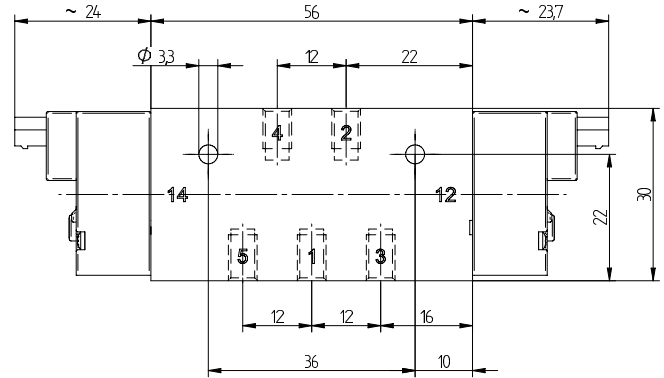
When ordering please complete the type number by 1, 2 or 3 according to the type required.

Available with 24V= solenoid system for connector according to JPC standard.
12V= available on request.

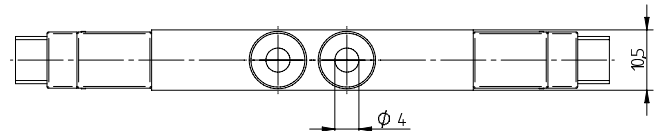
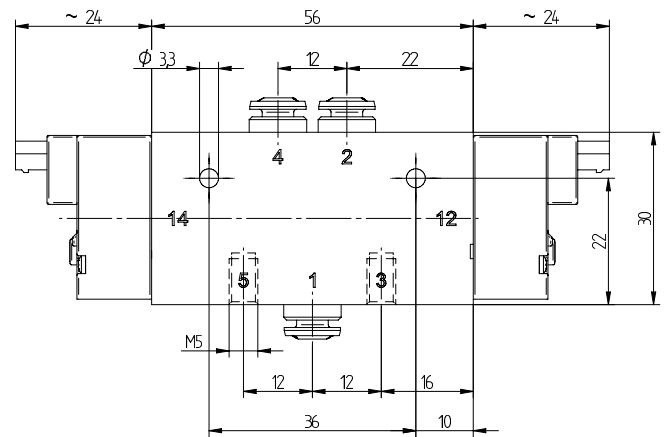
Solenoid with integrated LED and varistor.
Protection class IP 40.

Valves are generally equipped with manual override to push.

Connectors according to JPC standard with a cable length of 300 mm are included.



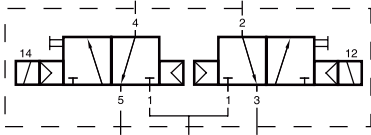
MMD 510 301 24DC



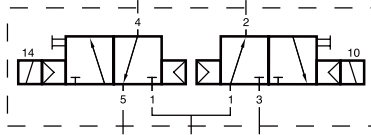
MMD 510 341 24DC

Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 53_ 301 24DC	M5	230 l/min	3 - 8 bar	0,6 W	0,068 kg
MMD 53_ 341 24DC	pif 4 mm	230 l/min	3 - 8 bar	0,6 W	0,074 kg

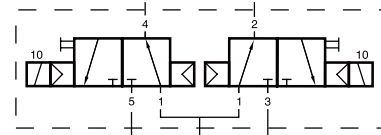
MMD 231 304 24DC / MMD 232 304 24DC MMD 233 304 24DC



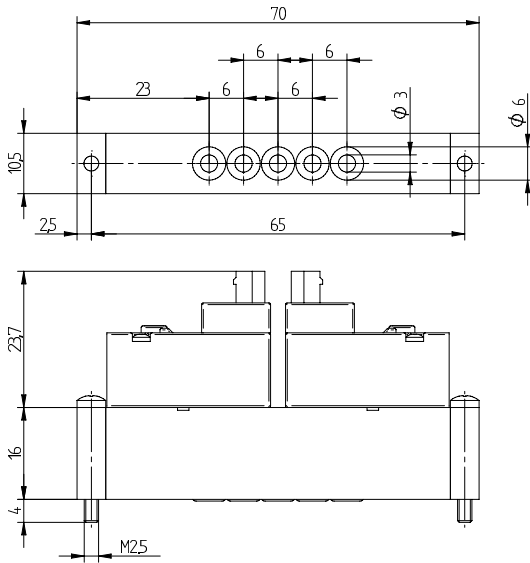
MMD 231 304 24DC



MMD 232 304 24DC



MMD 233 304 24DC



MMD 23_304 24DC

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

- Type 231 NC & NC
- Type 232 NC & NO
- Type 233 NO & NO

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

Available with 24V= solenoid system for connector according to JPC standard.
12V= available on request.

Solenoid with integrated LED and varistor.
Protection class IP 40.

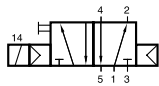
Valves are generally equipped with manual override to push.

Connectors according to JPC standard with a cable length of 300 mm are included.

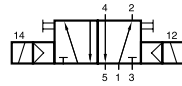
Modular manifold system type RM 5 304 on page 2.6.2.4, valve terminals on page 2.6.2.5.

Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 23_304 24DC	Ø 3 mm	230 l/min	3 - 8 bar	0,6 W	0,054 kg

MMD 510 304 24DC/MMD 520 304 24DC



MMD 510 304 24DC



MMD 520 304 24DC



MMD 510 304

5/2-way solenoid valve actuated by permanent signal and equipped with air spring return. All the ports are in the plate.

MMD 520 304

5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical signal. All the ports are in the plate.

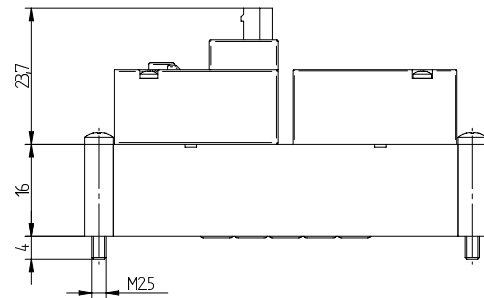
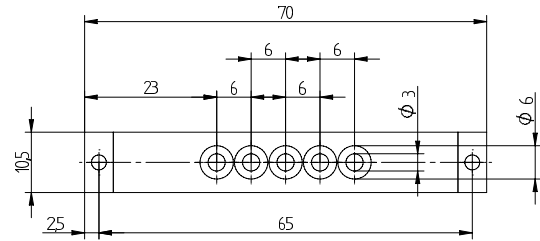
Available with 24V= solenoid system for connector according to JPC standard.
12V= available on request.

Solenoid with integrated LED and varistor.
Protection class IP 40.

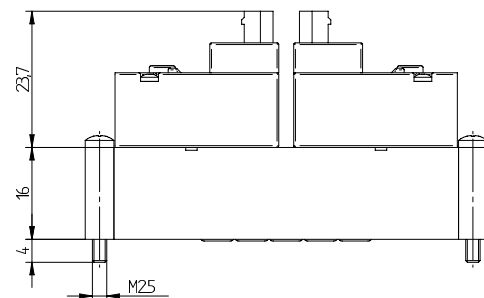
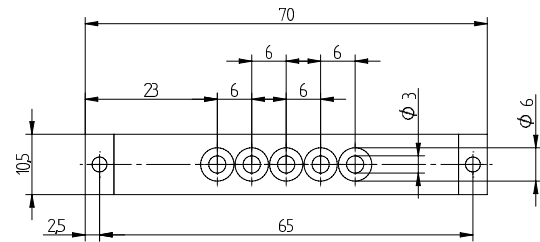
Valves are generally equipped with manual override to push.

Connector according to JPC standard with a cable length of 300 mm is included.
MMD 520 304 24DC equipped with two connectors.

Modular manifold system type RM 5 304 on page 2.6.2.4, valve terminals on page 2.6.2.5.

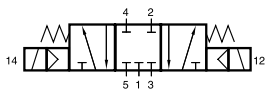


MMD 510 304 24DC

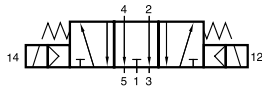


MMD 520 304 24DC

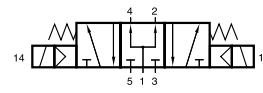
Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 510 304 24DC	Ø 3 mm	230 l/min	3 - 8 bar	0,6 W	0,054 kg
MMD 520 304 24DC	Ø 3 mm	230 l/min	3 - 8 bar	0,6 W	0,054 kg



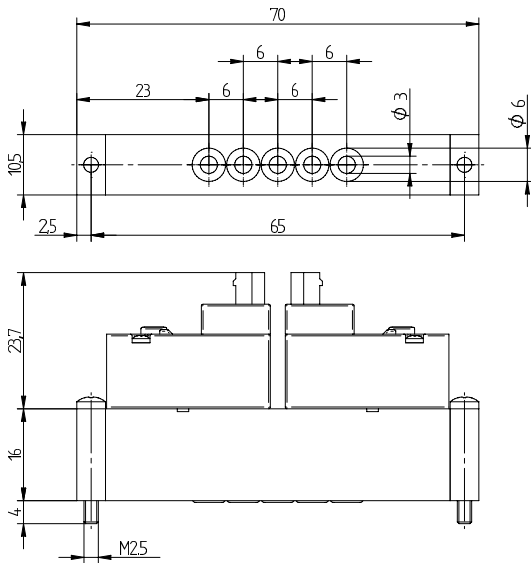
MMD 531 304 24DC



MMD 532 304 24DC



MMD 533 304 24DC



MMD 53_ 304 24DC

5/3-way solenoid valve with spring return to middle position, actuated by permanent signal. All the ports are in the plate.

- 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.

Available with 24V= solenoid system for connector according to JPC standard.
12V= available on request.

Solenoid with integrated LED and varistor.
Protection class IP 40.

Valves are generally equipped with manual override to push.

Connectors according to JPC standard with a cable length of 300 mm are included.

Modular manifold system type RM 5 304 on page 2.6.2.4, valve terminals on page 2.6.2.5.

Type	Ports 1,2,3	Air flow	Operating press.	Power cons.	Weight
MMD 53_ 304 24DC	Ø 3 mm	230 l/min	3 - 8 bar	0,6 W	0,054 kg

RM 5__344



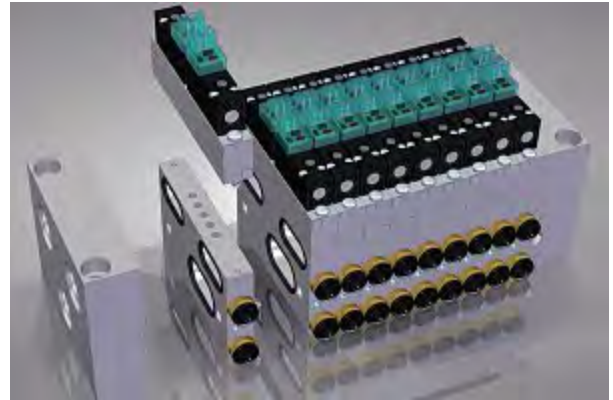
Modular manifold system for common connection to ports 1 (pressure), 3 and 5 (exhaust). Ports 2 and 4 of the individual valves are also located in the manifold plate and equipped with 4 mm push-in fittings.

The system can be build and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time.

Valves to be screwed from the top onto the modular manifold plate.

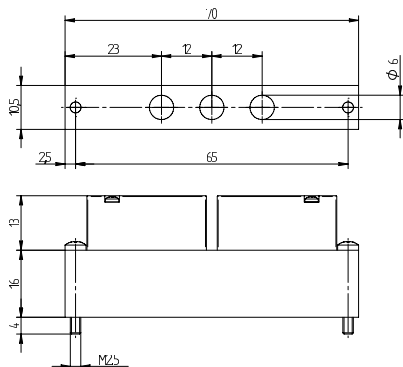
Blanking plates are also available type BPM 5 304. The plates can also be ordered assembled by the manufacturer. In this case order RM 5__344. Please add two digits for the number of positions required.

End-plates do not offer a valve-position.

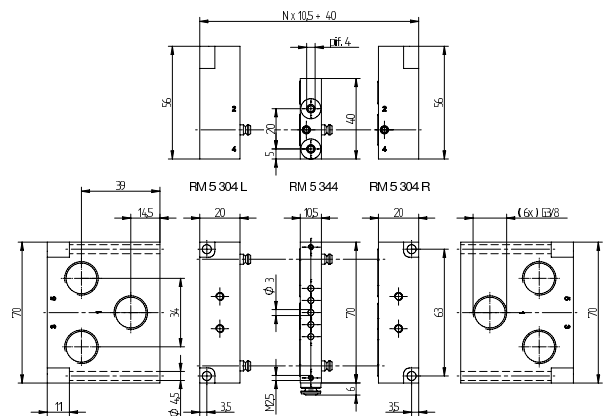


The following valves can be assembled to the manifold plate RM 5__304:

Type	Function	Page
MMD 231 304 24DC	Double 3/2-way (NC&NC)	2.6.2.1
MMD 232 304 24DC	Double 3/2-way (NC&NO)	2.6.2.1
MMD 233 304 24DC	Double 3/2-way (NO&NO)	2.6.2.1
MMD 510 304 24DC	5/2 single sol.	2.6.2.2
MMD 520 304 24DC	5/2 double sol.	2.6.2.2
MMD 531 304 24DC	5/3 solenoid, closed	2.6.2.3
MMD 532 304 24DC	5/3 solenoid, exhausted	2.6.2.3
MMD 533 304 24DC	5/3 solenoid, pressurized	2.6.2.3

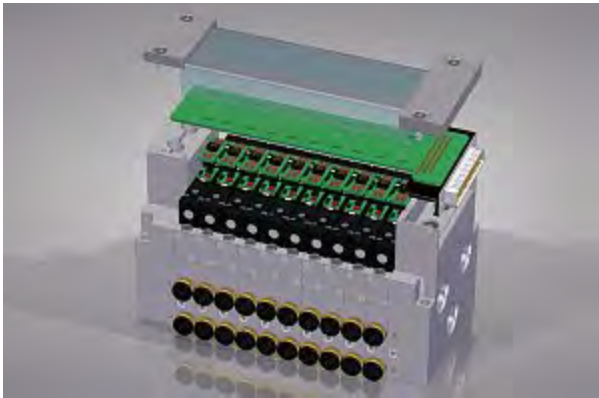


BPM 5 304



RM 5 304 L/RM 5 344/RM 5 304 R

Type	Function	Ports	Weight
RM 5 304 L	End-plate left	G 3/8"	0,176 kg
RM 5 304 R	End-plate right	G 3/8"	0,176 kg
RM 5 344	Individual position	pif 4 mm	0,064 kg
BPM 5 304	Blanking plate	-	0,054 kg



The following valves can be assembled to the valve terminal T_10 5__ 344:

Type	Function	Page
MMD 231 304 24DC	Double 3/2-way (NC&NC)	2.6.2.1
MMD 232 304 24DC	Double 3/2-way (NC&NO)	2.6.2.1
MMD 233 304 24DC	Double 3/2-way (NO&NO)	2.6.2.1
MMD 510 304 24DC	5/2 single sol.	2.6.2.2
MMD 520 304 24DC	5/2 double sol.	2.6.2.2
MMD 531 304 24DC	5/3 solenoid, closed	2.6.2.3
MMD 532 304 24DC	5/3 solenoid, exhausted	2.6.2.3
MMD 533 304 24DC	5/3 solenoid, pressurized	2.6.2.3

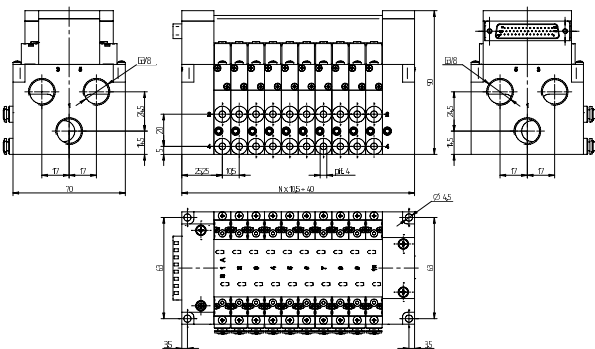


Valve terminal with 2 to 20 valve positions for valves with one or two solenoids. Common connection to ports 1 (pressure), 3 and 5 (exhaust). Ports 2 and 4 of the individual valves are also located in the manifold plate and equipped with 4 mm push-in fittings.

Valves are screwed from the top onto the modular manifold plate. Electric part is added afterwards. The electric part has a defined number of positions and can be chosen with cable connection either on the left or on the right side. The following illustration shows a TR 10 510 344. The TL 10 has the connector on the opposite side.

Blanking plates are also available type BPM 5 304, displayed on page 2.6.2.4. The valve terminal will be equipped and tested by the manufacturer. Please advise configuration.

End-plates do not offer a valve-position.



T_10 5__ 344



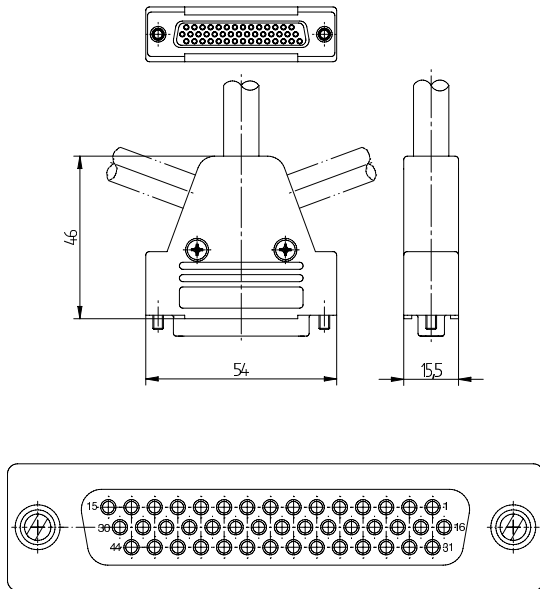
Element with ports 2+4 on the bottom:
RM 5 344 K1

Type	Connector	Ports	Comment
TR 10 5__ 344	On the right side	front side	Please amend the type nr. by the required positions
TL 10 5__ 344	On the left side	front side	Please amend the type nr. by the required positions
TR 10 5__ 344 K1	On the right side	bottom	Please amend the type nr. by the required positions
TL 10 5__ 344 K1	On the left side	bottom	Please amend the type nr. by the required positions

ST 54 20 L3000/ST 54 40 L3000



Straight electrical connector for 10 mm valve terminals.
Cable can be offset by 2 x 90°.
Standard cable length 3000 mm, others on request.

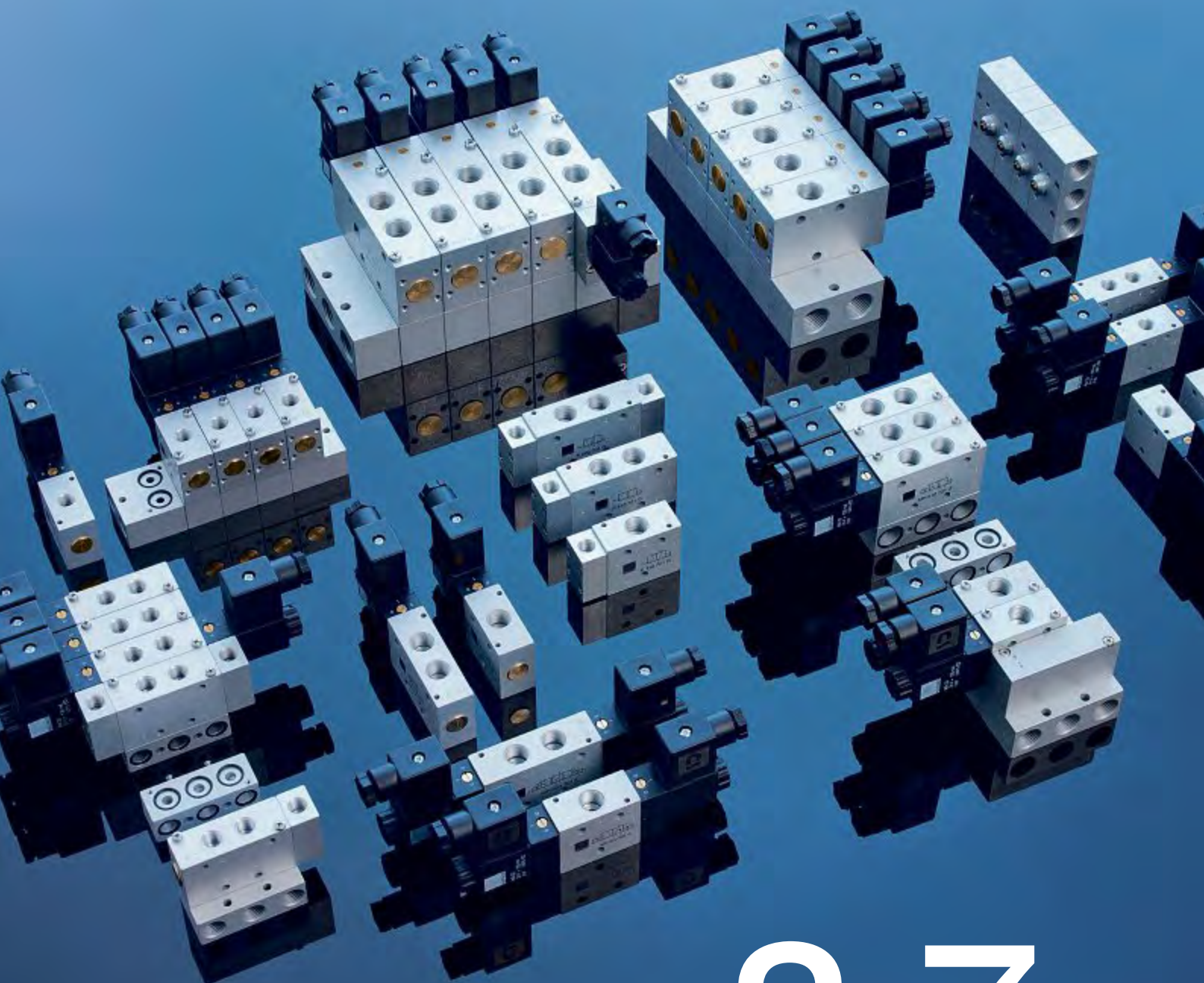


PIN-numbering

Valve	Solenoid	Colour	PIN
1	A	brown	23
	B	yellow	37
2	A	green	38
	B	red	22
3	A	blue	9
	B	pink	7
4	A	grey	24
	B	violet	36
5	A	black	39
	B	brown-green	21
6	A	white-green	10
	B	red-blue	6
7	A	grey-pink	25
	B	yellow-brown	35
8	A	white-yellow	40
	B	pink-brown	20
9	A	white-pink	11
	B	grey-brown	5
10	A	white-grey	26
	B	white-red	34
11	A	white-blue	41
	B	grey-green	19
12	A	brown-black	12
	B	white-black	4
13	A	brown-red	27
	B	pink-green	33
14	A	yellow-grey	42
	B	green-red	18
15	A	yellow-blue	13
	B	green-blue	3
16	A	yellow-pink	28
	B	grey-blue	32
17	A	yellow-black	29
	B	green-black	17
18	A	yellow-red	43
	B	grey-red	2
19	A	pink-blue	14
	B	grey-black	31
20	A	pink-red	44
	B	blue-black	16
common +/- up to 10 valves		white	8
2. common +/- for 10 to 20 valves		brown-blue	8
Without function		pink-black	
		red-black	

Solenoid A and B are marked on the terminal.
For TR10 solenoids A are on valve-side 12,
the B solenoids are on valve-side 14.
For TL10 solenoids A are on valve-side 14,
the B solenoids are on valve-side 12.

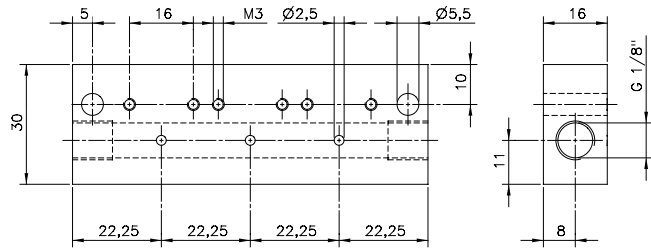
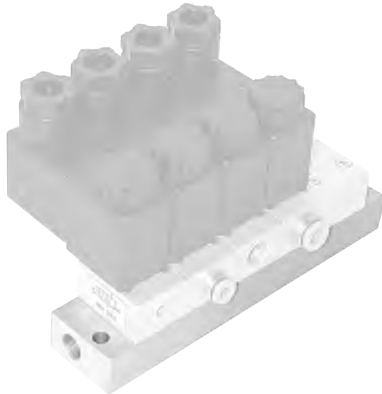
Type	Comment
ST 54 20 L3000	Connector for up to 10 valves
ST 54 40 L3000	Connector for up to 20 valves



2.7

Manifold Plates

R _ _



Common connection to port 1 (pressure).

The following valves can be assembled to the manifold plate type **R _ _**:

- MH 312 port 2: M5
- MH 314 port 2: pif 4 mm
- MH 315 port 2: G 1/8"
- MH 316 port 2: pif 6 mm

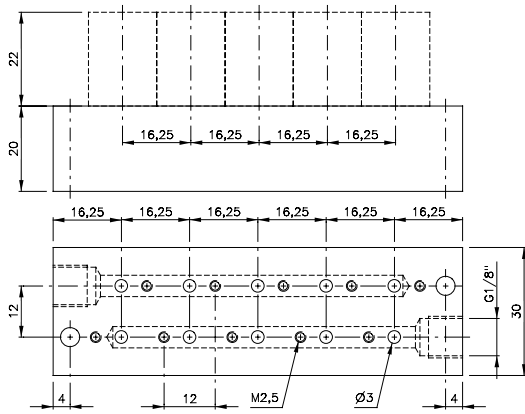
R _ _ Orifice size: 8,5 mm

All the valves are displayed on page 2.5.1.2.2.

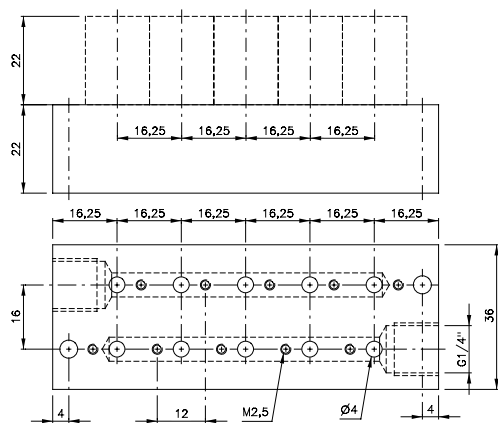
Blanking plates are also available type BP 3.

All the manifold plates offered by Hafner-Pneumatik can be equipped with the DIN-rail mounting clips.

Stations	Type	Weight	Available
1	R 01	0,05 kg	from stock
2	R 02	0,08 kg	from stock
3	R 03	0,11 kg	from stock
4	R 04	0,13 kg	from stock
5	R 05	0,16 kg	from stock
6	R 06	0,19 kg	from stock
7	R 07	0,21 kg	from stock
8	R 08	0,24 kg	from stock
9	R 09	0,27 kg	from stock
10	R 10	0,30 kg	from stock
11	R 11	0,32 kg	from stock
12	R 12	0,35 kg	from stock
13	R 13	0,38 kg	from stock
14	R 14	0,41 kg	from stock
15	R 15	0,44 kg	from stock
16	R 16	0,47 kg	from stock



RD 3__ 303 Orifice size: 5 mm



RD 3__ 403 Orifice size: 6 mm



Common connection to port 1 (pressure) and 3 (exhaust).

The following valves can be assembled to the manifold plate type **RD 3__ 303**:

3/2-way n.c.	pif 4 mm	MD 310 343	page 2.5.1.2.4
3/2-way n.o.	pif 4 mm	MOD 310 343	page 2.5.1.2.4

Blanking plates are also available type BP 3 303.

The following valves can be assembled to the manifold plate type **RD 3__ 403**:

3/2-way n.c.	G 1/8"	MD 310 403	page 2.5.1.2.4
3/2-way n.o.	G 1/8"	MOD 310 403	page 2.5.1.2.4
3/2-way n.c.	pif 6 mm	MD 310 463	page 2.5.1.2.4
3/2-way n.o.	pif 6 mm	MOD 310 463	page 2.5.1.2.4

Blanking plates are also available type BP 3 403.

Please notice:

Due to the compact design of the plate if a larger number of valves are to switch at the same time please do not select plates with more than 6 stations.

Stations	Type	Weight	Available	Type	Weight	Available
2	RD 302 303	0,07 kg	from stock	RD 302 403	0,09 kg	from stock
3	RD 303 303	0,10 kg	from stock	RD 303 403	0,13 kg	from stock
4	RD 304 303	0,13 kg	from stock	RD 304 403	0,16 kg	from stock
5	RD 305 303	0,15 kg	from stock	RD 305 403	0,19 kg	from stock
6	RD 306 303	0,18 kg	from stock	RD 306 403	0,23 kg	from stock
7	RD 307 303	0,21 kg	on request	RD 307 403	0,27 kg	on request
8	RD 308 303	0,23 kg	from stock	RD 308 403	0,30 kg	from stock
9	RD 309 303	0,26 kg	on request	RD 309 403	0,33 kg	on request
10	RD 310 303	0,28 kg	from stock	RD 310 403	0,36 kg	from stock
12	RD 312 303	0,33 kg	from stock	RD 312 403	0,43 kg	from stock
14	RD 314 303	0,38 kg	on request	RD 314 403	0,49 kg	on request
16	RD 316 303	0,43 kg	on request	RD 316 403	0,55 kg	on request

RD 3__ 344/RD 3__ 464



Common connection to port 1 (pressure) and 3 (exhaust). The individual ports 2 are also in the manifold plate equipped with push-in fittings.

The following valves can be assembled to the manifold plate type **RD 3__ 344** (pif 4 mm):

- 3/2-way n.c. MD 310 304 page 2.5.1.2.5
- 3/2-way n.o. MOD 310 304 page 2.5.1.2.5

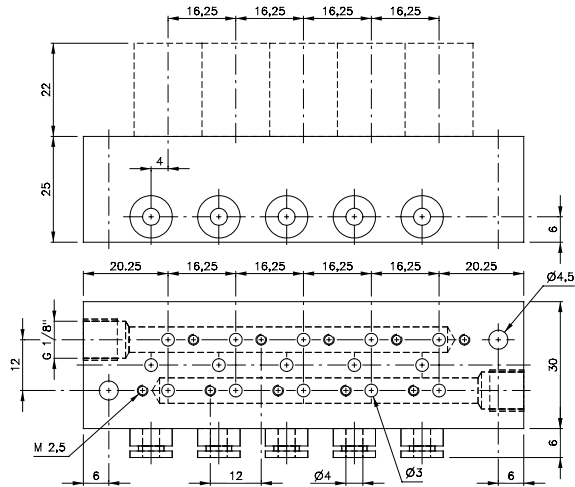
Blanking plates are also available type BP 3 344.

The following valves can be assembled to the manifold plate type **RD 3__ 464** (pif 6 mm):

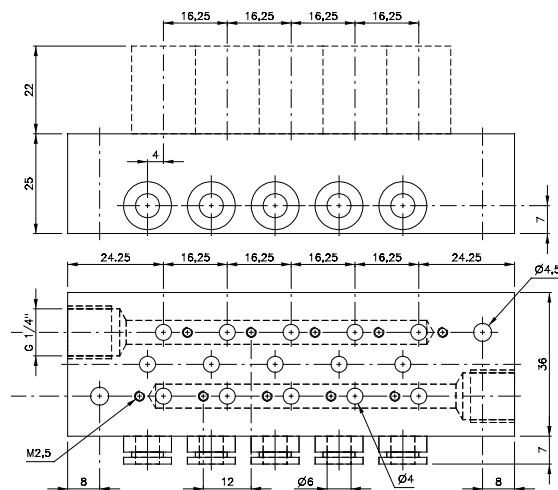
- 3/2-way n.c. MD 310 404 page 2.5.1.2.5
- 3/2-way n.o. MOD 310 404 page 2.5.1.2.5

Blanking plates are also available type BP 3 464.

Please notice:
Due to the compact design of the plate if a larger number of valves are to switch at the same time please do not select plates with more than 6 stations.

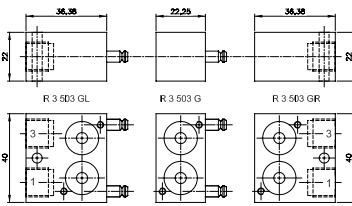


RD 3__ 344 Orifice size: 5 mm

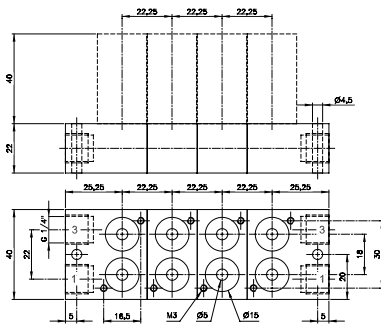


RD 3__ 464 Orifice size: 6 mm

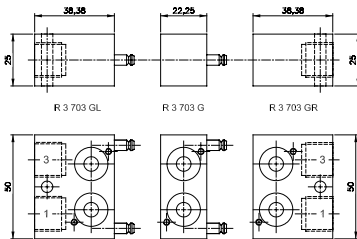
Stations	Type	Weight	Available	Type	Weight	Available
2	RD 302 344	0,13 kg	from stock	RD 302 464	0,15 kg	from stock
3	RD 303 344	0,16 kg	from stock	RD 303 464	0,19 kg	from stock
4	RD 304 344	0,19 kg	from stock	RD 304 464	0,23 kg	from stock
5	RD 305 344	0,22 kg	from stock	RD 305 464	0,26 kg	from stock
6	RD 306 344	0,25 kg	from stock	RD 306 464	0,30 kg	from stock
7	RD 307 344	0,28 kg	on request	RD 307 464	0,34 kg	on request
8	RD 308 344	0,31 kg	from stock	RD 308 464	0,38 kg	from stock
9	RD 309 344	0,34 kg	on request	RD 309 464	0,41 kg	on request
10	RD 310 344	0,38 kg	from stock	RD 310 464	0,49 kg	from stock
12	RD 312 344	0,44 kg	from stock	RD 312 464	0,53 kg	from stock
14	RD 314 344	0,50 kg	on request	RD 314 464	0,60 kg	from stock
16	RD 316 344	0,56 kg	on request	RD 316 464	0,68 kg	on request



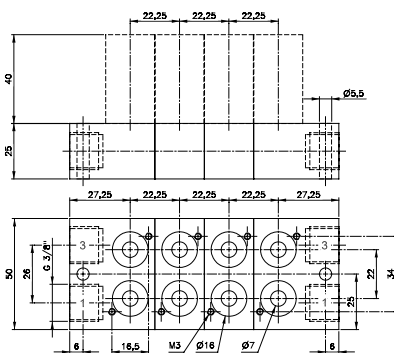
Parts of modular manifold RB 3__ 503 G



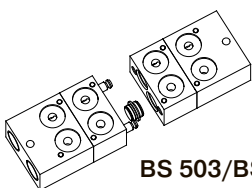
RB 3__ 503 G Orifice size: 10 mm



Parts of modular manifold RB 3__ 703 G



RB 3__ 703 G Orifice size: 15 mm



BS 503/BS 703

By adding a special plug (type BS 503/BS 703), two different pressures can be attached at the same manifold plate. The plug is intercepting the air-supply in the manifold plate wherever the customer likes to. Type BS 503 for manifold RB_503 G and BS 703 for manifold RB_703 G.



Modular manifold system for common connections to ports 1 (pressure) and 3 (exhaust). The system can be build and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time. End-plates are equipped with threads for adding DIN-rail mounting clips.

The following valves can be assembled to the system **RB 3__ 503 G**:

- 3/2 single sol. n.c. G 1/8" MH 310 501 G page 2.5.1.1.14
- 3/2 single sol. n.o. G 1/8" MOH 310 501 G page 2.5.1.1.14
- 3/2 double sol. G 1/8" MH 320 501 G page 2.5.1.1.18

The system consists of:

- End-plate right type R 3 503 GR
- End-plate left type R 3 503 GL
- Individual position type R 3 503 G

Blanking plates are also available type BP 3 503.

The following valves can be assembled to the system **RB 3__ 703 G**:

- 3/2 single sol. n.c. G 1/4" MH 310 701 G page 2.5.1.1.14
- 3/2 single sol. n.o. G 1/4" MOH 310 701 G page 2.5.1.1.14
- 3/2 double sol. G 1/4" MH 320 701 G page 2.5.1.1.18

The system consists of:

- End-plate right type R 3 703 GR
- End-plate left type R 3 703 GL
- Individual position type R 3 703 G

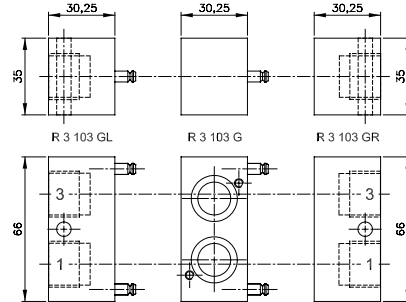
Blanking plates are also available type BP 3 703.

The plates can also be ordered assembled by the manufacturer. In this case order RB 3__ 503 G (1/8") or RB 3__ 703 G (1/4"). Please add two digits for the number of positions required.

Type	Function	Weight
R 3 503 GR	End-plate right	0,07 kg
R 3 503 GL	End-plate left	0,07 kg
R 3 503 G	Individual position	0,05 kg

Type	Function	Weight
R 3 703 GR	End-plate right	0,11 kg
R 3 703 GL	End-plate left	0,11 kg
R 3 703 G	Individual position	0,07 kg
R 3 703 G D1	Individual position, with individual valve isolation	0,08 kg

RB 3__ 103 G/R 3__ 121 G



Parts of modular manifold **RB 3__ 103 G**

Series 103 G modular manifold system for common connections to ports 1 (pressure) and 3 (exhaust). The system can be build and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time. End-plates are equipped with threads for adding DIN-rail mounting clips.

The following valves can be assembled to the system

RB 3__ 103 G:

3/2 single sol. n.c.	G 3/8" MH 310 101 G	page 2.5.1.1.15
3/2 single sol. n.o.	G 3/8" MOH 310 101 G	page 2.5.1.1.15
3/2 double sol.	G 3/8" MH 320 101 G	page 2.5.1.1.18

The system consists of:

- End-plate right type R 3 103 GR
- End-plate left type R 3 103 GL
- Individual position type R 3 103 G

Blanking plates are also available type BP 3 103.

Please notice:

- End-plates of series 103 G are not offering an individual valve position.
- The plates can also be ordered assembled by the manufacturer. In this case order RB 3__ 103 G (3/8").
- Please add two digits for the number of positions required.

Series 121 G solid manifold system for common connections to ports 1 (pressure) and 3 (exhaust).

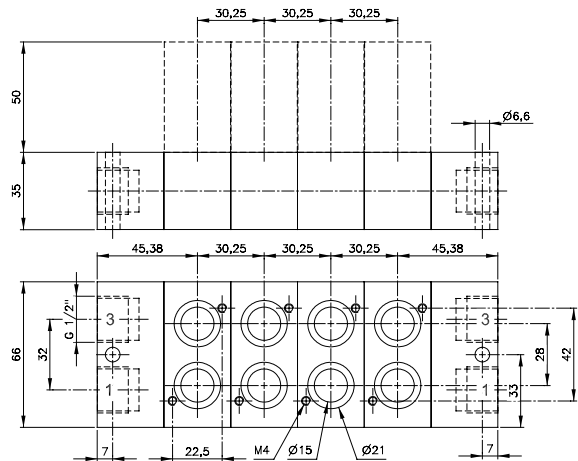
The following valves can be assembled to the manifold plate type **R 3__ 121 G:**

Solenoid valves:

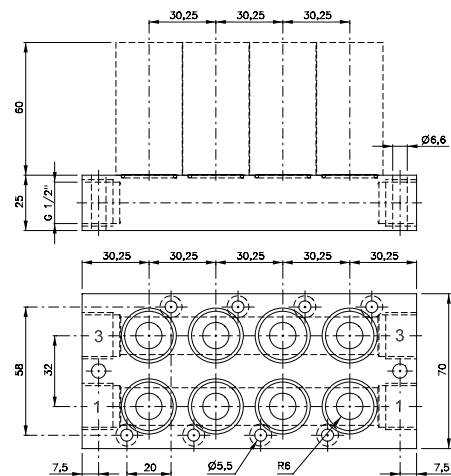
3/2 single sol. n.c.	G 1/2" MH 310 121 G	page 2.5.1.1.15
3/2 single sol. n.o.	G 1/2" MOH 310 121 G	page 2.5.1.1.15
3/2 double sol.	G 1/2" MH 320 121 G	page 2.5.1.1.18
3/3-way centre closed	G 1/2" MH 331 121 G	page 2.5.1.3

Pneumatically actuated 3/2-way valves:

air spring	G 1/2" P 310 121 G	page 2.4.1.4
mech. spring	G 1/2" P 311 121 G	page 2.4.1.4

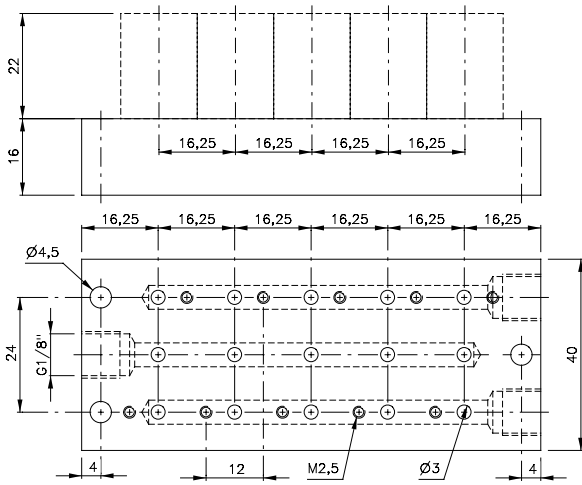


RB 3__ 103 G Orifice size: 19 mm

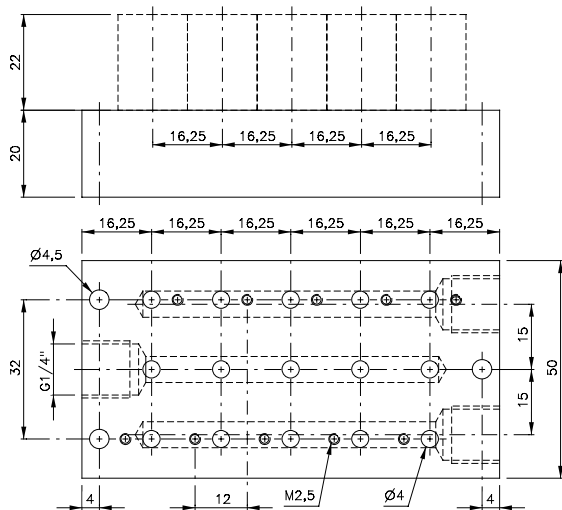


R 3__ 121 G Orifice size: 12 mm

Type	Function	Weight	Type	Weight	Available
R 3 103 GR	End-plate right	0,14 kg	R 302 121 G	0,28 kg	from stock
R 3 103 GL	End-plate left	0,15 kg			
R 3 103 G	Individual position	0,12 kg	R 304 121 G	0,48 kg	from stock



RD 5__ 303 Orifice size: 8 mm



RD 5__ 403 Orifice size: 10 mm



Common connection to port 1 (pressure), 3 and 5 (exhaust).

The following solenoid valves can be assembled to the manifold plate type **RD 5__ 303**:

5/2 single sol.	M5	MD 510 303	page 2.5.2.2.1
5/2 single sol.	pif 4 mm	MD 510 343	page 2.5.2.2.1
5/2 double sol.	M5	MD 520 303	page 2.5.2.2.5
5/2 double sol.	pif 4 mm	MD 520 343	page 2.5.2.2.5
5/3-way	M5	MD 53_ 303	page 2.5.3.2.1
5/3-way	pif 4 mm	MD 53_ 343	page 2.5.3.2.1

Blanking plates are also available type BP 5 303.

The following solenoid valves can be assembled to the manifold plate type **RD 5__ 403**:

5/2 single sol.	G 1/8"	MD 510 403	page 2.5.2.2.1
5/2 single sol.	pif 6 mm	MD 510 463	page 2.5.2.2.1
5/2 double sol.	G 1/8"	MD 520 403	page 2.5.2.2.5
5/2 double sol.	pif 6 mm	MD 520 463	page 2.5.2.2.5
5/3-way	G 1/8"	MD 53_ 403	page 2.5.3.2.1
5/3-way	pif 6 mm	MD 53_ 463	page 2.5.3.2.1

Blanking plates are also available type BP 5 403.

Please notice:

Due to the compact design of the plate if a larger number of valves are to switch at the same time please do not select plates with more than 6 stations.

Stations	Type	Weight	Available	Type	Weight	Available
2	RD 502 303	0,08 kg	from stock	RD 502 403	0,12 kg	from stock
3	RD 503 303	0,10 kg	from stock	RD 503 403	0,16 kg	from stock
4	RD 504 303	0,13 kg	from stock	RD 504 403	0,20 kg	from stock
5	RD 505 303	0,16 kg	from stock	RD 505 403	0,24 kg	from stock
6	RD 506 303	0,18 kg	from stock	RD 506 403	0,28 kg	from stock
7	RD 507 303	0,21 kg	on request	RD 507 403	0,32 kg	on request
8	RD 508 303	0,24 kg	from stock	RD 508 403	0,37 kg	from stock
9	RD 509 303	0,26 kg	on request	RD 509 403	0,41 kg	on request
10	RD 510 303	0,29 kg	from stock	RD 510 403	0,45 kg	from stock
12	RD 512 303	0,34 kg	from stock	RD 512 403	0,53 kg	from stock
14	RD 514 303	0,39 kg	on request	RD 514 403	0,62 kg	from stock
16	RD 516 303	0,44 kg	on request	RD 516 403	0,69 kg	from stock

RB 5 __ 503 G



Modular manifold system for common connections to ports 1 (pressure), 3 and 5 (exhaust). The system can be build and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time. End-plates are equipped with threads for adding DIN-rail mounting clips.

