

Valves



2014



CERTIFICATE

EN ISO 9001 : 2008
Quality Management System

AIB-VINÇOTTE
INTERNATIONAL Ltd,
Brussels - Belgium

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

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

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

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

This certificate is based on the result of a quality audit documented in the audit report **REP-C-13-011/IS.**

Certificate number: **13 5248**
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 consulting the organization.

This certificate is granted subject to AIB-Vinçotte International's Ltd General Regulations.



Signed for the certification body:

Bart Janssens
Chairman Certification Committee



EN ISO 9001 : 2008

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ РОСС DE.A175.H04559
Срок действия с 16.07.2013 по 15.07.2016
№ 1374831

ОРГАН ПО СЕРТИФИКАЦИИ рег. № РОСС RU.0001.11A175.Общество с ограниченной ответственностью «ПродМашТест». 127018, г. Москва, ул. Складочная, д. 1, стр. 18, подъезд 12, офис 308, тел. (495) 7634799, факс (495) 7634799, E-mail: prodmachtest@yandex.ru.

ПРОДУКЦИЯ Оборудование для пневмосистем, торговой марки «HAFNER» с комплектующими и запасными частями, согласно приложению, бланки № 0855723, 0855724. Серийный выпуск.

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ
ГОСТ 12.2.003-91, ГОСТ Р 52869-2007 (ЕН 983:1996), ГОСТ 18460-91 (П. п. 1.8 – 1.10), ГОСТ 21251-85 (Р. п. 2, 3, 5, 6), ГОСТ 21324-83 (Р. п. 2, 5, 6, 8), ГОСТ 25144-82, ГОСТ 12.2.007.0-75

ИЗГОТОВИТЕЛЬ «Hafner-Pneumatik Kraemer KG». Адрес: Stammheimerstr. 10, D-70806 Kornwestheim, Германия.

СЕРТИФИКАТ ВЫДАН «Hafner-Pneumatik Kraemer KG». Адрес: Stammheimerstr. 10, D-70806 Kornwestheim, Германия.

НА ОСНОВАНИИ Протокол исследований № 88950-41 от 15.07.2013 г., Испытательная лаборатория ООО «ПродМашТест», рег. № РОСС RU.0001.21AB79 от 28.10.2011, адрес: 127015, Москва, Бумажный пр., 14, стр. 1

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Схема сертификации: 3.

Руководитель органа Мылыев В. В.
Эксперт Чугунов А.А.

Сертификат не применяется при обязательной сертификации

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

ПРИЛОЖЕНИЕ № 0855723

К сертификату соответствия № РОСС DE.A175.H04559

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП)	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
код ТН ВЭД России		
№ п/п	Наименование продукции	Код ОКП Код ТН ВЭД
1.	Оборудование для пневмосистем, торговой марки «HAFNER» клапаны с мембраной и ручным приводом, серии: BV, BR, BL, BA, BAE, BH, BHP, BHN, BG, BZ, BV, HVR, HVN, HVN, HVRN, HVP, HVZ, HVZN, HE, HVRZN; пневматические клапаны, серии: F, PD, RP, PN, SU, SLH, PH; пневматические и логические элементы, серии: VA, ES, DR, D, RP, KE; клапаны быстрого сброса, серии: SE, SEJ, SEN, SENR, SEA, DSVN, UB, CBN; обратные клапаны, серии: VNR, VSR; пневмоотводы, серии: TH, TL, TD; регуляторы расхода, серии: DRN, DRP, SCU, RUC, RUC, RCO, RCO, SSC, SVE; блоки воздушного дросселирования, серии: FR, FR, F, R, L, FE, C-01, C-11, C-33, R-01; Электромагнитные клапаны, серии: M, MD, MD, MEH, MX, MOD, MD, MF, MH, MOK, MK, MEH, MEON, MNF, MED, MND, MNH, MNCH, MOK, MHP, MS, MV, MSV, SSV, SOV; 2. Катунки вдуваемости к соединительным клапанам, серия MA; 3. Коллекторные и монтажные платы, серии: R, RD, RB, BP, PPNW, ZVP, ZPN, FP, ZP, GPN; 4. Комплектующие к пневмоотводам серий TH, TL, TD: разъемы и кабели к пневмоотводам (24В), серия ST; 5. Комплектующие для блоков воздушного дросселирования серий FR, FR, F, R, L, FE, C-01, C-11, C-33, R-01: монтажные скобы, соединительные элементы, соединительные клапаны, серии: VU, VP, BW, ZW.	41 5100 8481 80 790 0 8412 90 800 0 8481 40 900 0 8481 30 990 9 8412 90 800 0 8481 80 599 0 8481 10 050 0 8481 80 790 0 8504 50 950 0 8412 90 800 0 8535 21 000 0 7317 00 900 9

Руководитель органа Мылыев В. В.
Эксперт Русаковская А.Б.

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р
ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

ПРИЛОЖЕНИЕ № 0855724

К сертификату соответствия № РОСС DE.A175.H04559

Перечень конкретной продукции, на которую распространяется действие сертификата соответствия

код ОК 005 (ОКП)	Наименование и обозначение продукции, ее изготовитель	Обозначение документации, по которой выпускается продукция
код ТН ВЭД России		
4.	Запасные части блоков воздушного дросселирования серий FR, FR, F, R, L, FE, C-01, C-11, C-33, R-01: стержни для фильтров блоков воздушного дросселирования, серии: FBS, FBA, LBM, LBA.	8481 90 000 0
7.	Манометры механические, серии: M, G.	9026 20 800 8
8.	Корпуса электромагнитных клапанов серий M, MD, MD, MEH, MX, MOD, MD, MF, MH, MOK, MK, MEH, MEON, MNF, MED, MND, MNH, MNCH, MOK, MHP, MS, MV, MSV, SSV, SOV.	8481 90 000 0

ИЗГОТОВИТЕЛЬ «Hafner-Pneumatik Kraemer KG». Адрес: Stammheimerstr. 10, D-70806 Kornwestheim, Германия.

Руководитель органа Мылыев В. В.
Эксперт Русаковская А.Б.

page

14 **General Technical Information**

15 **Quick Finder for Manifold Systems**

17 **2.1 Mechanically Actuated Valves**

2.1.1 3/2 way valves

18	2.1.1.1	BV/BR/BL 311 201	M5	
19	2.1.1.2	BV/BR/BL 311 202	M5	ports on bottom
20	2.1.1.3	BV/BR/BL 311 243	pif 4 mm	
21	2.1.1.4	BV/BR/BL 311 301	G 1/8"	
22	2.1.1.5	BG/BZ 311 401/BG 311 701	G 1/8" - G 1/4"	panel mounting
23	2.1.1.6	BR 311 501/701	G 1/8" - G 1/4"	heavy duty

2.1.2 5/2 way valves

24	2.1.2.1	BV/BR/BL 511 201	M5	
25	2.1.2.2	BV/BR/BL 511 301	G 1/8"	
26	2.1.2.3	BR 511 501/701	G 1/8" - G 1/4"	heavy duty

27 **2.2 Valves for Panel Mounting**

28	2.2.1	BA 311 201/BA 311 202/BA 311 203 BA 311 243/BA 311 301	M5 pif 4 mm - G 1/8"	3/2 way
29	2.2.2	BA 511 201/BA 511 202/BA 511 301	M5 - G 1/8"	5/2 way
30	2.2.3	Ø 22mm Actuators for Panel Mounting		
31	2.2.4	BA 430 301/BA 730 301/BA 334 01	G 1/8"	3 positions
32	2.2.5	BAE 311 301	G 1/8"	pneumo-electric switch
33	2.2.6	BH 311 401/BH 320 401/BH 311 701/BH 320 701	G 1/8" - G 1/4"	3/2 way, push-pull
34	2.2.7	BH 511 401/BH 520 401/BH 511 701/BH 520 701	G 1/8" - G 1/4"	5/2 way, push-pull
35	2.2.8	BHP 320 442/462	pif 4 - 6 mm	3/2 way pneumatic reset
36	2.2.9	BHP 520 442/462	pif 4 - 6 mm	5/2 way pneumatic reset