The following valves can be assembled to the system **RB 5 __ 503 G**:

Solenoid valves:

5/2 single sol.	G 1/8"	MH 510 501 G	page 2.5.2.1.5
5/2 single sol.	G 1/8"	MH 510 503	page 2.5.2.2.2
5/2 double sol.	G 1/8"	MH 520 501 G	page 2.5.2.1.11
5/2 double sol.	G 1/8"	MH 520 503	page 2.5.2.2.6
5/3 solenoid	G 1/8"	MH 53_ 501 G	page 2.5.3.1.4
5/3 solenoid	G 1/8"	MH 53_ 503	page 2.5.3.2.2

Pneumatically actuated valves:

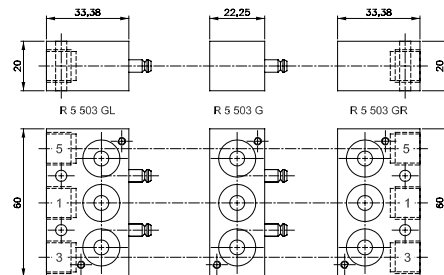
5/2 air spring	G 1/8"	P 510 501 G	page 2.4.2.4
5/2 mech. spring	G 1/8"	P 511 501 G	page 2.4.2.4
5/2 double pilot	G 1/8"	P 52_ 501 G	page 2.4.2.8
5/3	G 1/8"	P 53_ 501 G	page 2.4.3.3

The system consists of:

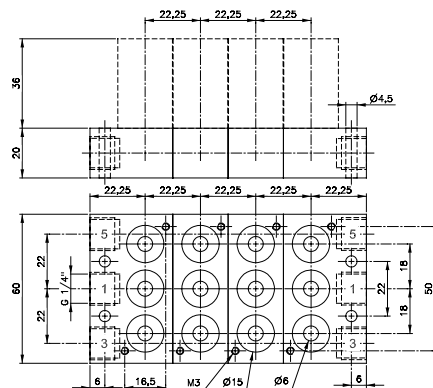
End-plate right	type R 5 503 GR
End-plate left	type R 5 503 GL
Individual position	type R 5 503 G

Blanking plates are also available type BP 5 503.

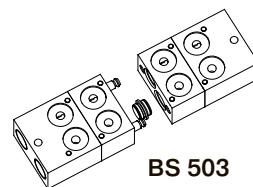
The plates can also be ordered assembled by the manufacturer. In this case order RB 5 __ 503 G. Please add two digits for the number of positions required.



Parts of modular manifold RB 5 __ 503 G



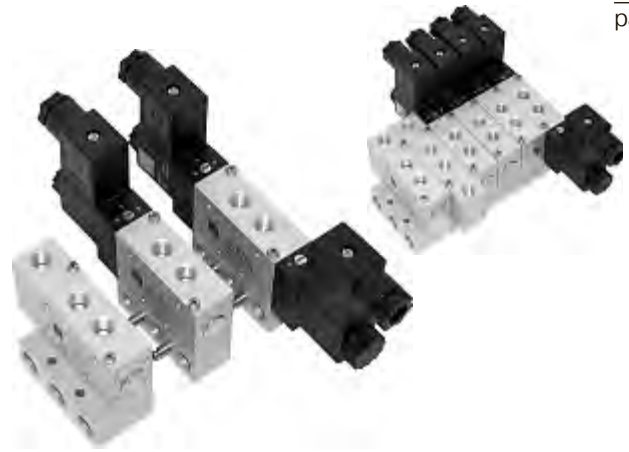
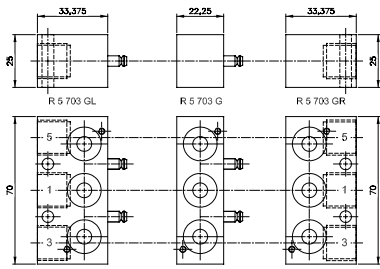
RB 5 __ 503 G Orifice size: 10 mm



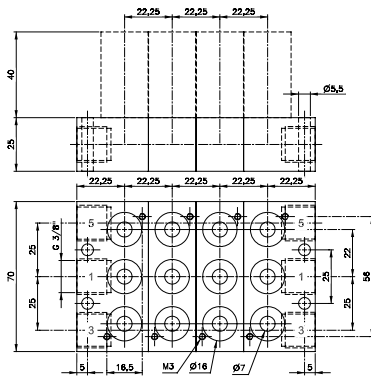
BS 503

By adding a special plug (type BS 503), two different pressures can be attached at the same manifold plate. The plug is intercepting the air-supply in the manifold plate wherever the customer likes to.

Type	Function	Weight
R 5 503 GR	End-plate right	0,08 kg
R 5 503 GL	End-plate left	0,08 kg
R 5 503 G	Individual position	0,06 kg



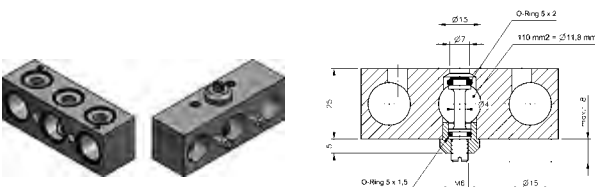
Parts of modular manifold RB 5 __ 703 G



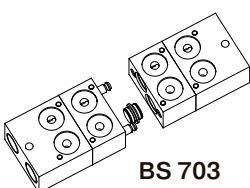
RB 5 __ 703 G Orifice size: 15 mm



1.) Combination of 3- and 5-way valves



2.) Individual valve isolation (R 5 703 G D1)



By adding a special plug (type BS 703), two different pressures can be attached at the same manifold plate. The plug is intercepting the air-supply in the manifold plate wherever the customer likes to.

Modular manifold system for common connections to ports 1 (pressure), 3 and 5 (exhaust). The system can be built and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time. End-plates are equipped with threads for adding DIN-rail mounting clips.

The following valves can be assembled to the system **RB 5 __ 703 G**:

Solenoid valves:

5/2 single sol.	G 1/4"	MH 510 701 G	page 2.5.2.1.5
5/2 single sol.	G 1/4"	MH 510 703	page 2.5.2.2.2
5/2 double sol.	G 1/4"	MH 520 701 G	page 2.5.2.1.11
5/2 double sol.	G 1/4"	MH 520 703	page 2.5.2.2.6
5/3 solenoid	G 1/4"	MH 53_ 701 G	page 2.5.3.1.4
5/3 solenoid	G 1/4"	MH 53_ 703	page 2.5.3.2.2

Pneumatically actuated valves:

5/2 air spring	G 1/4"	P 510 701 G	page 2.4.2.4
5/2 mech. spring	G 1/4"	P 511 701 G	page 2.4.2.4
5/2 double pilot	G 1/4"	P 52_ 701 G	page 2.4.2.8
5/3 pneum.	G 1/4"	P 53_ 701 G	page 2.4.3.3

The system consists of:

End-plate right	type R 5 703 GR
End-plate left	type R 5 703 GL
Individual position	type R 5 703 G

Blanking plates are also available type BP 5 703.

NPT-ported end-plates available on request.

The plates can also be ordered assembled by the manufacturer. In this case order RB 5 __ 703 G. Please add two digits for the number of positions required.

Additional:

1.) Combine 3-way and 5-way valves on the same plate. By adding R 53 703 G elements to the standard R 5 703 G elements, 3-way as well as 5-way valves can be mixed on the same plate (e.g. MH 510 701 G and MH 310 701 G).

2.) Individual valve isolation.

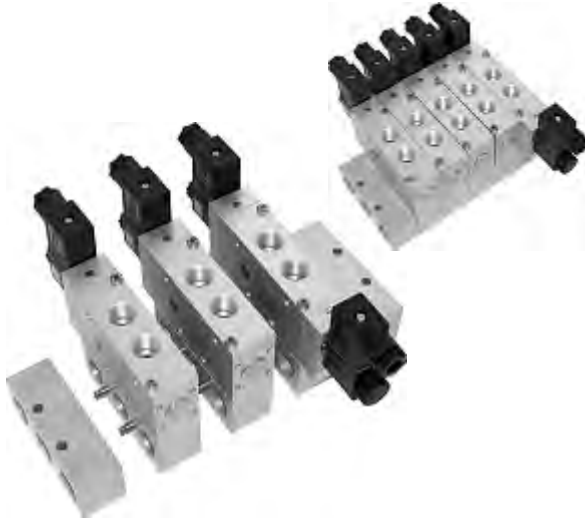
In certain industries the user appreciates, if he can take away air pressure at any valve on the plate individually. Valves can easily be exchanged by closing port 1 on the reverse side of the plate without interruption of the air-supply of the other valves.

The system consists of:

End-plate right	type R 5 703 GR D1
End-plate left	type R 5 703 GL D1
Individual position	type R 5 703 G D1

Type	Function	Weight
R 5 703 GR	End-plate right	0,13 kg
R 5 703 GL	End-plate left	0,12 kg
R 5 703 G	Individual position	0,09 kg
R 5 703 G D1	Individual position with individual valve isolation	0,09 kg

RB 5 __ 103 G



Modular manifold system for common connections to ports 1 (pressure), 3 and 5 (exhaust). The system can be built and taken apart just by operating two hexagon socket screws. Additional stations can be added at any position and any time. End-plates are equipped with threads for adding DIN-rail mounting clips.

The following valves can be assembled to the system

RB 5 __ 103 G:

- 5/2 single solenoid G 3/8" MH 510 101 G page 2.5.2.1.6
- 5/2 double solenoid G 3/8" MH 520 101 G page 2.5.2.1.12
- 5/3 solenoid G 3/8" MH 53_ 101 G page 2.5.3.1.5

The system consists of:

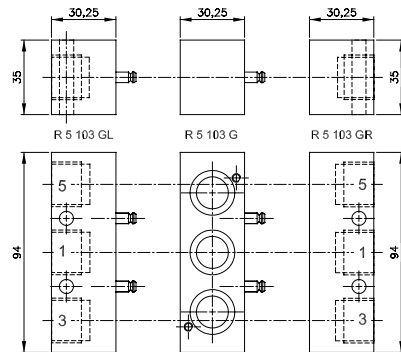
- End-plate right type R 5 103 GR
- End-plate left type R 5 103 GL
- Individual position type R 5 103 G

Blanking plates are also available type BP 5 103.

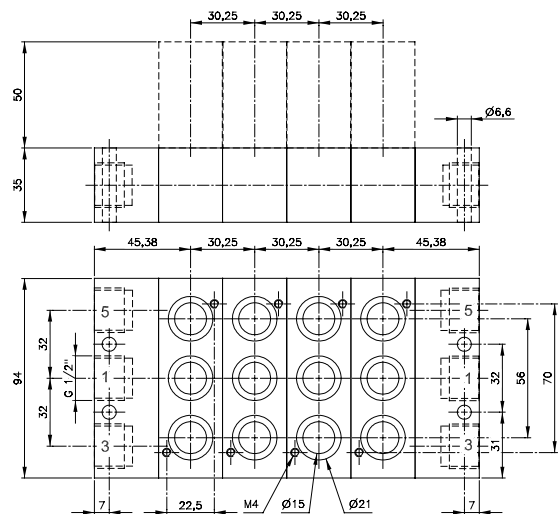
Please notice:

End-plates are not offering an individual valve-position.

The plates can also be ordered assembled by the manufacturer. In this case order RB 5 __ 103 G. Please add two digits for the number of positions required.

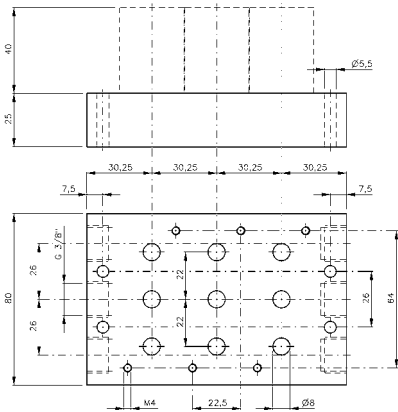


Parts of modular manifold RB 5 __ 103 G



R 5 __ 103 G Orifice size: 19 mm

Type	Function	Weight
R 5 103 GR	End-plate right	0,20 kg
R 5 103 GL	End-plate left	0,21 kg
R 5 103 G	Individual position	0,18 kg



R 5 __ 803 Orifice size: 15 mm

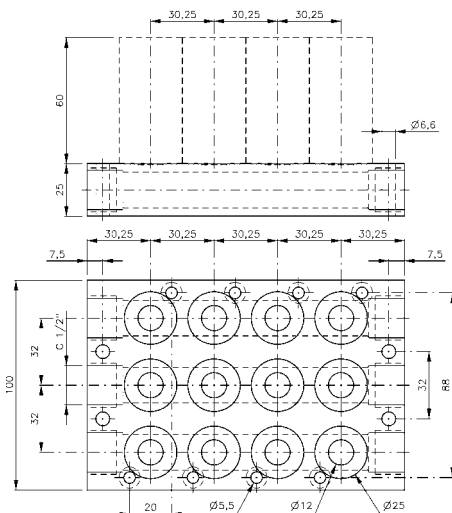
Common connection to port 1 (pressure), 3 and 5 (exhaust).

R 5 __ 803 for valves for manifold-plates only.

The following solenoid valves can be assembled to **R __ 803**:

5/2 single sol.	G 1/4"	MH 510 803	page 2.5.2.2.2
5/2 double sol.	G 1/4"	MH 520 803	page 2.5.2.2.6
5/3- way	G 1/4"	MH 53_ 803	page 2.5.3.2.2

Blanking plates are also available type BP 5 803.



R 5 __ 121 G Orifice size: 17 mm

R 5 __ 121 G for dual use valves.

The following valves can be assembled to **R 5 __ 121 G**:

5/2 single sol.	G 1/2"	MH 510 121 G	page 2.5.2.1.6
5/2 double sol.	G 1/2"	MH 520 121 G	page 2.5.2.1.12
5/3 solenoid	G 1/2"	MH 53_ 121 G	page 2.5.3.1.5

5/2 single pilot	G 1/2"	P 510 121 G	page 2.4.2.4
5/2 double pilot	G 1/2"	P 520 121 G	page 2.4.2.8
5/3 pneumatic	G 1/2"	P 53_ 121 G	page 2.4.3.3

Blanking plates are also available type BP 5 121 G.

Plates can be equipped with DIN-rail mounting clips.

Stations	Type	Weight	Type	Weight
2	R 502 803	0,41 kg	R 502 121 G	0,41 kg
3	R 503 803	0,54 kg	R 503 121 G	0,56 kg
4	R 504 803	0,71 kg	R 504 121 G	0,70 kg
5	R 505 803	0,86 kg	R 505 121 G	0,85 kg
6	R 506 803	1,00 kg	R 506 121 G	0,99 kg
8	R 508 803	1,30 kg	n.a.	
10	R 510 803	1,61 kg	n.a.	
12	R 512 803	1,90 kg	n.a.	

RD 5__ 344/RD 5__ 464



Common connection to port 1 (pressure), 3 and 5 (exhaust).
The individual ports 2 and 4 are also in the manifold plate equipped with push-in fittings.

The following solenoid valves can be assembled to the manifold plate type **RD 5__ 344** (pif 4 mm):

- 5/2 single sol. MD 510 304 page 2.5.2.2.3
- 5/2 double sol. MD 520 304 page 2.5.2.2.7
- 5/3-way MD 53_304 page 2.5.3.2.3

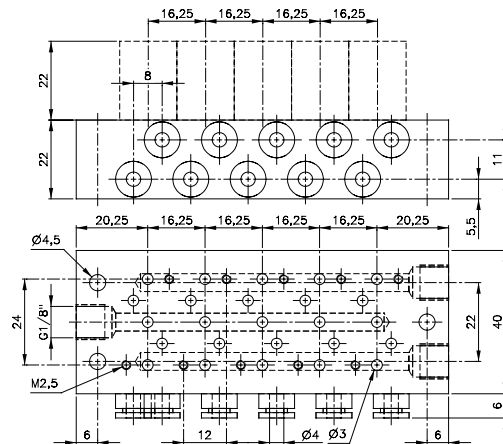
Blanking plates are also available type BP 5 344.

The following solenoid valves can be assembled to the manifold plate type **RD 5__ 464** (pif 6 mm):

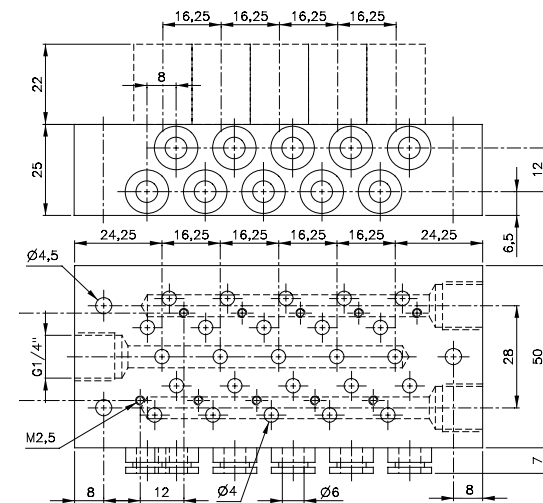
- 5/2 single sol. MD 510 404 page 2.5.2.2.3
- 5/2 double sol. MD 520 404 page 2.5.2.2.7
- 5/3-way MD 53_404 page 2.5.3.2.3

Blanking plates are also available type BP 5 464.

Please notice:
Due to the compact design of the plate if a larger number of valves are to switch at the same time please do not select plates with more than 6 stations.

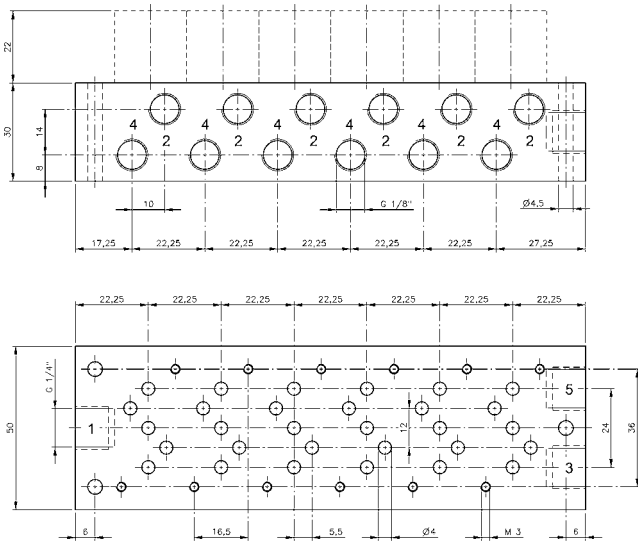


RD 5__ 344 Orifice size: 5 mm

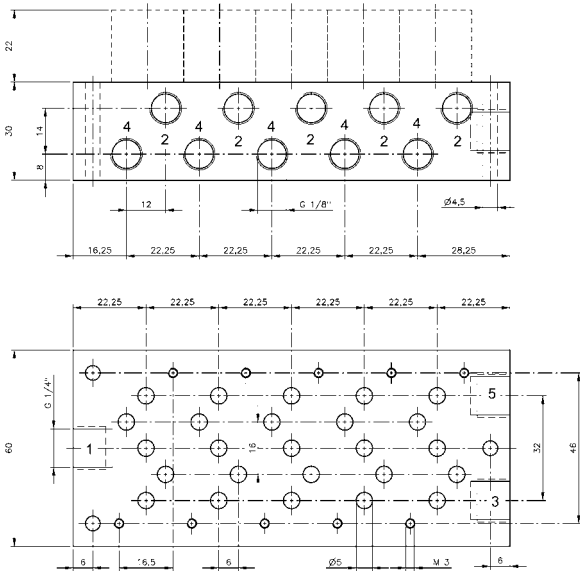


RD 5__ 464 Orifice size: 6 mm

Stations	Type	Weight	Available	Type	Weight	Available
2	RD 502 344	0,14 kg	from stock	RD 502 464	0,21 kg	from stock
3	RD 503 344	0,18 kg	from stock	RD 503 464	0,27 kg	from stock
4	RD 504 344	0,22 kg	from stock	RD 504 464	0,33 kg	from stock
5	RD 505 344	0,26 kg	from stock	RD 505 464	0,38 kg	from stock
6	RD 506 344	0,30 kg	from stock	RD 506 464	0,44 kg	from stock
7	RD 507 344	0,34 kg	on request	RD 507 464	0,50 kg	from stock
8	RD 508 344	0,38 kg	from stock	RD 508 464	0,55 kg	from stock
9	RD 509 344	0,42 kg	on request	RD 509 464	0,60 kg	from stock
10	RD 510 344	0,46 kg	from stock	RD 510 464	0,66 kg	from stock
12	RD 512 344	0,54 kg	from stock	RD 512 464	0,77 kg	from stock
14	RD 514 344	0,62 kg	on request	RD 514 464	0,88 kg	on request
16	RD 516 344	0,70 kg	on request	RD 516 464	0,99 kg	on request



R 5__ 304 Orifice size: 6 mm



R 5__ 504 Orifice size: 6,6 mm



Common connection to port 1 (pressure), 3 (exhaust) and 5 (exhaust). The ports 2 and 4 of the individual valves are also located in the manifold plate.

The following solenoid valves can be assembled to the manifold plate type **R 5__ 304** (G 1/8" orifice 3 mm):

5/2 single sol.	MH 510 304	page 2.5.2.2.4
5/2 double sol.	MH 520 304	page 2.5.2.2.8
5/3-way	MH 53_304	page 2.5.3.2.4

Blanking plates are also available type BP 5 304.

The following solenoid valves can be assembled to the manifold plate type **R 5__ 504** (G 1/8" orifice 5 mm):

5/2 single sol.	MH 510 504	page 2.5.2.2.4
5/2 double sol.	MH 520 504	page 2.5.2.2.8
5/3-way	MH 53_504	page 2.5.3.2.4

Blanking plates are also available type BP 5 504.

Stations	Type	Weight	Type	Weight
2	R 502 304	0,26 kg	R 502 504	0,30 kg
3	R 503 304	0,34 kg	R 503 504	0,40 kg
4	R 504 304	0,42 kg	R 504 504	0,50 kg
5	R 505 304	0,51 kg	R 505 504	0,60 kg
6	R 506 304	0,59 kg	R 506 504	0,70 kg
8	R 508 304	0,76 kg	R 508 504	0,89 kg
10	R 510 304	0,93 kg	R 510 504	1,08 kg
12	R 512 304	1,11 kg	R 512 504	1,29 kg

R 5__704/R 5__784

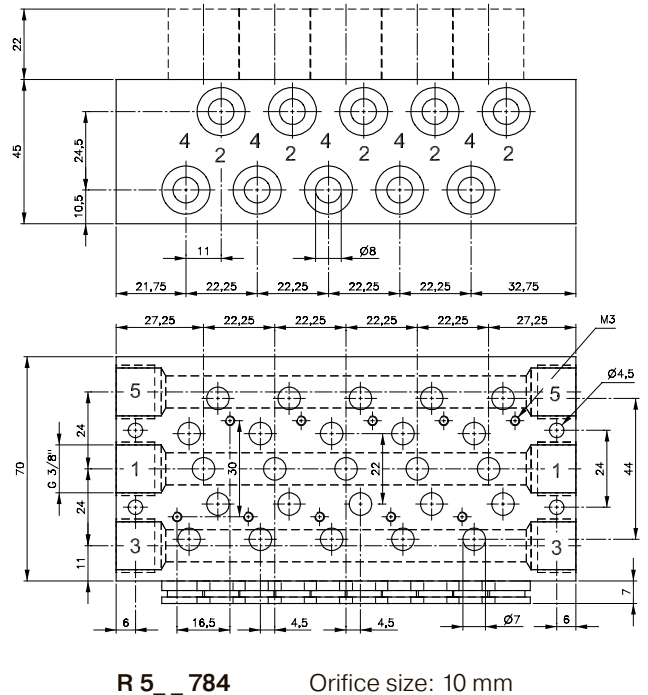
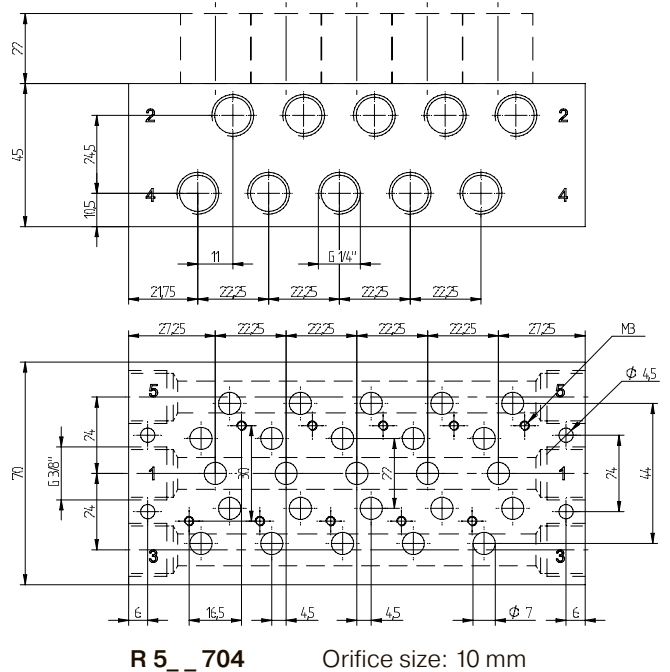


Common connection to port 1 (pressure), 3 (exhaust) and 5 (exhaust). The ports 2 and 4 of the individual valves are also located in the manifold plate.

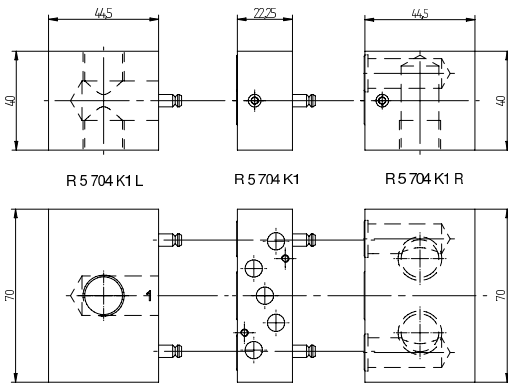
The following valves can be assembled to the manifold plate type **R 5__704** (G 1/4") and **R 5__784** (pif 8 mm):

- | | | |
|---------|------------|----------------|
| 5/2-way | MH 510 704 | page 2.5.2.2.4 |
| 5/2-way | MH 520 704 | page 2.5.2.2.8 |
| 5/3-way | MH 53_704 | page 2.5.3.2.4 |

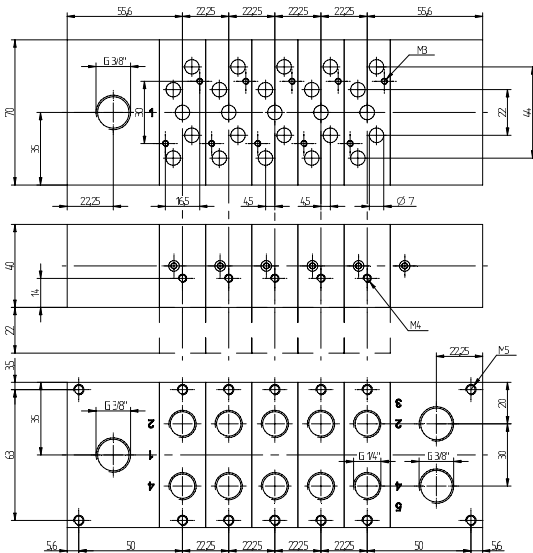
Blanking plates are also available type BP 5 704.



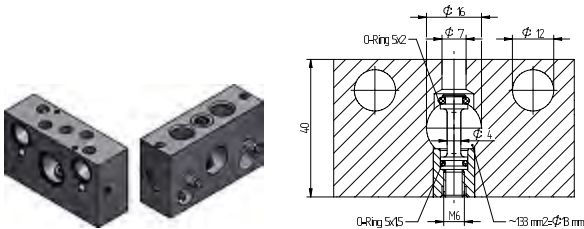
Stations	Type	Weight	Type	Weight
2	R 502 704	0,54 kg	R 502 784	0,54 kg
3	R 503 704	0,72 kg	R 503 784	0,72 kg
4	R 504 704	0,90 kg	R 504 784	0,90 kg
5	R 505 704	1,10 kg	R 505 784	1,10 kg
6	R 506 704	1,25 kg	R 506 784	1,25 kg
8	R 508 704	1,60 kg	R 508 784	1,60 kg
10	R 510 704	1,95 kg	R 510 784	1,95 kg
12	R 512 704	2,32 kg	R 512 784	2,32 kg



Parts of modular manifold RB 5__ 704 K1



RB 5__ 704 K1



Individual valve isolation (R 5 704 K1 D1)

Modular manifold system with all ports on the bottom. Plates are designed for assemblage in control cabinets.

Common connection to port 1 (pressure), 3 (exhaust) and 5 (exhaust). The ports 2 and 4 of the individual valves are also located in the manifold plate. The system can be build up and taken apart by just operating two hexagon socket screws. Additional stations can be added at any position and any time.

The following valves can be assembled to the system

RB 5__ 704 K1:

5/2 single solenoid	MH 510 704	page 2.5.2.2.4
5/2 double solenoid	MH 520 704	page 2.5.2.2.8
5/3 solenoid	MH 53_ 704	page 2.5.3.2.4

3/2-way functions by closing either port 2 or 4.

The system consists of:

End-plate right	type R 5 704 K1 R
End-plate left	type R 5 704 K1 L
Individual position	type R 5 704 K1

Blanking plates are also available type BP 5 704.

Please notice:

End-plates are not offering an individual valve-position.

The plates can also be ordered assembled by the manufacturer. In this case order **RB 5__ 704 K1**. Please add two digits for the number of positions required.

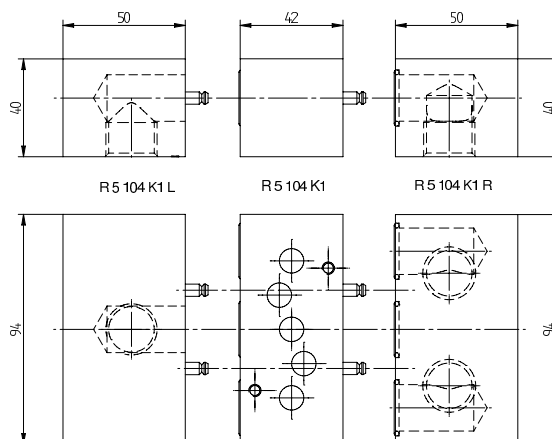
In case the customer wants to have the FRL inside the box, the endplate left offers as second supply port that faces inside the box. One of the two has to be closed with a G 3/8" plug.

The individual plates are also available with individual valve isolation type R 5 704 K1 D1. In certain industries the user appreciates, if he can take away air pressure at any valve on the plate individually. Valves can easily be exchanged by closing the plug in port 1 without interruption of the air-supply of the other valves.

Wider elements for usage with wider coils (e.g. ATEX-approved versions) are available on request.

Type	Function	Weight
R 5 704 K1 R	End-plate right	0,13 kg
R 5 704 K1 L	End-plate left	0,12 kg
R 5 704 K1	Individual position	0,09 kg
R 5 704 K1 D1	Individual position, with individual valve isolation	0,09 kg

RB 5__ 104 K1



Parts of modular manifold RB 5__ 104 K1

Modular manifold system with all ports on the bottom. Plates are designed for assemblage in control cabinets.

Common connection to port 1 (pressure), 3 (exhaust) and 5 (exhaust). The ports 2 and 4 of the individual valves are also located in the manifold plate. The system can be build up and taken apart by just operating two hexagon socket screws.

Additional stations can be added at any position and any time.

The following valves can be assembled to the system

RB 5__ 104 K1:		
5/2 single solenoid	MH 510 104	page 2.5.2.2.4
5/2 double solenoid	MH 520 104	page 2.5.2.2.8
5/3 solenoid	MH 53_ 104	page 2.5.3.2.4

The system consists of:

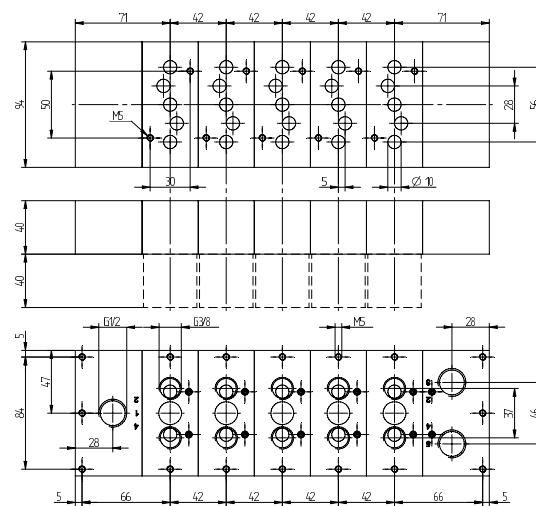
End-plate right	type R 5 104 K1 R
End-plate left	type R 5 104 K1 L
Individual position	type R 5 104 K1

Please notice:

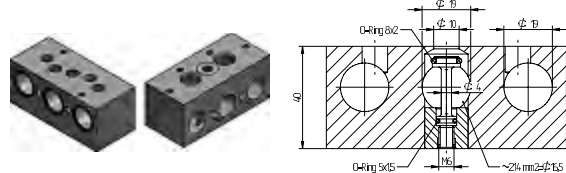
End-plates are not offering an individual valve-position.

The plates can also be ordered assembled by the manufacturer. In this case order **RB 5__ 104 K1**. Please add two digits for the number of positions required.

The individual plates are also available with individual valve isolation type R 5 104 K1 D1. In certain industries the user appreciates, if he can take away air pressure at any valve on the plate individually. Valves can easily be exchanged by closing the plug in port 1 without interruption of the air-supply of the other valves.



RB 5__ 104 K1



Individual valve isolation (R 5 104 K1 D1)

Type	Function	Weight
R 5 104 K1 R	End-plate right	0,45 kg
R 5 104 K1 L	End-plate left	0,50 kg
R 5 104 K1	Individual position	0,32 kg
R 5 104 K1 D1	Individual position, with individual valve isolation	0,32 kg



Hafner is offering a range of products designed to make the assemblage of manifolds and valve terminals inside a control cabinet as easy as possible. No tubing needs to stay inside the box!

- **Series 704 K1** with a maximum air-flow of 1.250 l/min
Further information on page 2.7.2.9 and 2.8.3.8
- **Series 104 K1** with a maximum air-flow of 2.250 l/min
Further information on page 2.7.2.10

The Hafner system offers distinct advantages:

- Less effort to assemble = significant time-savings
- No bulk-head fittings required
- Less installation material = significant material savings
- No hoses inside the box
- Less risk of leakage inside the box, significant air savings



Available as a special feature:

Manifolds with **individual valve isolation screw** (suffix D1 to type-number).

Valves can easily be exchanged by closing the plug in port 1 without interruption of the air-supply of the other valves.

Application examples:

Control cabinet with 8 x 5/2-way single solenoid valves with 7 mm orifice, assembled on a valve terminal. Manifold is having the individual valve isolation feature.



Same cabinet as above but with hand-lever valves.

DIN-rail mounting clips

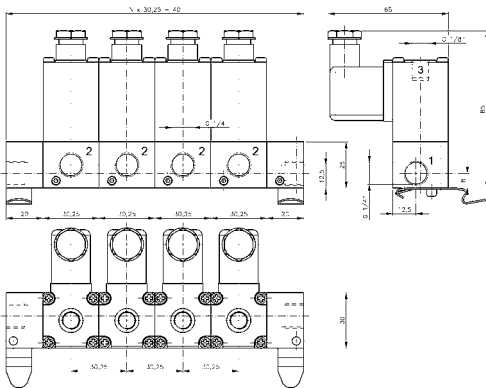
For assembling valve-terminals, please send us your inquiry.



Mounting accessory to assemble and dismantle manifold plates to and from 35 mm wide DIN-rails. The mounting accessory is generally to be assembled on the back of the manifold plate by the manufacturer. Self-assembly is also possible, assembly drawings can be made available.

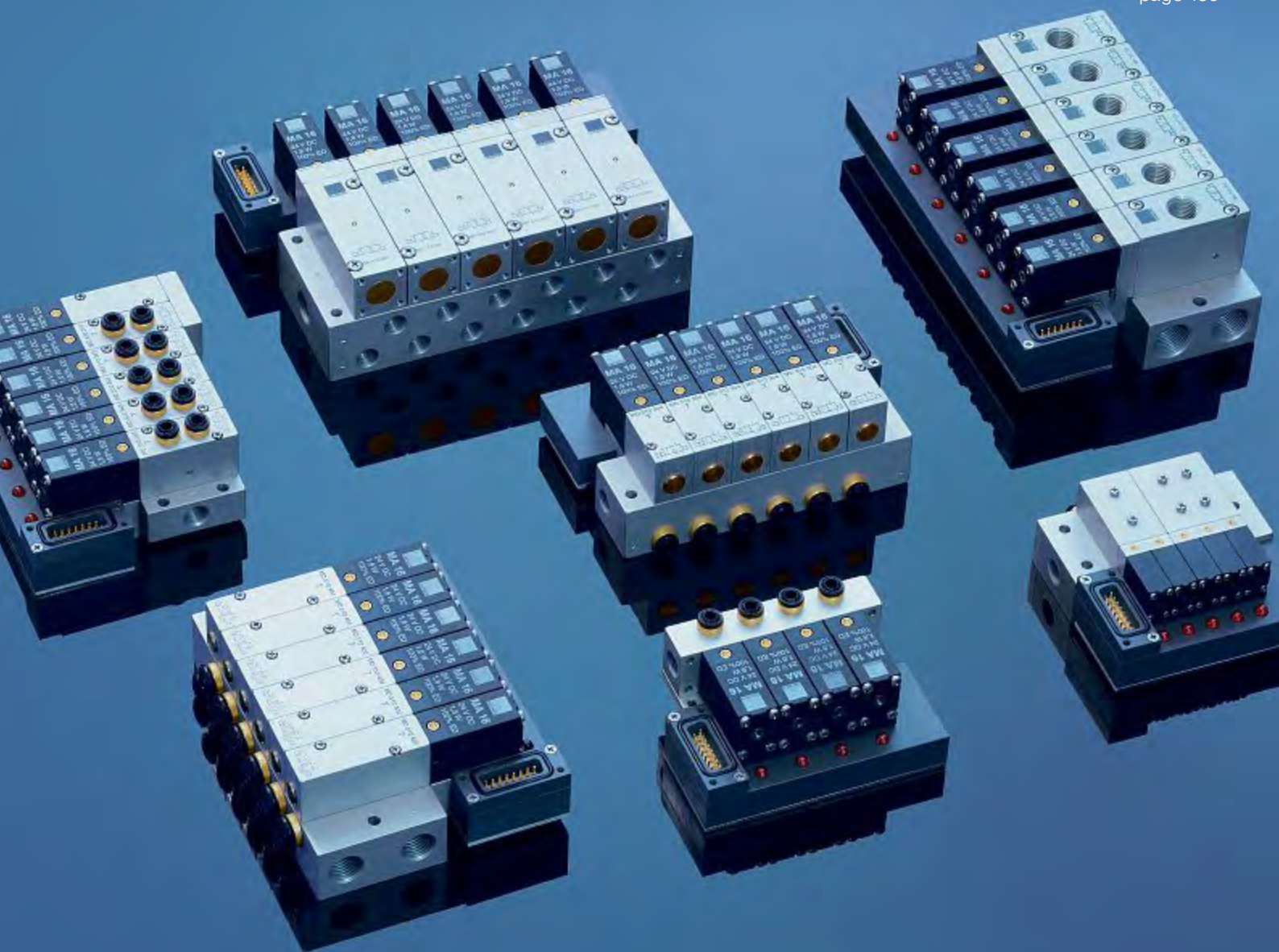
All the manifold plates offered by Hafner-Pneumatik can be equipped with the DIN-rail mounting clips.

Modular manifolds are generally equipped with threads for assembling DIN-rails.



Also individual valves such as the **MH 311 015 DIN** can be equipped with DIN-rail mounting clips.





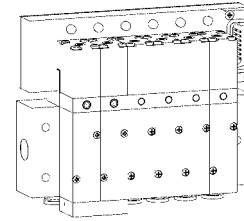
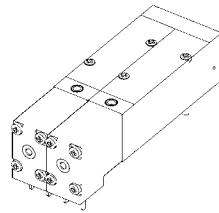
2.8

Valve Terminals

General Information on Valve Terminals

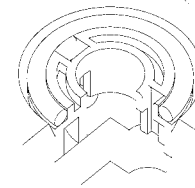
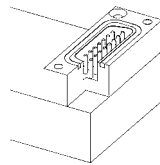
Valve terminal for valves 24 V= and 24 V~.

2 - 14 stations available, equipped with varistor and red LED. Common Minus or Plus on white cable.



Double solenoid valves (5/2-way and 5/3-way) occupy 2 spaces.

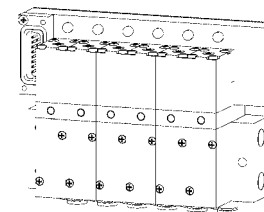
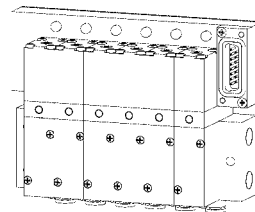
The system is highly water resistant. D-sub-multipin connector and individual valve positions are sealed with NBR O-rings against water and humidity offering IP 65.



Seal at connector

Seal at valve

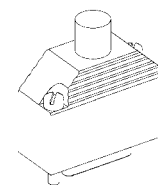
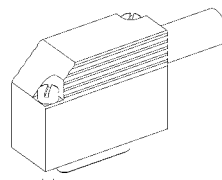
Position of the connector can be chosen at the right or at the left hand side of the terminal.



Connector right = TR16

Connector left = TL16

Cable can be supplied with an elbow or a straight electrical connector. Standard cable length is 3 m others are available on request. For details please refer to page 2.8.4.



ST40 W__

ST40 G__

General order information:

When ordering a Hafner valve terminal please proceed as follows:

The electrical and pneumatical manifold has the type-number:

For ordering the required valves add a T to the order code, e.g. MD 510 404 T.

The cable with the connector as displayed on page 2.7.4.

All items to be ordered separately but assembled by manufacturer.

T _ _ _ _ _
1 2 3 4 5 6 7 8

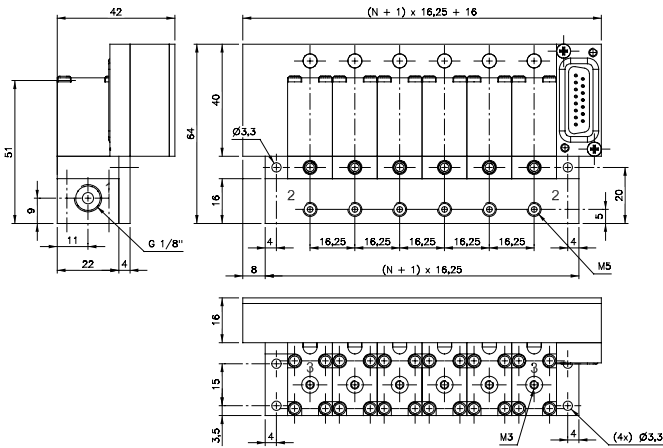
1
R or L: Defining the side of the connector
R = right, L = left

2
16 for valves 16 mm wide
22 for valves 22 mm wide

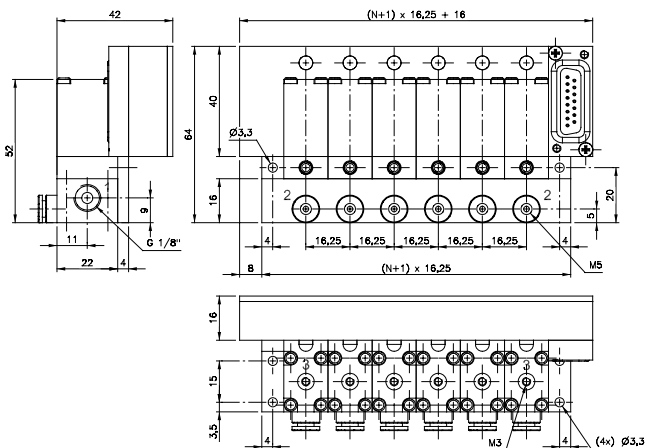
3
3 or 5: Defining if the plate is for 3- or 5-way valves

4, 5
number of positions, 02 to 14

6, 7, 8
defining size and position of the ports, please refer to page 2.7.1.2 to 2.7.3.9



T_163__104



T_163__144



Valve terminal with direct actuated 3-way valves, orifice size 1 mm, port 2 is in the plate. Port 2 is either equipped with push-in fitting for 4 mm tube or thread M5.

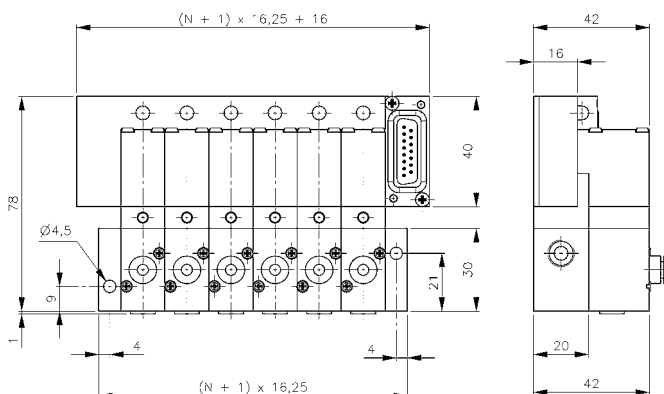
The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic system (valve and manifold) is displayed and described on page 2.5.1.2.1, type RD 3__104 or RD 3__144.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering add a T to the regular type-number (e.g. MD 311 104 T 24DC or MD 311 104 T 24AC).

Blanking plates are also available type BP 3 104 T.

T_ 16 3 __ 303



T_ 16 3 __ 303
equipped with valves type 343 T

Valve terminal with 3-way valves, orifice size 3 mm, port 2 is in the valve. Port 2 is equipped with push-in fitting for 4 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

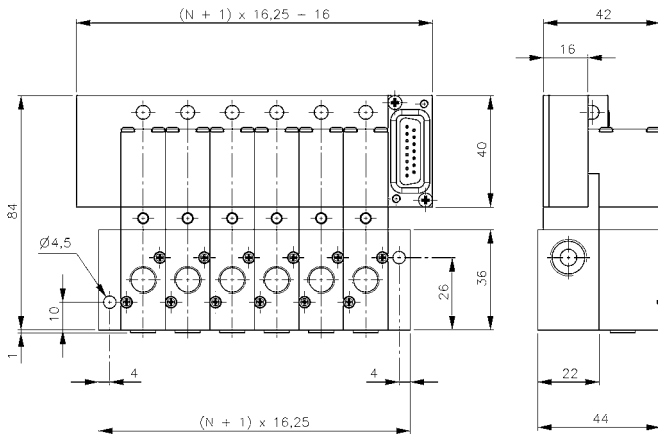
The pneumatic manifold is displayed and described on page 2.7.1.2, type RD 3 __ 303.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 310 343 T 24DC or MD 310 343 T 24AC).

Blanking plates are also available type BP 3 303 T.