37 **2.3 Lever Actuated Valves**

2.3.1 3/2 way valves

38	2.3.1.1	HV 311 501/HV 311 701/HV 311 801 HVR 320 501/HVR 320 701/HVR 320 801 HV 311 701 NPT/HVR 320 701 NPT	G 1/8" - G 1/4"	spring return indexed
39	2.3.1.2	HV 311 101/HV 311 121/HV 311 181 HVR 320 101/HVR 320 121/HVR 320 181 HV 311 121 NPT/HVR 320 121 NPT	1/4" NPT G 3/8" - G 1/2" - G 3/4" 1/2" NPT	spring return/indexed spring return indexed spring return/indexed

2.3.2 5/2 way valves

40	2.3.2.1	HV 511 501/HV 511 701/HV 511 801 HVR 520 501/HVR 520 701/HVR 520 801 HV 511 701 NPT/HVR 520 701 NPT	G 1/8" - G 1/4"	spring return indexed
41	2.3.2.2	HV 511 101/HV 511 121/HV 511 181 HVR 520 101/HVR 520 121/HVR 520 181 HV 511 121 NPT/HVR 520 121 NPT	1/4" NPT G 3/8" - G 1/2" - G 3/4" 1/2" NPT	spring return/indexed spring return indexed spring return/indexed

2.3.3 5/3 way valves

42	2.3.3.1	HV 53_ 501/HV 53_ 701/HV 53_ 801 HVR 53_ 501/HVR 53_ 701/HVR 53_ 801 HV 53_ 701 NPT HVR 53_ 701 NPT	G 1/8" - G 1/4"	spring return indexed
43	2.3.3.2	HV 53_ 101/HV 53_ 121/HV 53_ 181 HVR 53_ 101/HVR 53_ 121/HVR 53_ 181 HV 53_ 121 NPT HVR 53_ 121 NPT	1/4" NPT 1/4" NPT G 3/8" - G 1/2" - G 3/4" 1/2" NPT 1/2" NPT	spring return indexed spring return indexed spring return indexed

Table of Contents

page 6

page

45 2.4 Pilot Actuated Valves

2.4.1 3/2 way valves

46	2.4.1.1	P 310 302/P 310 502
47	2.4.1.2	P 310 501/P 310 701/P 310 801 P 311 501/P 311 701/P 311 801
48	2.4.1.3	P 310 101/P 310 121/P 310 181 P 311 101/P 311 121/P 311 181 P 310 121 NPT/P 311 121 NPT
49	2.4.1.4	P 310 701 G/P 310 121 G P 311 701 G/P 311 121 G P 310 701 G NPT/P 311 701 G NPT
50	2.4.1.5	P 320 302/P 320 502 P 322 302/P 322 502
51	2.4.1.6	P 320 501/P 320 701 G/P 320 801 P 322 501/P 322 701 G
52	2.4.1.7	P 320 101/P 320 121/P 320 181

G-type for in-line and manifold use (dual)

M5 - G 1/8"	air spring return
G 1/8" - G 1/4"	air spring return
G 1/8" - G 1/4"	mech. spring
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
G 1/4" - G 1/2"	air spring, dual
G 1/4" - G 1/2"	mech. spring, dual
1/4" NPT	air/mech. spring, dual
M5 - G 1/8"	double pilot
M5 - G 1/8"	dominating
G 1/8" - G 1/4"	double pilot
G 1/8" - G 1/4"	dominating
G 3/8" - G 1/2" - G 3/4"	double pilot