The following valves can be used on that type of valve-terminal:

Type	Function	Page	Comment
MD 310 343 T	n.c.	2.5.1.2.4	both types can be mixed on the plate
MOD 310 343 T	n.o.	2.5.1.2.4	both types can be mixed on the plate



T_163__403
equipped with valves type 403 T



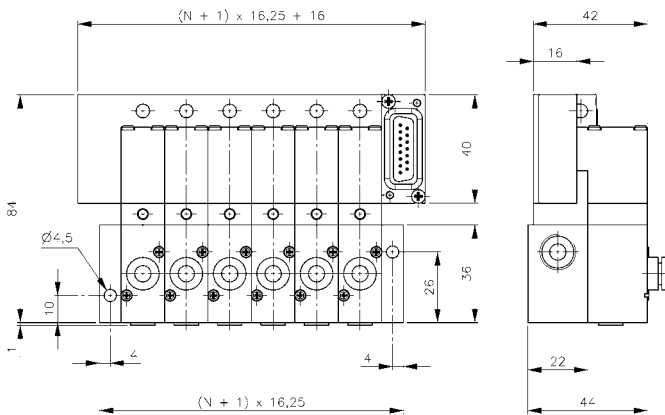
Valve terminal with 3-way valves, orifice size 4 mm, port 2 is in the valve. Port 2 is either equipped with thread G 1/8" or with push-in fitting for 6 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.1.2, type RD 3__403.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 310 463 T 24DC or MD 310 463 T 24AC).

Blanking plates are also available type BP 3 403 T.



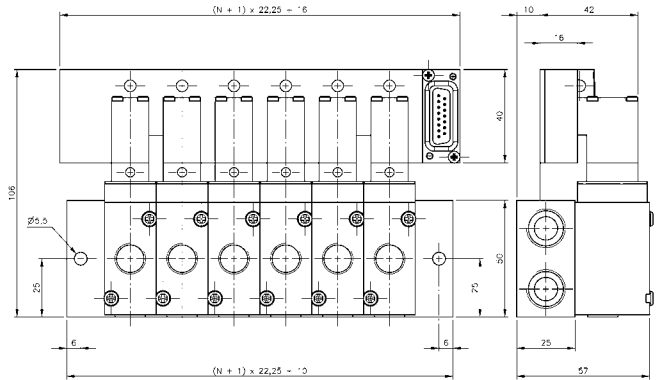
T_163__403
equipped with valves type 463 T

The following valves can be used on that type of valve-terminal:

Type	Function	Page	Comment
MD 310 403 T	n.c.	2.5.1.2.4	all four types of valves can be mixed on one plate
MD 310 463 T	n.c.	2.5.1.2.4	all four types of valves can be mixed on one plate
MOD 310 403 T	n.o.	2.5.1.2.4	all four types of valves can be mixed on one plate
MOD 310 463 T	n.o.	2.5.1.2.4	all four types of valves can be mixed on one plate

For additional order information please refer to page 2.8.1.

T_22 3__703



T_22 3__703
equipped with valves type 703 T

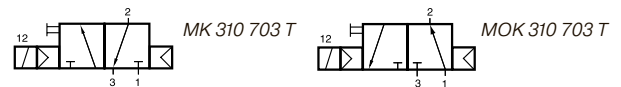
Valve terminal with 3-way valves, orifice size 7 mm, port 2 is in the valve, G 1/4".

The terminal is available with 2, 3, 4, 5, 6, 8, 10, 12 positions, others on request. Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.1.4, type R 3__703.

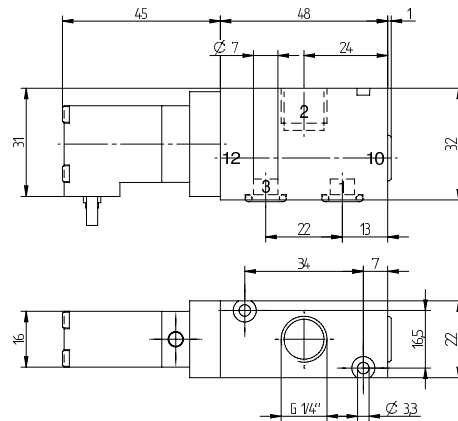
Blanking plates are also available type BP 3 703 T.

Normally closed (MK 310 703 T) and normally open (MOK 310 703 T) valves can be mixed on the same terminal.



Valves offer a manual override to be pushed.

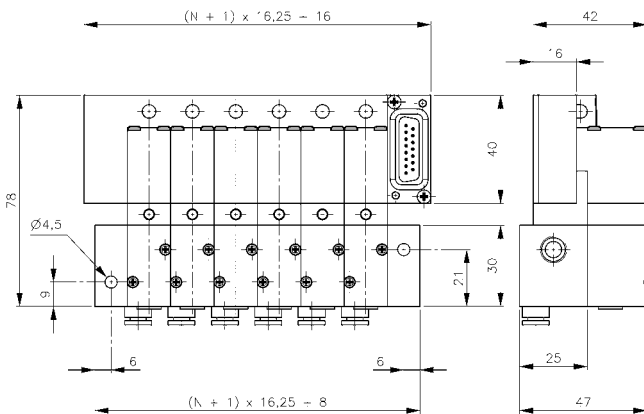
Valves 24 DC as well as 24 AC can be used on the terminals.



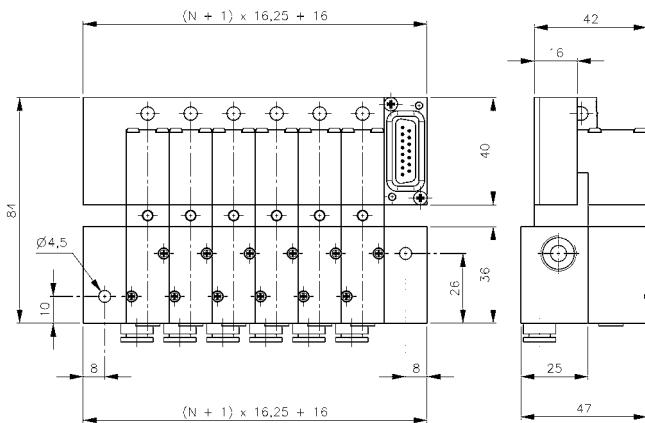
MK 310 703 T/MOK 310 703 T

Type	Function	Air flow	Operating press.	Power consumption	Weight
MK 310 703 T	n.c.	1250 l/min	2 - 10 bar	1,8 W = / 3 VA ~	0,19 kg
MOK 310 703 T	n.o.	1250 l/min	2 - 10 bar	1,8 W = / 3 VA ~	0,19 kg

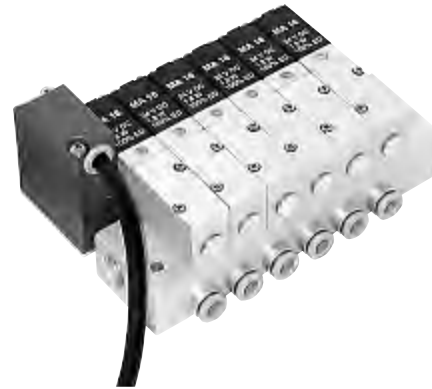
For additional order information please refer to page 2.8.1.



T_163__344
equipped with valves type 304 T



T_163__464
equipped with valves type 404 T



Valve terminal with 3-way valves, all ports are in the plate.

Type 344 orifice size 3 mm, port 2 is equipped with push-in fitting for 4 mm tube.

Type 464 orifice size 4 mm, port 2 is equipped with push-in fitting for 6 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifolds are displayed and described on page 2.7.1.3, type RD 3__344 / RD 3__464.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 310 304 T 24DC or MD 310 304 T 24AC).

Blanking plates are also available type BP 3 344 T or type BP 3 464 T.

The following valves can be used on T_163__344 n.c. and n.o. can be mixed.

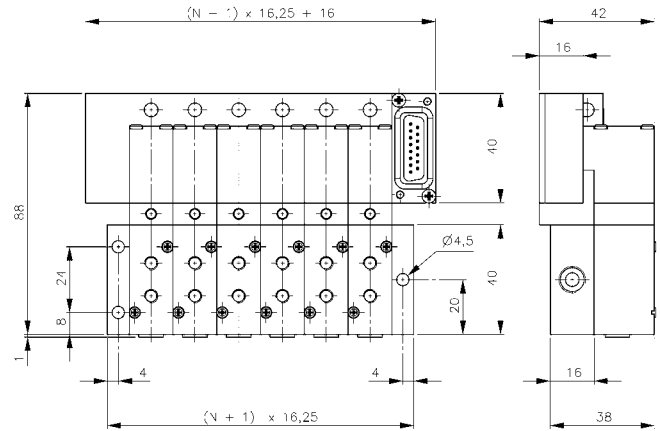
Type	Function	Page
MD 310 304 T	n.c.	2.5.1.2.5
MOD 310 304 T	n.o.	2.5.1.2.5

The following valves can be used on T_163__464 n.c. and n.o. can be mixed.

Type	Function	Page
MD 310 404 T	n.c.	2.5.1.2.5
MOD 310 404 T	n.o.	2.5.1.2.5

For additional order information please refer to page 2.8.1.

T_ 16 5 _ _ 303



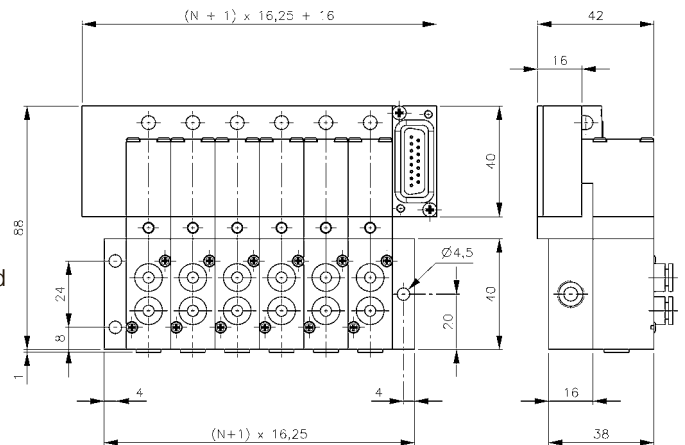
T_ 16 5 _ _ 303
equipped with valves type 303 T

Valve terminal with 5-way valves, orifice size 3 mm, ports 2 and 4 are in the valve. Ports 2 and 4 are either equipped with thread M5 or with push-in fittings for 4 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.2. 1, type RD 5 _ _ 303.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 510 303 T 24DC or MD 510 303 T 24AC). "Double body valves" (5/2-way impulse and 5/3-way-valves) occupy 2 spaces as described on page 2.8. 1.

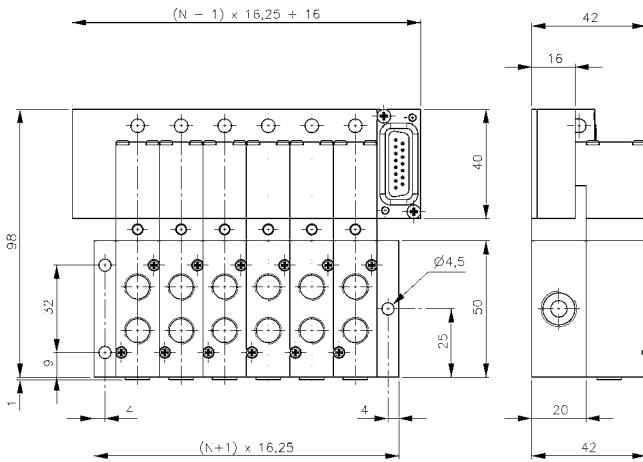


T_ 16 5 _ _ 303
equipped with valves type 343 T

Blanking plates are also available type BP 5 303 T.

The following valves can be used on that type of valve terminal:

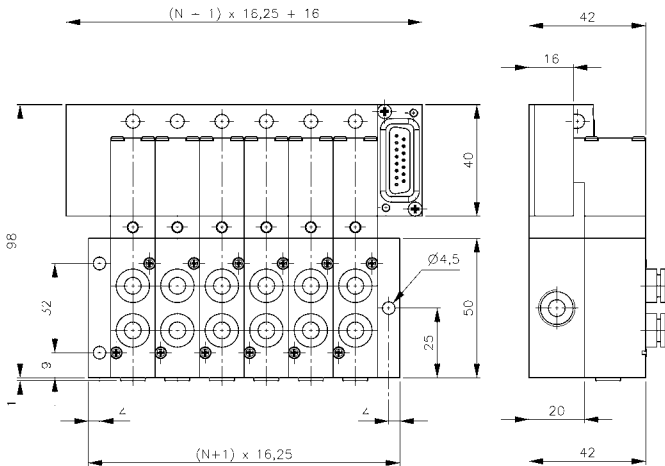
Type	Function	Page	Comment
MD 510 303 T	single sol.	2.5.2.2.1	
MD 510 343 T	single sol.	2.5.2.2.1	
MD 520 303 T	double sol.	2.5.2.2.5	double body
MD 520 343 T	double sol.	2.5.2.2.5	double body
MD 53_ 303 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description
MD 53_ 343 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description



T_16 5__403
equipped with valves type 403 T



Valve terminal with 5-way valves, orifice size 4 mm, ports 2 and 4 are in the valve. Ports 2 and 4 are either equipped with thread G 1/8" or with push-in fittings for 6 mm tube.



T_16 5__403
equipped with valves type 463 T

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.2.1, type RD 5__403.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 510 403 T 24DC or MD 510 403 T 24AC). "Double body valves" (5/2-way impulse and 5/3-way-valves) occupy 2 spaces as described on page 2.8.1.

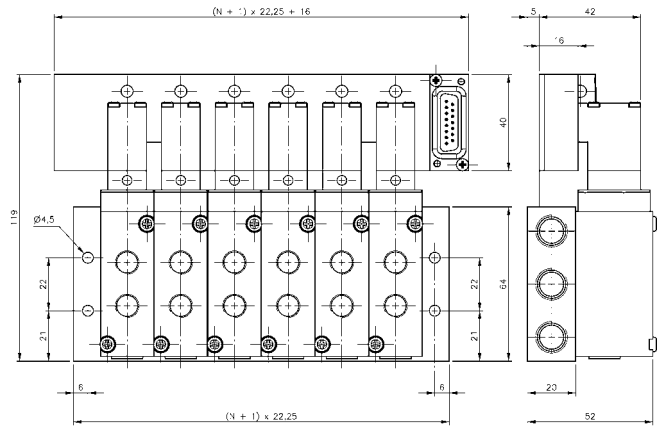
Blanking plates are also available type BP 5 403 T.

The following valves can be used on that type of valve terminal:

Type	Function	Page	Comment
MD 510 403 T	single sol.	2.5.2.2.1	
MD 510 463 T	single sol.	2.5.2.2.1	
MD 520 403 T	double sol.	2.5.2.2.5	double body
MD 520 463 T	double sol.	2.5.2.2.5	double body
MD 53__403 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description
MD 53__463 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.

T_22 5__ 503/T_22 5__ 703



T_22 5__ 503
equipped with valves type 503 T

Valve terminal with 5-way valves, ports 2 and 4 are in the valve.

Type 503 orifice size 5 mm, G 1/8"

Type 703 orifice size 7 mm, G 1/4"

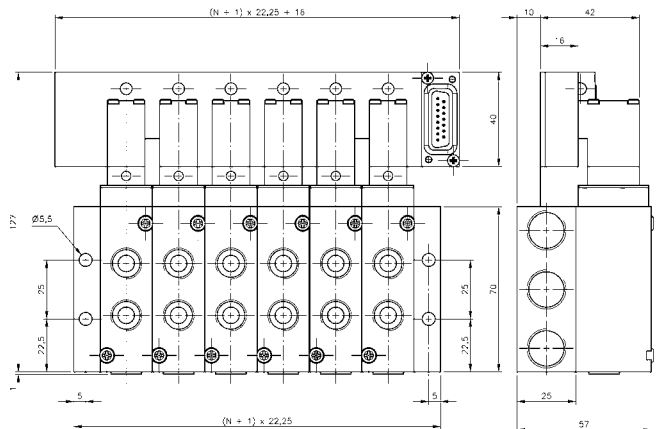
The terminal is available with 2, 3, 4, 5, 6, 8, 10, 12 positions, others on request. Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifolds are displayed and described on page 2.7.2.2 type R 5__ 503, on page 2.7.2.3 type R 5__ 703.

Valves for terminal use offer a 1.8 Watt / 3 VA solenoid, turned by 180° and no 3rd pin (ground).
Order-number valves:

MK 5__ 03 T 24DC or MK 5__ 03 T 24AC.

Blanking plates are also available type BP 5 503 T or type BP 5 703 T.



T_22 5__ 703
equipped with valves type 703 T

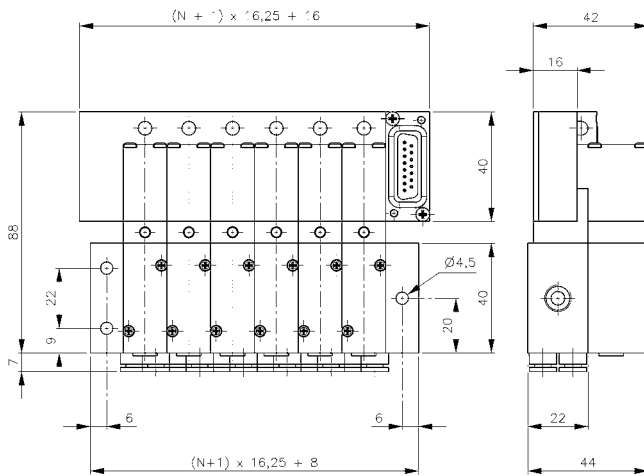
The following valves can be used on T_22 5__ 503:

Type	Function	Page	Comment
MK 510 503 T	single sol.	2.5.2.2.2	
MK 520 503 T	double sol.	2.5.2.2.6	double body
MK 53_ 503 T	5/3-way	2.5.3.2.2	double body, 3 versions available, refer to description

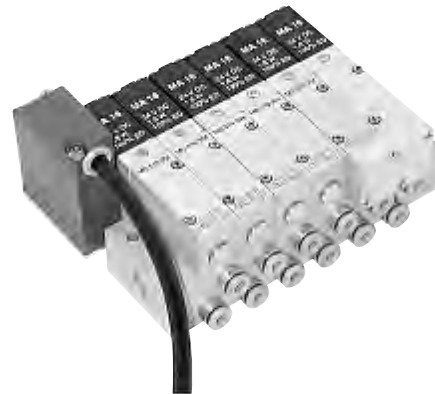
The following valves can be used on T_22 5__ 703:

Type	Function	Page	Comment
MK 510 703 T	single sol.	2.5.2.2.2	
MK 520 703 T	double sol.	2.5.2.2.6	double body
MK 53_ 703 T	5/3-way	2.5.3.2.2	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.



T_16 5__344
equipped with valves type 304 T



Valve terminal with 5-way valves, orifice size 3 mm, all the ports are in the plate. Ports 2 and 4 are equipped with push-in fittings for 4 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.2.6, type RD 5__344.

Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 510 304 T 24DC or MD 510 304 T 24AC). "Double body valves" (5/2-way impulse and 5/3-way-valves) occupy 2 spaces as described on page 2.8.1.

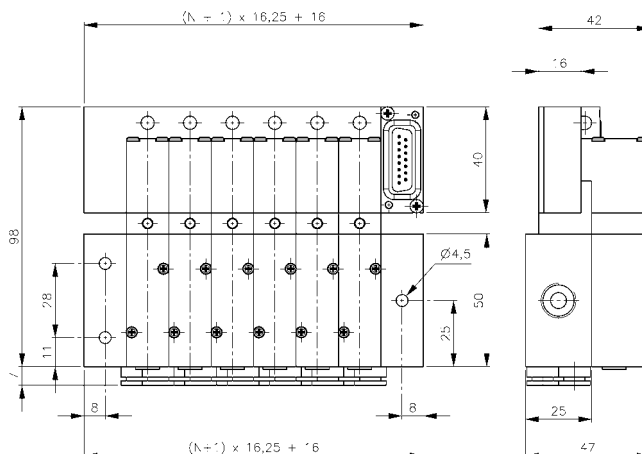
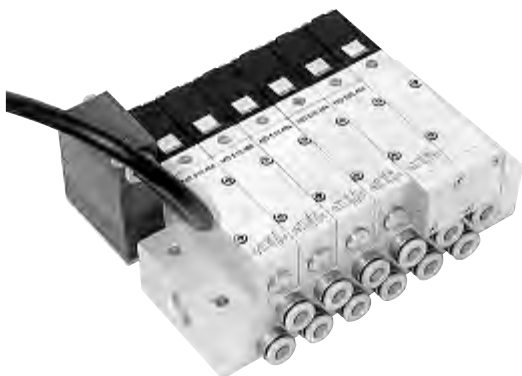
Blanking plates are also available type BP 5 344 T.

The following valves can be used on that type of valve terminal:

Type	Function	Page	Comment
MD 510 304 T	single sol.	2.5.2.2.3	
MD 520 304 T	double sol.	2.5.2.2.7	double body
MD 53__304 T	5/3-way	2.5.3.2.3	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.

T_ 16 5_ _ 464



T_ 16 5_ _ 464
equipped with valves type 404 T

Valve terminal with 5-way valves, orifice size 4 mm, all the ports are in the plate. Ports 2 and 4 are equipped with push-in fittings for 6 mm tube.

The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifold is displayed and described on page 2.7.2.6, type RD 5_ _ 464.

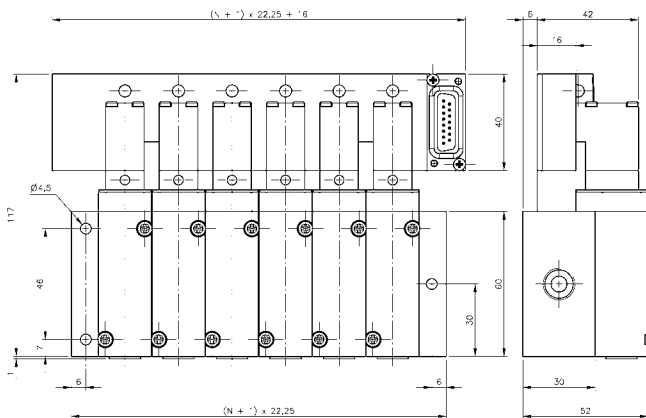
Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 510 404 T 24DC or MD 510 404 T 24AC). "Double body valves" (5/2-way impulse and 5/3-way-valves) occupy 2 spaces as described on page 2.8.1.

Blanking plates are also available type BP 5 464 T.

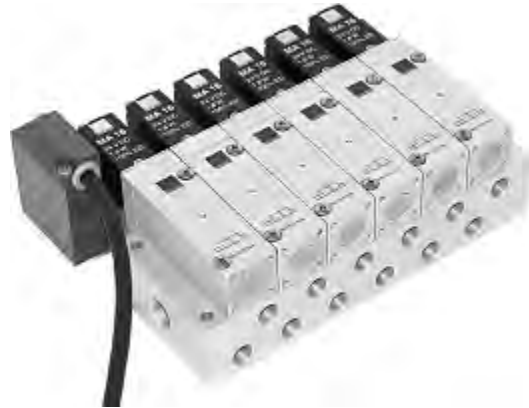
The following valves can be used on that type of valve terminal:

Type	Function	Page	Comment
MD 510 404 T	single sol.	2.5.2.2.3	
MD 520 404 T	double sol.	2.5.2.2.7	double body
MD 53_ 404 T	5/3-way	2.5.3.2.3	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.



T_22 5__ 504
equipped with valves type 504 T



Valve terminal with 5-way valves, orifice 5 mm, all the ports are in the plate. Port 2 and 4: G 1/8".

The terminal is available with 2, 3, 4, 5, 6, 8, 10, 12 positions, others on request. Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifolds are displayed and described on page 2.7.2.7, type R 5__ 504.

Valves for terminal use offer a 1.8 Watt / 3 VA solenoid, turned by 180° and no 3rd pin (ground).
Order-number valves:
MK 5__ 504 T 24DC or MK 5__ 504 T 24AC.

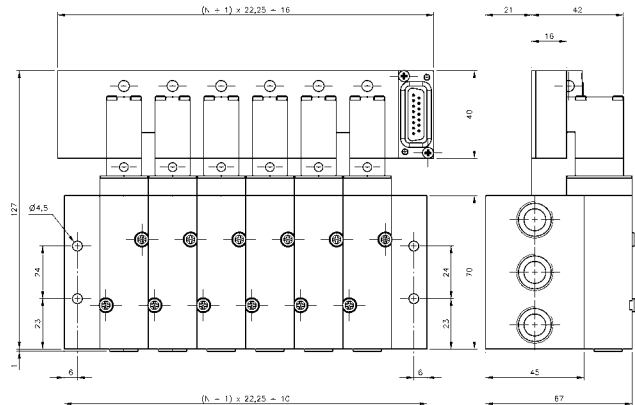
Blanking plates are also available type BP 5 504 T.

The following valves can be used on that type of valve terminal:

Type	Function	Page	Comment
MK 510 504 T	single sol.	2.5.2.2.4	
MK 520 504 T	double sol.	2.5.2.2.8	double body
MK 53_ 504 T	5/3-way	2.5.3.2.4	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.

T_22 5__704/T_22 5__784



T_22 5__704
equipped with valves type 704 T

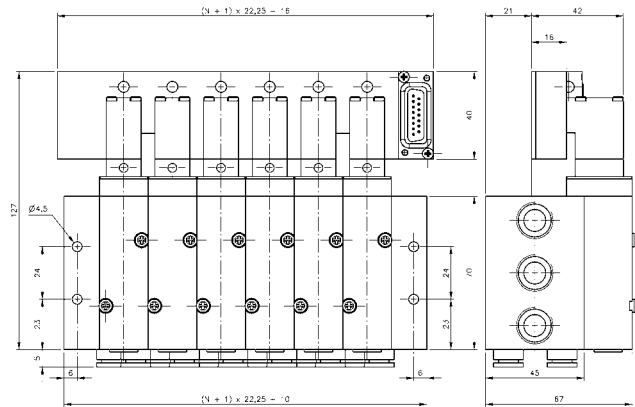
Valve terminal with 5-way valves, orifice 7 mm, all the ports are in the plate. Port 2 and 4 either G 1/4" (terminal 704) or push-in fittings for 8 mm tube (terminal 784).

The terminal is available with 2, 3, 4, 5, 6, 8, 10, 12 positions, others on request. Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

The pneumatic manifolds are displayed and described on page 2.7.2.8, type R 5__704 / 784.

Valves for terminal use offer a 1.8 Watt / 3 VA solenoid, turned by 180° and no 3rd pin (ground).
Order-number valves:
MK 5__704 T 24DC or MK 5__704 T 24AC.

Blanking plates are also available type BP 5 704 T.

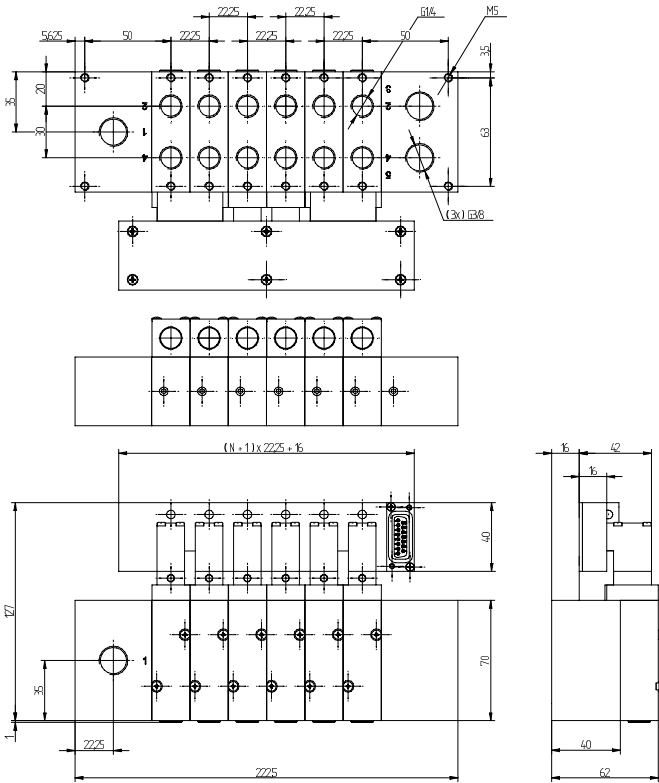


T_22 5__784
equipped with valves type 704 T

The following valves can be used on that type of valve terminal:

Type	Function	Page	Comment
MK 510 704 T	single sol.	2.5.2.2.4	
MK 520 704 T	double sol.	2.5.2.2.8	double body
MK 53_704 T	5/3-way	2.5.3.2.4	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.



T_22 5__704 K1
equipped with valves type 704 T



Valve terminal with 5-way valves, orifice 7 mm, all the ports are in the plate.

Plates are designed for assemblage in control cabinets.

Ports 2 and 4: G 1/4".

The terminal is available with 2, 3, 4, 5, 6, 8, 10, 12 positions, others on request. Every station is equipped with a varistor and red LED for coils 24V= or 24V~.

The pneumatic manifolds are displayed and described on page 2.7.2.9, type RB 5__704 K1.

Valves for terminal use offer a 1.8 Watt / 3 VA solenoid, turned by 180° and no 3rd pin (ground).

Order-number valves:

MK 5__704T 24DC or MK 5__704 T 24AC.

3/2-way functions by closing either port 2 or 4.

Blanking plates are also available type BP 5 704.

In case the customer wants to have the FRL inside the box, the endplate left offers as second supply port that faces inside the box. One of the two has to be closed with a G 3/8" plug.

The valve terminals are also available with individual valve isolation. In certain industries the user appreciates, if he can take away air pressure at any valve on the plate individually. Valves can easily be exchanged by closing the plug in port 1 without interruption of the air-supply of the other valves. If requested, please order T_5__704 K1D1.



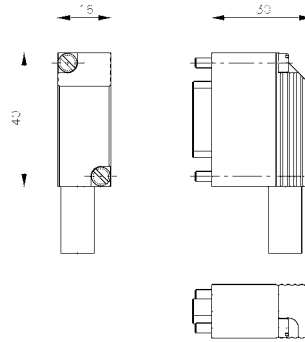
Individual valve isolation

The following valves can be used on that type of valve terminal:

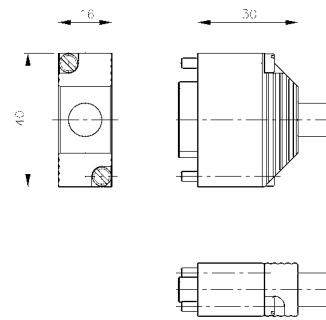
Type	Function	Page	Comment
MK 510 704 T	single sol.	2.5.2.2.4	
MK 520 704 T	double sol.	2.5.2.2.8	double body
MK 53_704 T	5/3-way	2.5.3.2.4	double body, 3 versions available, refer to description

For additional order information please refer to page 2.8.1.

Connectors and Cable ST40 W__ / ST40 G__



ST40 W__



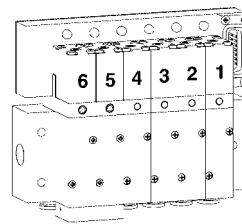
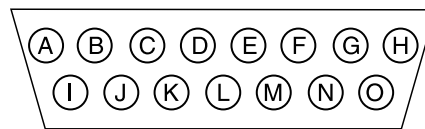
ST40 G__

Connector and cables for Hafner valve-terminals. O-ring seal assures best protection against water and humidity. Standard cable length is 3 m, others are available on request.

2 screws are included.

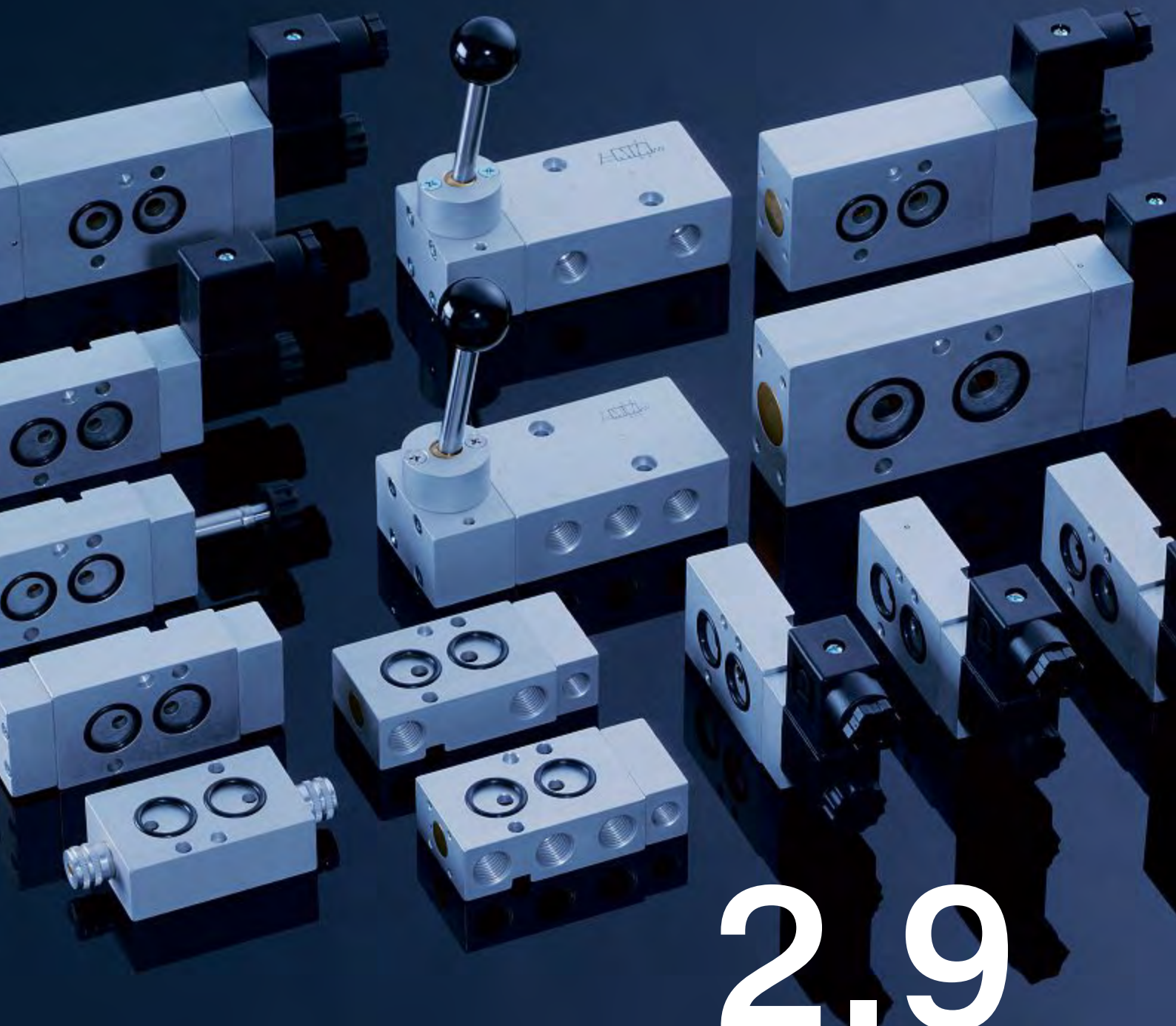
Relationship of valve-position, cable-colour and PINS in the connector

Position of solenoid	Colour of cable	PIN
1	brown	K
2	green	M
3	yellow	C
4	grey	F
5	pink	J
6	blue	N
7	red	B
8	black	G
9	violet	I
10	grey-pink	O
11	blue-red	A
12	white-green	H
13	brown-green	D
14	white-yellow	E
common – or +	white	L



Please be aware: Always count position of solenoid from the connector !

Type	Exit of cable	Number of laces
ST40 W06	at the side	7, 6 positions and common Plus or Minus
ST40 W14	at the side	15, 14 positions and common Plus or Minus
ST40 G06	at the back	7, 6 positions and common Plus or Minus
ST40 G14	at the back	15, 14 positions and common Plus or Minus



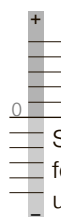
2.9

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: - 50° C to + 50° C.
For detailed information refer to chapter 2.11.



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



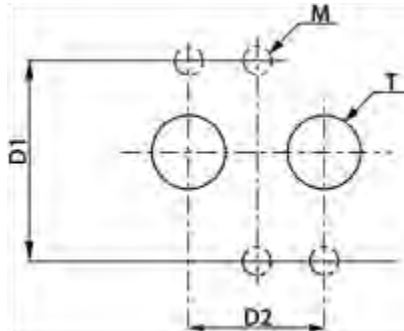
Selected models are available in stainless steel.
For detailed information refer to chapter 2.12.

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



General information: Valves with the 1/4" and 1/2" NAMUR-interface and different flow rates

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 1.250 l/min
NAMUR-interface 1/4"
Port size G 1/4" or 1/4" NPT



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



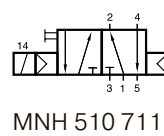
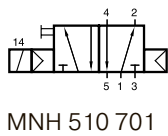
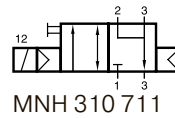
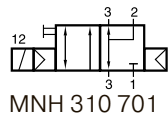
Series 121 Orifice size 12 3.000 l/min
NAMUR-interface 1/2"
Port size G 1/2" or 1/2" NPT

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

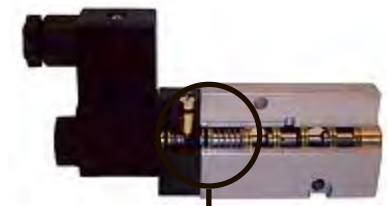
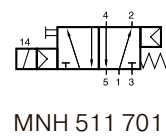
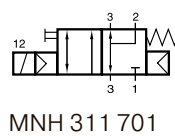
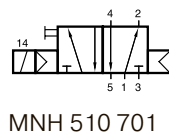
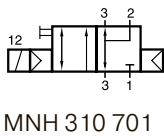
alternative port-scheme



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

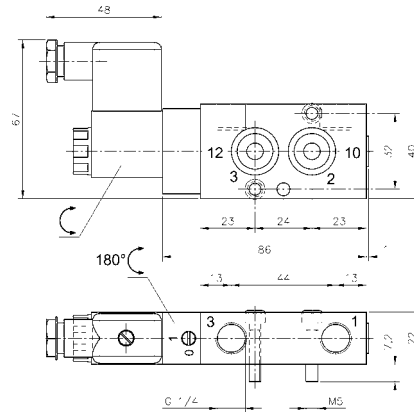
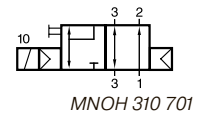
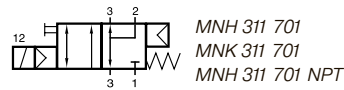
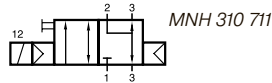
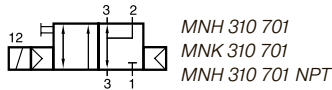
Valves with air spring return

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.

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



**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").

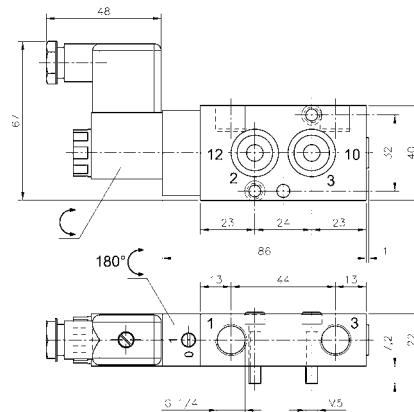
Type MNH 31_7_1 normally closed
Type MNOH 31_701 normally open
Type MNK 31_701 n.c. low power

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.

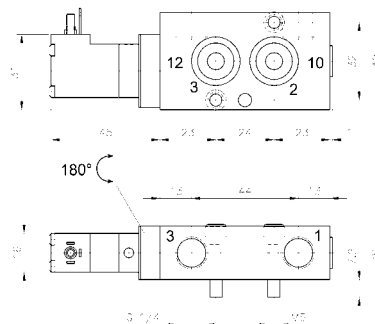
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

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.



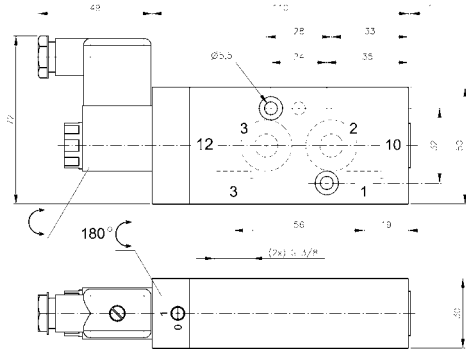
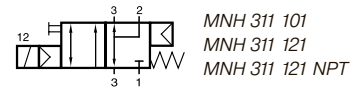
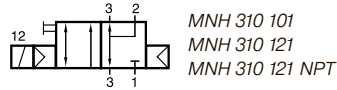
MNH 310 711 ports 1 and 3 are swapped!



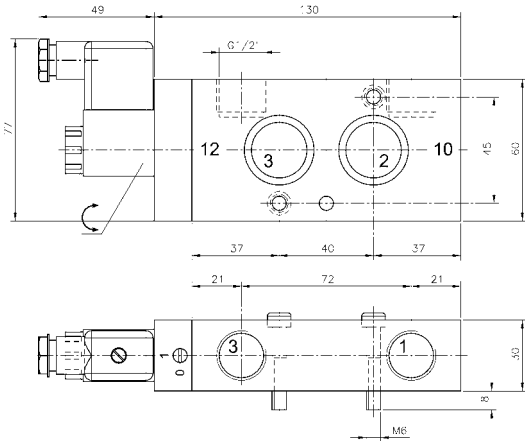
MNK 310 701/MNK 311 701

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 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.

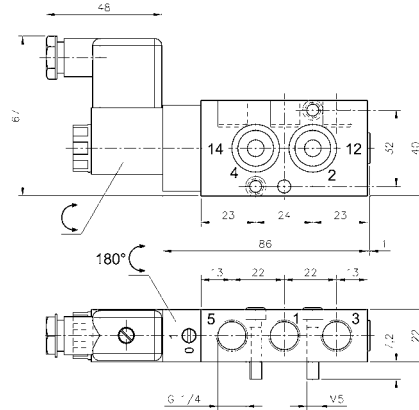
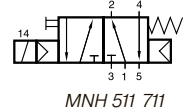
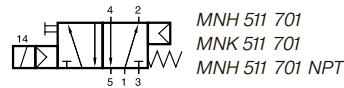
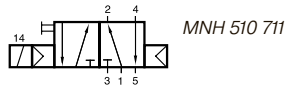
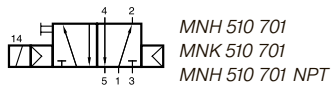
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V-, 12V-.

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

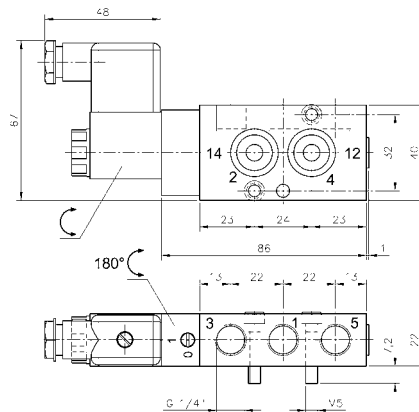
5/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4" NAMUR-standard.

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.

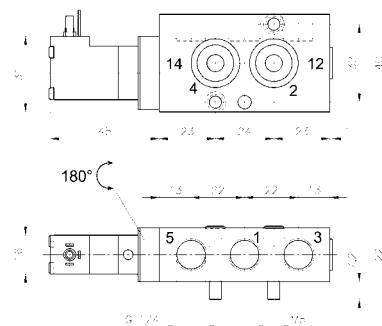
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

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!

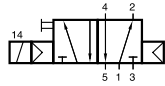


MNK 510 701/MNK 511 701

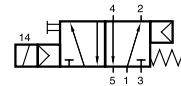
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MNH 510 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg
MNH 510 711	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg
MNH 511 701	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg
MNH 511 711	G 1/4"	1250 l/min	2,5 - 10 bar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



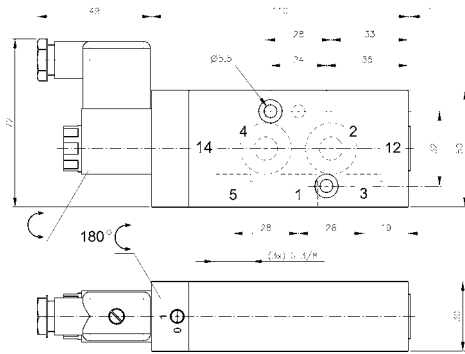
MNH 510 101/MNH 511 101 MNH 510 121/MNH 511 121



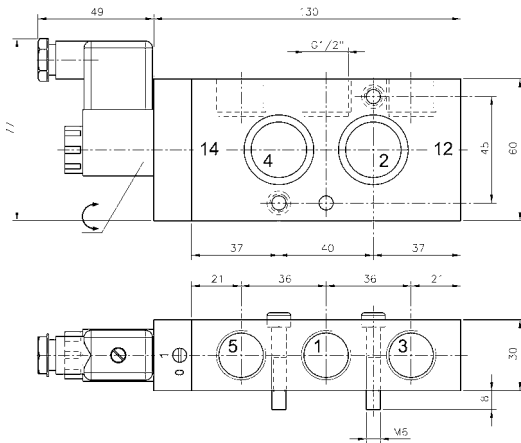
MNH 510 101
MNH 510 121
MNH 510 121 NPT



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.

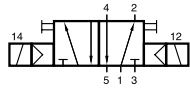
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

The valves are generally equipped with manual override to turn.

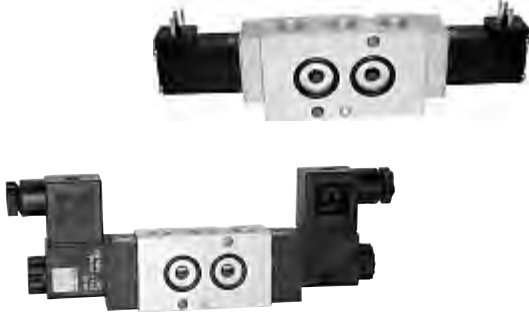
Delivery includes 1 pin, 2 screws, 2 O-rings.

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
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
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

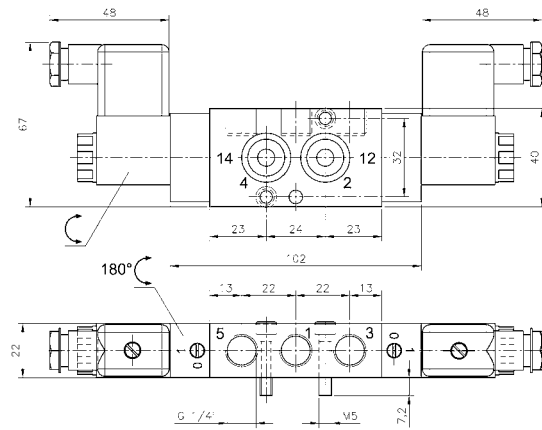


5/2-way solenoid valve actuated by impulse.
Position is kept until next electrical signal even
when not attached to electrical source. Interface
according to NAMUR-standard.

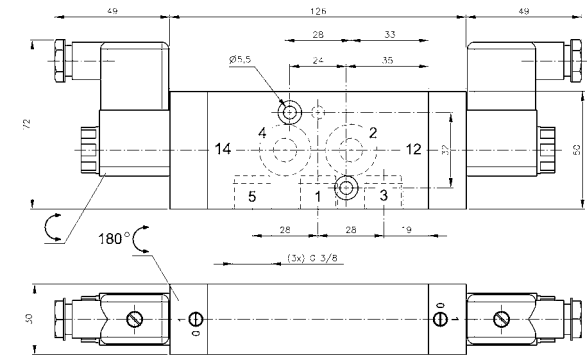
MNH generally with manual override to turn
with solenoid operators 230V/50Hz, 110V/50Hz,
24V/50Hz, 48V=, 24V=, 12V=.

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

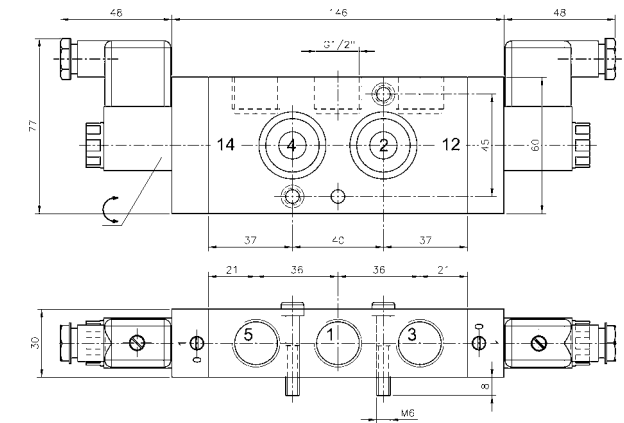
Delivery includes 1 pin, 2 screws, 2 O-rings.



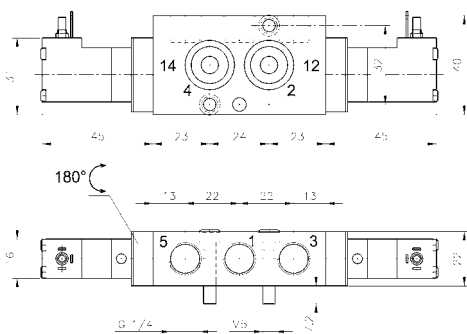
MNH 520 701/MNH 520 701 NPT









MNH 520 101

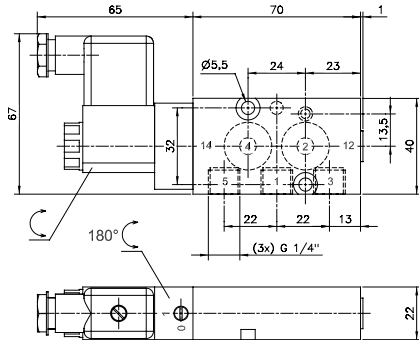
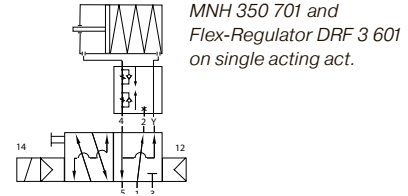
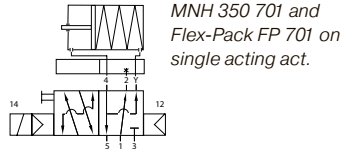
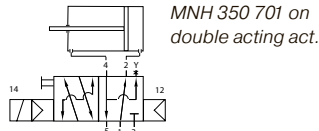


MNH 520 121/MNH 520 121 NPT

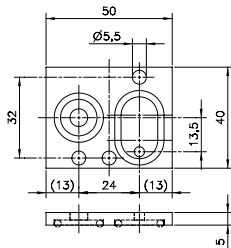


MNK 520 701

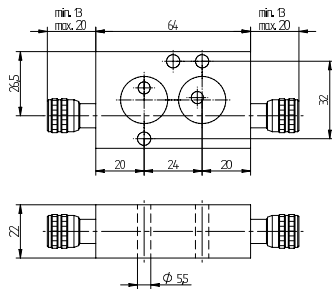
Type	NAMUR Port size	Air flow	Operating press.	Power cons.	Weight
MNH 520 701	1/4" G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg 
MNH 520 101	1/4" G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,84 kg 
MNH 520 121	1/2" G 1/2"	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,87 kg 
MNK 520 701	1/4" G 1/4"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



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.

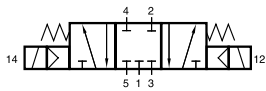
Delivery of FP 701 and DRF 3 601 includes longer screws, seals as well as a plug to close port 3 of the valve.

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

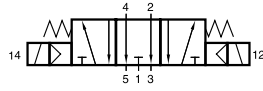
Type	Port size	Air flow	Operating press.	Power Cons.	Weight
MNH 350 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 350 701 NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701 NPT	1/4" NPT	1250 l/min	2,5 -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



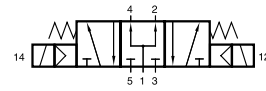
MNH 531 701/MNH 532 701/MNH 533 701 MNH 531 101/MNH 531 121/MNK 531 701



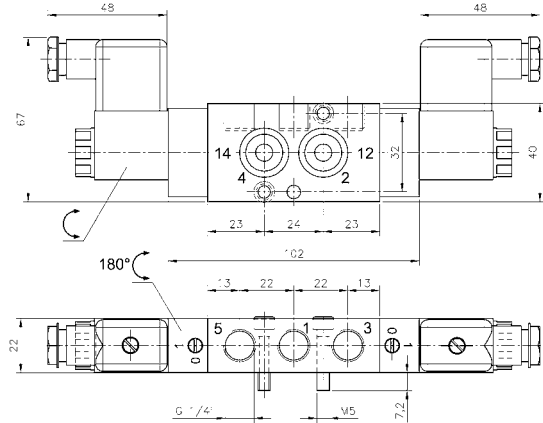
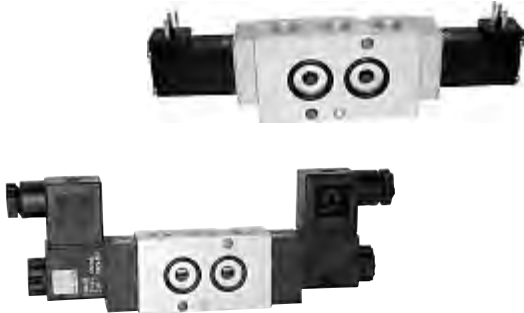
MNH 531 701
MNH 531 101
MNH 531 121
MNK 531 701
MNH 531 701 NPT
MNH 531 121 NPT



MNH 532 701



MNH 533 701



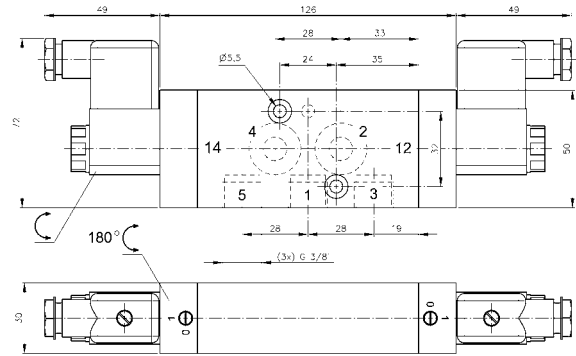
MNH 53_701/MNH 531 701 NPT

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

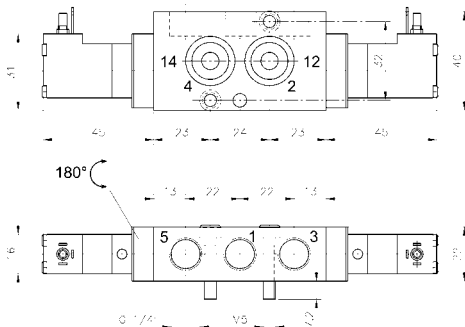
MNH generally with manual override to turn with solenoid operators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

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

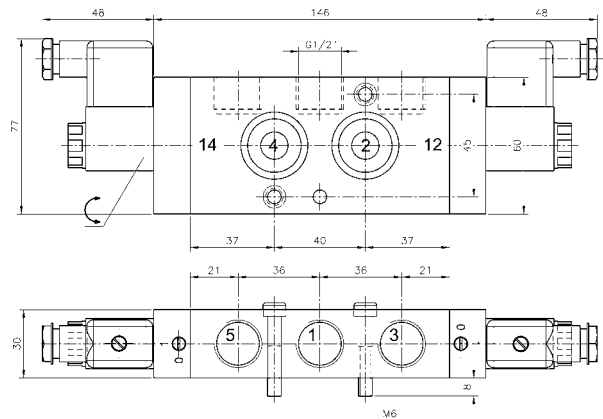


MNH 531 101

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



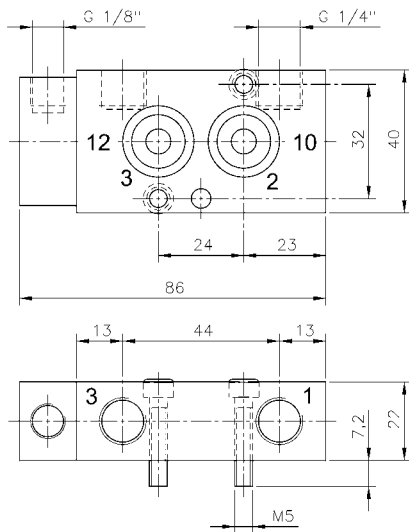
MNK 531 701



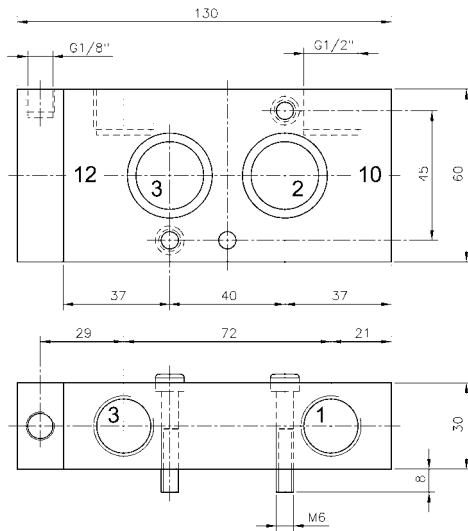
MNH 531 121/MNH 531 121 NPT

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
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
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
MNH 531 121 NPT	1/2"	1/2" NPT	3000 l/min 3 - 10 bar	3 W = / 5 VA ~	0,87 kg

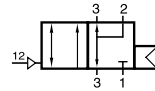
PN 310 701/PN 311 701/PN 310 121



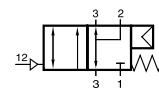
PN 310 701/PN 311 701



PN 310 121



PN 310 701
PN 310 121



PN 311 701



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"

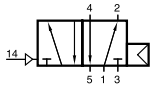
Port sizes type 121: 1 and 3: G 1/2"
12: G 1/8"

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

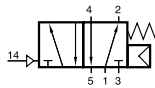
NPT ported valves are available on request.

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 

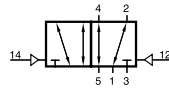
PN 510 701/PN 511 701/PN 510 121 PN 520 701/PN 520 121



PN 510 701
PN 510 121



PN 511 701



PN 520 701
PN 520 121



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

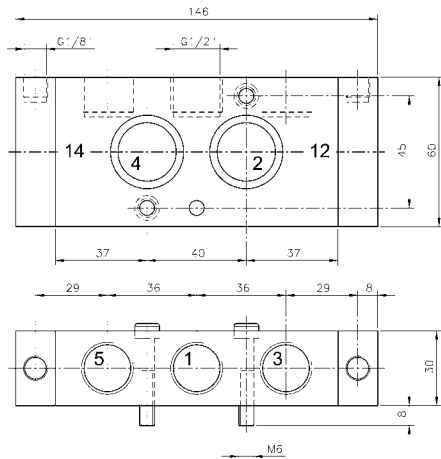
PN 510 701 and PN 510 121 with pneumatic spring. For valves with pure pneumatic spring operating and actuation pressure should be at the same level. PN 511 701 with combined mechanical and pneumatic spring return. PN 520 with double pilot.

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

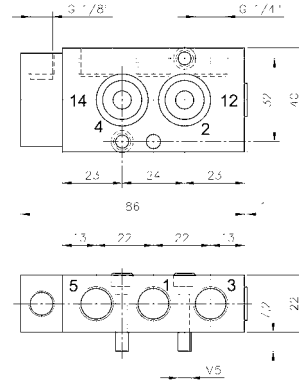
Port sizes type 121: 1, 3 and 5: G 1/2"
12 and 14: G 1/8"

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

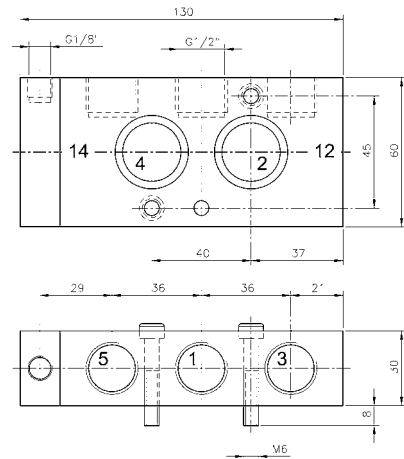
NPT ported valves are available on request.



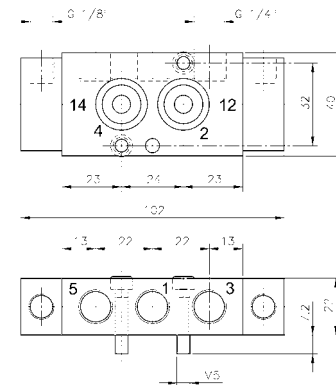
PN 520 121



PN 510 701/PN 511 701

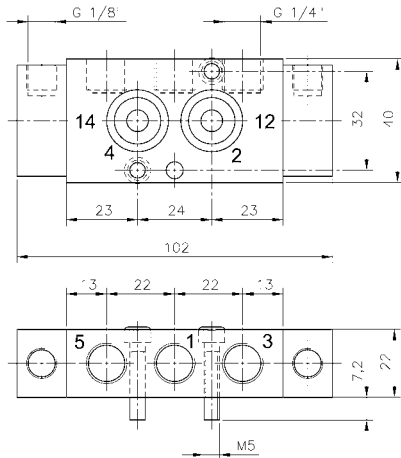
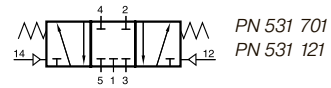


PN 510 121

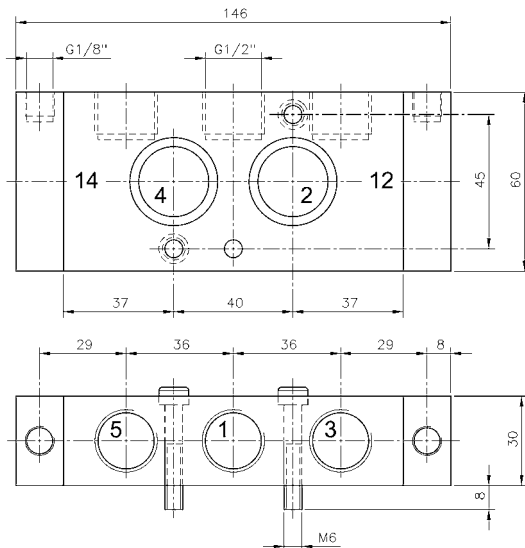


PN 520 701

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
PN 511 701	1/4"	G 1/4" - G 1/8"	1250 l/min	3 - 10 bar	3 - 10 bar	0,19 kg
PN 510 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	the same	0,60 kg
PN 520 701	1/4"	G 1/4" - G 1/8"	1250 l/min	2 - 10 bar	2,5 - 10 bar	0,22 kg
PN 520 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	2,5 - 10 bar	0,67 kg



PN 531 701



PN 531 121



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 type 121: 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.

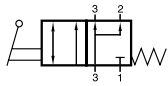
Delivery includes 1 pin, 2 screws, 2 O-rings.

NPT ported valves are available on request.

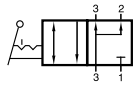
Type	NAMUR	Port size	Air flow	Operating press.	Actuation press.	Weight
PN 531 701	1/4"	G 1/4" - G 1/8"	1250 l/min	1 - 10 bar	3 - 10 bar	0,22 kg
PN 531 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	3 - 10 bar	0,67 kg



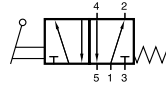
HVN 311 701/HVRN 320 701 HVN 511 701/HVRN 520 701



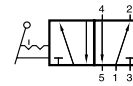
HVN 311 701



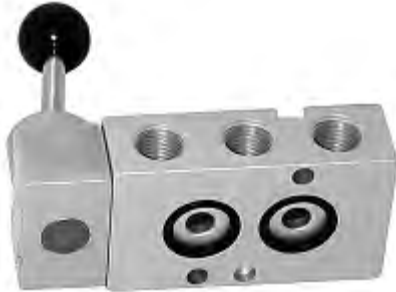
HVRN 320 701



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

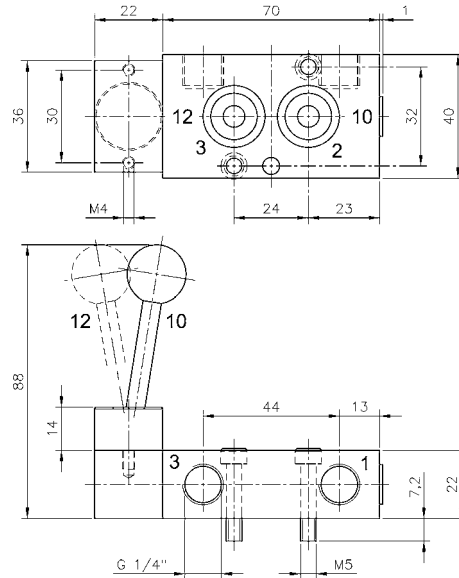
3/2-way valves offer exhaust air recirculation („purge“).

The lever is sealed by using a metal ball.

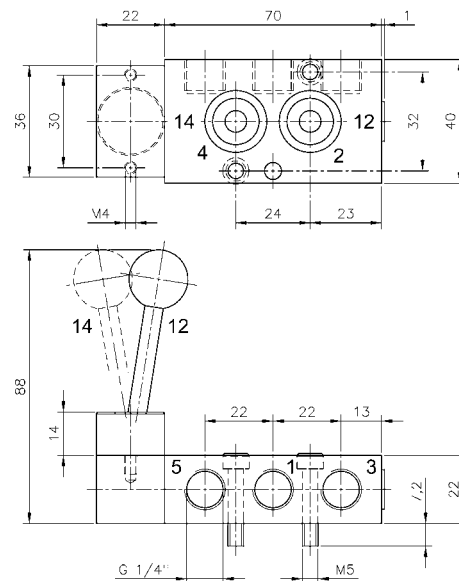
Exhaust can be throttled.

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

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

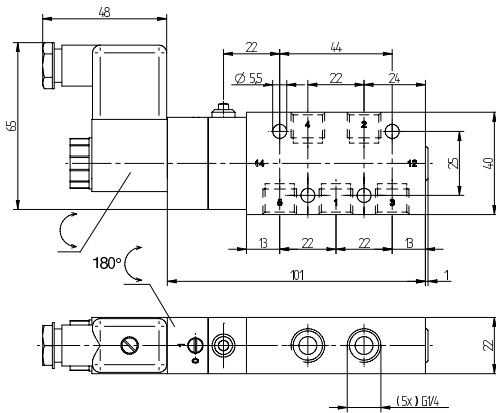


HVN 311 701/HVRN 320 701



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



MHLL 510 701 ALU



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.

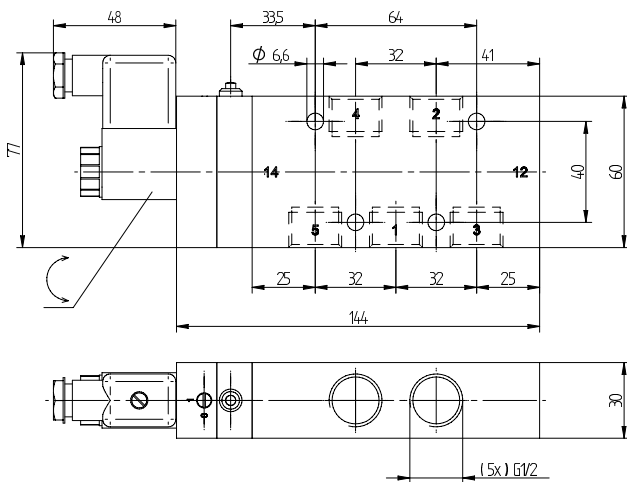
Unlike a valve with a manual reset function: In order to switch-on the valve the solenoid has to be actuated and initially a knob on the valve has to be pushed.

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:

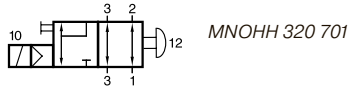
- *Stainless steel version*
- *ATEX-approved*
- *Pneumatically actuated valves*



MHLL 510 121

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

Valves with latch-lock function



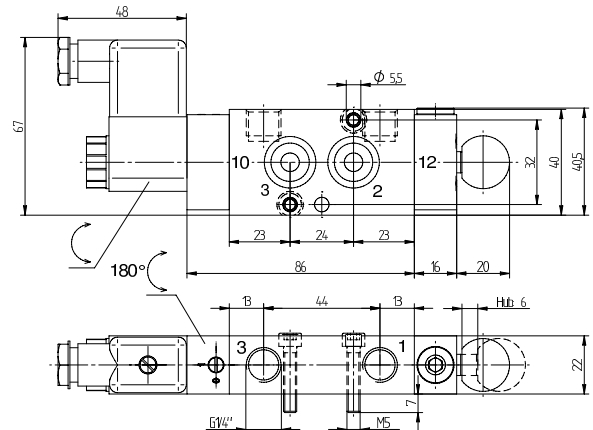
The MNOHH 320 701 is a 2-position valve, actuated from one side by solenoid, from the other side manually.

Interface according to 1/4" 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.

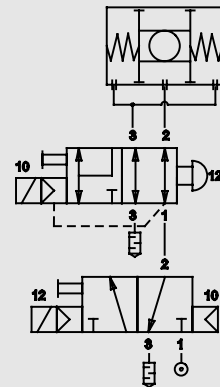
As a result the process valve stays in this position until maintenance personnel is present and resets the valve.

Function:

Actuator

MNOHH 320 701

3/2-way valve



On request:

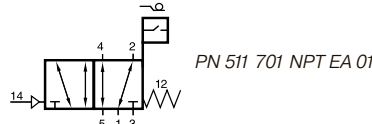
- Other functions
- ATEX-approved
- Stainless steel version

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

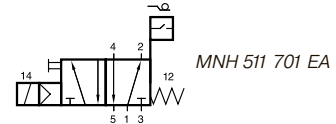
Valves with position feedback function



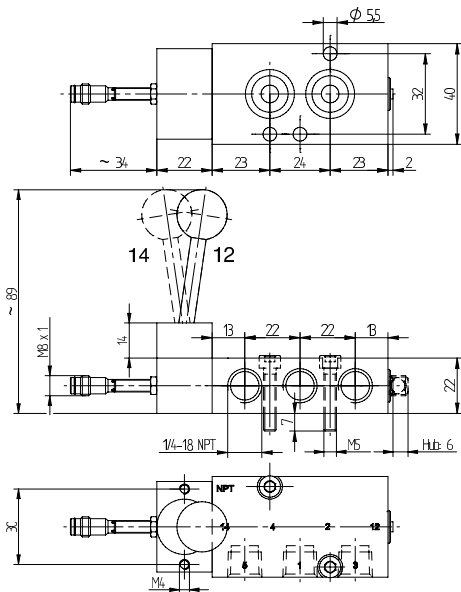
HVRN 520 701 L NPT EA 01



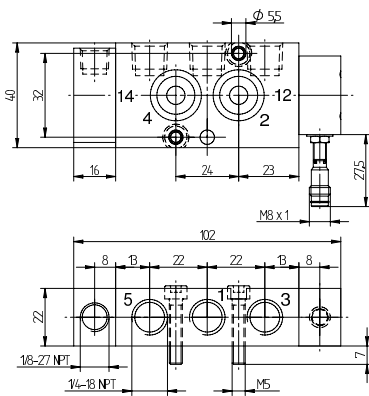
PN 511 701 NPT EA 01



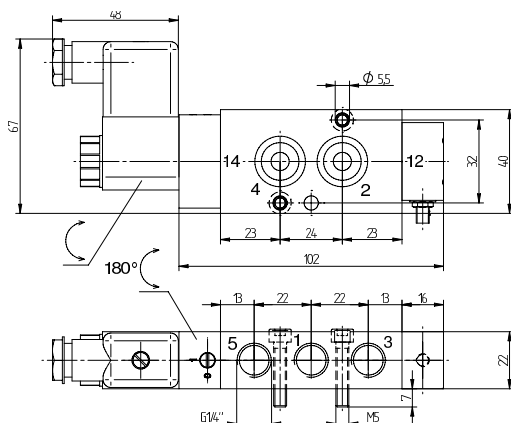
MNH 511 701 EA



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

Valves for high temperature applications

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).



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.

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



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



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.

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

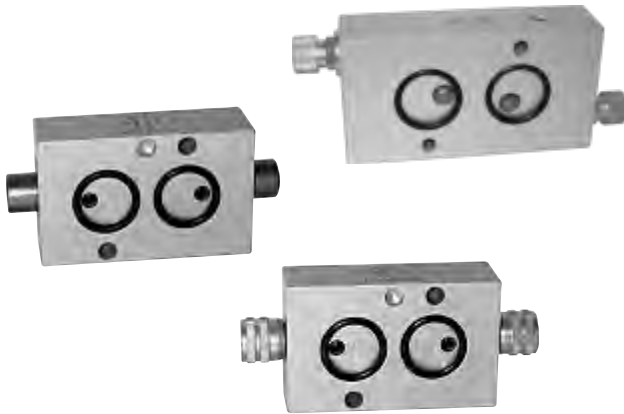
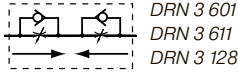


2.10

**Accessories for smart
valve automation**

DRN 3 601/DRN 3 611/DRN 3 128

Flow regulator plate

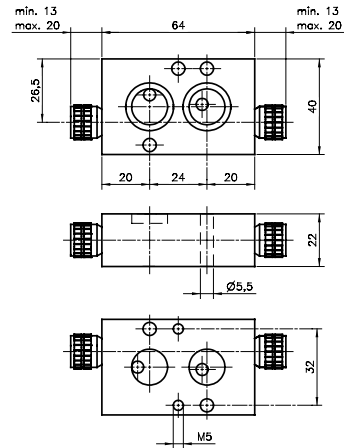


Block form flow regulator as intermediate plate, interface according to NAMUR-standard, for 3/2-way valves with exhaust air recirculation.

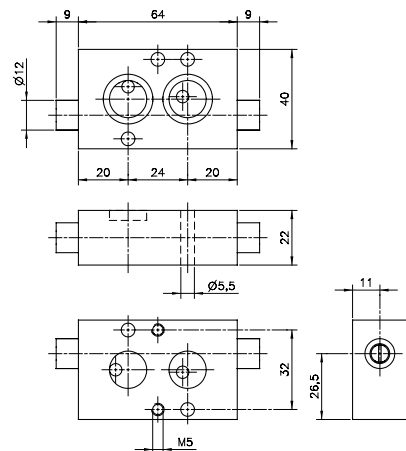
To regulate the forward stroke of a single acting pneumatic actuator and to regulate the exhaust air going into the spring return unit. DRN 3 601 and DRN 3 128 to be operated manually, DRN 3 611 with a screw-driver.

If flow regulator is required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.10.14.

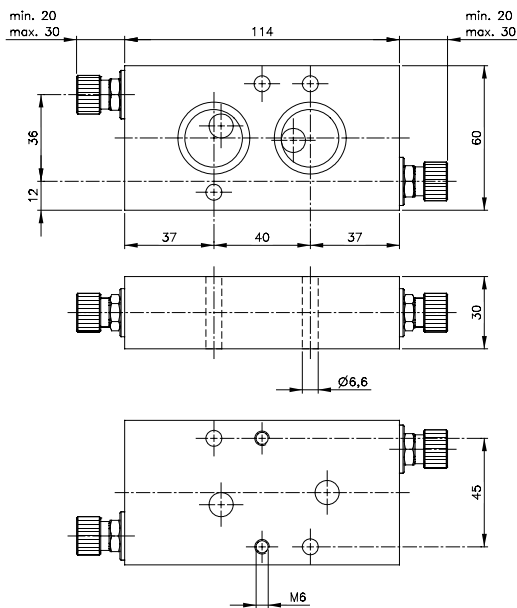
Delivery includes 1 pin, 2 screws, 2 O-rings.



DRN 3 601



DRN 3 611

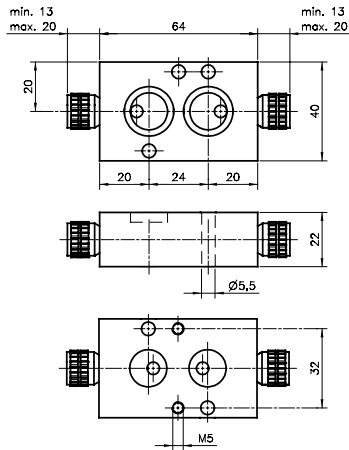
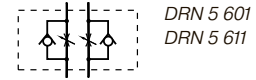


DRN 3 128

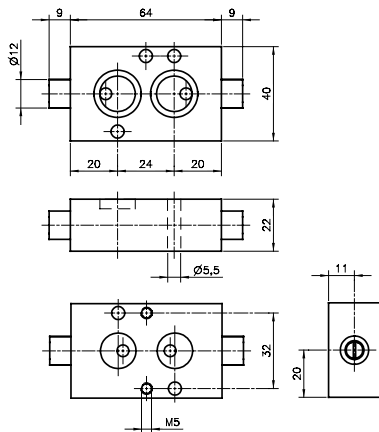
Type	Function	NAMUR	Port size	Max. air flow	Operating pressure	Weight
DRN 3 601	3-way	1/4"	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 3 611	3-way	1/4"	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 3 128	3-way	1/2"	Ø 8 mm	1.500 l/min	0,5 - 10 bar	0,60 kg

DRN 5 601/DRN 5 611

Flow regulator plate



DRN 5 601



DRN 5 611

Block form flow regulator as intermediate plate, interface according to 1/4" 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 5 501 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 2.10.14.

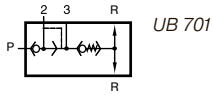
Delivery includes 1 pin, 2 screws, 2 O-rings.

Type	Function	Port size	Max. air flow	Operating pressure	Weight
DRN 5 601	5-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 5 611	5-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg



UB 701

Air-recirculation block for single acting actuators



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

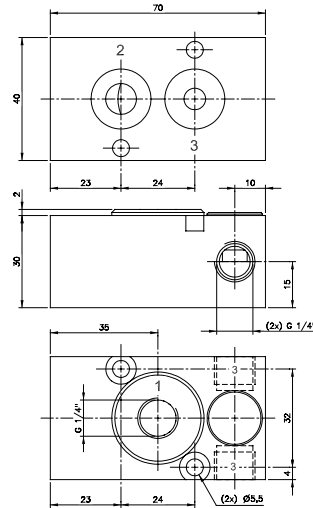
Valve is designed for spring return pneumatic actuators with 1/4" NAMUR-interface to be controlled by a remote piloted 3/2-way valve.

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

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

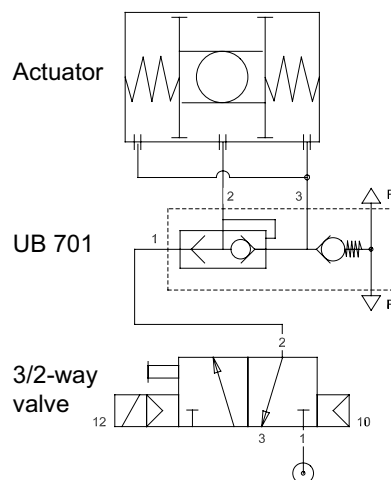
One of the two exhaust ports 3 to be closed by a plug.

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



UB 701

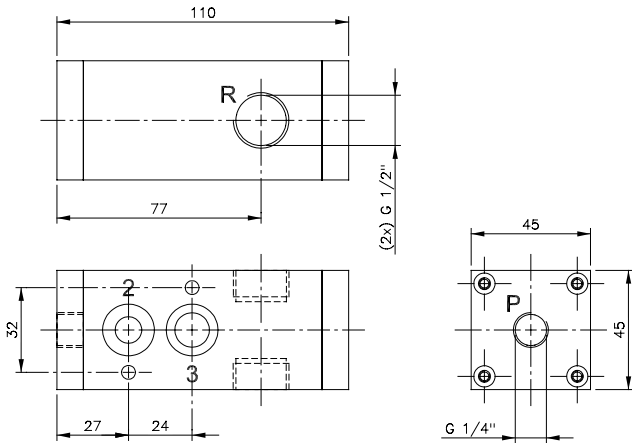
Function:



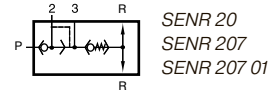
Type	NAMUR	Port size	Air flow	Operating pressure	Weight
UB 701	1/4"	G 1/4"	1250 l/min	1 - 10 bar	0,22 kg

SENR 20/SENR 207/SENR 207 01

Quick-exhaust-block with non-return valve



SENR 20



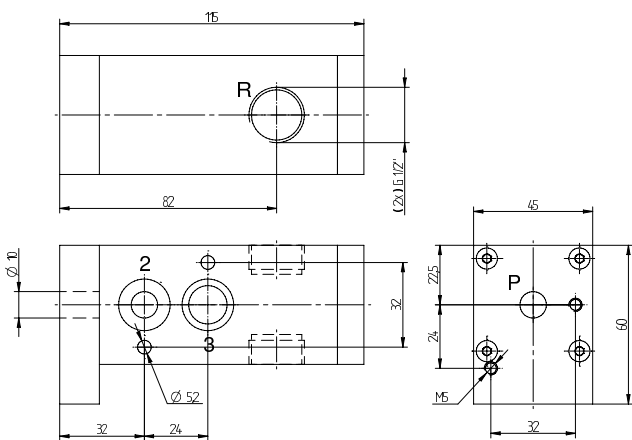
The valve is designed for fast closing of spring-return actuators with 1/4" NAMUR-interface.

Any 3/2-way valve can be used as pilot valve. The connection towards the pilot valve is either G 1/4" ported (type SENR 20) 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.

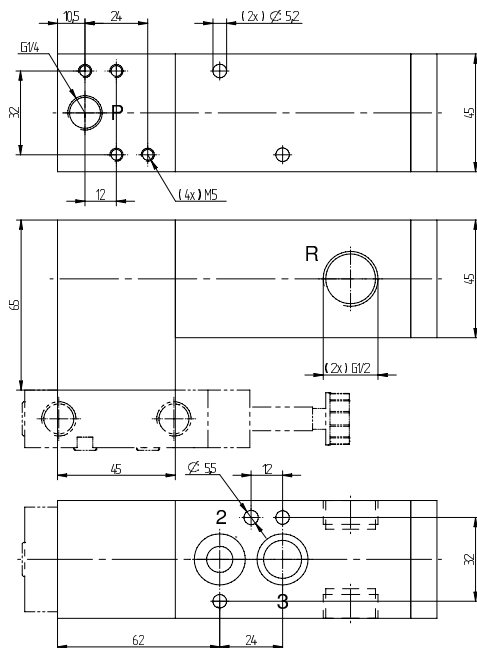
Delivery includes 2 screws, 2 O-rings, 1/2" plug for port R.



SENR 207

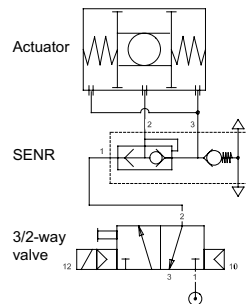
Special solution (SENR 207 01):

Quick-exhaust block for external piping and universal NAMUR-valve mounting.



SENR 207 01

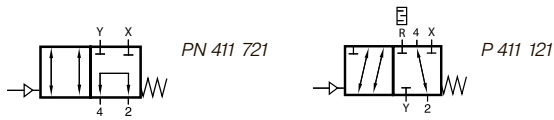
Function:



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

PN 411 721/P 411 121

Short-cut valve when using manual gearbox



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 G 1/2".

Function:

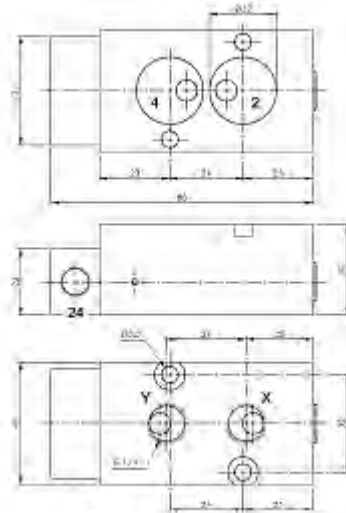
As long as a pneumatic signal is applied, the valve forwards the signals applied to 2 and 4 through to X and Y. When no pneumatic signal is applied the ports 2 and 4 are shortcut.

Typical application:

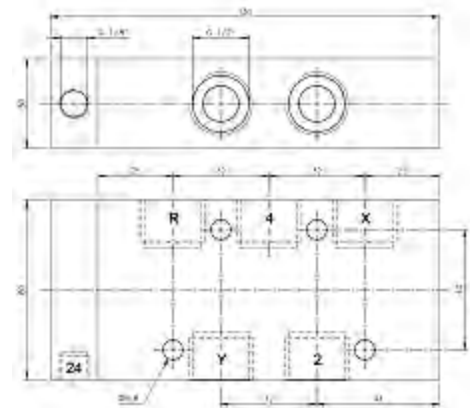
On automated process-valve equipped with a gear-box for manual actuation in case of emergency. When failure occurs, compressed air might get trapped in the actuator. Manual operation might damage the actuator. Valve assures, that the user doesn't have to close the process valve against the force of the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

On request:

Valve that is normally blocked, type PN 411 711.



PN 411 721

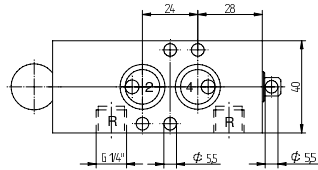
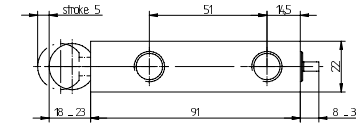
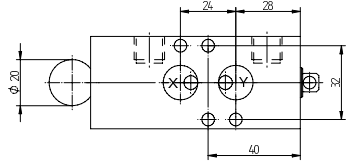
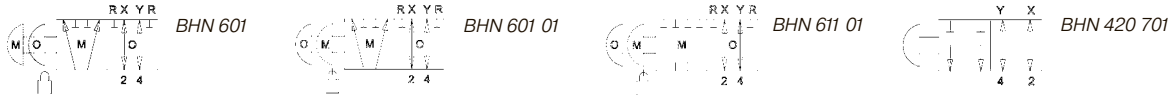


P 411 121

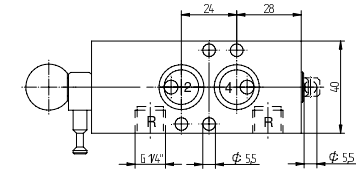
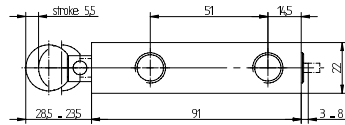
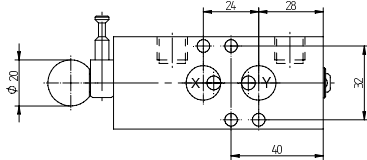
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
PN 411 721	G 1/4"	1250 l/min	1,5 - 10 bar	3 - 10 bar	0,20 kg
P 411 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,63 kg

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

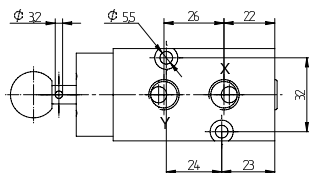
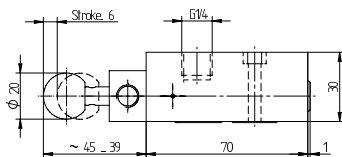
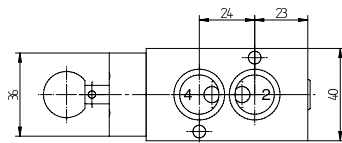
Manual actuated block and vent/block and block/short-cut valve



BHN 601



BHN 601 01/ BHN 611 01



BHN 420 701



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.

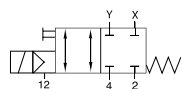
If BHN 6__ are required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.10.14.

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

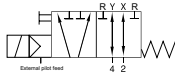
Type	Function	lockable	Air flow	Operating press.	Actuation force	Weight
BHN 601	vents actuator	O-position	900 l/min	1 - 10 bar	18 N	0,23 kg 
BHN 601 01	vents actuator	M-position	900 l/min	1 - 10 bar	18 N	0,24 kg
BHN 611 01	blocks actuator	M-position	900 l/min	1 - 10 bar	18 N	0,24 kg
BHN 420 701	shortcuts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

MNEH 411 711/MNEH 611 601

Electrically actuated block and block/block and vent valve



MNEH 411 711



MNEH 611 601



The **MNEH 411 711** 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 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.

Pilot ports are blocked and actuator chamber is vented when the electric signal or air pressure at the external pilot port cuts off.

Available with solenoid operators:

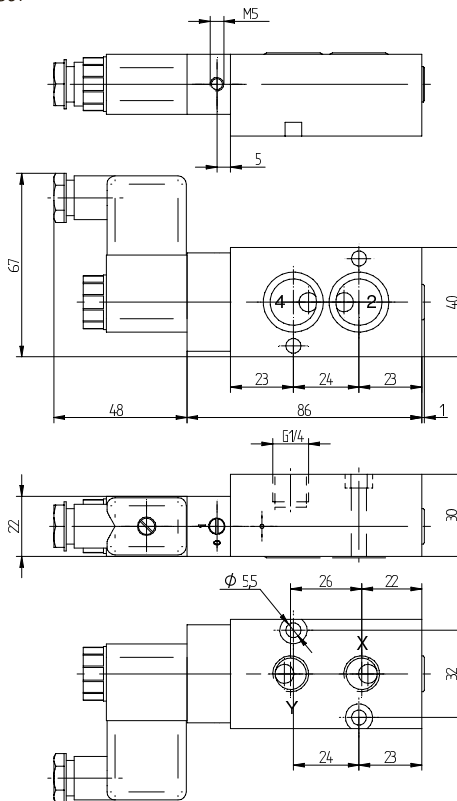
230V/50Hz, 100V/50Hz, 24V/50Hz, 48V=. 24V=, 12V=.

The valves are equipped with manual override to turn.

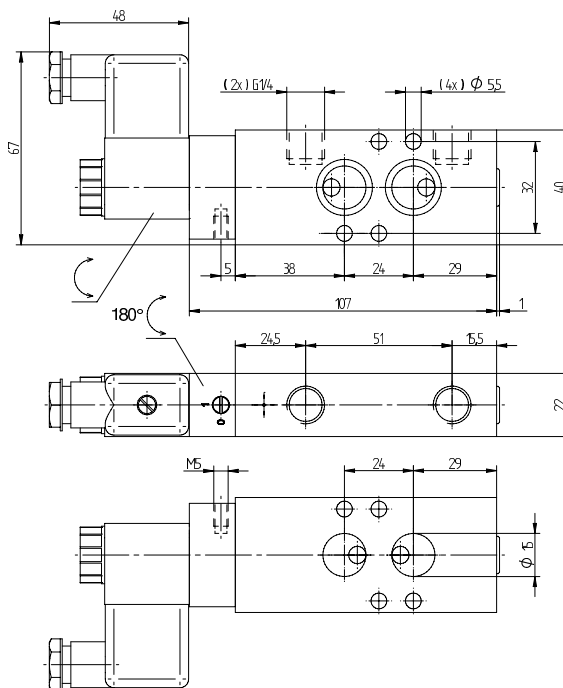
Valves can be used in combination with a positioner.

External pilot-feed is required.

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



MNEH 411 711

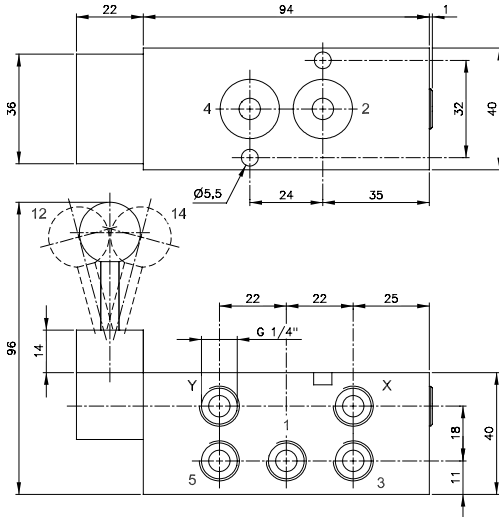
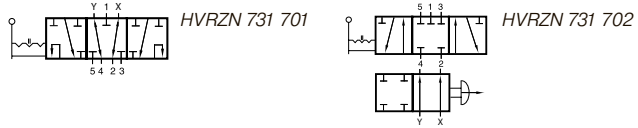


MNEH 611 601

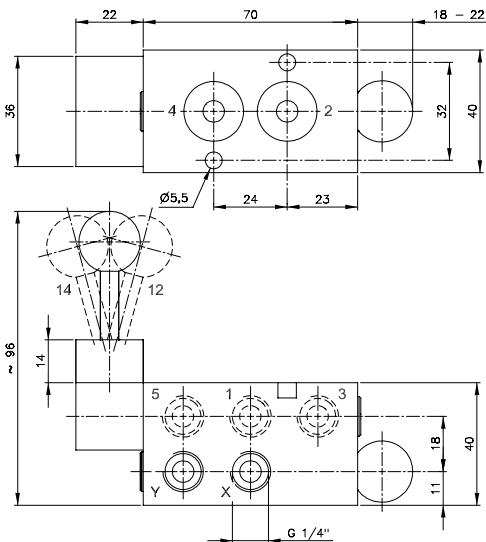
Type	Port size	Air flow	Operating press.	Actuation press.	Power consumption	Weight
MNEH 411 711	G 1/4" - 1/4" NAMUR	1250 l/min	1 - 10 bar	3 - 6 bar	3 W = / 5 VA ~	0,20 kg
MNEH 611 601	1/4" NAMUR	900 l/min	1 - 10 bar	3 - 6 bar	3 W = / 5 VA ~	0,28 kg

HVRZN 731 701/HVRZN 731 702

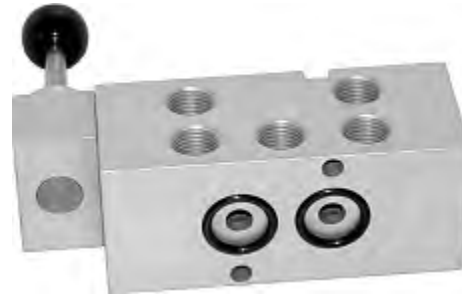
Pneumo-manual override valve for positioners



HVRZN 731 701



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:

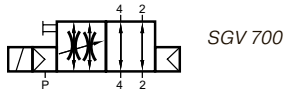
In order to avoid unintended manual actuation the lever of both versions has to be pulled thoroughly for being manipulated out of central position.