2.4.2 5/2 way valves

53	2.4.2.1	P 510 302/P 510 502
54	2.4.2.2	P 510 501/P 510 701/P 510 801 P 511 501/P 511 701/P 511 801
55	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
56	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
57	2.4.2.5	P 520 302/P 520 502
58	2.4.2.6	P 520 501/P 520 701/P 520 801 P 522 501/P 522 701
59	2.4.2.7	P 520 101/P 520 121/P 520 181 P 520 121 NPT
60	2.4.2.8	P 520 501 G/P 520 701 G/P 520 121 G P 522 501 G/P 522 701 G P 520 701 G NPT

G-type for in-line and manifold use (dual)

M5 - G 1/8"	air spring return
G 1/8" - G 1/4"	air spring return
G 1/8" - G 1/4"	mech. spring
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
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
M5 - G 1/8"	double pilot
G 1/8" - G 1/4"	double pilot
G 1/8" - G 1/4"	dominating
G 3/8" - G 1/2" - G 3/4"	double pilot
1/2" NPT	double pilot
G 1/8" - G 1/4" - G 1/2"	double pilot, dual
G 1/8" - G 1/4"	dominating, dual
1/4" NPT	double pilot, dual

2.4.3 5/3 way valves

61	2.4.3.1	P 53_ 501/P 53_ 701/P 53_ 801
62	2.4.3.2	P 53_ 101/P 53_ 121/P 53_ 181 P 53_ 121 NPT
63	2.4.3.3	P 53_ 501 G/P 53_ 701 G/P 53_ 121 G P 53_ 701 G NPT

G-type for in-line and manifold use (dual)

G 1/8" - G 1/4"
G 3/8" - G 1/2" - G 3/4"
1/2" NPT
G 1/8" - G 1/4" - G 1/2" dual
1/4" NPT

2.4.4 Pneumatic and logic elements

64	2.4.4.1	VA 341/VA 401/ES 341/ES 401
65	2.4.4.2	SE 501/SE 801/SE 8101/SE 121
66	2.4.4.3	P 311 501 SR/P 411 701 SR/ P 411 701 SR NPT

pif 4 mm, G 1/8"	OR- / AND-gate
G 1/8" - G 1/4" - G 1/2"	Quick exhaust (valve)
G 1/8" - G 1/4"	Pneum. pressure switch
1/4" NPT	Pneum. pressure switch

67	2.4.4.4	DR 501/DR 801/DR 101/D 501/D 801/D 101
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G 1/8" - G 3/8"	flow regulator
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2.4.5 Sub-base mounted pneumatic valves with integral pif in plate – Logic elements

68	2.4.5.1	P 310 304/P 311 304/P 320 304/P 322 304 RP 3 344
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all ports in the plate 3/2 way
pif 4 mm

69	2.4.5.2	P 510 304/P 511 304/P 520 304/P 522 304 RP 5 344
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all ports in the plate 5/2 way
pif 4 mm

70	2.4.5.3	VA 304/ES 304 RP 2 344
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all ports in the plate OR-/AND-gates
pif 4 mm

page

71	2.5	Solenoid Valves	
	2.5.1	3/2 way valves and 2/2 way valves	
	2.5.1.1	3/2 way and 2/2 way in-line valves	G-type for in-line and manifold use (dual)
72	2.5.1.1.1	MD 311 010	M5 direct actuated
73	2.5.1.1.2	MH 311 012/ MOH 311 012/MX 311 012 MH 311 015/MOH 311 015/MX 311 015 MH 211 012/MH 211 015	M5 3/2 way direct G 1/8" 3/2 way direct M5 - G 1/8" 2/2 way direct G 1/8" 3/2 way direct G 1/4" 3/2 way direct G 1/8" - G 1/4" 2/2 way direct G 1/8" - G 1/4" 3/2 way direct PA G 1/8" - G 1/4" 3/2 way banjo PA G 1/8" - G 1/4" 3/2 way banjo alu G 1/8" - G 1/4" 3/2 way banjo alu
74	2.5.1.1.3	MH 311 305/MOH 311 305 MH 311 309/MOH 311 309 MH 211 305/MH 211 309	M5 single solenoid pif 4 mm single solenoid G 1/8" single solenoid pif 6 mm single solenoid M5 single solenoid G 1/8" single solenoid G 1/8" - G 1/4" 2/2 way single solenoid G 1/8" single solenoid G 1/4" single solenoid G 1/4" single solenoid G 3/8" single solenoid G 1/2" single solenoid G 3/4" single solenoid 1/2" NPT single solenoid G 1/8" single solenoid, dual G 1/4" single solenoid, dual 1/4" NPT single solenoid, dual G 3/8" single solenoid, dual G 1/2" single solenoid, dual G 1/8" - G 1/4" double solenoid G 3/8" - G 1/2" - G 3/4" double solenoid G 1/8" - G 1/4" double solenoid, dual G 3/8" - G 1/2" double solenoid, dual
75	2.5.1.1.4	MH 311 105/MOH 311 105/MX 311 105	
76	2.5.1.1.5	MH 311 014/MOH 311 014/MH 311 019/MX 311 019	
77	2.5.1.1.6	MH 311 013/MH 311 017	
78	2.5.1.1.7	MH 311 313/MH 311 317	
79	2.5.1.1.8	MD 310 301/MOD 310 301 MD 310 341/MOD 310 341	
80	2.5.1.1.9	MD 310 401/MOD 310 401 MD 310 461/MOD 310 461	
81	2.5.1.1.10	MH 310 302/MOH 310 302 MH 310 502/MOH 310 502	
82	2.5.1.1.11	MH 210 501/MH 210 701	
83	2.5.1.1.12	MH 310 501/MOH 310 501 MH 310 701/MOH 310 701 MH 310 801/MOH 310 801	
84	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	
85	2.5.1.1.14	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	
86	2.5.1.1.15	MH 310 101 G/MOH 310 101 G MH 310 121 G/MOH 310 121 G	
87	2.5.1.1.16	MH 320 501/MH 320 701/MH 320 801	
88	2.5.1.1.17	MH 320 101/MH 320 121/MH 320 181	
89	2.5.1.1.18	MH 320 501 G/MH 320 701 G MH 320 101 G/MH 320 121 G	
	2.5.1.2	3/2 and 2/2 way base-mounted valves	
90	2.5.1.2.1	MD 311 104/RD 3__ 104/RD 3__ 144	M5 - pif 4 mm direct actuated
91	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 G 1/4" direct modular
92	2.5.1.2.3	MH 339/MH 239/R 33 R/R 33 L	pif 4 mm single solenoid G 1/8" single solenoid pif 6 mm single solenoid all ports in plate single solenoid all ports in plate single solenoid
93	2.5.1.2.4	MD 310 343/MOD 310 343 MD 310 403/MOD 310 403 MD 310 463/MOD 310 463	
94	2.5.1.2.5	MD 310 304/MOD 310 304 MD 310 404/MOD 310 404	
	2.5.1.3	3/3 way valves	
95	2.5.1.3	MH 331 701 G/MH 331 121 G	G 1/4" - G 1/2"
	2.5.2	5/2 way valves	
	2.5.2.1	In-line valves	G-type for in-line and manifold use (dual)
97	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 M5 - G 1/8" single solenoid G 1/8" - G 1/4" single solenoid G 3/8" - G 1/2" - G 3/4" single solenoid 1/2" NPT single solenoid
98	2.5.2.1.2	MH 510 302/MH 510 502	
99	2.5.2.1.3	MH 510 501/MH 510 701/MH 510 801	
100	2.5.2.1.4	MH 510 101/MH 510 121/MH 510 181 MH 510 121 NPT	