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

SGV 700

Two-speed valve



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 end 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.

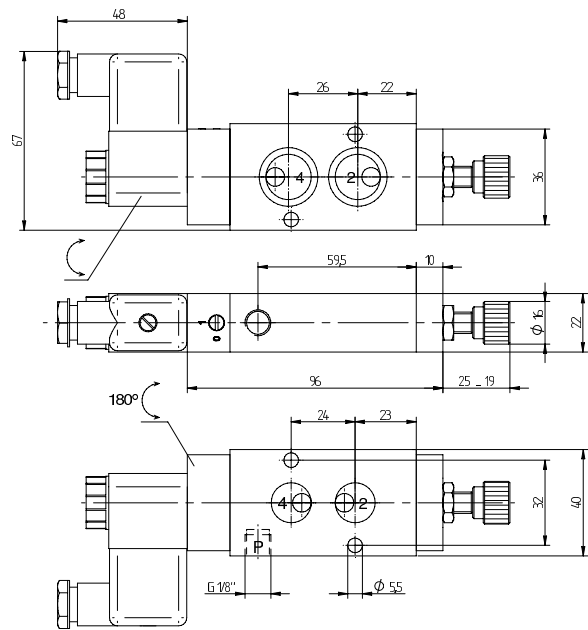
The valve is designed to go as a sandwich between actuator and NAMUR-pilot-valve.

If the valve is required with G 1/4" ports, plate GPN 1/4 can be added.

For details please refer to page 2.10.14.

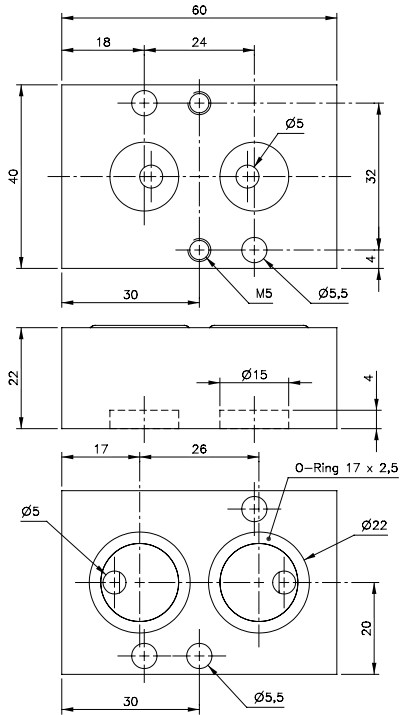
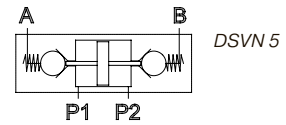
The valve needs an external air supply, port P (G 1/8").

Delivery includes 2 screws, 2 O-rings.



SGV 700

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



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 2.10.14.

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

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

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



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

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.

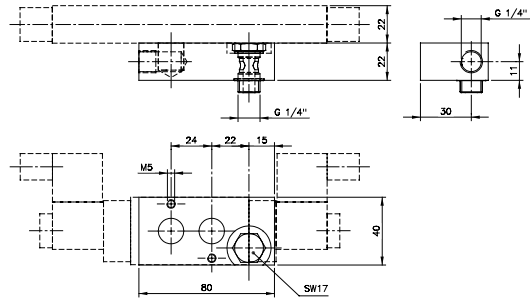
ZVP 121 to be assembled onto a cylinder with G 1/2" ports (diameter 100, 125 mm according to ISO 6431/ISO 15552). Designed for an orifice size 12 mm in combination with e.g. MNH 510 121.

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

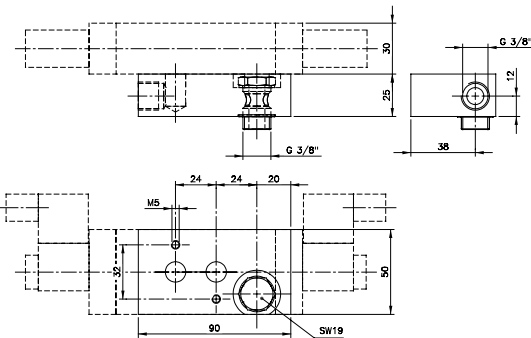
Plate can be equipped with different kinds of NAMUR-valves.

Delivery contains the plate and the banjo for one port.

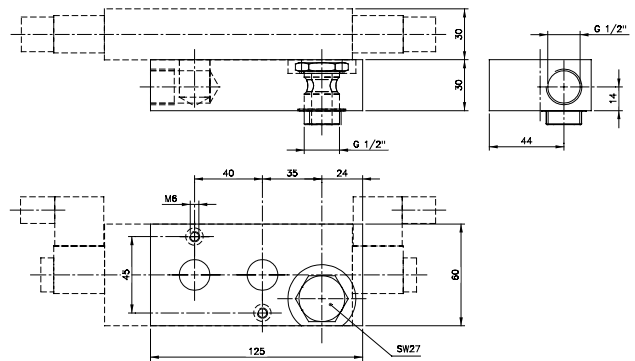
Straight male fittings and rotating elbow fittings to make the other connection can be supplied on request.



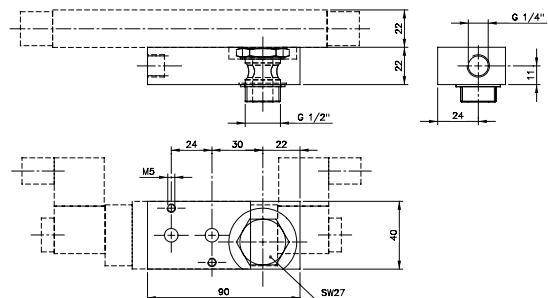
ZVP 701



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

ZVPS 701/ZVPS 101/ZVPS 121

Plates for cylinder-valve combinations – 2. for scotch-yoke actuators



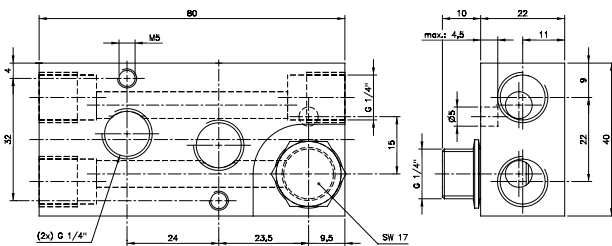
Double cylinder actuator



Single cylinder actuator, piped



Single cylinder actuator, NAMUR



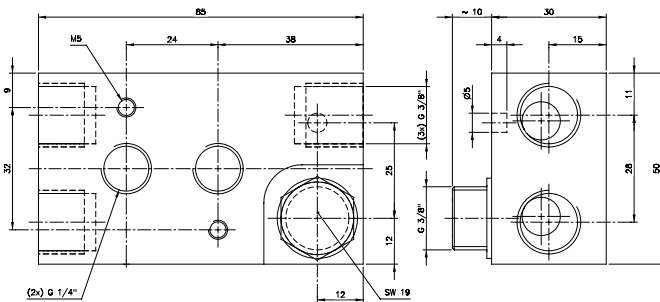
ZVPS 701

Hafner is offering an innovative system to generate a NAMUR-interface on scotch-yoke actuators.

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

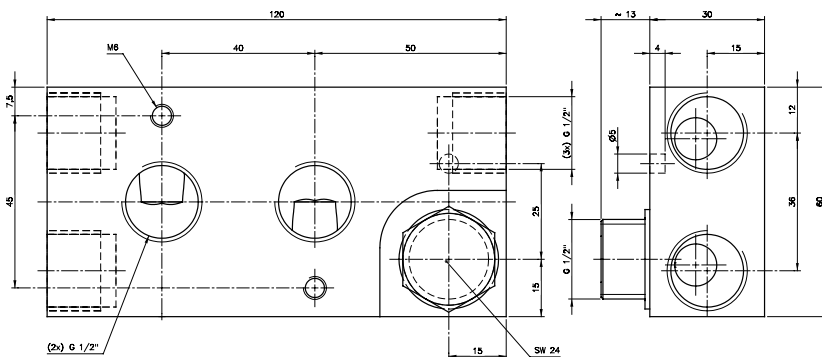
Plates are available with 1/4" as well as with 1/2" NAMUR-interface.

Banjo-joint to fix plate on actuator in G 1/4", G 3/8" and G 1/2".



ZVPS 101

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.

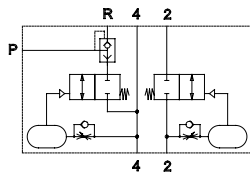


ZVPS 121

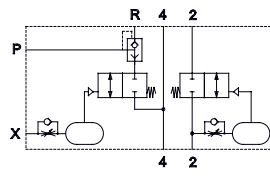
Type	Port A	Port B	Port C + O	NAMUR	Orifice	Weight
ZVPS 701	Banjo G 1/4"	G 1/4"	G 1/4"	1/4"	7 mm	0,35 kg
ZVPS 101	Banjo G 3/8"	G 3/8"	G 1/4"	1/4"	10 mm	0,40 kg
ZVPS 121	Banjo G 1/2"	G 1/2"	G 1/2"	1/2"	12 mm	0,45 kg

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.

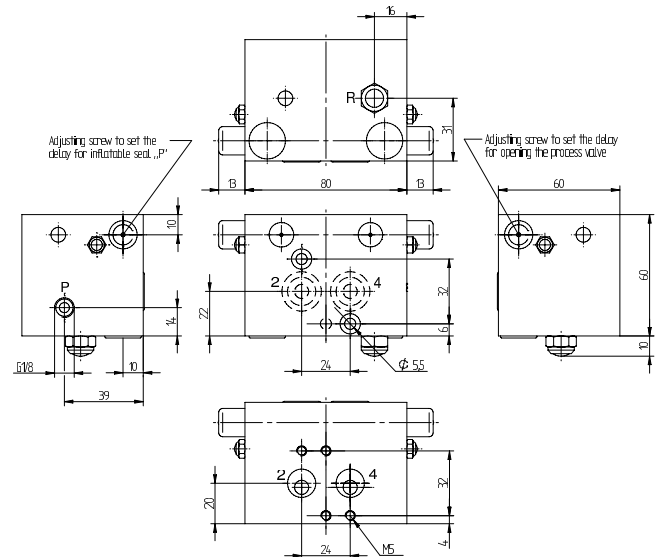
At 6 bar time-delay can be adjusted between 0 and 2 seconds.

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

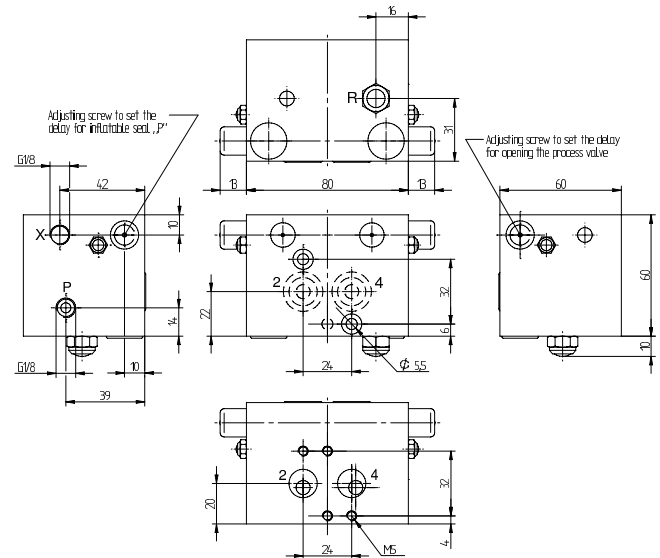
If the valve is required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.10.14.

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 2.14.4.1.

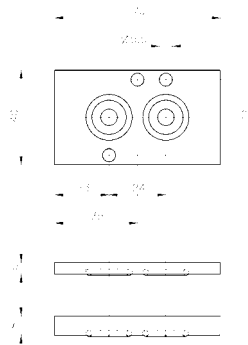


CBN 700 K

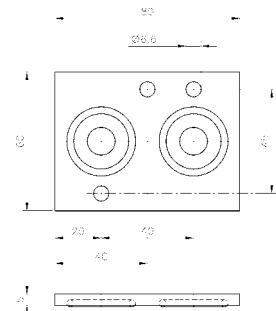


CBN 700 K EB

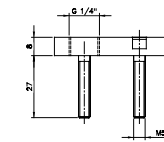
Type	NAMUR	Port P	Port X	Air flow act.	Operating press.	Air flow seal	Weight	
CBN 700 K	1/4"	G 1/8"		900 l/min	3 - 10 bar	400 l/min	0,80 kg	Ex
CBN 700 K EB	1/4"	G 1/8"	G 1/8"	900 l/min	3 - 10 bar	400 l/min	0,80 kg	Ex



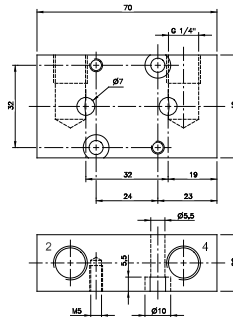
ZPN 5/ZPN 8



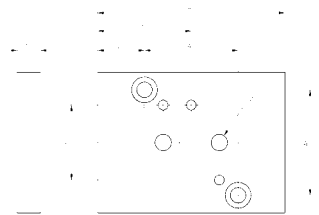
ZPN 6-5



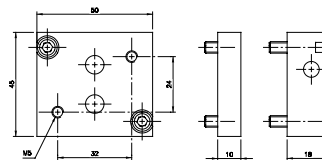
GPN 1/4



FPNW 22-1/4



ZPN 6-10



ZPN 701-90

Mounting accessories for NAMUR products when assembling them to an actuator.

O-ring seals are made from NBR 70° shore, fasteners such as screws and pins are made from stainless steel (A2) only.

GPN 1/4

Plate to convert a 1/4" NAMUR-interface into 2 x G 1/4" threaded ports for remote piloting.

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 1/4" BSP thread. Mounting plate can be assembled independently and the valve is attached later-on.

ZPN 6-10:

Adapter plate to be assembled onto an actuator with 1/2" interface. A 1/4" NAMUR-valve can be assembled to the plate. Saves money whenever the actuator does not have to be operated fast.

ZPN 701-90:

Plate to rotate a NAMUR-valve on the actuator by 90°. Orifice 7 mm assures full flow!

Type	Use and Content
ZPN 5	Intermediate plate, made from anodised aluminium 5 mm thick to be used in case a 30 mm wide coil is to be assembled to a 22 mm wide 1/4" NAMUR-valve
ZPN 5K	Intermediate plate, made from Polyamid 5 mm thick to be used in case a 30 mm wide coil is to be assembled to a 22 mm wide 1/4" NAMUR-valve
ZPN 8	Intermediate plate, made from anodised aluminium 8 mm thick 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	Intermediate plate, made from anodised aluminium 5 mm thick to be used in case a 36 mm wide coil is to be assembled to a 30 mm wide 1/2" NAMUR-valve
FPNW 22-1/4	Plate to convert a NAMUR-valve into an inline valve
ZPN 6-10	Adapter-plate G 1/2" actuator to G 1/4" valve
ZPN 701-90	Plate to turn a NAMUR-valve by 90° on the actuator
GPN 1/4	Plate to convert a 1/4" NAMUR-interface into G 1/4" threaded ports

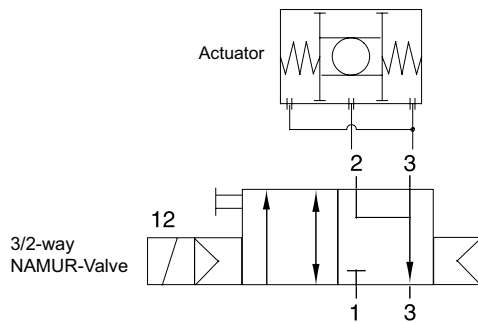
The air-recirculation in single-acting actuators

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.

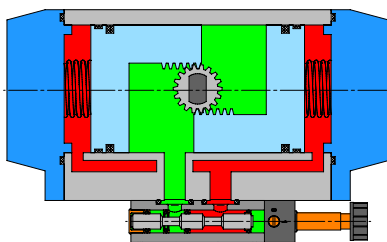
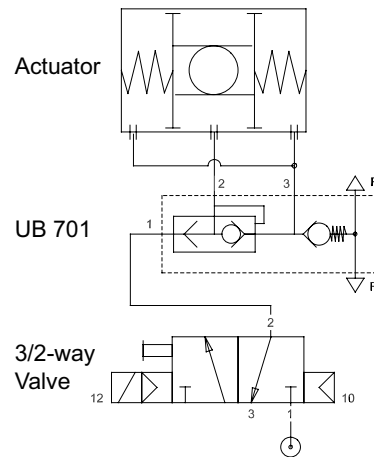
This function is called **exhaust air-recirculation** or **“purge”**.

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:

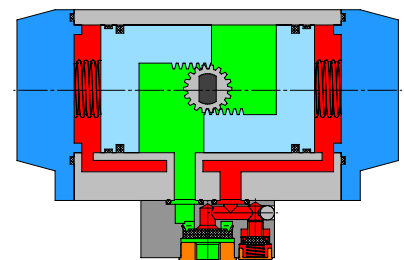


Function if actuator is remote piloted:



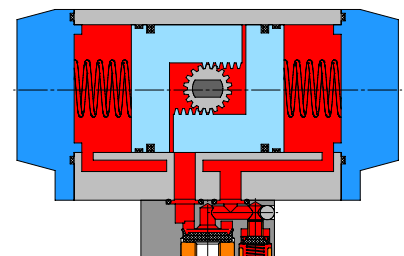
Step 1 - Opening:

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



All 3-way Hafner NAMUR-valves ensure the exhaust air-recirculation! That applies also to our Hafner NAMUR-Flex valve (page 2.9.1.3).

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 2.10.3.

Only by using the UB 701 you can avoid that ambient atmosphere can suck into the actuator.



2.11

„Hafner on the Rocks“ Low Temperature Valves

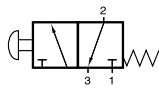
Selected models are available for explosion hazardous environment. They are ATEX-Ex certified. For detailed information refer to chapter 2.14.



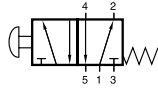
Temperature range: - 50° C to + 50° C

Please notice:
Below -40°C minimum operating pressure generally increases to 3 bar.

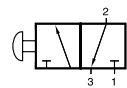
BH 311 701 TT/BH 320 701 TT BH 511 701 TT/BH 520 701 TT



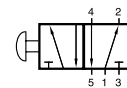
BH 311 701 TT



BH 511 701 TT



BH 320 701 TT



BH 520 701 TT



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

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

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

Please notice:

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

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

Use unlubricated air only.

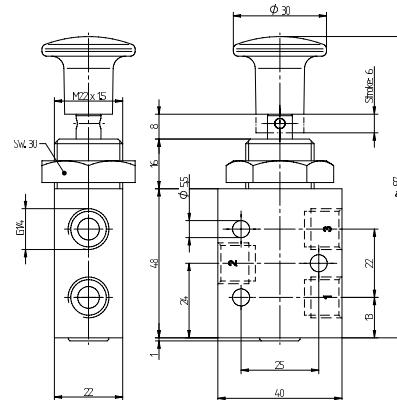
Exhaust can be throttled.

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

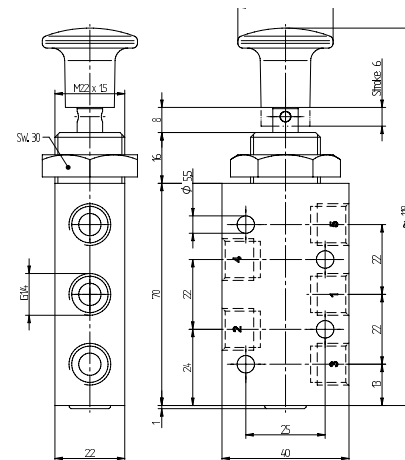
Available on request: BG 311 701 TT

Mechanically actuated 3/2-way valve, body as well as technical specifications similar to BH 311 701.

Modified stem actuator.



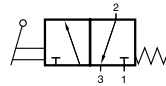
BH 311 701 TT/BH 320 701 TT



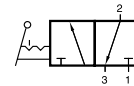
BH 511 701 TT/ BH 520 701 TT

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

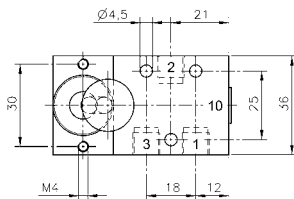
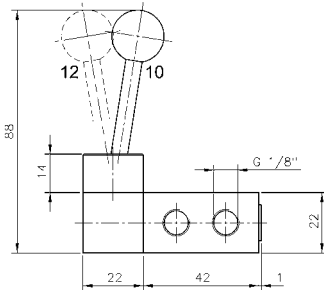
HV 311 501 TT/HV 311 701 TT HVR 320 501 TT/HVR 320 701 TT



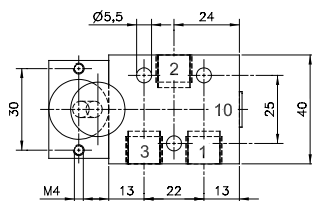
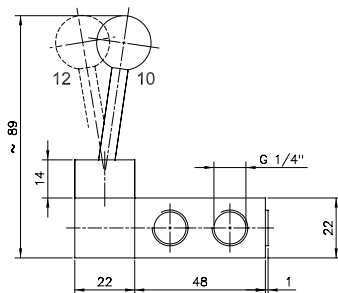
HV 311 501 TT
HV 311 701 TT



HVR 320 501 TT
HVR 320 701 TT



HV 311 501 TT/HVR 320 501 TT



HV 311 701 TT/HVR 320 701 TT



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

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

The lever is sealed by using a metal ball.

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

Please notice:

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

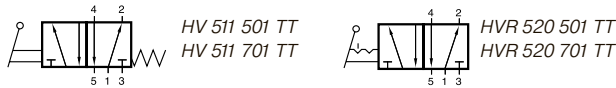
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

Exhaust can be throttled.

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 311 501 TT	3/2-way spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg
HV 311 701 TT	3/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg
HVR 320 501 TT	3/2-way indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg
HVR 320 701 TT	3/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg

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



Lever actuated 5/2-way spool valve for low temperature environment - 50° C to + 50° C.

Type HV 511 spring return
Type HVR 520 indexed

The lever is sealed by using a metal ball.

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

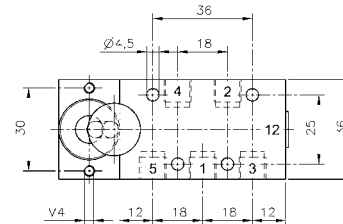
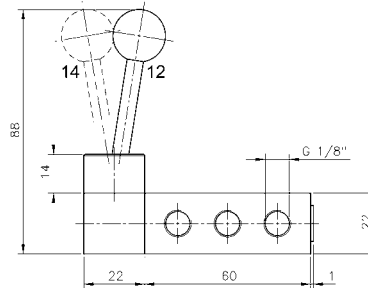
Please notice:

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

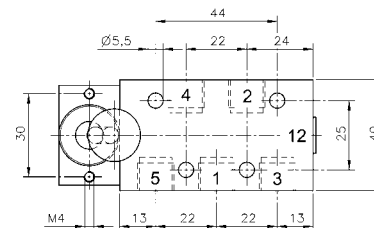
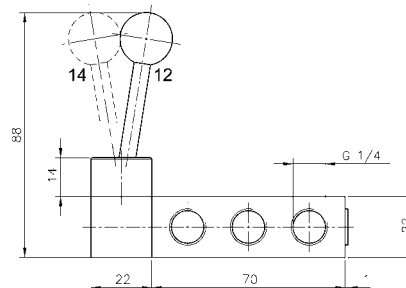
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

Exhaust can be throttled.



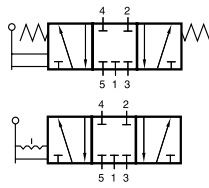
HV 511 501 TT/HVR 520 501 TT



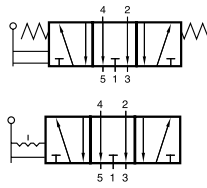
HV 511 701 TT/HVR 520 701 TT

Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 511 501 TT	5/2-way spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 511 701 TT	5/2-way spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HVR 520 501 TT	5/2-way indexed	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HVR 520 701 TT	5/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg

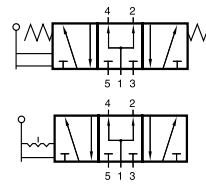
HV 53_ 501 TT/HV 53_ 701 TT HVR 53_ 501 TT/HVR 53_ 701 TT



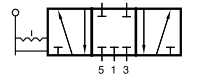
HV 531 501 TT
HVR 531 701 TT



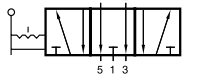
HV 532 501 TT
HVR 532 701 TT



HV 533 501 TT
HVR 533 701 TT



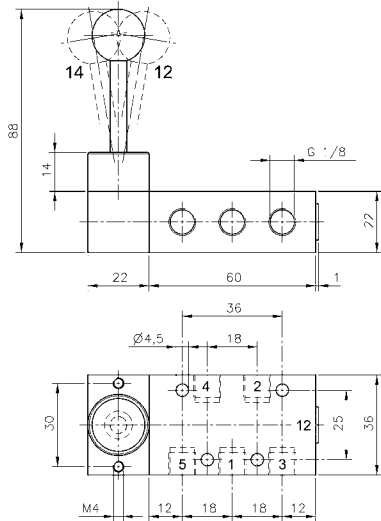
HVR 531 501 TT
HVR 531 701 TT



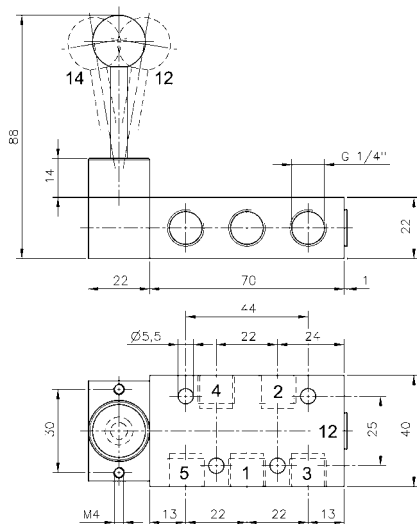
HVR 532 501 TT
HVR 532 701 TT



HVR 533 501 TT
HVR 533 701 TT



HV 53_ 501 TT/HVR 53_ 501 TT



HV 53_ 701 TT/HVR 53_ 701 TT



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

Type HV spring return to middle position
Type HVR indexed

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

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

The lever is sealed by using a metal ball.

Exhaust can be throttled.

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

Please notice:

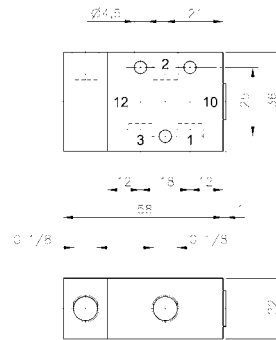
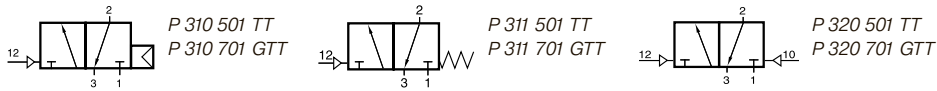
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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

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

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



P 310 501 TT/P 311 501 TT

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

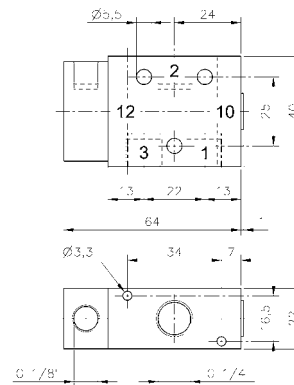
- Type 310 single pilot n.c. air-spring return operating and actuating pressure should be at the same level.
- Type 311 single pilot n.c. mechanical spring return
- Type 320 double pilot

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

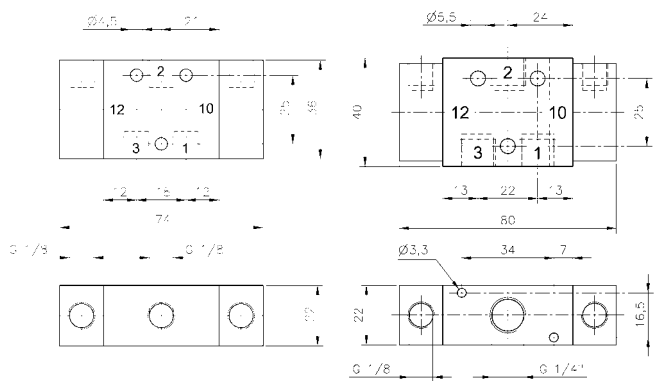
Due to the specific design of the low temperature seals pressure has to be applied to port 1.
For other versions (e.g. normally open) please get in touch with the manufacturer.

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

Exhaust can be throttled.



P 310 701 GTT/P 311 701 GTT

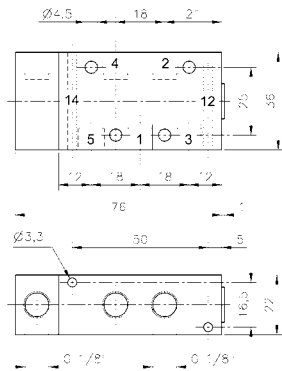
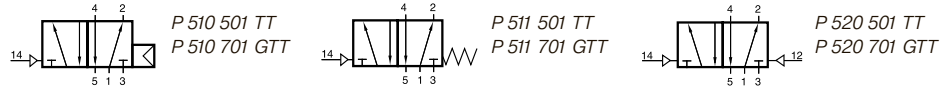


P 320 501 TT

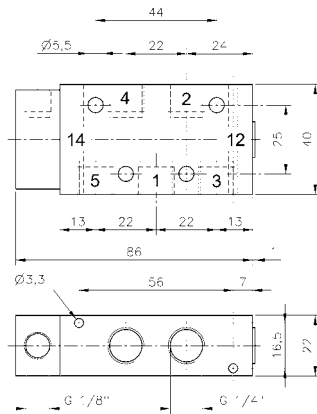
P 320 701 GTT

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

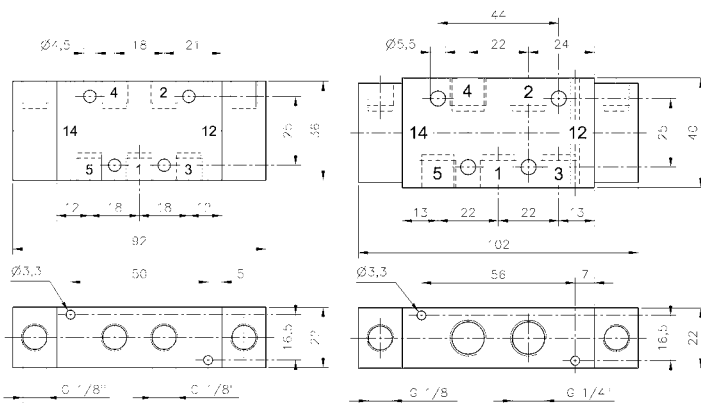
P 510 501 GTT/P 510 701 GTT/P 511 501 GTT P 511 701 GTT/P 520 501 GTT/P 520 701 GTT



P 510 501 GTT/P 511 501 GTT



P 510 701 GTT/P 511 701 GTT



P 520 501 GTT

P 520 701 GTT



Pneumatically actuated 5/2-way spool valve for low temperature environment - 50° C to + 50° C.

- Type 510 single pilot air-spring return
operating and actuating pressure
should be at the same level.
- Type 511 single pilot mechanical
spring return
- Type 520 double pilot

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

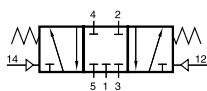
Due to the specific design of the low temperature seals pressure has to be applied to port 1. For other versions please get in touch with the manufacturer.

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

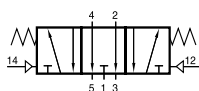
Exhaust can be throttled.

Type	Function	Port size	Air flow	Operating pressure	Actuating pressure	Weight
P 510 501 GTT	air return	G 1/8"	650 l/min	2 - 10 bar	the same	0,16 kg
P 510 701 GTT	air return	G 1/4"	1250 l/min	2 - 10 bar	the same	0,18 kg
P 511 501 GTT	mech. spring	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,16 kg
P 511 701 GTT	mech. spring	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,18 kg
P 520 501 GTT	double pilot	G 1/8"	650 l/min	2 - 10 bar	≤ operating press.	0,20 kg
P 520 701 GTT	double pilot	G 1/4"	1250 l/min	2 - 10 bar	≤ operating press.	0,22 kg

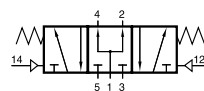
P 53_ 501 GTT/P 53_ 701 GTT



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



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



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



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

- 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.

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

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

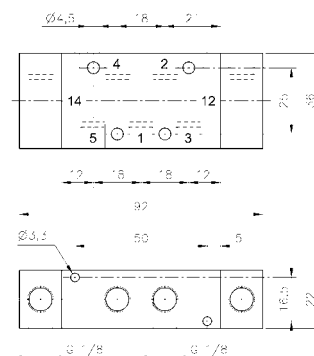
Please notice:

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

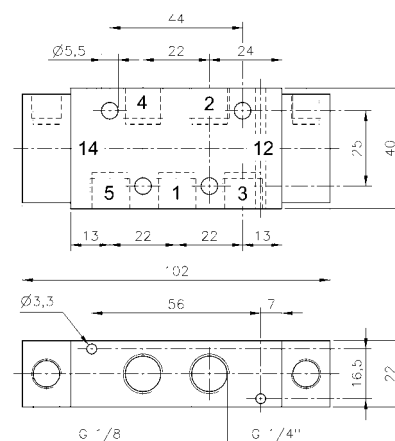
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

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.



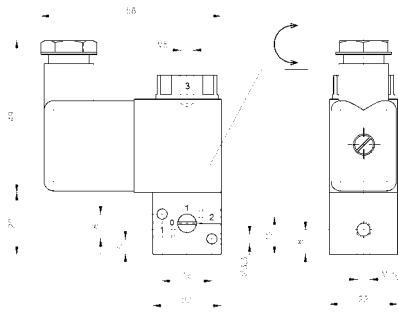
P 53_ 501 GTT



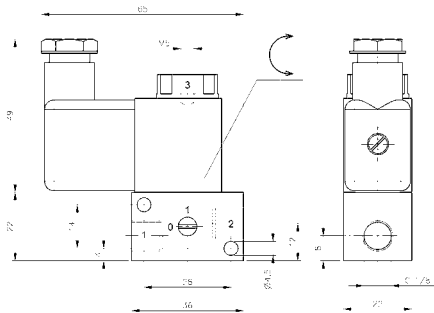
P 53_ 701 GTT

Type	Port size	Air flow	Operating pressure	Actuating pressure	Weight
P 53_ 501 GTT	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,20 kg
P 53_ 701 GTT	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,22 kg

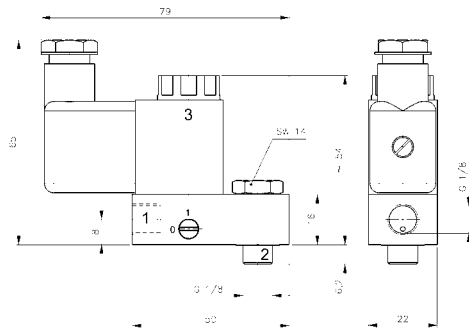
MH 311 012 TT/MH 311 015 TT MH 311 013 TT/MH 311 017 TT



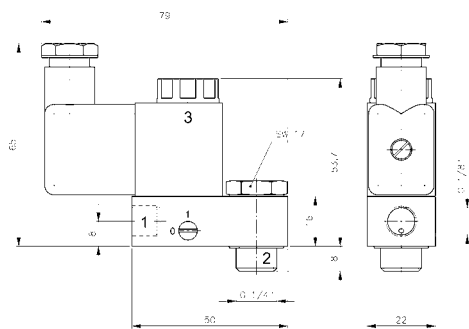
MH 311 012 TT



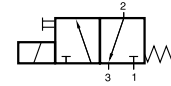
MH 311 015 TT



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.

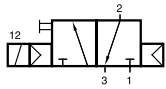
Available with solenoid operators:

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

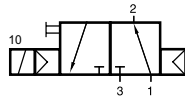
Valves are equipped with manual override to turn.

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

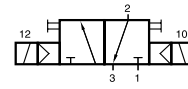
M(O)H 310 501 TT/M(O)H 310 701 GTT MH 320 501 TT/MH 320 701 GTT



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. Manifolds for valves type 701 G are displayed on page 2.7.1.4.

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

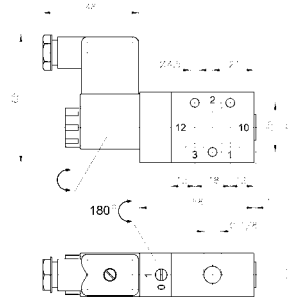
Valves are equipped with manual override to turn.

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

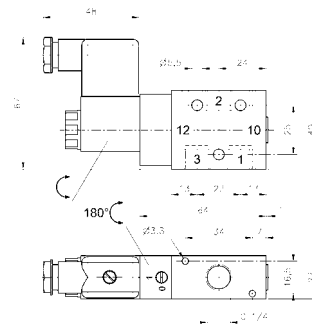
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.
Use unlubricated air only.

Valves are also available with external pilot feed.

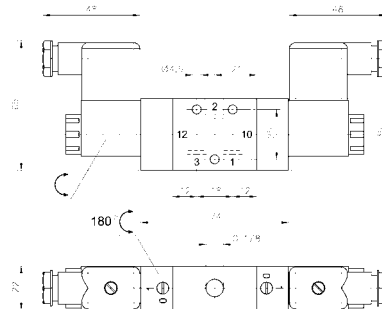
NPT ported valves are available on request.



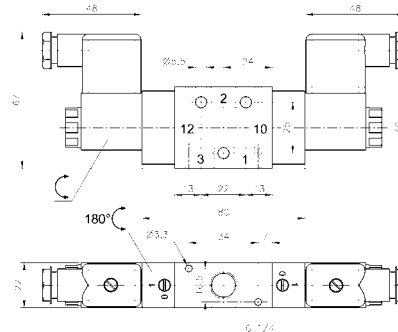
MH 310 501 TT/MOH 310 501 TT



MH 310 701 GTT/MOH 310 701 GTT

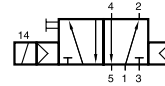


MH 320 501 TT

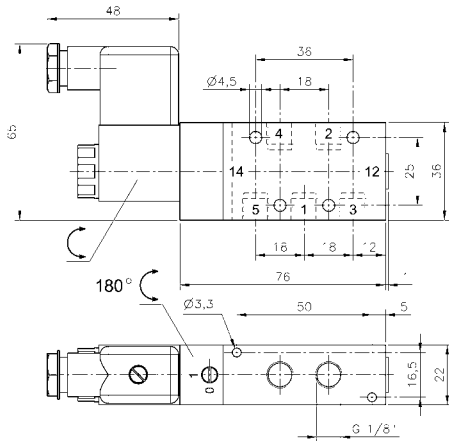


MH 320 701 GTT

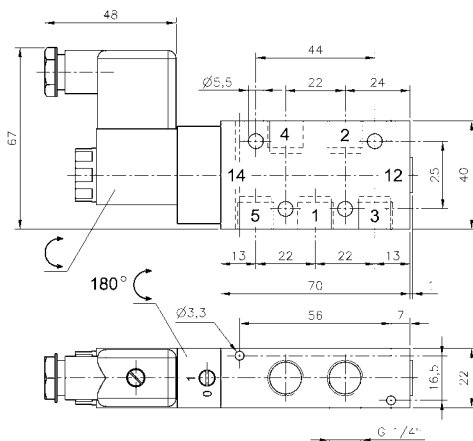
Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 310 501 TT	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MH 310 701 GTT	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MOH 310 501 TT	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MOH 310 701 GTT	n.o.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



MH 510 501 GTT
MH 510 701 GTT



MH 510 501 GTT



MH 510 701 GTT



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

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

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

Valves are equipped with manual override to turn.

Please notice:

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

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

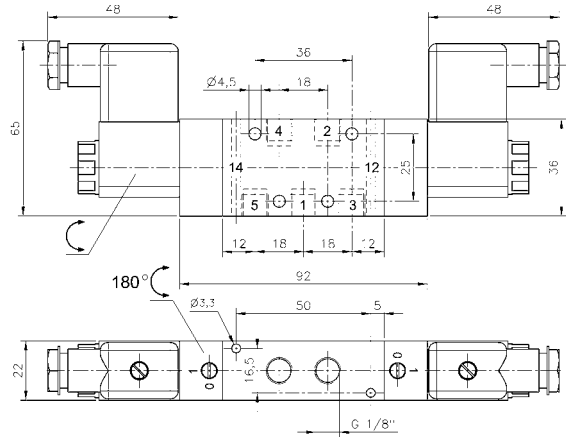
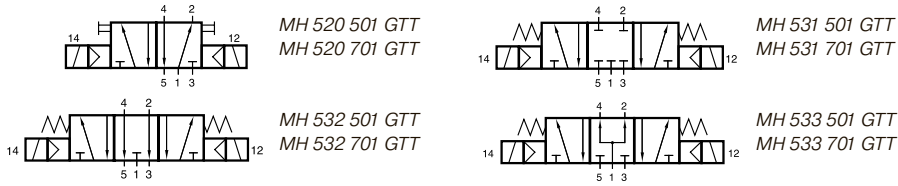
Use unlubricated air only.

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 510 501 GTT	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,25 kg
MH 510 701 GTT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,27 kg

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



MH 520 501 GTT/MH 53_ 501 GTT

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

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

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

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

Valves are equipped with manual override to turn.

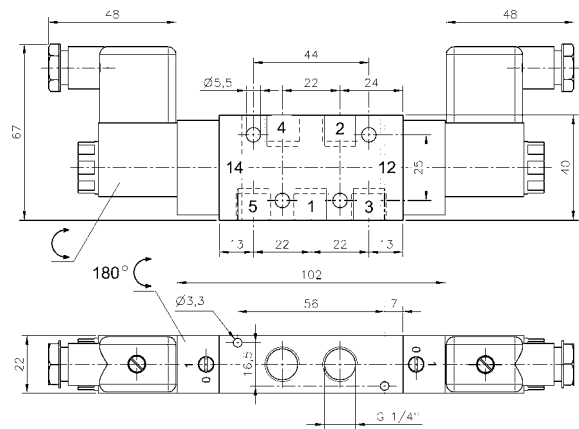
Please notice:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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

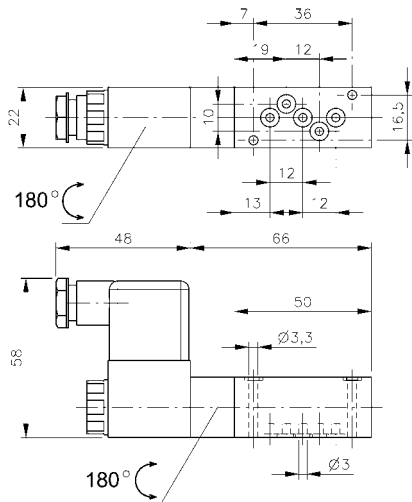
NPT ported valves are available on request.



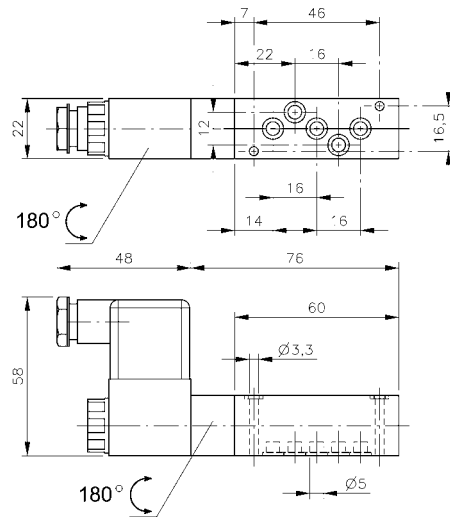
MH 520 701 GTT/MH 53_ 701 GTT

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

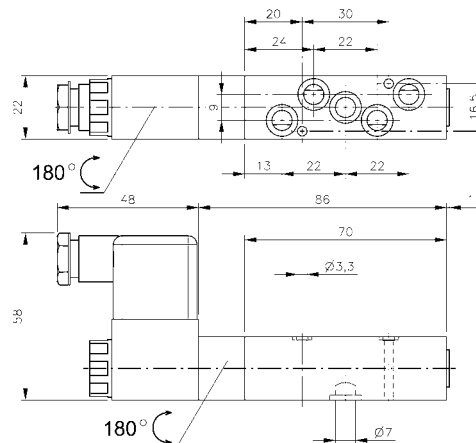
MH 510 304 TT / MH 510 504 TT MH 510 704 TT



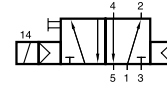
MH 510 304 TT



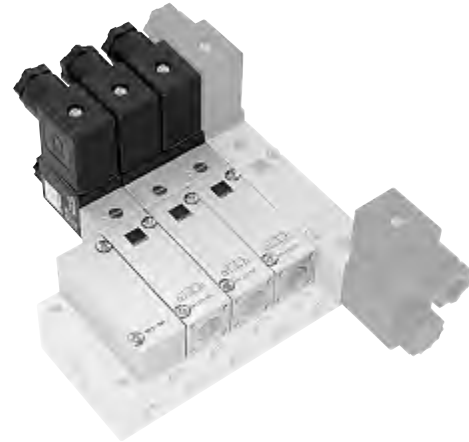
MH 510 504 TT



MH 510 704 TT



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



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

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

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

Valves are equipped with manual override to turn.

Please notice:

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

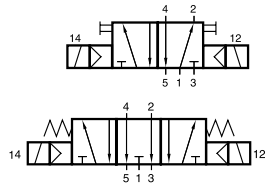
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

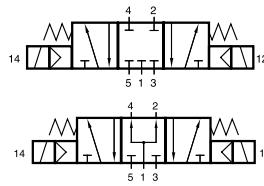
Mounting screws and seals are included.

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

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



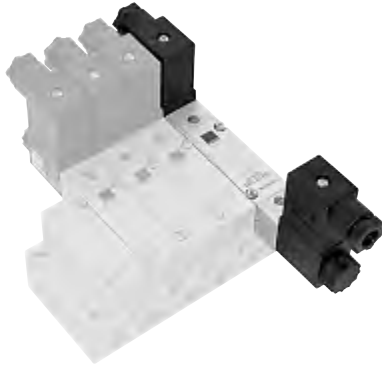
MH 520 304 TT
MH 520 504 TT
MH 520 704 TT



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

MH 532 304 TT
MH 532 504 TT
MH 532 704 TT

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



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

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

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

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

Valves are equipped with manual override to turn.

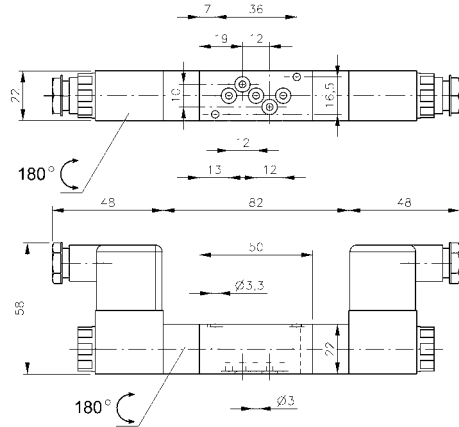
Please notice:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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

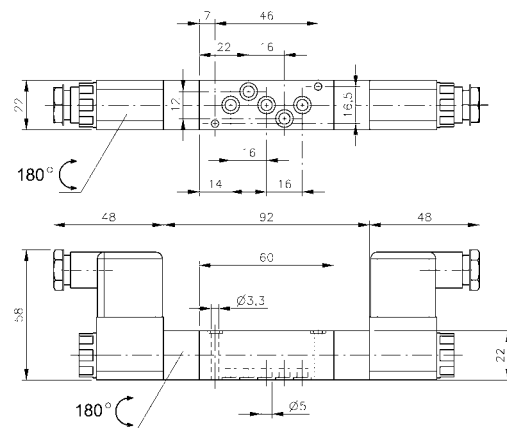
Use unlubricated air only.

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

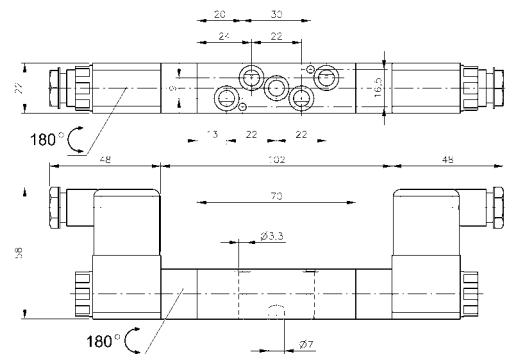
Mounting screws and seals are included.



MH 520 304 TT/MH 53_304 TT

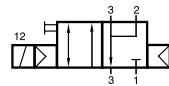


MH 520 504 TT/MH 53_504 TT

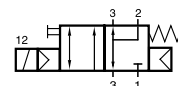


MH 520 704 TT/MH 53_704 TT

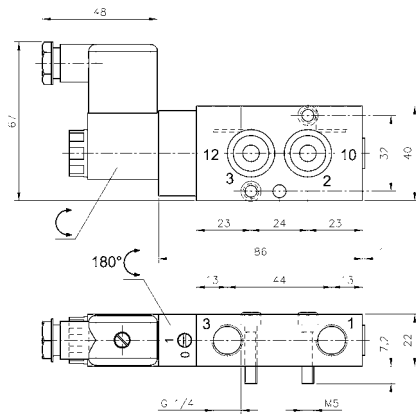
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 304 TT	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg
MH 520 504 TT	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,32 kg
MH 520 704 TT	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,34 kg
MH 53_304 TT	Ø 3 mm	220 l/min	3 - 10 bar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



MNH 310 701 TT



MNH 311 701 TT



MNH 310 701 TT/MNH 311 701 TT



3/2-way solenoid valve, actuated by permanent signal for low temperature environment - 50° C to + 50° C. 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.

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

The valves are generally 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 cm³ /min.
Use unlubricated air only.

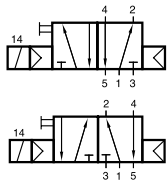
Delivery includes 1 pin, 2 screws, 2 O-rings.

NPT ported valves are available on request.

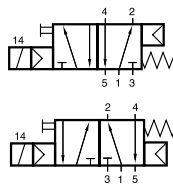
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MNH 310 701 TT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 311 701 TT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg



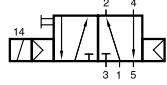
MNH 510 701 TT/MNH 511 701 TT MNH 510 711 TT/MNH 511 711 TT



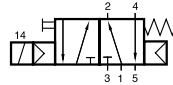
MNH 510 701 TT



MNH 511 701 TT



MNH 510 711 TT



MNH 511 711 TT



5/2-way solenoid valve, actuated by permanent signal for low temperature environment - 50° C to + 50° C. Interface according to 1/4" Namur standard.

Type MNH 510 7_1 with pneumatic spring return
Type MNH 511 7_1 with combined spring.

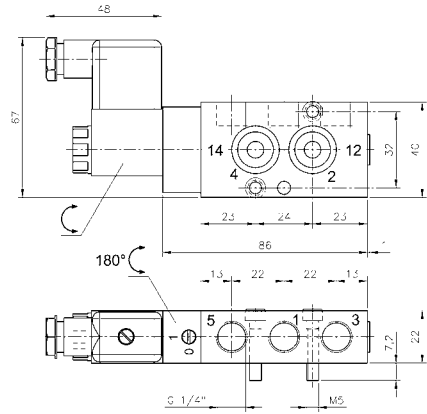
Available with actuators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

The valves are generally equipped with manual override to turn.

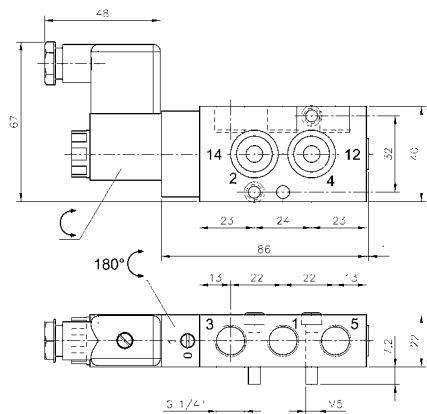
Please notice:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.
Use unlubricated air only.

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

NPT ported valves are available on request.

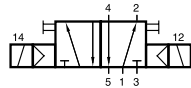


MNH 510 701 TT/MNH 511 701 TT

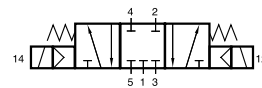


MNH 510 711 TT/MNH 511 711 TT
ports 2 and 4 are swapped!

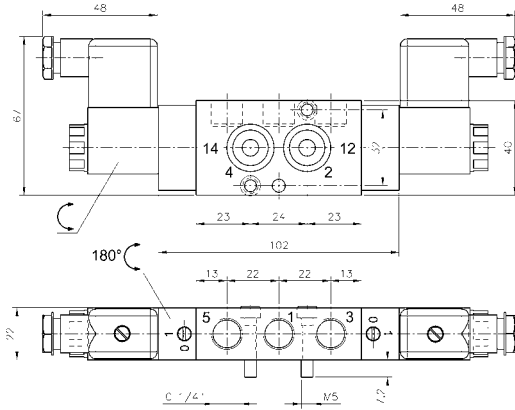
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MNH 510 701 TT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 510 711 TT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 511 701 TT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 511 711 TT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg



MNH 520 701 TT



MNH 531 701 TT



MNH 520 701 TT/MNH 531 701 TT



5-way solenoid valve for low temperature environment - 50° C to + 50° C. Interface according to 1/4" Namur standard.

- Type 520 5/2-way double solenoid, actuated by impulse.
- Type 531 5/3-way centre closed. Other 5/3-way versions available on request.

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 cm³ /min.
Use unlubricated air only.

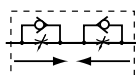
For type 531: pressure at port 1 has to be ≥ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

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

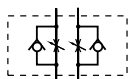
NPT ported valves are available on request.

Type	Function	Port size	Air flow	Operating pressure	Power consumption	Weight
MNH 520 701 TT	5/2 double sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,41 kg
MNH 531 701 TT	5/3 centre closed	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,41 kg

DRN 3 611 TT/DRN 5 611 TT



DRN 3 611 TT



DRN 5 611 TT



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

Type DRN 3 611 TT:

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

Type DRN 5 611 TT:

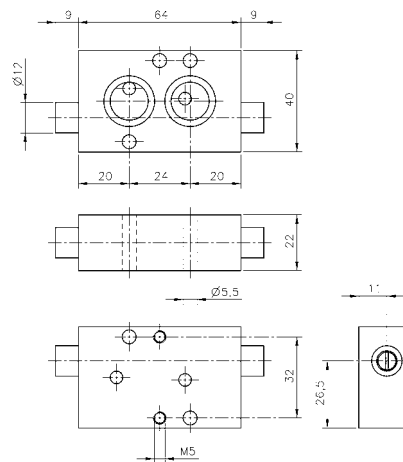
for 5/2 and 5/3 way valves only. To regulate the forward- and backward stroke of a double acting pneumatic actuator. To be operated with a screw-driver.

Please notice:

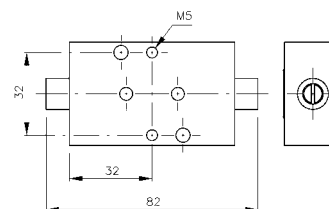
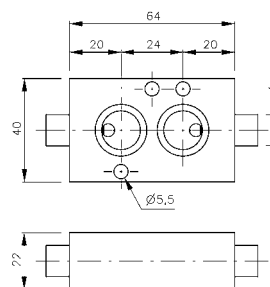
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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



2.12

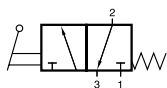
„Heavy Metal“ Stainless Steel Valves

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

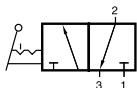


Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.11.

HV 311 701 VES/HVR 320 701 VES



HV 311 701 VES



HVR 320 701 VES



Lever actuated 3/2-way spool valve.

Body parts are made from stainless steel 316L / 1.4404, seals PUR and FKM.

Type HV spring return
Type HVR indexed

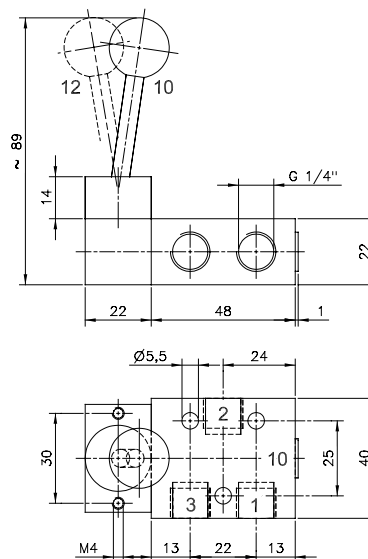
The lever is sealed by using a metal ball.

Exhaust can be throttled.

Versions with G 1/2" ports (3.000 l/min air-flow) are available on request.

NPT ported valves are available on request.

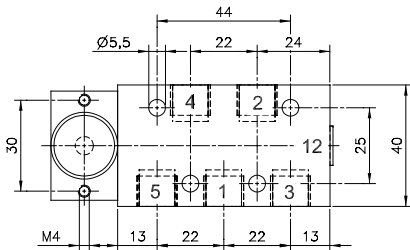
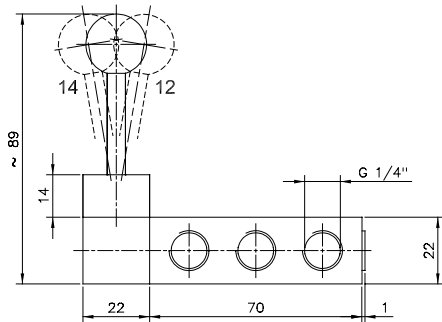
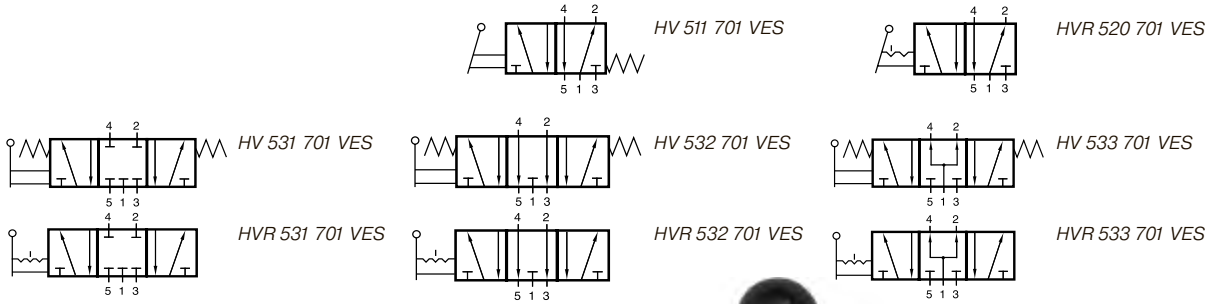
Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions please contact the manufacturer.



HV 311 701 VES/HVR 320 701 VES

Type	Function	Port size	Air flow	Operating press.	Act. force	Weight
HV 311 701 VES	Spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,35 kg
HVR 320 701 VES	Indexed	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,35 kg

HV 511 701 VES/HVR 520 701 VES HV 53_ 701 VES/HVR 53_ 701 VES



**HV 511 701 VES/HVR 520 701 VES/
HV_ 53_ 701 VES**



Lever actuated 5/2-way and 5/3-way spool valves.

Body parts are made from stainless steel 316L / 1.4404, seals PUR and FKM.

Type HV spring return
Type HVR indexed

Type 511 and 520		5/2-way
Type 531	centre closed	5/3-way
Type 532	centre exhausted	5/3-way
Type 533	centre pressurized	5/3-way

The lever is sealed by using a metal ball.

Exhaust can be throttled.

Versions with G 1/2" ports (3.000 l/min air-flow) are available on request.

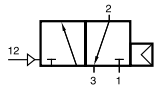
NPT ported valves are available on request.

Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions please contact the manufacturer.

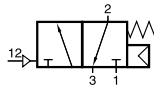
Please notice: for type 531: pressure at port 1 has to be \geq pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

Type	Function	Port size	Air flow	Operating press.	Act. force	Weight
HV 511 701 VES	Spring ret.	G 1/4"	1250 l/min	1- 10 bar	20 N	0,50 kg
HVR 520 701 VES	Indexed	G 1/4"	1250 l/min	1- 10 bar	20 N	0,50 kg
HV 53_ 701 VES	Spring ret.	G 1/4"	1250 l/min	1- 10 bar	20 N	0,50 kg
HVR 53_ 701 VES	Indexed	G 1/4"	1250 l/min	1- 10 bar	20 N	0,50 kg

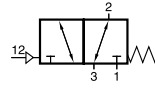
P 310 701 VES/P 311 701 VES P 310 121 VES/P 311 121 VES



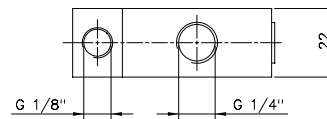
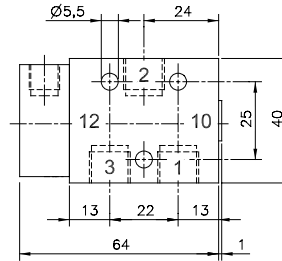
P 310 701 VES
P 310 701 NPT VES
P 310 121 VES
P 310 121 NPT VES



P 311 701 VES
P 311 701 NPT VES



P 311 121 VES
P 311 121 NPT VES



Pneumatically actuated 3/2-way spool valve.

Body parts are made from stainless steel 316L / 1.4404, seals in FKM / PUR (series 701).

Type P 310 ___ VES single pilot valve with air-spring-return.

Operating pressure and actuating pressure should be at the same level.

Type P 311 701 VES single pilot valve with combined spring return.

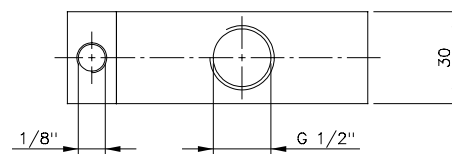
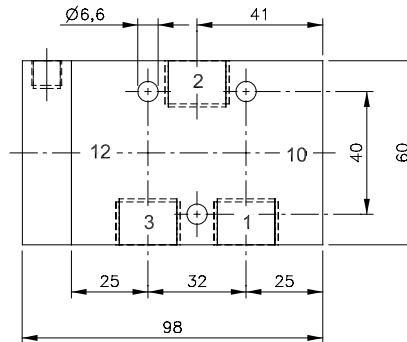
Type P 311 121 VES single pilot valve with mechanic spring return.

Double pilot valves are available on request.

Exhaust can be throttled.

For 1/4"-size: Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions (e.g. normally open) please contact the manufacturer.

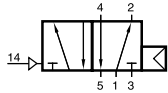
**P 310 701 VES/ P 311 701 VES
P 310 701 NPT VES/ P 311 701 NPT VES**



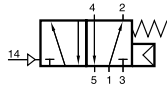
**P 310 121 VES/ P 311 121 VES
P 310 121 NPT VES/ P 311 121 NPT VES**

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 701 VES	G 1/4"	1250 l/min	2 - 10 bar	the same	0,35 kg
P 311 701 VES	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,35 kg
P 310 701 NPT VES	G 1/4"	1250 l/min	2 - 10 bar	the same	0,35 kg
P 311 701 NPT VES	G 1/4"	1250 l/min	2 - 10 bar	3 - 10 bar	0,35 kg
P 310 121 VES	G 1/2"	3000 l/min	2 - 10 bar	the same	1,20 kg
P 311 121 VES	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	1,20 kg
P 310 121 NPT VES	G 1/2"	3000 l/min	2 - 10 bar	the same	1,20 kg
P 311 121 NPT VES	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	1,20 kg

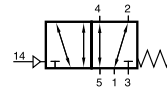
P 510 701 VES/P 511 701 VES P 510 121 VES/P 511 121 VES



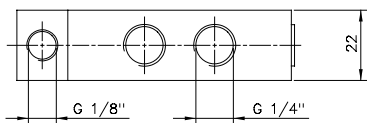
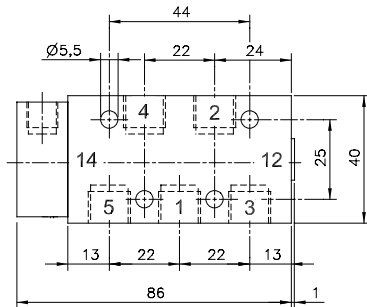
P 510 701 VES
P 510 701 NPT VES



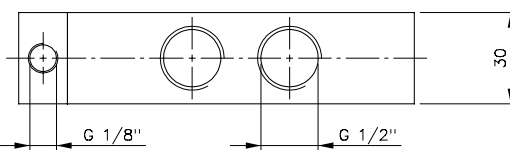
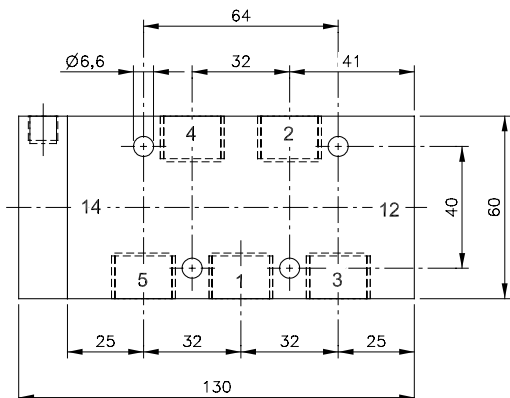
P 511 701 VES
P 511 701 NPT VES



P 511 121 VES
P 511 121 NPT VES



**P 510 701 VES/P 511 701 VES
P 510 701 NPT VES/P 511 701 NPT VES**



**P 510 121 VES/P 511 121 VES
P 510 121 NPT VES/P 511 121 NPT VES**



Pneumatically actuated 5/2-way spool valve.

Body parts are made from stainless steel 316L / 1.4404, rubber parts FKM, PUR (series 701).

Type P 510 ___ VES single pilot valve with air-spring-return.

Operating pressure and actuating pressure should be at the same level.

Type P 511 701 VES single pilot valve with combined spring return.

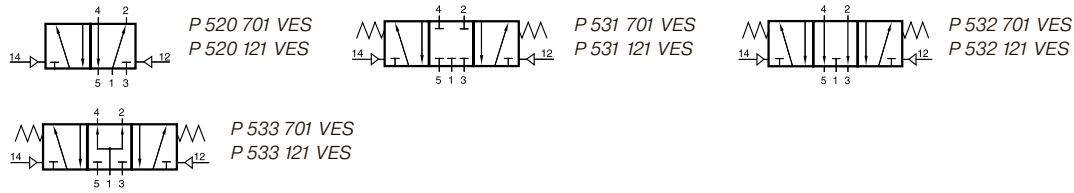
Type P 511 121 VES single pilot valve with mechanic spring return.

Exhaust can be throttled.

For 1/4"-size: Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions (e.g. normally open) please contact the manufacturer.

Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 510 701 VES	G 1/4"	1250 l/min	2 - 10 bar	the same	0,40 kg
P 511 701 VES	G 1/4"	1250 l/min	3 - 10 bar	3 - 10 bar	0,40 kg
P 510 701 NPT VES	1/4" NPT	1250 l/min	2 - 10 bar	the same	0,40 kg
P 511 701 NPT VES	1/4" NPT	1250 l/min	2 - 10 bar	3 - 10 bar	0,40 kg
P 510 121 VES	G 1/2"	3000 l/min	3 - 10 bar	the same	1,50 kg
P 511 121 VES	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	1,50 kg
P 510 121 NPT VES	1/2" NPT	3000 l/min	3 - 10 bar	the same	1,50 kg
P 511 121 NPT VES	1/2" NPT	3000 l/min	2 - 10 bar	3 - 10 bar	1,50 kg

P 520 701 VES/P 53_ 701 VES P 520 121 VES/P 53_ 121 VES



Pneumatically actuated 5/2-way and 5/3-way spool valves, actuated by impulse.

Body parts are made from stainless steel 316L / 1.4404, seals FKM / PUR (series 701).

Type P 520 __ _ VES
5/2-way double pilot. Position is kept until next pneumatic signal is applied.
Operating pressure and actuating pressure should be at the same level.

Type P 53_ 701 and 121 VES
5/3-way valves.

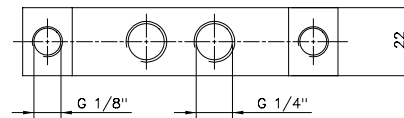
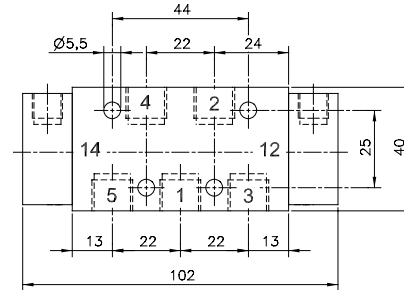
Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurized

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

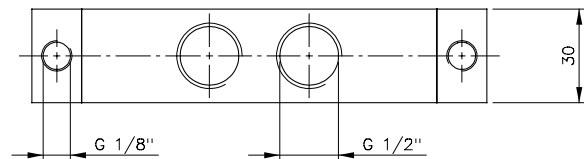
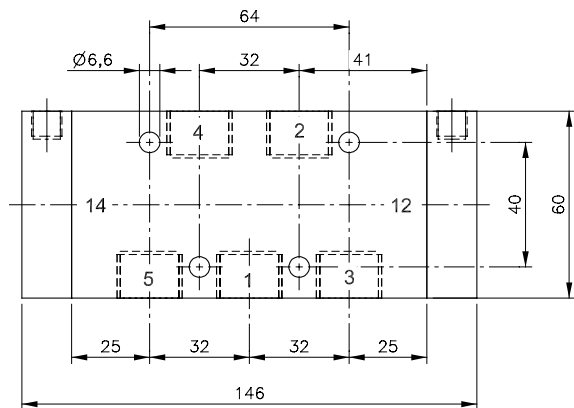
For 1/4"-size: Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions please contact the manufacturer.

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

1/2" NPT on request.

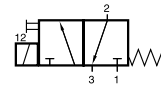


**P 520 701 VES/ P 53_ 701 VES
P 520 701 NPT VES/ P 53_ 701 NPT VES**

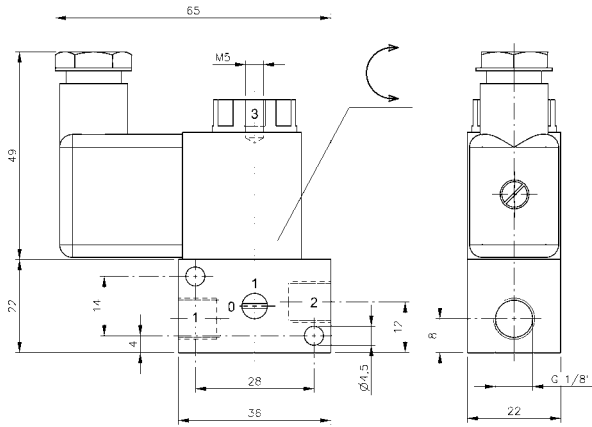


P 520 121 VES/ P 53_ 121 VES

Type	Port size	Function	Air flow	Oper. press.	Act. press.	Weight	
P 520 701 VES	G 1/4"	double pilot	1250 l/min	1,5 - 10 bar	the same	0,50 kg	☃️⊠
P 520 701 NPT VES	1/4" NPT	double pilot	1250 l/min	1,5 - 10 bar	the same	0,50 kg	☃️⊠
P 520 121 VES	G 1/2"	double pilot	3000 l/min	1,5 - 10 bar	the same	1,70 kg	⊠
P 53_ 701 VES	G 1/4"	5/3-way	1250 l/min	1,5 - 10 bar	3,0 - 10 bar	0,50 kg	☃️⊠
P 53_ 701 NPT VES	G 1/4"	5/3-way	1250 l/min	1,5 - 10 bar	3,0 - 10 bar	0,50 kg	☃️⊠
P 53_ 121 VES	G 1/2"	5/3-way	3000 l/min	1,5 - 10 bar	3,0 - 10 bar	1,70 kg	⊠



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.

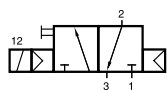
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are generally equipped with manual override.

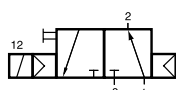
Type	Function	Port size			Air flow	Operating pressure	Power consumption	Weight
		1	2	3				
MH 311 015 VES	n.c.	G 1/8"	G 1/8"	M5	50 l/min	0 - 10 bar	3 W = / 5 VA ~	0,14 kg



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 NPT VES
MH 310 701 NPT KES



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

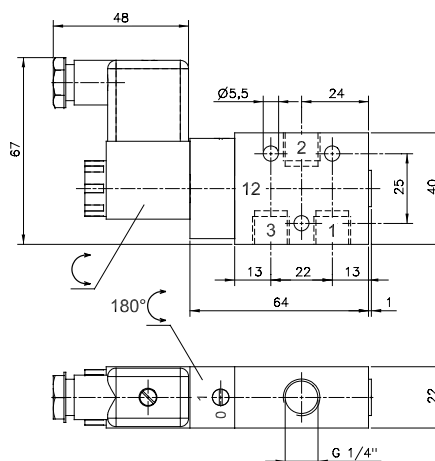


3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

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=.

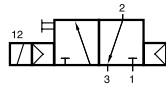
Valves are equipped with manual override to be turned.



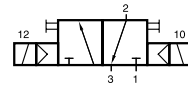
MH 310 701 VES/KES
MOH 310 701 VES/KES
MH 310 701 NPT VES/KES
MOH 310 701 NPT VES/KES

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

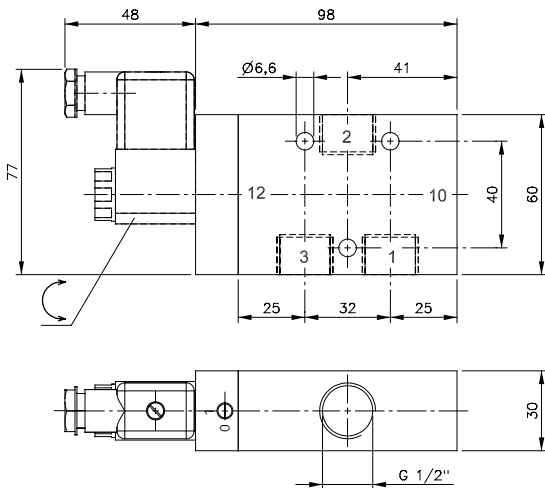
Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight
MH 310 701 VES	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg ❄️⊕
MH 310 701 KES	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg
MOH 310 701 VES	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,42 kg ❄️⊕
MOH 310 701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



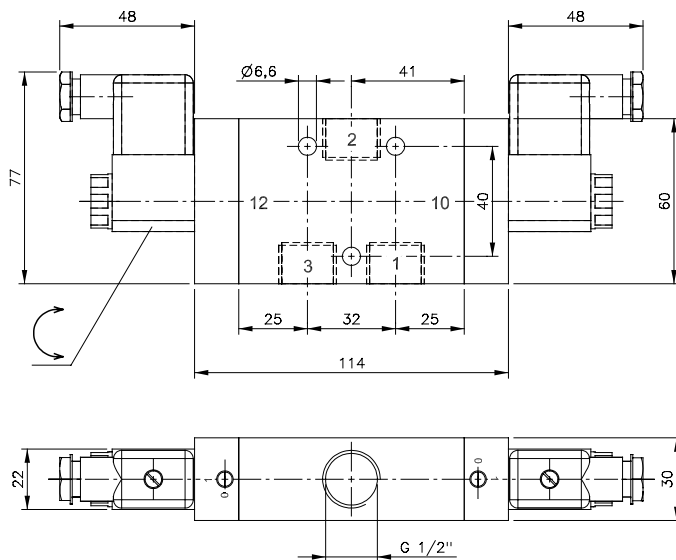
MH 310 121 VES
MH 310 121 NPT VES



MH 320 121 VES



MH 310 121 VES
MH 310 121 NPT VES



MH 320 121 VES



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

Type MH 320 121 VES 3/2-way double solenoid valve. 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 are made from FKM.

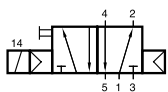
Valves are available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V-, 12V=.

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
MH 310 121 NPT VES	n.c.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,20 kg
MH 320 121 VES	double coil	G 1/2"	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	1,45 kg

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



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



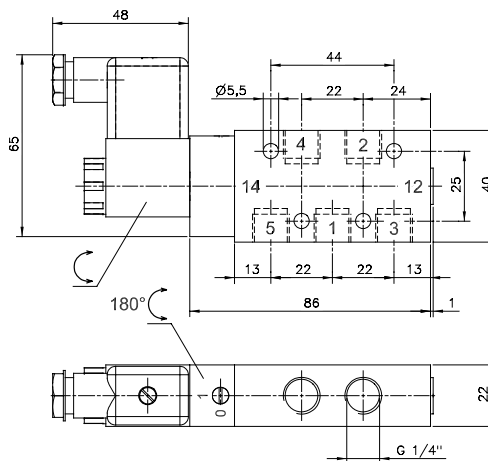
5/2-way solenoid valves actuated by permanent signal and equipped with air spring return.

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

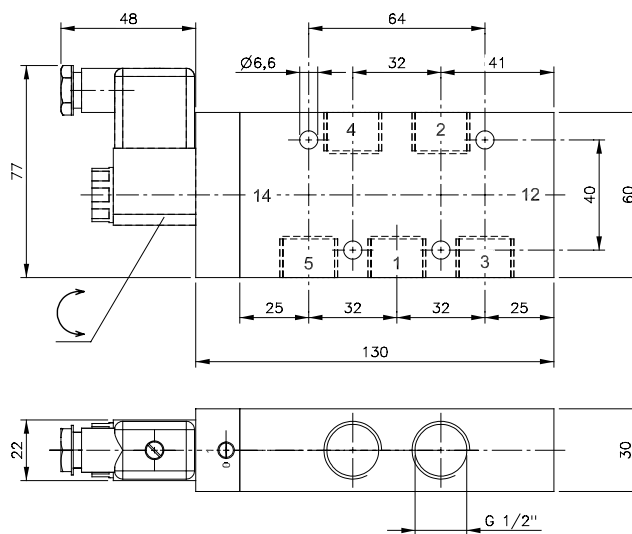
For series 701 the customer has the choice between two versions VES and KES, for details refer to the table below.

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 NPT VES/KES**

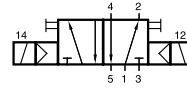


**MH 510 121 VES
MH 510 121 NPT VES**

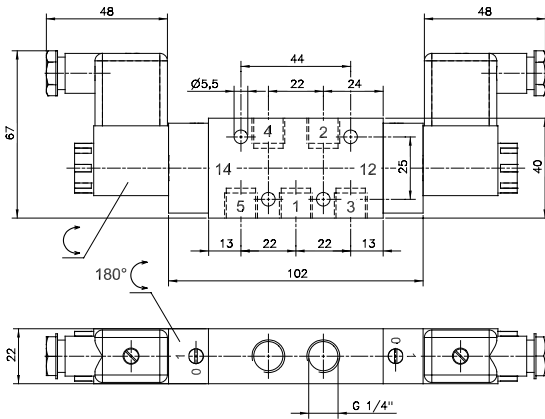
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

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 ❄️⊕
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 NPT VES	single sol.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,53 kg ❄️⊕
MH 510 701 NPT KES	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 ⊕
MH 510 121 NPT VES	single sol.	1/2" NPT	3000 l/min	2 - 10 bar	3 W = / 5 VA ~	1,50 kg ⊕

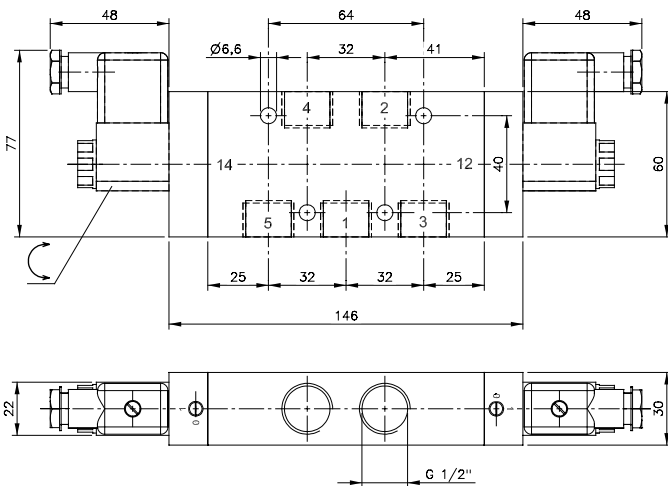
MH 520 701 VES/MH 520 701 KES MH 520 121 VES



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



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



**MH 520 121 VES
MH 520 121 NPT VES**



5/2-way double solenoid valve.

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.

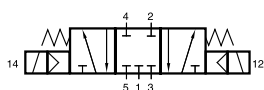
Valves are available with solenoid operators: 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are equipped with manual override to be turned.

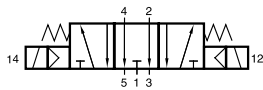
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

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
MH 520 701 KES	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,60 kg
MH 520 701 NPT VES	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,74 kg
MH 520 701 NPT KES	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
MH 520 121 NPT VES	1/2" NPT	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,70 kg

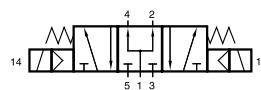
MH 53_ 701 VES/MH 53_ 701 KES MH 53_ 121 VES



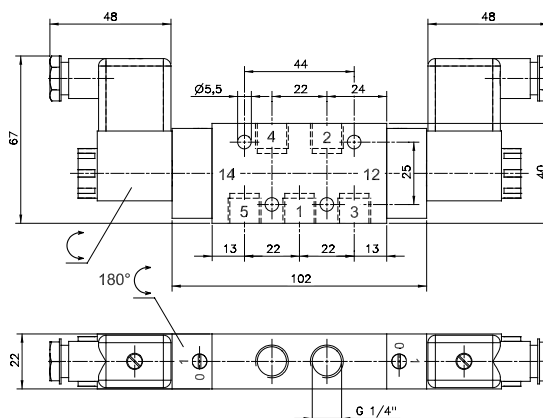
MH 531 701 VES/KES
MH 531 701 NPT VES/KES
MH 531 121 VES
MH 531 121 NPT VES



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



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



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

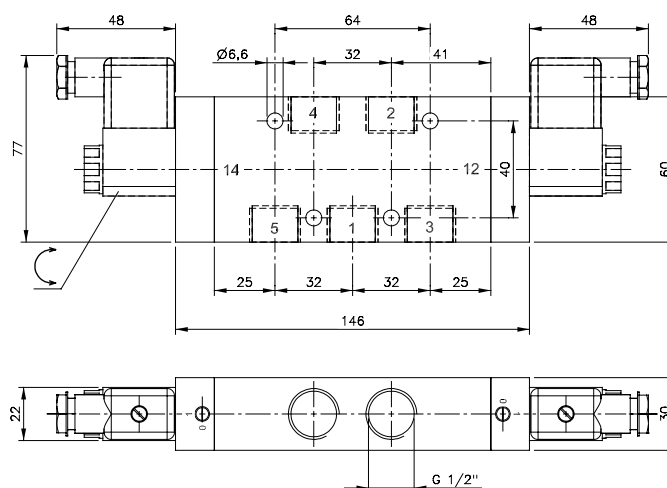
When ordering please complete the type number by 1, 2 or 3 according to the type required.

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 NPT VES/KES

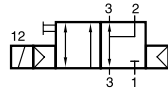


MH 53_ 121 VES
MH 53_ 121 NPT VES

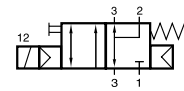
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

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
MH 53_ 701 KES	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,60 kg
MH 53_ 701 NPT VES	1/4" NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,74 kg
MH 53_ 701 NPT KES	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
MH 53_ 121 NPT VES	1/2" NPT	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	1,70 kg

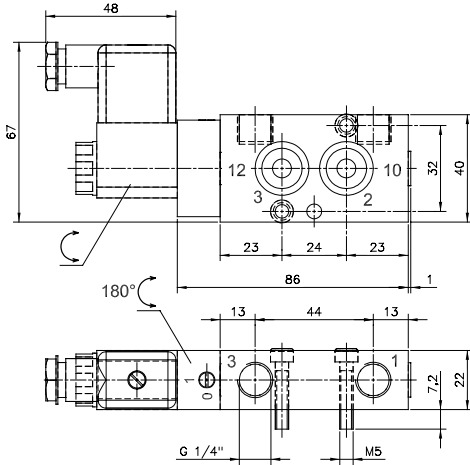
MNH 310 701 VES/MNH 310 701 KES MNH 311 701 VES/MNH 311 701 KES



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



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



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



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.

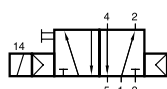
Delivery includes 1 pin, 2 screws, 2 O-rings.

Namur 2 (1/2") on request.

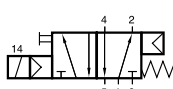
Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM

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 ❄️⊕
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 NPT VES	air-spring	1/4" NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,57 kg ❄️⊕
MNH 310 701 NPT KES	air-spring	1/4" NPT	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,49 kg
MNH 311 701 NPT VES	comb. spring	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,57 kg ❄️
MNH 311 701 NPT KES	comb. spring	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,49 kg

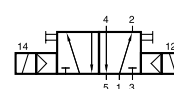
MNH 510 701 VES/MNH 510 701 KES MNH 511 701 VES/MNH 511 701 KES MNH 520 701 VES/MNH 520 701 KES



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



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



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



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.

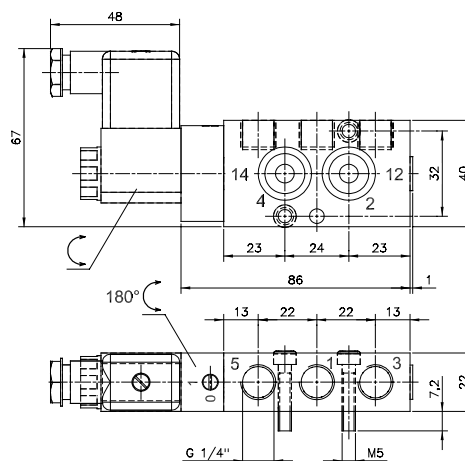
Body parts are made from stainless steel 316L / 1.4404. Customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.

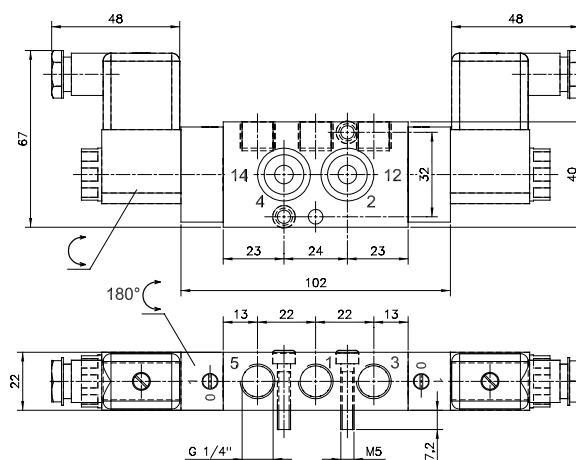
Delivery includes 1 pin, 2 screws, 2 O-rings.

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



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

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



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

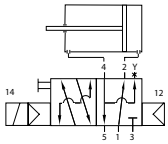
Type Pilot head Seals Other rubber parts

VES 1.4404 PUR FKM

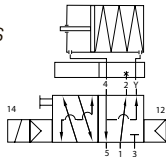
KES PA PUR FKM

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

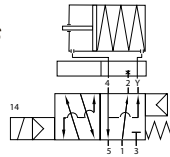
MNH 350 701 VES/MNH 350 701 KES MNH 351 701 VES/MNH 351 701 KES



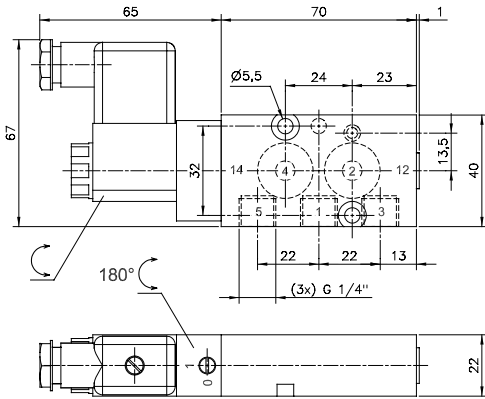
MNH 350 701 VES/KES
MNH 350 701 NPT VES/KES
on double acting act.



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

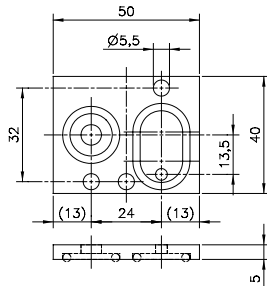


MNH 351 701 VES/KES
MNH 351 701 NPT VES/KES
and Flex-Pack
on single acting act.



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

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



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 ❄️⊕

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

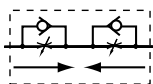
MNH 350 701 NPT VES air-spring 1/4" NPT 1250 l/min 1,5 - 10 bar 3 W = / 5 VA ~ 0,57 kg ❄️⊕

MNH 350 701 NPT KES air-spring 1/4" NPT 1250 l/min 1,5 - 10 bar 3 W = / 5 VA ~ 0,49 kg

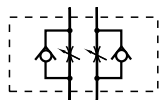
MNH 351 701 NPT VES comb. spring 1/4" NPT 1250 l/min 2,5 - 10 bar 3 W = / 5 VA ~ 0,57 kg ❄️

MNH 351 701 NPT KES comb. spring 1/4" NPT 1250 l/min 2,5 - 10 bar 3 W = / 5 VA ~ 0,49 kg

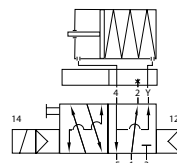
DRN 3 611 VES/DRN 5 611 VES DRF 3 611 VES



DRN 3 611 VES



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:

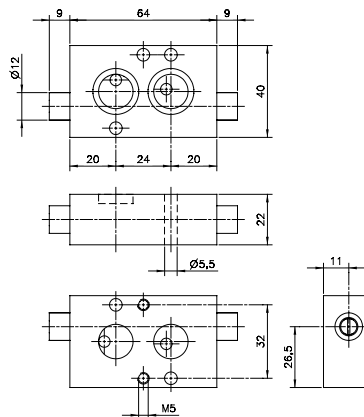
For 5/2 and 5/3 way valves only. To regulate the forward- and backward-stroke of a double acting pneumatic actuator.

Type DRF 3 611 VES:

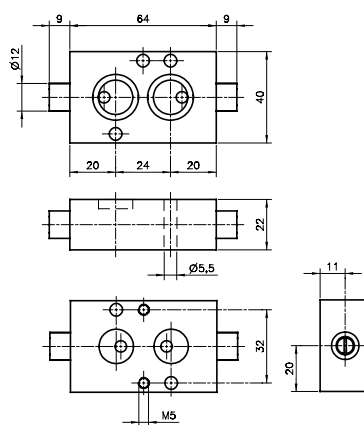
For the Hafner Namur-Flex valve. To regulate the forward stroke of a single acting actuator and to regulate the exhaust air going into the spring return unit.

To be operated with a screw-driver.

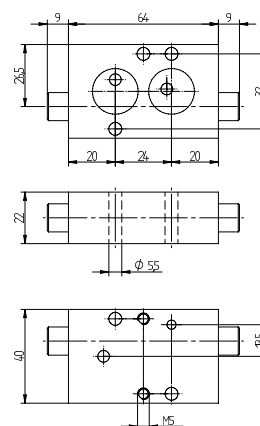
Delivery includes 1 pin, 2 screws, 2 O-Rings.