Table of Contents

page 8

page

101	2.5.2.1.5	MH 510 501 G/MH 510 701 G MH 510 701 G NPT	G 1/8" - G 1/4" 1/4" NPT	single solenoid, dual single solenoid, dual
102	2.5.2.1.6	MH 510 101 G/MH 510 121 G	G 3/8" - G 1/2"	single solenoid, dual
103	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
104	2.5.2.1.8	MH 520 302/MH 520 502	M5 - G 1/8"	double solenoid
105	2.5.2.1.9	MH 520 501/MH 520 701/MH 520 801	G 1/8" - G 1/4"	double solenoid
106	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
107	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
108	2.5.2.1.12	MH 520 101 G/MH 520 121 G	G 3/8" - G 1/2"	double solenoid, dual
	2.5.2.2	Base-mounted valves		
109	2.5.2.2.1	MD 510 303/MD 510 343 MD 510 403/MD 510 463	M5 - pif 4 mm G 1/8" - pif 6 mm	single solenoid single solenoid
110	2.5.2.2.2	MH 510 503/MH 510 703/MH 510 803	G 1/8" - G 1/4"	single solenoid
111	2.5.2.2.3	MD 510 304/MD 510 404	all ports in the plate	single solenoid
112	2.5.2.2.4	MH 510 304/MH 510 504/MH 510 704	all ports in the plate	single solenoid
113	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
114	2.5.2.2.6	MH 520 503/MH 520 703/MH 520 803	G 1/8" - G 1/4"	double solenoid
115	2.5.2.2.7	MD 520 304/MD 520 404	all ports in the plate	double solenoid
116	2.5.2.2.8	MH 520 304/MH 520 504/MH 520 704	all ports in the plate	double solenoid
	2.5.3	5/3 way valves		
	2.5.3.1	In-line valves		
117	2.5.3.1.1	MD 53_ 301/MD 53_ 341 MD 53_ 401/MD 53_ 461	G-type for in-line and manifold use (dual) M5 - pif 4 mm G 1/8" - pif 6 mm	
118	2.5.3.1.2	MH 53_ 501/MH 53_ 701/MH 53_ 801	G 1/8" - G 1/4"	
119	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	
120	2.5.3.1.4	MH 53_ 501 G/MH 53_ 701 G MH 53_ 701 G NPT	G 1/8" - G 1/4" 1/4" NPT	dual dual
121	2.5.3.1.5	MH 53_ 101 G/MH 53_ 121 G	G 3/8" - G 1/2"	dual
	2.5.3.2	Base-mounted valves		
122	2.5.3.2.1	MD 53_ 303/MD 53_ 343 MD 53_ 403/MD 53_ 463	M5 - pif 4 mm G 1/8" - pif 6 mm	
123	2.5.3.2.2	MH 53_ 503/MH 53_ 703/MH 53_ 803	G 1/8" - G 1/4"	
124	2.5.3.2.3	MD 53_ 304/MD 53_ 404	all ports in the plate	
125	2.5.3.2.4	MH 53_ 304/MH 53_ 504/MH 53_ 704	all ports in the plate	
127	2.6	Manifold Plates		
	2.6.1	For 3 way valves		
128	2.6.1.1	R __	For valves displayed on page 2.5.1.2.2	
129	2.6.1.2	RD 3__ 303/RD 3__ 403	For valves displayed on page 2.5.1.2.4	
130	2.6.1.3	RD 3__ 344/RD 3__ 464	For valves displayed on page 2.5.1.2.5	
131	2.6.1.4	RB 3__ 503 G RB 3__ 103 G	For solenoid valves displayed on page 2.5.1.1.14, 2.5.1.1.15, 2.5.1.1.18	
132	2.6.1.5	R 3__ 703 G/R 3__ 121 G	For solenoid valves displayed on page 2.5.1.1.14, 2.5.1.1.15, 2.5.1.1.18, 2.5.1.3	
			For pneumatic valves of page 2.4.1.4, 2.4.1.6	
			For low temp. solenoids of page 2.9.4.1.2	
			For low temp. pneumatic v. of page 2.9.3.1	
	2.6.2	For 5 way valves		
133	2.6.2.1	RD 5__ 303/RD 5__ 403	For valves displayed on page 2.5.2.2.1, 2.5.2.2.5, 2.5.3.2.1	