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

Pneumatically actuated valves in Stainless Steel with Namur interface



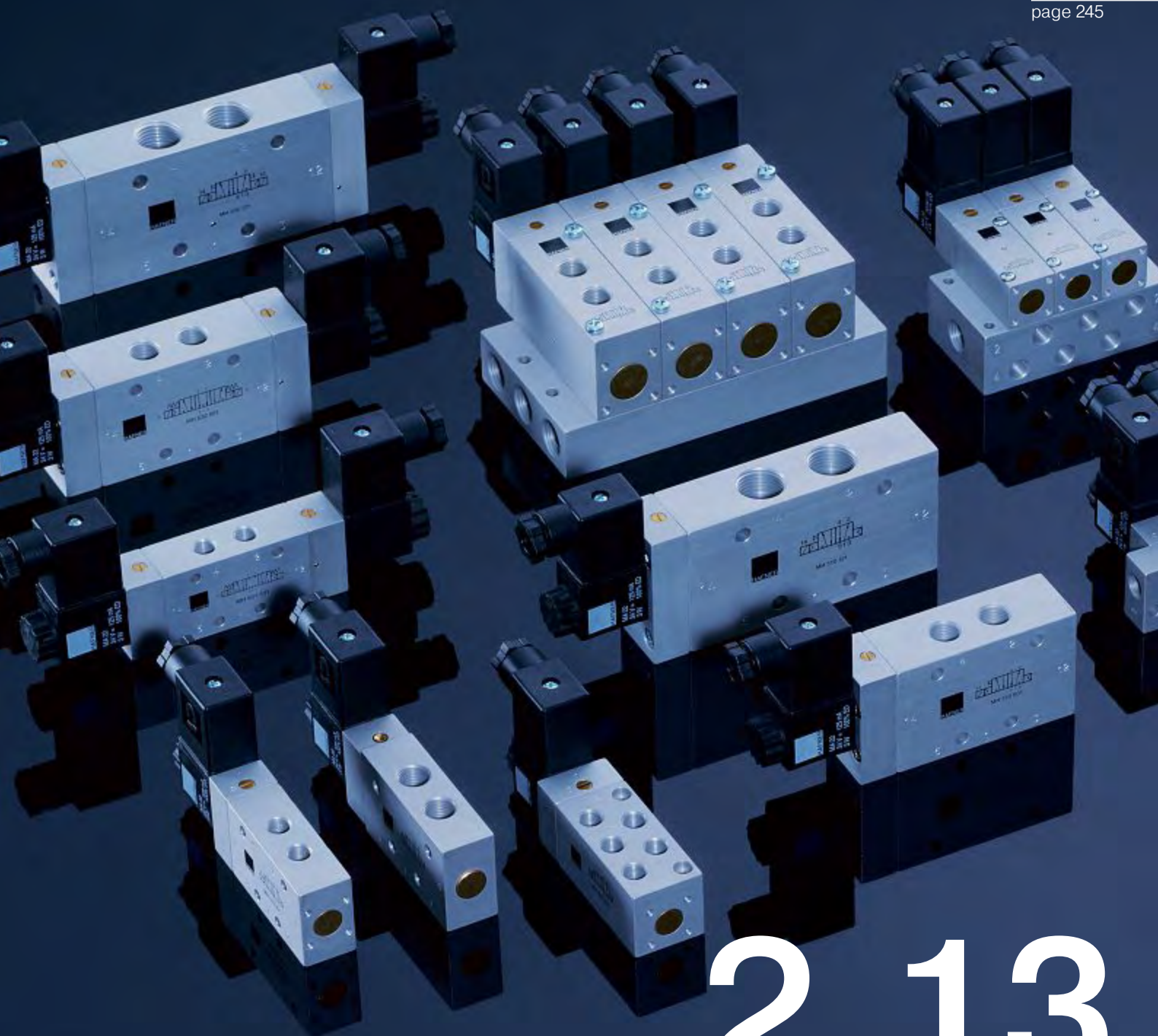
Dimensions can be taken from chapter 2.9.2 as technical drawings are identical to the products in aluminum.

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 \geq pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

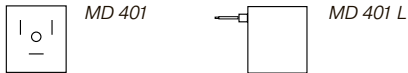
Type	Namur	Port size	Function	Air flow	Oper. press.	Act. press.
PN 310 701 VES	1/4"	G 1/4" - G 1/8"	3/2-way air ret.	1250 l/min	1,5 - 10 bar	the same
PN 311 701 VES	1/4"	G 1/4" - G 1/8"	3/2-way spring ret.	1250 l/min	3 - 10 bar	2,5 - 10 bar
PN 510 701 VES	1/4"	G 1/4" - G 1/8"	5/2-way air ret.	1250 l/min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



2.13

Coils and Connectors

MD 401/MD 401 L



16 mm wide solenoid system for valves type MD and MK, including valve-head.

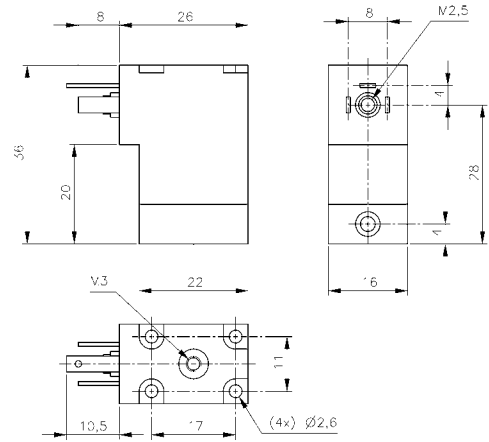
Coil made from 25 % glass filled thermoplastic PA material, epoxy filled. Valve head glass filled thermoplastic PA including a manual override to push.

MD 401

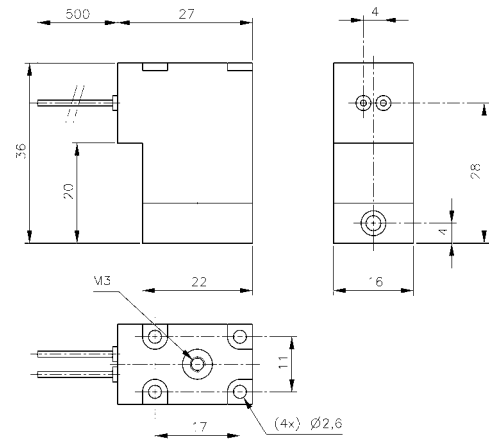
Interface form C (DIN EN 175301-803), with 8 mm contact distance, connectors are displayed on page 2.13.4. Equipped with appropriate connector coil offers IP 65.

MD 401 L (Flying leads version)

Have a standard cable length of 500 mm, others are available on request. The coils are not grounded, take national safety regulations into consideration!

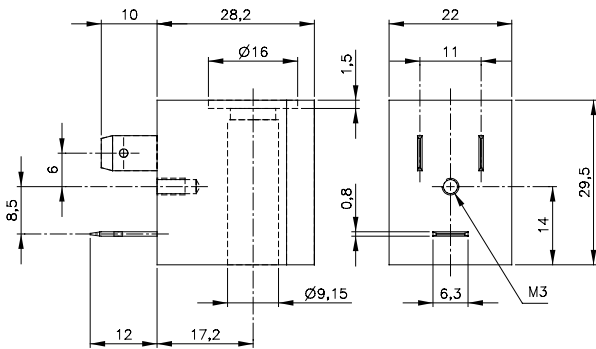


MD 401

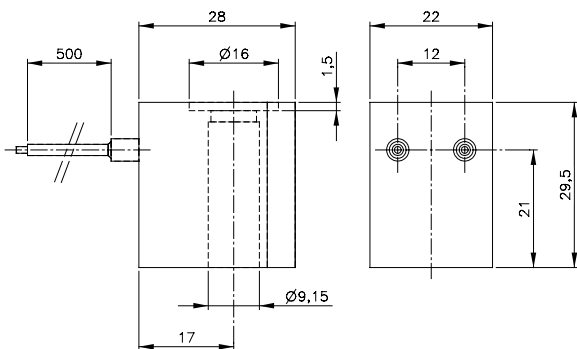


MD 401 L

Type	Voltage	Ampere	Power cons.	Connection
MD 401 6DC	6 V=	300 mA	1,8 W	Form C (DIN EN 175301-803)
MD 401 6DC L	6 V=	300 mA	1,8 W	Flying leads 500 mm long
MD 401 12DC	12 V=	150 mA	1,8 W	Form C (DIN EN 175301-803)
MD 401 12DC L	12 V=	150 mA	1,8 W	Flying leads 500 mm long
MD 401 24DC	24 V=	75 mA	1,8 W	Form C (DIN EN 175301-803)
MD 401 24DC L	24 V=	75 mA	1,8 W	Flying leads 500 mm long
MD 401 24AC	24 V~	125 mA	3 VA	Form C (DIN EN 175301-803)
MD 401 24AC L	24 V~	125 mA	3 VA	Flying leads 500 mm long
MD 401 110AC	110 V~	27 mA	3 VA	Form C (DIN EN 175301-803)
MD 401 110AC L	110 V~	27 mA	3 VA	Flying leads 500 mm long
MD 401 230AC	230 V~	13 mA	3 VA	Form C (DIN EN 175301-803)
MD 401 230AC L	230 V~	13 mA	3 VA	Flying leads 500 mm long



MA 22/MA 22 D/MA 22 U



MA 22 L

MA 22 U

Same as MA 22 but with UL-certification.



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



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 2. 13.3 and 2. 13.4. Equipped with appropriate connector, solenoid offers IP 65. Isolation class F. Wire class H.

MA 22 L (Flying leads version)

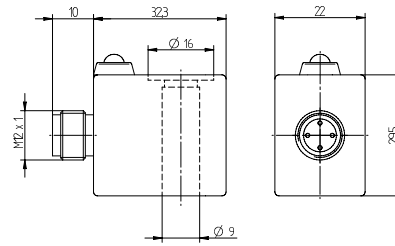
Housing made from heat resistant thermoplastic polyester material with 30 % glass filled. Standard cable length of 500 mm, others are available on request. The coils are not grounded, please take national safety regulations into consideration! Isolation class F. Wire class H.

MA 22 D (Epoxy version)

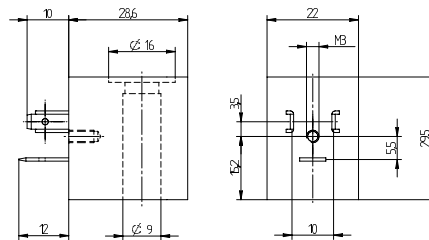
Housing made from Epoxy, interface industryform B (DIN/ISO 436 50). Isolation class F. Wire class H. Equipped with connector ST 22 and ST 222 V (please refer to page 2. 13.4) solenoid system offers IP 65. Equipped with connector ST 22 L 500 and additional O-rings the system offers IP 67.

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)

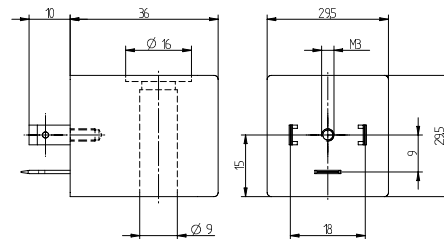
MA 22 D M12/MA 22 DIN/MA 30/ST 22 M12



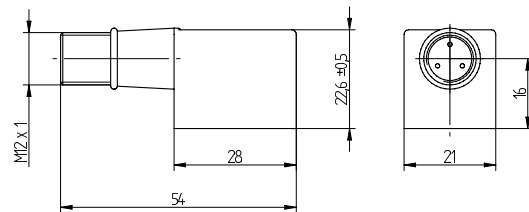
MA 22 D M12



MA 22 DIN



MA 30



ST 22 M12

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

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.

ST 22 M12

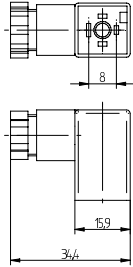
Connector with M12 x 1 connection which can be used with the standard Hafner MA 22 coils.
Connector is without LED in order to be more flexible regarding different voltages.

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

Type	Voltage	Tolerance	Ampere Max.	Power 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



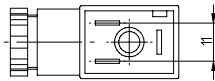
Connectors as accessories for Hafner valves.



ST 16/ST 162 V __

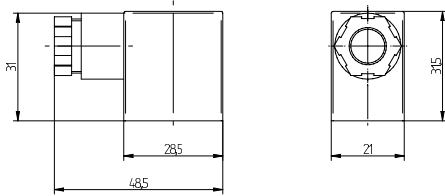
Type ST 16

Connector which can be used with the Hafner MD 401 solenoid system. Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



Type ST 162 V __

Connector with **LED and varistor** which can be used with the Hafner MD 401 solenoid system. Interface according to EN 175301-803 (form C). Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



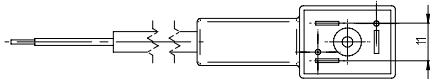
ST 22/ST 222 V __

Type ST 22

Connector which can be used with the Hafner MA 22 coils. Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

Type ST 222 V __

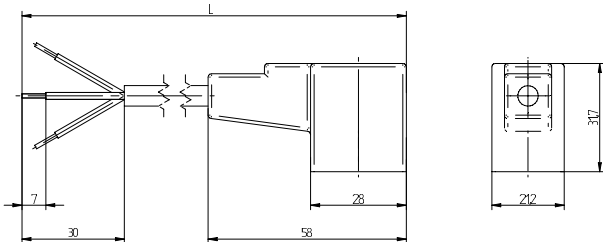
Connector with **LED and varistor** which can be used with the Hafner MA 22 coils. Using the enclosed flat seal, fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.



Type ST 22 L 5000

Connector with **5 meter moulded cable** which can be used with the Hafner MA 22 coils.

In combination with the Hafner Epoxy coils type MA 22 D, 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. Seal is part of the housing.



ST 22 L 5000/ ST 222 V __ L 1500

Type ST 222 V __ L 1500

Connector with **1,5 meter moulded cable, LED and varistor** which can be used with the Hafner MA 22 coils. In combination with the Hafner Epoxy coils type MA 22 D, 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. Seal is part of the housing.

Other connectors are available on request.

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 L 1500	Industrial	red	yes	110 V ± 10 %	6 A	6,5 mm	1.500	PVC
ST 222 V230 L 1500	Industrial	red	yes	230 V ± 10 %	6 A	6,5 mm	1.500	PVC

ST 22 Ex/ST 30 Ex nA/ ST 30 Ex ia



Connectors as accessories for explosion-proof coils.

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.

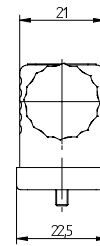
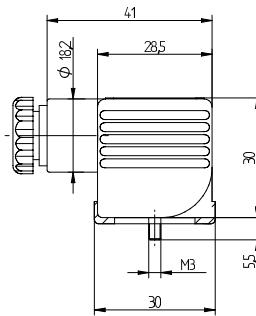
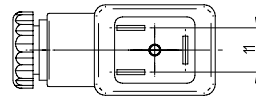
Type ST 30 Ex ia

Connector to be used in combination with MA 30 Ex ia. 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.

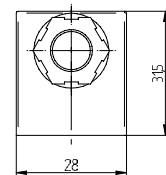
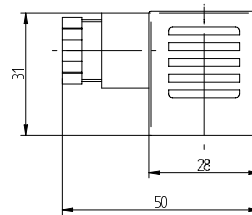
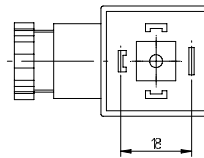
Type ST 30 Ex nA

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.

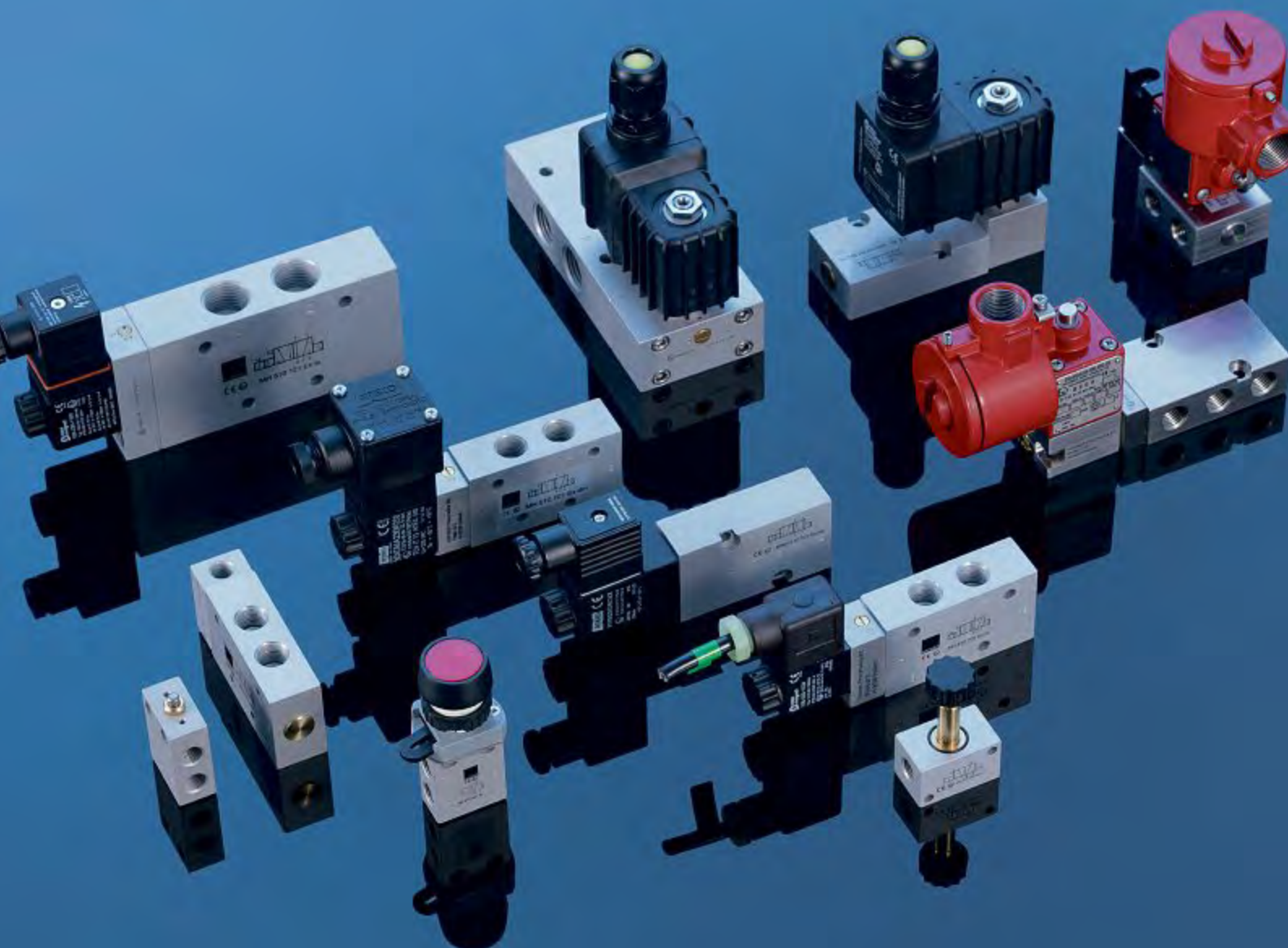


ST 22 Ex



ST 30 Ex nA/ ST 30 Ex ia

Type	Form	LED	VAR	Operat. voltage	Max. current	Cable diameter
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



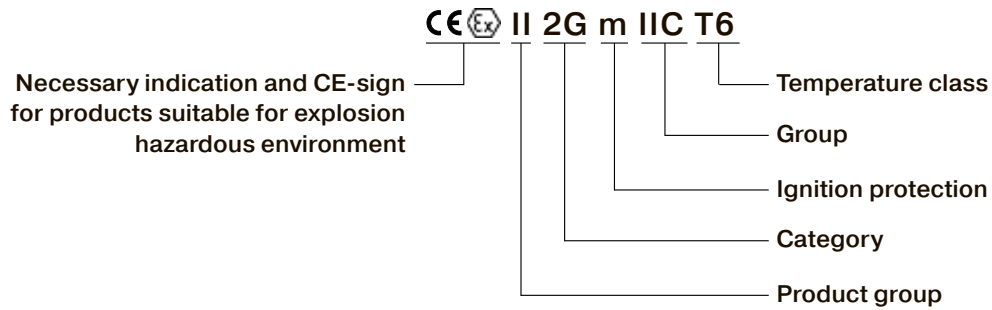
2.14

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:

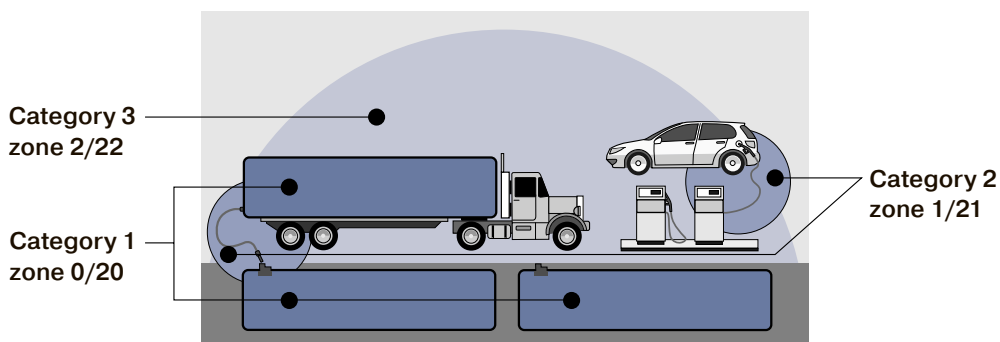
Product group I

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

Non-electric valves for explosion hazardous environment

The following **manually and mechanically actuated valves** are available for the use in explosion hazardous environment in zones 1, 2, 21, 22 gas and dust:

Type	Function	Port size	Further inform. on valve on page	
BV 311 301 EX	3/2-way, stem actuated	G 1/8"	2.1.1.4	
BV 511 301 EX	5/2-way, stem actuated	G 1/8"	2.1.2.2	
BA 311 301 EX	3/2-way, for panel mounting	G 1/8"	2.2.1	
BA 511 301 EX	5/2-way, for panel mounting	G 1/8"	2.2.2	
BA 22_	Actuator elements		2.2.3	



The products are marked:

II2G/D c T6 -10° C ≤ Ta ≤ 50° C

Delivery contains a manual as well as a declaration of conformity.

A declaration of the manufacturer that the actuation elements BA 22_ do not require a certification can be supplied on request. For the use in dust atmosphere we recommend the use of a dust protection cap.

The following **pneumatically actuated valves** are available for the use in explosion hazardous environment in zone zone 1, 2, 21, 22 gas and dust:

Type	Function	Port size	Further information on valve on page		
			Aluminum	Low Temp.	Stainl. Steel
P 310 502 EX	3/2-way, single sol.	G 1/8"	2.4.1.1		
P 310 501 EX	3/2-way, single sol.	G 1/8"	2.4.1.2	2.11.3.1	
P 310 701 EX	3/2-way, single sol.	G 1/4" -1/4" NPT	2.4.1.2	2.11.3.1	2.12.2.1
P 310 801 EX	3/2-way, single sol.	G 1/4"	2.4.1.2		
P 310 101 EX	3/2-way, single sol.	G 3/8"	2.4.1.3		
P 310 121 EX	3/2-way, single sol.	G 1/2" -1/2" NPT	2.4.1.3		2.12.2.1
P 320 502 EX	3/2-way, double sol.	G 1/8"	2.4.1.5		
P 320 501 EX	3/2-way, double sol.	G 1/8"	2.4.1.6	2.11.3.1	
P 320 701 EX	3/2-way, double sol.	G 1/4" -1/4" NPT	2.4.1.6	2.11.3.1	
P 320 801 EX	3/2-way, double sol.	G 1/4"	2.4.1.6		
P 320 101 EX	3/2-way, double sol.	G 3/8"	2.4.1.7		
P 320 121 EX	3/2-way, double sol.	G 1/2" -1/2" NPT	2.4.1.7		
P 510 502 EX	5/2-way, single sol.	G 1/8"	2.4.2.1		
P 510 501 EX	5/2-way, single sol.	G 1/8"	2.4.2.2	2.11.3.2	
P 510 701 EX	5/2-way, single sol.	G 1/4" -1/4" NPT	2.4.2.2	2.11.3.2	2.12.2.2
P 510 801 EX	5/2-way, single sol.	G 1/4"	2.4.2.2		
P 510 101 EX	5/2-way, single sol.	G 3/8"	2.4.2.3		
P 510 121 EX	5/2-way, single sol.	G 1/2" -1/2" NPT	2.4.2.3		2.12.2.2
P 520 502 EX	5/2-way, double sol.	G 1/8"	2.4.2.5		
P 520 501 EX	5/2-way, double sol.	G 1/8"	2.4.2.6	2.11.3.2	
P 520 701 EX	5/2-way, double sol.	G 1/4" -1/4" NPT	2.4.2.6	2.11.3.2	2.12.2.3
P 520 801 EX	5/2-way, double sol.	G 1/4"	2.4.2.6		
P 520 101 EX	5/2-way, double sol.	G 3/8"	2.4.2.7		
P 520 121 EX	5/2-way, double sol.	G 1/2" -1/2" NPT	2.4.2.7		2.12.2.3
P 531 501 EX	5/3-way, centre closed	G 1/8"	2.4.3.1	2.11.3.3	
P 531 701 EX	5/3-way, centre closed	G 1/4" -1/4" NPT	2.4.3.1	2.11.3.3	2.12.2.3
P 531 801 EX	5/3-way, centre closed	G 1/4"	2.4.3.1		
P 531 101 EX	5/3-way, centre closed	G 3/8"	2.4.3.2		
P 531 121 EX	5/3-way, centre closed	G 1/2" -1/2" NPT	2.4.3.2		2.12.2.3
P 532 501 EX	5/3-way, centre exhausted	G 1/8"	2.4.3.1	2.11.3.3	
P 532 701 EX	5/3-way, centre exhausted	G 1/4" -1/4" NPT	2.4.3.1	2.11.3.3	2.12.2.3
P 532 801 EX	5/3-way, centre exhausted	G 1/4"	2.4.3.1		
P 532 101 EX	5/3-way, centre exhausted	G 3/8"	2.4.3.2		
P 532 121 EX	5/3-way, centre exhausted	G 1/2" -1/2" NPT	2.4.3.2		2.12.2.3
P 533 501 EX	5/3-way, centre pressurised	G 1/8"	2.4.3.1	2.11.3.3	
P 533 701 EX	5/3-way, centre pressurised	G 1/4" -1/4" NPT	2.4.3.1	2.11.3.3	2.12.2.3
P 533 801 EX	5/3-way, centre pressurised	G 1/4"	2.4.3.1		
P 533 101 EX	5/3-way, centre pressurised	G 3/8"	2.4.3.2		
P 533 121 EX	5/3-way, centre pressurised	G 1/2" -1/2" NPT	2.4.3.2		2.12.2.3



The products are marked:

II2G/D c T6 -10° C ≤ Ta ≤ 50° C







Delivery contains a manual as well as a declaration of conformity.







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 	-10°C ... + 50°C	✓	✓	✓
Aluminum	-40°C ... + 50°C ❄️	n.a.	✓	n.a.
Stainless steel 	-40°C ... + 50°C ❄️	n.a.	✓	n.a.
Zone		2, 22	1, 21, 2, 22	1, 21, 2, 22
IEC-Ex rated			✓	✓
Reference:		2.14.3.4.3	2.14.3.3.5	2.14.3.2.4

Valve	Temp.-range	Ignition protection class		
		Ex e mb (encapsulation with junction box)	Ex dm (encapsulation with junction box)	Ex d (flameproof with junction box)
				
Aluminum	-10°C ... + 50°C	✓	✓	✓
Stainless steel 	-10°C ... + 50°C	✓	✓	✓
Aluminum	-40°C ... + 50°C ❄️	✓	✓	✓
Stainless steel 	-40°C ... + 50°C ❄️	✓	✓	✓
Zone		1, 21, 2, 22	1, 21, 2, 22	1, 21, 2, 22
IEC-Ex rated				on request
Reference:		2.14.3.5.4	2.14.3.7.5	2.14.3.6.5

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   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 ambient temperature for the coil of -20°C.

The following solenoid valves are available:

Type	Function	Port size	Installation	Further inform. on valve
MH 210 501 Ex m	2/2-way, single sol.	G 1/8"	in-line	2.5.1.1.11
MH 210 701 Ex m	2/2-way, single sol.	G 1/4"	in-line	2.5.1.1.11
MH 311 012 Ex m	3/2-way direct acting	M5	in-line	2.5.1.1.2
MH 311 015 Ex m	3/2-way direct acting	G 1/8"	in-line	2.5.1.1.2
MH 311 013 Ex m	3/2-way direct acting	G 1/8"	banjo screw	2.5.1.1.6
MH 311 017 Ex m	3/2-way direct acting	G 1/4"	banjo screw	2.5.1.1.6
MH 312 Ex m	3/2-way direct acting	M5	manifold	2.5.1.2.2
MH 315 Ex m	3/2-way direct acting	G 1/8"	manifold	2.5.1.2.2
MH 310 501 Ex m	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12
MOH 310 501 Ex m	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12
MH 310 701 Ex m	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12
MOH 310 701 Ex m	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12
MH 310 801 Ex m	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12
MOH 310 801 Ex m	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12
MH 310 101 Ex m	3/2-way, single sol.	G 3/8"	in-line	2.5.1.1.13
MOH 310 101 Ex m	3/2-way, n.o. single sol.	G 3/8"	in-line	2.5.1.1.13
MH 310 121 Ex m	3/2-way, single sol.	G 1/2" -1/2" NPT	in-line	2.5.1.1.13
MOH 310 121 Ex m	3/2-way, n.o. single sol.	G 1/2" -1/2" NPT	in-line	2.5.1.1.13
MH 310 501 G Ex m	3/2-way, single sol.	G 1/8"	dual use*	2.5.1.1.14
MOH 310 501 G Ex m	3/2-way, n.o. single sol.	G 1/8"	dual use*	2.5.1.1.14
MH 310 701 G Ex m	3/2-way, single sol.	G 1/4" -1/4" NPT	dual use*	2.5.1.1.14
MOH 310 701 G Ex m	3/2-way, n.o. single sol.	G 1/4" -1/4" NPT	dual use*	2.5.1.1.14
MH 310 101 G Ex m	3/2-way, single sol.	G 3/8"	dual use*	2.5.1.1.15
MOH 310 101 G Ex m	3/2-way, n.o. single sol.	G 3/8"	dual use*	2.5.1.1.15
MH 310 121 G Ex m	3/2-way, single sol.	G 1/2"	dual use*	2.5.1.1.15
MOH 310 121 G Ex m	3/2-way, n.o. single sol.	G 1/2"	dual use*	2.5.1.1.15
MH 320 501 Ex m	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16
MH 320 701 Ex m	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 801 Ex m	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 101 Ex m	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17
MH 320 121 Ex m	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17
MH 320 501 G Ex m	3/2-way, double sol.	G 1/8"	dual use*	2.5.1.1.18
MH 320 701 G Ex m	3/2-way, double sol.	G 1/4"	dual use*	2.5.1.1.18
MH 320 101 G Ex m	3/2-way, double sol.	G 3/8"	dual use*	2.5.1.1.18
MH 320 121 G Ex m	3/2-way, double sol.	G 1/2"	dual use*	2.5.1.1.18
MH 510 501 Ex m	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3
MH 510 701 Ex m	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3
MH 510 801 Ex m	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3
MH 510 101 Ex m	5/2-way, single sol.	G 3/8"	in-line	2.5.2.1.4
MH 510 121 Ex m	5/2-way, single sol.	G 1/2" -1/2" NPT	in-line	2.5.2.1.4
MH 510 501 G Ex m	5/2-way, single sol.	G 1/8"	dual use*	2.5.2.1.5
MH 510 701 G Ex m	5/2-way, single sol.	G 1/4" -1/4" NPT	dual use*	2.5.2.1.5
MH 510 101 G Ex m	5/2-way, single sol.	G 3/8"	dual use*	2.5.2.1.6
MH 510 121 G Ex m	5/2-way, single sol.	G 1/2"	dual use*	2.5.2.1.6

Type	Function	Port size	Installation	Further inform. on valve
MH 510 504 Ex m	5/2-way, single sol.	5 mm orifice	manifold**	2.5.2.2.4
MH 510 704 Ex m	5/2-way, single sol.	7 mm orifice	manifold**	2.5.2.2.4
MH 520 501 Ex m	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9
MH 520 701 Ex m	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9
MH 520 801 Ex m	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9
MH 520 101 Ex m	5/2-way, double sol.	G 3/8"	in-line	2.5.2.1.10
MH 520 121 Ex m	5/2-way, double sol.	G 1/2" -1/2" NPT	in-line	2.5.2.1.10
MH 520 501 G Ex m	5/2-way, double sol.	G 1/8"	dual use*	2.5.2.1.11
MH 520 701 G Ex m	5/2-way, double sol.	G 1/4" -1/4" NPT	dual use*	2.5.2.1.11
MH 520 101 G Ex m	5/2-way, double sol.	G 3/8"	dual use*	2.5.2.1.12
MH 520 121 G Ex m	5/2-way, double sol.	G 1/2"	dual use*	2.5.2.1.12
MH 520 504 Ex m	5/2-way, double sol.	5 mm orifice	manifold**	2.5.2.2.8
MH 520 704 Ex m	5/2-way, double sol.	7 mm orifice	manifold**	2.5.2.2.8
MH 53_ 501 Ex m	5/3-way, diff. versions	G 1/8"	in-line	2.5.3.1.2
MH 53_ 701 Ex m	5/3-way, diff. versions	G 1/4"	in-line	2.5.3.1.2
MH 53_ 801 Ex m	5/3-way, diff. versions	G 1/4"	in-line	2.5.3.1.2
MH 53_ 101 Ex m	5/3-way, diff. versions	G 3/8"	in-line	2.5.3.1.3
MH 53_ 121 Ex m	5/3-way, diff. versions	G 1/2" -1/2" NPT	in-line	2.5.3.1.3
MH 53_ 501 G Ex m	5/3-way, diff. versions	G 1/8"	dual use*	2.5.3.1.4
MH 53_ 701 G Ex m	5/3-way, diff.versions	G 1/4" -1/4" NPT	dual use*	2.5.3.1.4
MH 53_ 101 G Ex m	5/3-way, diff. versions	G 3/8"	dual use*	2.5.3.1.5
MH 53_ 121 G Ex m	5/3-way, diff. versions	G 1/2"	dual use*	2.5.3.1.5
MH 53_ 504 Ex m	5/3-way, diff. versions	5 mm orifice	manifold**	2.5.3.2.4
MH 53_ 704 Ex m	5/3-way, diff. versions	7 mm orifice	manifold**	2.5.3.2.4

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	2.9.1.3
MNH 310 701 Ex m	3/2-way, single sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.1.1
MNH 310 711 Ex m	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MNH 310 121 Ex m	3/2-way, single sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.1.2
MNH 510 701 Ex m	5/2-way, single sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.2.1
MNH 510 711 Ex m	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MNH 510 121 Ex m	5/2-way, single sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.2.2
MNH 520 701 Ex m	5/2-way, double sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.2.3
MNH 520 121 Ex m	5/2-way, double sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.2.3
MNH 53_ 701 Ex m	5/3-way, diff. versions	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.4
MNH 53_ 121 Ex m	5/3-way, diff. versions	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.4


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

Solenoids are described on page 2.14.3.2.4.

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   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	2.12.3.1
MH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MOH 310 701 VES Ex m	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MH 310 121 VES Ex m	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.3
MH 320 121 VES Ex m	3/2-way, double sol.	G 1/2"	in-line	2.12.3.3
MH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.4
MH 510 121 VES Ex m	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.4
MH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.5
MH 520 121 VES Ex m	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.5
MH 53_ 701 VES Ex m	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.12.3.6
MH 53_ 121 VES Ex m	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.12.3.6

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	2.12.4.3
MNH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.1
MNH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2
MNH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2

Solenoids are described on page 2.14.3.2.4.

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.

Voltage: Delivery on request:
12VDC, 24VDC, 110VAC,
220VAC, 240VAC

Voltage tolerance: - 10...+ 10%

Relative duty cycle: 100 %

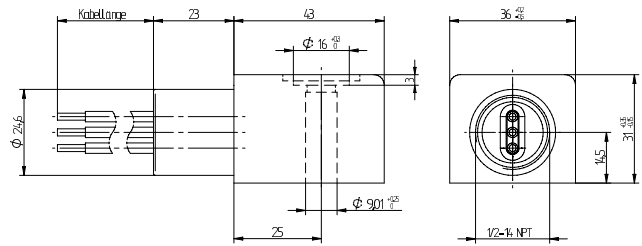
Temperature range: -20°C ... +60°C

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 2.10.14.

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

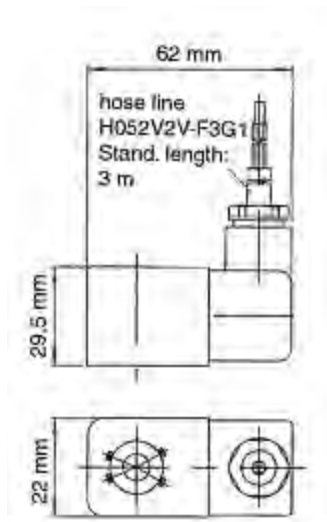
Specifications in accordance to CSA certificate:
Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III
Class I, Division 2, Groups A, B, C, D.

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 and 21.



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:   II 2G Ex mb IIT 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)

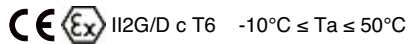
ATEX-approved valves – Ex ia – standard temperature range – aluminum

The following solenoid valves are available:



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



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

Coil is 30 mm wide!

Solenoids are described on page 2.14.3.3.5.

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

Type	Function	Port size	Installation	Further inform. on valve on page
MH 210 501 Ex ia	2/2-way, single sol.	G 1/8"	in-line	2.5.1.1.11
MH 210 701 Ex ia	2/2-way, single sol.	G 1/4"	in-line	2.5.1.1.11
MH 311 012 Ex ia	3/2-way direct acting	M5	in-line	2.5.1.1.2
MH 311 015 Ex ia	3/2-way direct acting	G 1/8"	in-line	2.5.1.1.2
MH 310 501 Ex ia	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12
MOH 310 501 Ex ia	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12
MH 310 701 Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.5.1.1.12
MOH 310 701 Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.5.1.1.12
MH 310 801 Ex ia	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12
MOH 310 801 Ex ia	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12
MH 310 101 Ex ia	3/2-way, single sol.	G 3/8"	in-line	2.5.1.1.13
MOH 310 101 Ex ia	3/2-way, n.o. single sol.	G 3/8"	in-line	2.5.1.1.13
MH 310 121 Ex ia	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.5.1.1.13
MOH 310 121 Ex ia	3/2-way, n.o. single sol.	G 1/2" - 1/2" NPT	in-line	2.5.1.1.13
MH 310 101 G Ex ia	3/2-way, single sol.	G 3/8"	dual use*	2.5.1.1.15
MOH 310 101 G Ex ia	3/2-way, n.o. single sol.	G 3/8"	dual use*	2.5.1.1.15
MH 310 121 G Ex ia	3/2-way, single sol.	G 1/2"	dual use*	2.5.1.1.15
MOH 310 121 G Ex ia	3/2-way, n.o. single sol.	G 1/2"	dual use*	2.5.1.1.15
MH 320 501 Ex ia	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16
MH 320 701 Ex ia	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 801 Ex ia	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 101 Ex ia	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17
MH 320 121 Ex ia	3/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.5.1.1.17
MH 320 121 G Ex ia	3/2-way, double sol.	G 1/2"	dual use*	2.5.1.1.18
MH 510 501 Ex ia	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3
MH 510 701 Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.5.2.1.3
MH 510 801 Ex ia	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3
MH 510 101 Ex ia	5/2-way, single sol.	G 3/8"	in-line	2.5.2.1.4
MH 510 121 Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.5.2.1.4
MH 510 101 G Ex ia	5/2-way, single sol.	G 3/8"	dual use*	2.5.2.1.6
MH 510 121 G Ex ia	5/2-way, single sol.	G 1/2"	dual use*	2.5.2.1.6
MH 520 501 Ex ia	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9
MH 520 701 Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.5.2.1.9
MH 520 801 Ex ia	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9
MH 520 101 Ex ia	5/2-way, double sol.	G 3/8"	in-line	2.5.2.1.10
MH 520 121 Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.5.2.1.10
MH 520 101 G Ex ia	5/2-way, double sol.	G 3/8"	dual use*	2.5.2.1.12
MH 520 121 G Ex ia	5/2-way, double sol.	G 1/2"	dual use*	2.5.2.1.12
MH 53_ 501 Ex ia	5/3-way, different versions	G 1/8"	in-line	2.5.3.1.2
MH 53_ 701 Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.5.3.1.2
MH 53_ 801 Ex ia	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MH 53_ 101 Ex ia	5/3-way, different versions	G 3/8"	in-line	2.5.3.1.3
MH 53_ 121 Ex ia	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.5.3.1.3
MH 53_ 101 G Ex ia	5/3-way, different versions	G 3/8"	dual use*	2.5.3.1.5
MH 53_ 121 G Ex ia	5/3-way, different versions	G 1/2"	dual use*	2.5.3.1.5

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	2.9.1.3
MNH 310 701 Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.1.1.1
MNH 310 711 Ex ia	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MNH 310 121 Ex ia	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.9.1.1.2
MNH 510 701 Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.1.2.1
MNH 510 711 Ex ia	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MNH 510 121 Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.9.1.2.2
MNH 520 701 Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.1.2.3
MNH 520 121 Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.9.1.2.3
MNH 53_ 701 Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" Namur	2.9.1.4
MNH 53_ 121 Ex ia	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" Namur	2.9.1.4

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

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   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	2.11.4.1.1
MH 311 015 TT Ex ia	3/2-way direct acting	G 1/8"	in-line	2.11.4.1.1
MH 310 501 TT Ex ia	3/2-way, single sol.	G 1/8"	in-line	2.11.4.1.2
MOH 310 501 TT Ex ia	3/2-way, n.o. single sol.	G 1/8"	in-line	2.11.4.1.2
MH 310 701 GTT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	dual use*	2.11.4.1.2
MOH 310 701 GTT Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	dual use*	2.11.4.1.2
MH 320 501 TT Ex ia	3/2-way, double sol.	G 1/8"	in-line	2.11.4.1.2
MH 320 701 GTT Ex ia	3/2-way, double sol.	G 1/4"	dual use*	2.11.4.1.2
MH 510 501 GTT Ex ia	5/2-way, single sol.	G 1/8"	dual use*	2.11.4.2.1
MH 510 701 GTT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	dual use*	2.11.4.2.1
MH 520 501 GTT Ex ia	5/2-way, double sol.	G 1/8"	dual use*	2.11.4.2.2
MH 520 701 GTT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	dual use*	2.11.4.2.2
MH 53_ 501 GTT Ex ia	5/3-way, different versions	G 1/8"	dual use*	2.11.4.2.2
MH 53_ 701 GTT Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	dual use*	2.11.4.2.2

Valves with interface according to Namur standard


MNH 310 701 TT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.1
MNH 510 701 TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.1
MNH 510 711 TT Ex ia	5/2-way, single sol.	G 1/4"	1/4" Namur	2.11.5.2.1
MNH 520 701 TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.2
MNH 531 701 TT Ex ia	5/3-way, centre closed	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.2

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

Solenoids are described on page 2.14.3.3.5.
 Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

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   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	2.12.3.1
MH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MOH 310 701 VES Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MH 310 121 VES Ex ia	3/2-way, single sol.	G 1/2"	in-line	2.12.3.3
MH 320 121 VES Ex ia	3/2-way, double sol.	G 1/2"	in-line	2.12.3.3
MH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.4
MH 510 121 VES Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.4
MH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.5
MH 520 121 VES Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.5
MH 53_701 VES Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.12.3.6
MH 53_121 VES Ex ia	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.12.3.6

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	2.12.4.3
MNH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.1
MNH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2
MNH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2


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

Solenoids are described on page 2.14.3.3.5.

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   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	2.12.3.1
MH 310 701 VES TT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MOH 310 701 VES TT Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.4
MH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.5
MH 53_701 VES TT Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.12.3.6
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	2.12.4.3
MNH 310 701 VES TT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.1
MNH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2
MNH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2

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

Solenoids are described on page 2.14.3.3.5.

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

MA 30 Ex ia tD II CT6 24 DC



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 and 21.

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 materials according to DIN VDE 0580: F

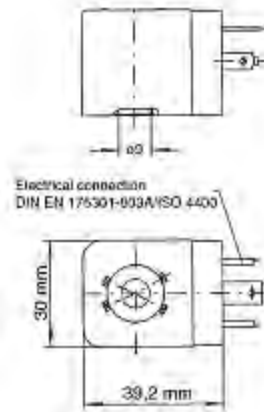
Protection level with connector according to EN 60529: IP 65

Moulding material: Thermoset resin (Epoxy)

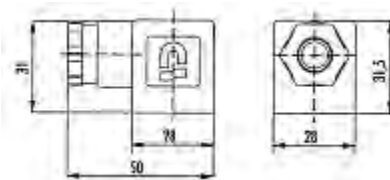
Marking on coil: II 2G Ex ia IIB/IIC T6
II 2D Ex tb IIIC T80°C

Barrier:

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



MA 30 Ex ia tD II CT6 24 DC



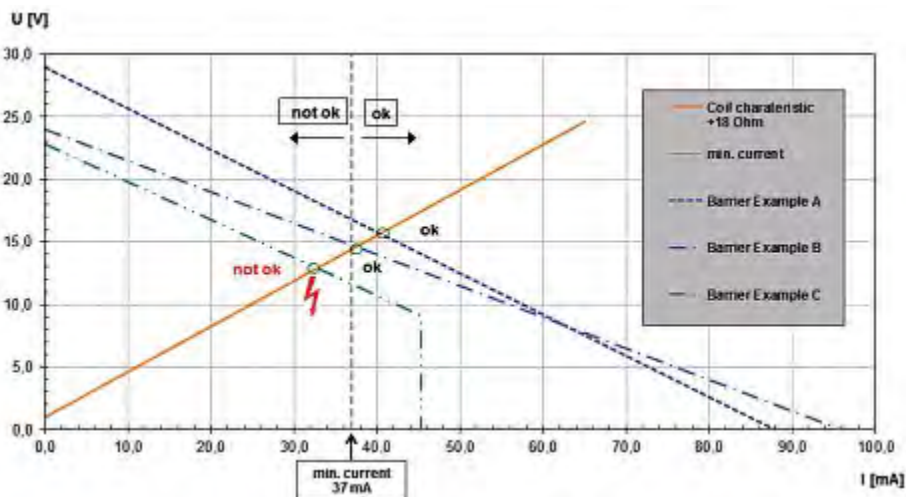
ST 30 Ex ia

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 2.10.14.

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.

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



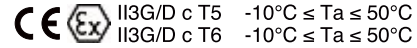
The ATEX approval is only valid as long as the associated components are used.

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



The following solenoid valves are available:

Type	Function	Port size	Installation	Further inform. on valve	Type	Function	Port size	Installation	Further inform. on valve
MH 210 501 Ex nA	2/2-way, single sol.	G 1/8"	in-line	2.5.1.1.11	MH 520 101 Ex nA	5/2-way, double sol.	G 3/8"	in-line	2.5.2.1.10
MH 210 701 Ex nA	2/2-way, single sol.	G 1/4"	in-line	2.5.1.1.11	MH 520 121 Ex nA	5/2-way, double sol.	G 1/2" - NPT	in-line	2.5.2.1.10
MH 311 012 Ex nA	3/2-way direct acting	M5	in-line	2.5.1.1.2	MH 520 501 G Ex nA	5/2-way, double sol.	G 1/8"	dual use*	2.5.2.1.11
MH 311 015 Ex nA	3/2-way direct acting	G 1/8"	in-line	2.5.1.1.2	MH 520 701 G Ex nA	5/2-way, double sol.	G 1/4" - NPT	dual use*	2.5.2.1.11
MH 311 013 Ex nA	3/2-way direct acting	G 1/8"	banjo screw	2.5.1.1.6	MH 520 101 G Ex nA	5/2-way, double sol.	G 3/8"	dual use*	2.5.2.1.12
MH 311 017 Ex nA	3/2-way direct acting	G 1/4"	banjo screw	2.5.1.1.6	MH 520 121 G Ex nA	5/2-way, double sol.	G 1/2"	dual use*	2.5.2.1.12
MH 312 Ex nA	3/2-way direct acting	M5	manifold	2.5.1.2.2	MH 520 504 Ex nA	5/2-way, double sol.	5 mm orifice	manifold	2.5.2.2.8
MH 315 Ex nA	3/2-way direct acting	G 1/8"	manifold	2.5.1.2.2	MH 520 704 Ex nA	5/2-way, double sol.	7 mm orifice	manifold	2.5.2.2.8
MH 310 501 Ex nA	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12	MH 53_501 Ex nA	5/3-way, different versions	G 1/8"	in-line	2.5.3.1.2
MOH 310 501 Ex nA	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12	MH 53_701 Ex nA	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MH 310 701 Ex nA	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12	MH 53_801 Ex nA	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MOH 310 701 Ex nA	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12	MH 53_101 Ex nA	5/3-way, different versions	G 3/8"	in-line	2.5.3.1.3
MH 310 801 Ex nA	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12	MH 53_121 Ex nA	5/3-way, different versions	G 1/2" - NPT	in-line	2.5.3.1.3
MOH 310 801 Ex nA	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12	MH 53_501 G Ex nA	5/3-way, different versions	G 1/8"	dual use*	2.5.3.1.4
MH 310 101 Ex nA	3/2-way, single sol.	G 3/8"	in-line	2.5.1.1.13	MH 53_701 G Ex nA	5/3-way, different versions	G 1/4" - NPT	dual use*	2.5.3.1.4
MOH 310 101 Ex nA	3/2-way, n.o. single sol.	G 3/8"	in-line	2.5.1.1.13	MH 53_101 G Ex nA	5/3-way, different versions	G 3/8"	dual use*	2.5.3.1.5
MH 310 121 Ex nA	3/2-way, single sol.	G 1/2" - NPT	in-line	2.5.1.1.13	MH 53_121 G Ex nA	5/3-way, different versions	G 1/2"	dual use*	2.5.3.1.5
MOH 310 121 Ex nA	3/2-way, n.o. single sol.	G 1/2" - NPT	in-line	2.5.1.1.13	MH 53_504 Ex nA	5/3-way, different versions	5 mm orifice	manifold	2.5.3.2.4
MH 310 501 G Ex nA	3/2-way, single sol.	G 1/8"	dual use*	2.5.1.1.14	MH 53_704 Ex nA	5/3-way, different versions	7 mm orifice	manifold	2.5.3.2.4
MOH 310 501 G Ex nA	3/2-way, n.o. single sol.	G 1/8"	dual use*	2.5.1.1.14					
MH 310 701 G Ex nA	3/2-way, single sol.	G 1/4" - NPT	dual use*	2.5.1.1.14					
MOH 310 701 G Ex nA	3/2-way, n.o. single sol.	G 1/4" - NPT	dual use*	2.5.1.1.14					
MH 310 101 G Ex nA	3/2-way, single sol.	G 3/8"	dual use*	2.5.1.1.15					
MOH 310 101 G Ex nA	3/2-way, n.o. single sol.	G 3/8"	dual use*	2.5.1.1.15					
MH 310 121 G Ex nA	3/2-way, single sol.	G 1/2"	dual use*	2.5.1.1.15					
MOH 310 121 G Ex nA	3/2-way, n.o. single sol.	G 1/2"	dual use*	2.5.1.1.15					
MH 320 501 Ex nA	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16					
MH 320 701 Ex nA	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16					
MH 320 801 Ex nA	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16					
MH 320 101 Ex nA	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17					
MH 320 121 Ex nA	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17					
MH 320 501 G Ex nA	3/2-way, double sol.	G 1/8"	dual use*	2.5.1.1.18					
MH 320 701 G Ex nA	3/2-way, double sol.	G 1/4"	dual use*	2.5.1.1.18					
MH 320 101 G Ex nA	3/2-way, double sol.	G 3/8"	dual use*	2.5.1.1.18					
MH 320 121 G Ex nA	3/2-way, double sol.	G 1/2"	dual use*	2.5.1.1.18					
MH 510 501 Ex nA	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3					
MH 510 701 Ex nA	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3					
MH 510 801 Ex nA	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3					
MH 510 101 Ex nA	5/2-way, single sol.	G 3/8"	in-line	2.5.2.1.4					
MH 510 121 Ex nA	5/2-way, single sol.	G 1/2" - NPT	in-line	2.5.2.1.4					
MH 510 501 G Ex nA	5/2-way, single sol.	G 1/8"	dual use*	2.5.2.1.5					
MH 510 701 G Ex nA	5/2-way, single sol.	G 1/4" - NPT	dual use*	2.5.2.1.5					
MH 510 101 G Ex nA	5/2-way, single sol.	G 3/8"	dual use*	2.5.2.1.6					
MH 510 121 G Ex nA	5/2-way, single sol.	G 1/2"	dual use*	2.5.2.1.6					
MH 510 504 Ex nA	5/2-way, single sol.	5 mm orifice	manifold	2.5.2.2.4					
MH 510 704 Ex nA	5/2-way, single sol.	7 mm orifice	manifold	2.5.2.2.4					
MH 520 501 Ex nA	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9					
MH 520 701 Ex nA	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9					
MH 520 801 Ex nA	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9					

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	2.9.1.3
MNH 310 701 Ex nA	3/2-way, single sol.	G 1/4" - NPT	1/4" Namur	2.9.1.1.1
MNH 310 711 Ex nA	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MNH 310 121 Ex nA	3/2-way, single sol.	G 1/2" - NPT	1/2" Namur	2.9.1.1.2
MNH 510 701 Ex nA	5/2-way, single sol.	G 1/4" - NPT	1/4" Namur	2.9.1.2.1
MNH 510 711 Ex nA	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MNH 510 121 Ex nA	5/2-way, single sol.	G 1/2" - NPT	1/2" Namur	2.9.1.2.2
MNH 520 701 Ex nA	5/2-way, double sol.	G 1/4" - NPT	1/4" Namur	2.9.1.2.3
MNH 520 121 Ex nA	5/2-way, double sol.	G 1/2" - NPT	1/2" Namur	2.9.1.2.3
MNH 53_701 Ex nA	5/3-way, different versions	G 1/4" - NPT	1/4" Namur	2.9.1.4
MNH 531 121 Ex nA	5/3-way, centre closed	G 1/2" - NPT	1/2" Namur	2.9.1.4



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

Solenoids are described on page 2.14.3.4.3. 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   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	2.12.3.1
MH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MOH 310 701 VES Ex nA	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.2
MH 310 121 VES Ex nA	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.3
MH 320 121 VES Ex nA	3/2-way, double sol.	G 1/2"	in-line	2.12.3.3
MH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.4
MH 510 121 VES Ex nA	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.4
MH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.12.3.5
MH 520 121 VES Ex nA	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.12.3.5
MH 53_701 VES Ex nA	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.12.3.6
MH 53_121 VES Ex nA	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.12.3.6

Valves with interface according to Namur standard

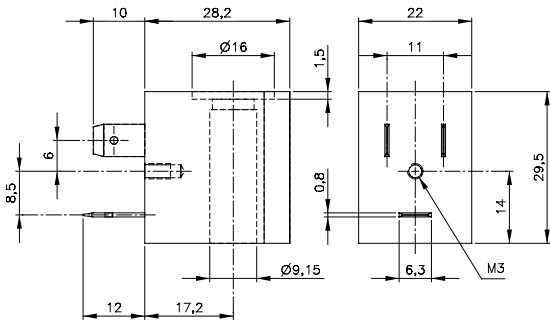
MNH 350 701 VES Ex nA	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.3
MNH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.1
MNH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2
MNH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.12.4.2

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

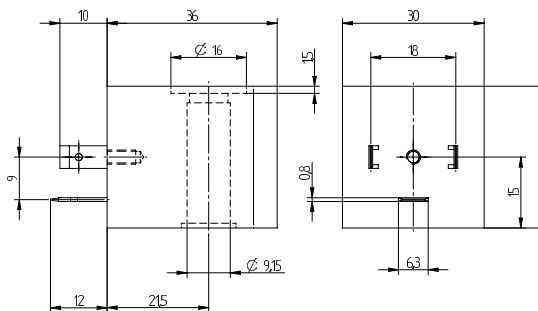
Solenoids are described on page 2.14.3.4.3.

Delivery contains valve with the 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 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 materials according 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 2.13.5.

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 4400)

Other voltages are available on request.

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   II2G/D c T4 -10°C ≤ Ta ≤ 60°C
 II2G/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 310 501 Ex e mb	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12
MOH 310 501 Ex e mb	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12
MH 310 701 Ex e mb	3/2-way, single sol.	G 1/4" -1/4" NPT	in-line	2.5.1.1.12
MOH 310 701 Ex e mb	3/2-way, n.o. single sol.	G 1/4" -1/4" NPT	in-line	2.5.1.1.12
MH 310 801 Ex e mb	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12
MOH 310 801 Ex e mb	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12
MH 310 101 Ex e mb	3/2-way, single sol.	G 3/8"	in-line	2.5.1.1.13
MOH 310 101 Ex e mb	3/2-way, n.o. single sol.	G 3/8"	in-line	2.5.1.1.13
MH 310 121 Ex e mb	3/2-way, single sol.	G 1/2" -1/2" NPT	in-line	2.5.1.1.13
MOH 310 121 Ex e mb	3/2-way, n.o. single sol.	G 1/2" -1/2" NPT	in-line	2.5.1.1.13
MH 320 501 Ex e mb	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16
MH 320 701 Ex e mb	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 801 Ex e mb	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MH 320 101 Ex e mb	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17
MH 320 121 Ex e mb	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17
MH 510 501 Ex e mb	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3
MH 510 701 Ex e mb	5/2-way, single sol.	G 1/4" -1/4" NPT	in-line	2.5.2.1.3
MH 510 801 Ex e mb	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3
MH 510 101 Ex e mb	5/2-way, single sol.	G 3/8"	in-line	2.5.2.1.4
MH 510 121 Ex e mb	5/2-way, single sol.	G 1/2" -1/2" NPT	in-line	2.5.2.1.4
MH 520 501 Ex e mb	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9
MH 520 701 Ex e mb	5/2-way, double sol.	G 1/4" -1/4" NPT	in-line	2.5.2.1.9
MH 520 801 Ex e mb	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9
MH 520 101 Ex e mb	5/2-way, double sol.	G 3/8"	in-line	2.5.2.1.10
MH 520 121 Ex e mb	5/2-way, double sol.	G 1/2" -1/2" NPT	in-line	2.5.2.1.10
MH 53_501 Ex e mb	5/3-way, different versions	G 1/8"	in-line	2.5.3.1.2
MH 53_701 Ex e mb	5/3-way, different versions	G 1/4" -1/4" NPT	in-line	2.5.3.1.2
MH 53_801 Ex e mb	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MH 53_101 Ex e mb	5/3-way, different versions	G 3/8"	in-line	2.5.3.1.3
MH 53_121 Ex e mb	5/3-way, different versions	G 1/2" -1/2" NPT	in-line	2.5.3.1.3

Valves with interface according to Namur standard

MNH 350 701 Ex e mb	3/2-way & 5/2-way	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.3
MNH 310 701 Ex e mb	3/2-way, single sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.1.1
MNH 310 711 Ex e mb	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MNH 310 121 Ex e mb	3/2-way, single sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.1.2
MNH 510 701 Ex e mb	5/2-way, single sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.2.1
MNH 510 711 Ex e mb	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MNH 510 121 Ex e mb	5/2-way, single sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.2.2
MNH 520 701 Ex e mb	5/2-way, double sol.	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.2.3
MNH 520 121 Ex e mb	5/2-way, double sol.	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.2.3
MNH 53_701 Ex e mb	5/3-way, different versions	G 1/4" -1/4" NPT	1/4" Namur	2.9.1.4
MNH 531 121 Ex e mb	5/3-way, centre closed	G 1/2" -1/2" NPT	1/2" Namur	2.9.1.4

Solenoids are described on page 2.14.3.5.4.

Example drawings including the solenoid are displayed on page 2.14.3.5.5.

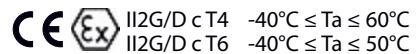
Delivery contains valve with the appropriate operator system, coil, manual and declaration of conformity.

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



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	2.11.4.1.2
MOH 310 501 TT Ex e mb	3/2-way, n.o. single sol.	G 1/8"	in-line	2.11.4.1.2
MH 310 701 GTT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.1.2
MOH 310 701 GTT Ex e mb	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.1.2
MH 320 501 TT Ex e mb	3/2-way, double sol.	G 1/8"	in-line	2.11.4.1.2
MH 320 701 TT Ex e mb	3/2-way, double sol.	G 1/4"	in-line	2.11.4.1.2
MH 510 501 GTT Ex e mb	5/2-way, single sol.	G 1/8"	in-line	2.11.4.2.1
MH 510 701 GTT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.2.1
MH 520 501 GTT Ex e mb	5/2-way, double sol.	G 1/8"	in-line	2.11.4.2.2
MH 520 701 GTT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.2.2
MH 53_ 501 GTT Ex e mb	5/3-way, different versions	G 1/8"	in-line	2.11.4.2.2
MH 53_ 701 GTT Ex e mb	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.11.4.2.2

Valves with interface according to Namur standard

MNH 310 701 TT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.1
MNH 510 701 TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.1
MNH 510 711 TT Ex e mb	5/2-way, single sol.	G 1/4"	1/4" Namur	2.11.5.2.1
MNH 520 701 TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.2
MNH 531 701 TT Ex e mb	5/3-way, centre closed	G 1/4" - 1/4" NPT	1/4" Namur	2.11.5.2.2


Solenoids are described on page 2.14.3.5.4.

Example drawings including the solenoid are displayed on page 2.14.3.5.5.

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   II2G/D c T4 -40°C ≤ Ta ≤ 60°C
 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	2.10.3.2
MOH 310 701 VES TT Ex e mb	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MH 510 701 VES TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.4
MH 520 701 VES TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.5
MH 53_701 VES TT Ex e mb	5/3-way, different version	G 1/4" - 1/4" NPT	in-line	2.10.3.6

Valves with interface according to Namur standard

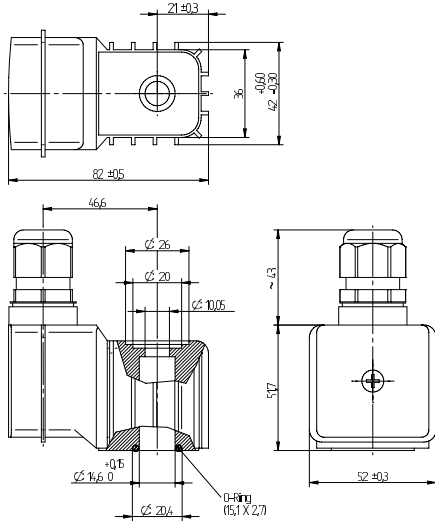
MNH 350 701 VES TT Ex e mb	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.3
MNH 310 701 VES TT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.1
MNH 310 711 VES TT Ex e mb	3/2-way, single sol.	G 1/4"	1/4" Namur	2.10.4.1
MNH 510 701 VES TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2
MNH 510 711 VES TT Ex e mb	5/2-way, single sol.	G 1/4"	1/4" Namur	2.10.4.2
MNH 520 701 VES TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2

Solenoids are described on page 2.14.3.5.4.

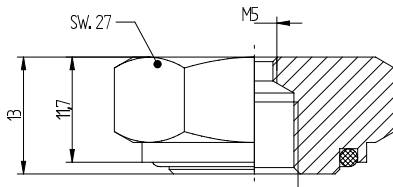
Example drawings including the solenoid are displayed on page 2.14.3.5.5.

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.

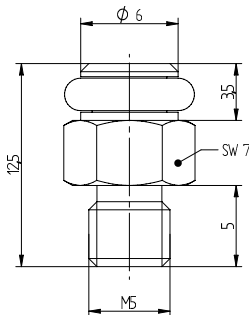
When this solenoid system is used in combination with "ATEX certified" mechanical components conforming EN 13463-1:2001 and PrEN 13463-5:2000, the entire valve can be used in explosive hazardous environment zone 1 and 21.



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 65

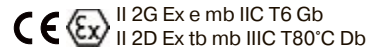
(IP 67 with nut type M G1/8 M5 in combination with exhaust protection fitting type ESR M5)

Moulding material: Thermoplasticpolyester

Cable Gland: M20 x 1,5
for cable diameters
6 – 13 mm

Please note:
Same coil for DC and AC.

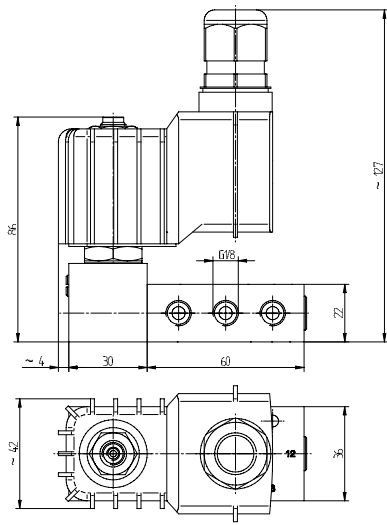
Marking on coil:



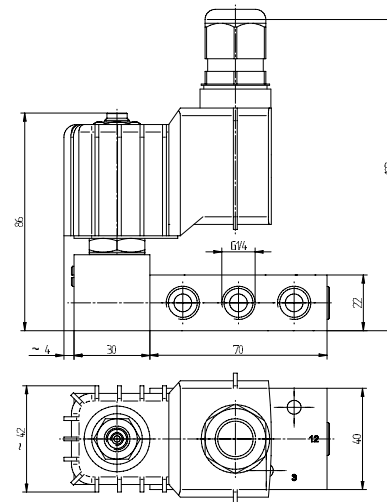
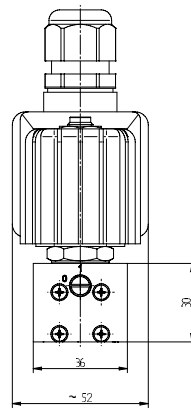
The ATEX approval is only valid as long as the associated components are used.

Type	Operating press.	Power cons.	Temperature class
MA 52 EEx e mb IIC T6 24	max. 10 bar	4,8 Watt / 4,3 VA	T6 (85° C)
MA 52 EEx e mb IIC T6 110	max. 10 bar	4,4 VA	T6 (85° C)
MA 52 EEx e mb IIC T6 230	max. 10 bar	4,8 VA	T6 (85° C)

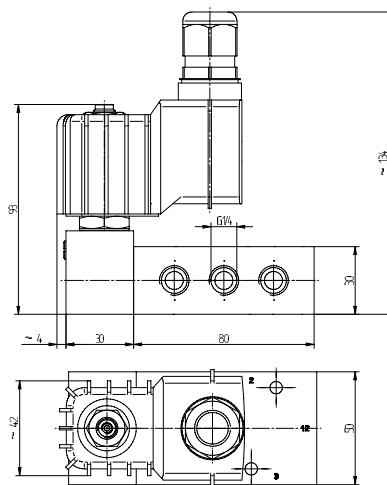
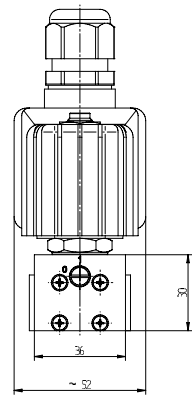
Example drawings of solenoid valves with Ex e mb solenoid system



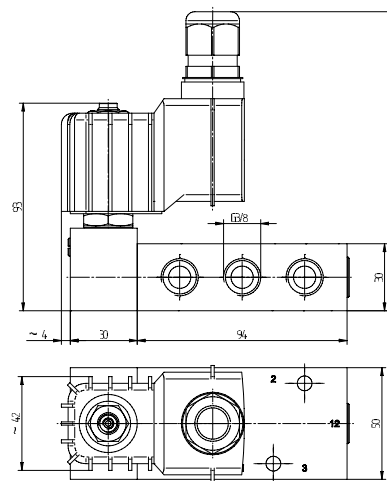
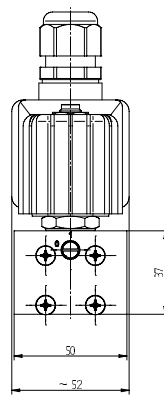
MH 510 501 Ex e mb IIC T6



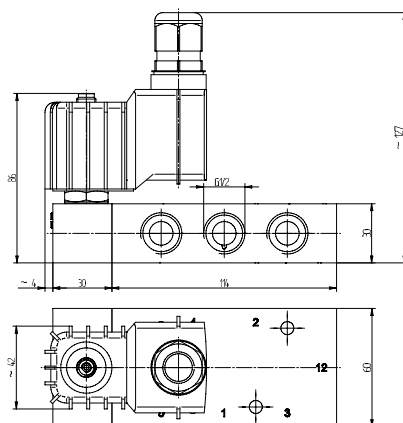
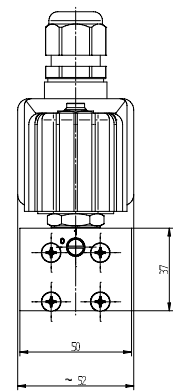
MH 510 701 Ex e mb IIC T6 /
MNH 510 701 EX e mb IIC T6



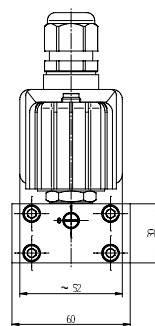
MH 510 801 Ex e mb IIC T6



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



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 2.14.3.6.5.

Example drawings including the solenoid are displayed on page 2.14.3.6.6.

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   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 210 501 Ex d	2/2-way, single sol.	G 1/8"	in-line	2.5.1.1.11
MC 210 701 Ex d	2/2-way, single sol.	G 1/4"	in-line	2.5.1.1.11
MC 310 501 Ex d	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12
MOC 310 501 Ex d	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12
MC 310 701 Ex d	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12
MOC 310 701 Ex d	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12
MC 310 121 Ex d	3/2-way, single sol.	G 1/2"	in-line	2.5.1.1.13
MOC 310 121 Ex d	3/2-way, n.o. single sol.	G 1/2"	in-line	2.5.1.1.13
MC 320 501 Ex d	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16
MC 320 701 Ex d	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16
MC 320 121 Ex d	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17
MC 510 501 Ex d	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3
MC 510 701 Ex d	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3
MC 510 121 Ex d	5/2-way, single sol.	G 1/2"	in-line	2.5.2.1.4
MC 520 501 Ex d	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9
MC 520 701 Ex d	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9
MC 520 121 Ex d	5/2-way, double sol.	G 1/2"	in-line	2.5.2.1.10
MC 53_ 501 Ex d	5/3-way, different version	G 1/8"	in-line	2.5.3.1.2
MC 53_ 701 Ex d	5/3-way, different version	G 1/4"	in-line	2.5.3.1.2
MC 53_ 121 Ex d	5/3-way, different version	G 1/2"	in-line	2.5.3.1.3

Valves with interface according to NAMUR-standard				
MNC 350 701 Ex d	3/2-way & 5/2-way	G 1/4"	1/4" NAMUR	2.9.1.3
MNC 310 701 Ex d	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.9.1.1.1
MNC 310 711 Ex d	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.9.1.1.1
MNC 310 121 Ex d	3/2-way, single sol.	G 1/2"	1/2" NAMUR	2.9.1.1.2
MNC 510 701 Ex d	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.9.1.2.1
MNC 510 711 Ex d	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.9.1.2.1
MNC 510 121 Ex d	5/2-way, single sol.	G 1/2"	1/2" NAMUR	2.9.1.2.2
MNC 520 701 Ex d	5/2-way, double sol.	G 1/4"	1/4" NAMUR	2.9.1.2.3
MNC 520 121 Ex d	5/2-way, double sol.	G 1/2"	1/2" NAMUR	2.9.1.2.3
MNC 53_ 701 Ex d	5/3-way, different version	G 1/4"	1/4" NAMUR	2.9.1.4
MNC 53_ 121 Ex d	5/3-way, different version	G 1/2"	1/2" NAMUR	2.9.1.4

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
 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
 Ignition protection type: Ex d – flameproof
 Temperature class: T6 (solenoid)

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 2.14.3.6.5.

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

Example drawings including the solenoid are displayed on page 2.14.3.6.6.

The following solenoid valves are available:

Type	Function	Port size	Installation	Further information on valve on page
MC 310 501 TT Ex d	3/2-way, single sol.	G 1/8"	in-line	2.11.4.1.2
MOC 310 501 TT Ex d	3/2-way, n.o. single sol.	G 1/8"	in-line	2.11.4.1.2
MC 310 701 GTT Ex d	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.1.2
MOC 310 701 GTT Ex d	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.1.2
MC 320 501 TT Ex d	3/2-way, double sol.	G 1/8"	in-line	2.11.4.1.2
MC 320 701 GTT Ex d	3/2-way, double sol.	G 1/4"	in-line	2.11.4.1.2
MC 510 501 GTT Ex d	5/2-way, single sol.	G 1/8"	in-line	2.11.4.2.1
MC 510 701 GTT Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.2.1
MC 520 501 GTT Ex d	5/2-way, double sol.	G 1/8"	in-line	2.11.4.2.2
MC 520 701 GTT Ex d	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.11.4.2.2
MC 53_501 GTT Ex d	5/3-way, different version	G 1/8"	in-line	2.11.4.2.2
MC 53_701 GTT Ex d	5/3-way, different version	G 1/4" - 1/4" NPT	in-line	2.11.4.2.2

Valves with interface according to NAMUR-standard				
MNC 310 701 TT Ex d	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.11.5.1
MNC 510 701 TT Ex d	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.11.5.2.1
MNC 510 711 TT Ex d	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.11.5.2.1
MNC 520 701 TT Ex d	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" NAMUR	2.11.5.2.2
MNC 531 701 TT Ex d	5/3-way, different version	G 1/4" - 1/4" NPT	1/4" NAMUR	2.11.5.2.2

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 2.14.3.6.5.

Example drawings including the solenoid are displayed on page 2.14.3.6.6.

Material: Stainless steel, 316L 
 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   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, single sol.	G 1/4"	in-line	2.12.3.2
MOC 310 701 VES Ex d	3/2-way, n.o. single sol.	G 1/4"	in-line	2.12.3.2
MC 310 121 VES Ex d	3/2-way, single sol.	G 1/2"	in-line	2.12.3.3
MC 510 701 VES Ex d	5/2-way, single sol.	G 1/4"	in-line	2.12.3.4
MC 510 121 VES Ex d	5/2-way, single sol.	G 1/2"	in-line	2.12.3.4
MC 520 701 VES Ex d	5/2-way, double sol.	G 1/4"	in-line	2.12.3.5
MC 520 121 VES Ex d	5/2-way, double sol.	G 1/2"	in-line	2.12.3.5
MC 53_ 701 VES Ex d	5/3-way, different version	G 1/4"	in-line	2.12.3.6
MC 53_ 121 VES Ex d	5/3-way, different version	G 1/2"	in-line	2.12.3.6


Valves with interface according to NAMUR-standard

MNC 350 701 VES Ex d	3/2-way & 5/2-way	G 1/4"	1/4" NAMUR	2.12.4.3
MNC 310 701 VES Ex d	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.1
MNC 510 701 VES Ex d	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.2
MNC 520 701 VES Ex d	5/2-way, double sol.	G 1/4"	1/4" NAMUR	2.12.4.2

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

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




Material: Stainless steel, 316L 
 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
 Ignition protection type: Ex d – flameproof
 Temperature class: T6 (solenoid)

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 2.14.3.6.5.

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

Example drawings including the solenoid are displayed on page 2.14.3.6.6.

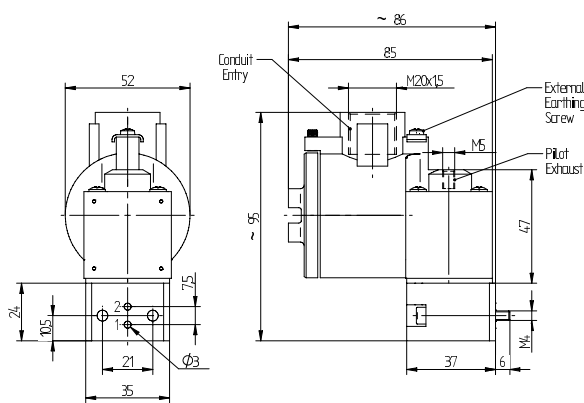
The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MC 310 701 VES TT Ex d	3/2-way, single sol.	G 1/4"	in-line	2.12.3.2
MOC 310 701 VES TT Ex d	3/2-way, n.o. single sol.	G 1/4"	in-line	2.12.3.2
MC 510 701 VES TT Ex d	5/2-way, single sol.	G 1/4"	in-line	2.12.3.4
MC 520 701 VES TT Ex d	5/2-way, double sol.	G 1/4"	in-line	2.12.3.5
MC 53_701 VES TT Ex d	5/3-way, different version	G 1/4"	in-line	2.12.3.6

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" NAMUR	2.12.4.3
MNC 310 701 VES TT Ex d	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.1
MNC 510 701 VES TT Ex d	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.2
MNC 520 701 VES TT Ex d	5/2-way, double sol.	G 1/4"	1/4" NAMUR	2.12.4.2



MA 52 EEx d IIC T6 24 DC/ MA 52 EEx d IIC T6 24 DC 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 and 21.



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
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:	  II 2G Ex d IIC T6 II 2D Ex tD A21 IP66 T85°C

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

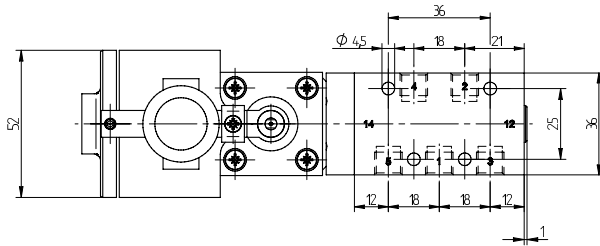
Technical details pilot head :

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

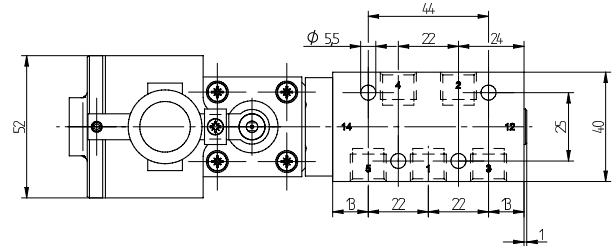
The ATEX approval is only valid as long as the associated components are used.

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)

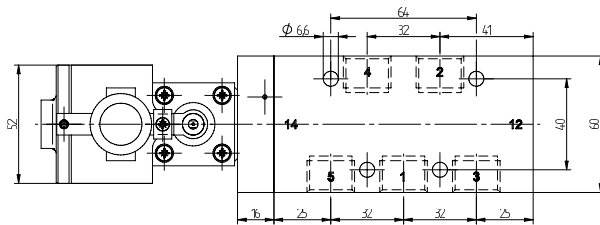
Example drawings of solenoid valves with Ex d solenoid system



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:  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 2.14.3.7.5.

The following solenoid valves are available:

Type	Function	Port size	Installation	Further inform. on valve	Valves with interface according to NAMUR-standard				
Type	Function	Port size	Installation	Further inform. on valve	Type	Function	Port size	Installation	Further inform. on valve
MH 210 501 Ex dm	2/2-way, single sol.	G 1/8"	in-line	2.5.1.1.11	MNH 350 701 Ex dm	3/2-way & 5/2-way	G 1/4"	1/4" Namur	2.9.1.3
MH 210 701 Ex dm	2/2-way, single sol.	G 1/4"	in-line	2.5.1.1.11	MNH 310 701 Ex dm	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MH 311 012 Ex dm	3/2-way direct acting	M5	in-line	2.5.1.1.2	MNH 310 711 Ex dm	3/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.1.1
MH 311 015 Ex dm	3/2-way direct acting	G 1/8"	in-line	2.5.1.1.2	MNH 310 121 Ex dm	3/2-way, single sol.	G 1/2"	1/2" Namur	2.9.1.1.2
MH 310 501 Ex dm	3/2-way, single sol.	G 1/8"	in-line	2.5.1.1.12	MNH 510 701 Ex dm	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MOH 310 501 Ex dm	3/2-way, n.o. single sol.	G 1/8"	in-line	2.5.1.1.12	MNH 510 711 Ex dm	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.1.2.1
MH 310 701 Ex dm	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12	MNH 510 121 Ex dm	5/2-way, single sol.	G 1/2"	1/2" Namur	2.9.1.2.2
MOH 310 701 Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12	MNH 520 701 Ex dm	5/2-way, double sol.	G 1/4"	1/4" Namur	2.9.1.2.3
MH 310 801 Ex dm	3/2-way, single sol.	G 1/4"	in-line	2.5.1.1.12	MNH 520 121 Ex dm	5/2-way, double sol.	G 1/2"	1/2" Namur	2.9.1.2.3
MOH 310 801 Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	2.5.1.1.12	MNH 53_701 Ex dm	5/3-way, different version	G 1/4"	1/4" Namur	2.9.1.4
MH 310 101 Ex dm	3/2-way, single sol.	G 3/8"	in-line	2.5.1.1.13	MNH 53_121 Ex dm	5/3-way, different version	G 1/2"	1/2" Namur	2.9.1.4
MOH 310 101 Ex dm	3/2-way, n.o. single sol.	G 3/8"	in-line	2.5.1.1.13					
MH 310 121 Ex dm	3/2-way, single sol.	G 1/2"	in-line	2.5.1.1.13					
MOH 310 121 Ex dm	3/2-way, n.o. single sol.	G 1/2"	in-line	2.5.1.1.13					
MH 320 501 Ex dm	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16					
MH 320 701 Ex dm	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16					
MH 320 801 Ex dm	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16					
MH 320 101 Ex dm	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17					
MH 320 121 Ex dm	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17					
MH 510 501 Ex dm	5/2-way, single sol.	G 1/8"	in-line	2.5.2.1.3					
MH 510 701 Ex dm	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3					
MH 510 801 Ex dm	5/2-way, single sol.	G 1/4"	in-line	2.5.2.1.3					
MH 510 101 Ex dm	5/2-way, single sol.	G 3/8"	in-line	2.5.2.1.4					
MH 510 121 Ex dm	5/2-way, single sol.	G 1/2"	in-line	2.5.2.1.4					
MH 520 501 Ex dm	5/2-way, double sol.	G 1/8"	in-line	2.5.2.1.9					
MH 520 701 Ex dm	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9					
MH 520 801 Ex dm	5/2-way, double sol.	G 1/4"	in-line	2.5.2.1.9					
MH 520 101 Ex dm	5/2-way, double sol.	G 3/8"	in-line	2.5.2.1.10					
MH 520 121 Ex dm	5/2-way, double sol.	G 1/2"	in-line	2.5.2.1.10					
MH 53_501 Ex dm	5/3-way, different version	G 1/8"	in-line	2.5.3.1.2					
MH 53_701 Ex dm	5/3-way, different version	G 1/4"	in-line	2.5.3.1.2					
MH 53_801 Ex dm	5/3-way, different version	G 1/4"	in-line	2.5.3.1.2					
MH 53_101 Ex dm	5/3-way, different version	G 3/8"	in-line	2.5.3.1.3					
MH 53_121 Ex dm	5/3-way, different version	G 1/2"	in-line	2.5.3.1.3					

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:   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 2.14.3.7.5.

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	2.11.4.1.1
MH 311 015 TT Ex dm	3/2-way direct acting	G 1/8"	in-line	2.11.4.1.1
MH 310 501 TT Ex dm	3/2-way, single sol.	G 1/8"	in-line	2.11.4.1.2
MOH 310 501 TT Ex dm	3/2-way, n.o. single sol.	G 1/8"	in-line	2.11.4.1.2
MH 310 701 GTT Ex dm	3/2-way, single sol.	G 1/4"	in-line	2.11.4.1.2
MOH 310 701 GTT Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	2.11.4.1.2
MH 320 501 TT Ex dm	3/2-way, double sol.	G 1/8"	in-line	2.11.4.1.2
MH 320 701 GTT Ex dm	3/2-way, double sol.	G 1/4"	in-line	2.11.4.1.2
MH 510 501 GTT Ex dm	5/2-way, single sol.	G 1/8"	in-line	2.11.4.2.1
MH 510 701 GTT Ex dm	5/2-way, single sol.	G 1/4"	in-line	2.11.4.2.1
MH 520 501 GTT Ex dm	5/2-way, double sol.	G 1/8"	in-line	2.11.4.2.2
MH 520 701 GTT Ex dm	5/2-way, double sol.	G 1/4"	in-line	2.11.4.2.2
MH 53_501 GTT Ex dm	5/3-way, different version	G 1/8"	in-line	2.11.4.2.2
MH 53_701 GTT Ex dm	5/3-way, different version	G 1/4"	in-line	2.11.4.2.2


Valves with interface according to NAMUR-standard

MNH 310 701 TT Ex dm	3/2-way, single sol.	G 1/4"	1/4" Namur	2.11.5.1
MNH 510 701 TT Ex dm	5/2-way, single sol.	G 1/4"	1/4" Namur	2.11.5.2.1
MNH 510 711 TT Ex dm	5/2-way, single sol.	G 1/4"	1/4" Namur	2.11.5.2.1
MNH 520 701 TT Ex dm	5/2-way, double sol.	G 1/4"	1/4" Namur	2.11.5.2.2
MNH 53_701 TT Ex dm	5/3-way, different version	G 1/4"	1/4" Namur	2.11.5.2.2

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:   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 2.14.3.7.5.

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	2.12.3.1
MH 310 701 VES Ex dm	3/2-way, single sol.	G 1/4"	in-line	2.12.3.2
MOH 310 701 VES Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	2.12.3.2
MH 310 121 VES Ex dm	3/2-way, single sol.	G 1/2"	in-line	2.12.3.3
MOH 310 121 VES Ex dm	3/2-way, n.o. single sol.	G 1/2"	in-line	2.12.3.3
MH 510 701 VES Ex dm	5/2-way, single sol.	G 1/4"	in-line	2.12.3.4
MH 510 121 VES Ex dm	5/2-way, single sol.	G 1/2"	in-line	2.12.3.4
MH 520 701 VES Ex dm	5/2-way, double sol.	G 1/4"	in-line	2.12.3.5
MH 520 121 VES Ex dm	5/2-way, double sol.	G 1/2"	in-line	2.12.3.5
MH 53_701 VES Ex dm	5/3-way, different version	G 1/4"	in-line	2.12.3.6
MH 53_121 VES Ex dm	5/3-way, different version	G 1/2"	in-line	2.12.3.6


Valves with interface according to NAMUR-standard

MNH 350 701 VES Ex dm	3/2-way & 5/2-way	G 1/4"	1/4" NAMUR	2.12.4.3
MNH 310 701 VES Ex dm	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.1
MNH 510 701 VES Ex dm	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.2
MNH 520 701 VES Ex dm	5/2-way, double sol.	G 1/4"	1/4" NAMUR	2.12.4.2

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:   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 2.14.3.7.5.

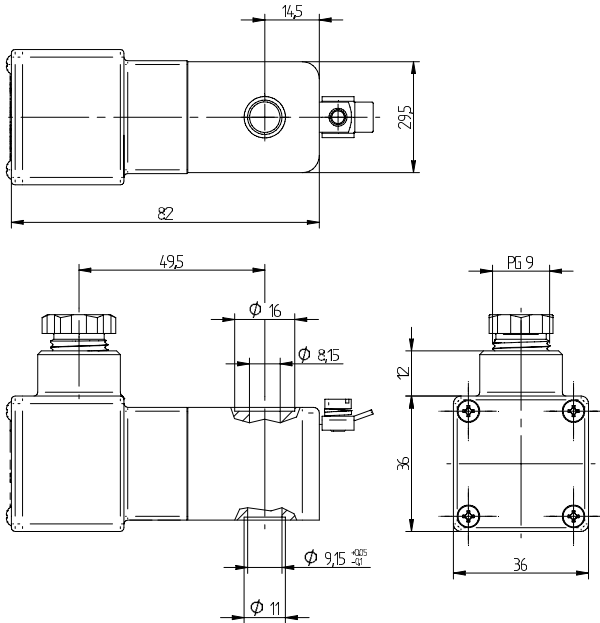
The following solenoid valves are available:

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	2.12.3.1
MH 310 701 VES TT Ex dm	3/2-way, single sol.	G 1/4"	in-line	2.12.3.2
MOH 310 701 VES TT Ex dm	3/2-way, n.o. single sol.	G 1/4"	in-line	2.12.3.2
MH 510 701 VES TT Ex dm	5/2-way, single sol.	G 1/4"	in-line	2.12.3.4
MH 520 701 VES TT Ex dm	5/2-way, double sol.	G 1/4"	in-line	2.12.3.5
MH 53_701 VES TT Ex dm	5/3-way, different version	G 1/4"	in-line	2.12.3.6

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" NAMUR	2.12.4.3
MNH 310 701 VES TT Ex dm	3/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.1
MNH 510 701 VES TT Ex dm	5/2-way, single sol.	G 1/4"	1/4" NAMUR	2.12.4.2
MNH 520 701 VES TT Ex dm	5/2-way, double sol.	G 1/4"	1/4" NAMUR	2.12.4.2

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 and 21.



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

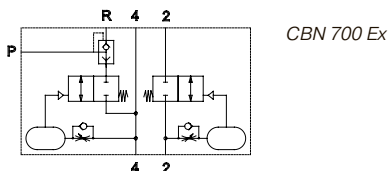
Marking on coil:   II 2G Ex db mb IIC T5 Gb
II 2D Ex tb IIIC T95°C IP66 Db

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 2.10.14.

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 Ex



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

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.

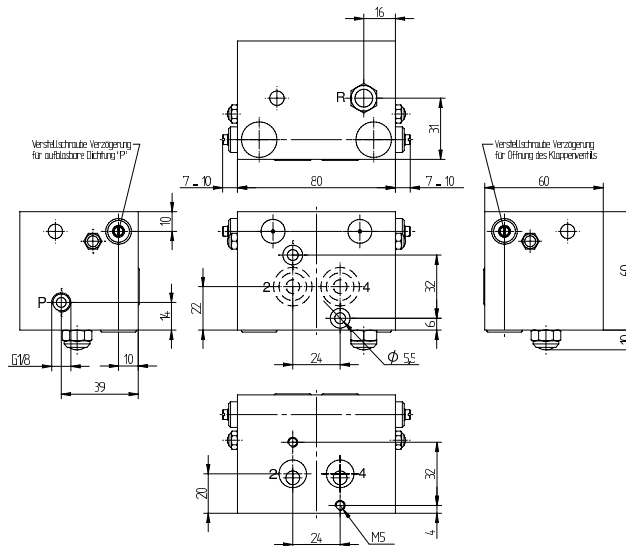
When the process-valves is to be closed first the seal is deflated, with time-delay the actuator opens the process-valve.

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.

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

Zone: 2,22



CBN 700 Ex

Type	NAMUR	Port size	Air flow act.	Air flow seal	Weight
CBN 700 Ex	1/4"	G 1/8"	900 l/min	400 l/min	0,80 kg

Additional pneumatic elements

In addition to high-quality pneumatic valves, Hafner is also offering cylinders, air preparation units, fittings and tube. Further information such as datasheets and drawings can be found online <http://www.hafner-pneumatik.com/our-products>.



Pneumatic Cylinders

- Mini cylinders
- Round cylinders according to ISO 6432
- Round cylinders with larger diameters
- Compact cylinders according to ISO 21287
- Compact cylinders according to UNITOP
- Short stroke cylinders
- Profile cylinders according to ISO 15552
- Tie-rod cylinders
- Clamping cylinders
- Fixtures and accessories
- Stainless steel cylinders



Air Preparation Units

We offer two different lines of air preparation units:

Classic line

- Basic and inexpensive range of FRL-units
- Robust design
- Connection plates are interchangeable, therefore high flexibility on port sizes

Futura line

- Well designed and modern line of FRL-units
- Modular design
- Wide range of accessories such as fine filters, precision pressure regulators, oil bowls with level sensor, unique lubricator filling system, metal bowls etc. available



Fittings

- Automatic quick couplings
- Function fittings
- Silencers
- Fittings made from stainless steel
- Cutting-ring fittings
- Push-on fittings



Tube

- Polyurethane (PUR)
- Polyamide (PA)
- Polyethylene (PE)
- Polytetrafluorethylene (PTFE)
- Spiral- and DUO-tubes



HAFNER

aim *fluid control* sinds 1995. Als onafhankelijke specialist in het meten en regelen van diverse soorten vloeistof- en gasstromen (Flow & Fluid Technology) richt aim zich op de professionele markt. De markt met de behoefte aan standaardproducten tot aan engineeringprojecten die verregaande technische kennis vereisen op het gebied van afsluiters, magneetventielen, pneumatiek ventielen, actuators, appendages, vacuümpompen, compressoren, fittingen en toebehoren.

Vanuit het hoofdkantoor en magazijn te Son & Breugel, nabij Science Park Ekkersrijt, ontzorgt aim zijn klanten van A tot Z en biedt technische en logistieke maatwerkoplossingen door gedegen kennis, een gedreven en persoonlijke service én een klantspecifiek voorraadbeheer.

Ontzorgend, **Betrokken** & **Verantwoordelijk**

aim fluid control b.v.
Ekkersrijt 7310-7312
5692 HH Son en Breugel / Nederland
T. +31(0) 499 49 10 90
E. info@aimfluid.nl
F. +31(0) 499 49 63 70
I. www.aimfluid.nl

Hafner-Pneumatik Krämer KG
Stammheimer Straße 10
D-70806 Kornwestheim
T. +49 - 71 54 - 17 85 890
F. +49 - 71 54 - 17 85 89 28
E. info@hafner-pneumatik.de
I. www.hafner-pneumatik.de