page

134	2.6.2.2	RB 5__ 503 G R 5 503 GR/R 5 503 GL/R 5 503 G	For solenoid valves displayed on page 2.5.2.1.5, 2.5.2.1.11, 2.5.3.1.4, 2.5.2.2.2, 2.5.2.2.6, 2.5.3.2.2 For pneumatic valves displayed on page 2.4.2.4, 2.4.2.8, 2.4.3.3 For low temp. solenoids of page 2.9.4.2.1, 2.9.4.2.2 For low temp. pneumatic valves of page 2.9.3.2, 2.9.3.3
135	2.6.2.3	RB 5__ 703 G R 5 703 GR/R 5 703 GL/R 5 703 G	
136	2.6.2.4	RB 5__ 103 G R 5 103 GR/R 5 103 GL/R 5 103 G	For valves displayed on page 2.5.2.1.6, 2.5.2.1.12, 2.5.3.1.5 For valves displayed on page 2.5.2.2.2, 2.5.2.2.6, 2.5.3.2.2 For solenoid valves displayed on page 2.5.2.1.6, 2.5.2.1.12, 2.5.3.1.5 For pneumatic valves of page 2.4.2.4, 2.4.2.8, 2.4.3.3 For valves displayed on page 2.5.2.2.3, 2.5.2.2.7, 2.5.3.2.3
137	2.6.2.5	R 5__ 803 R 5__ 121 G	
138	2.6.2.6	RD 5__ 344/RD 5__ 464	For solenoid valves displayed on page 2.5.2.2.4, 2.5.2.2.8, 2.5.3.2.4 For low temp. solenoids of page 2.9.4.3.1, 2.9.4.3.2
139	2.6.2.7	R 5__ 304/R 5__ 504	
140	2.6.2.8	R 5__ 704/R 5__ 784	
141	2.6.2.9	RB 5__ 704 K1 R 5 704 K1R/R 5 704 K1L/R 5 704 K1	
142	2.6.3	DIN-Rail mounting clips	
143	2.7	Valve Terminals	
144	2.7.1	General Information on Valve Terminals	
	2.7.2	Valve terminals with 3 way valves	
145	2.7.2.1	T_ 16 3__ 104/T_ 16 3__ 144	M5 - pif 4 mm direct actuated
146	2.7.2.2	T_ 16 3__ 303	pif 4 mm port 2 in valve
147	2.7.2.3	T_ 16 3__ 403	G 1/8" - pif 6 mm port 2 in valve
148	2.7.2.4	T_ 22 3__ 703	G 1/4" port 2 in valve
149	2.7.2.5	T_ 16 3__ 344/T_ 16 3__ 464	pif 4 mm, pif 6 mm all ports in plate
	2.7.3	Valves terminals with 5 way valves	
150	2.7.3.1	T_ 16 5__ 303	M5 - pif 4 mm port 2 & 4 in valve
151	2.7.3.2	T_ 16 5__ 403	G 1/8" - pif 6 mm port 2 & 4 in valve
152	2.7.3.3	T_ 22 5__ 503/T_ 22 5__ 703	G 1/8" - G 1/4" port 2 & 4 in valve
153	2.7.3.4	T_ 16 5__ 344	pif 4 mm all ports in plate
154	2.7.3.5	T_ 16 5__ 464	pif 6 mm all ports in plate
155	2.7.3.6	T_ 22 5__ 504	G 1/8" all ports in plate
156	2.7.3.7	T_ 22 5__ 704/T_ 22 5__ 784	G 1/4" all ports in plate
157	2.7.3.8	T_ 22 5__ 704 K1	G 1/4" all ports in plate through
	2.7.4	Connectors and Cables	
158	2.7.4	ST40 W06/ST40 W14 ST40 G06/ST40 G14	Elbow connector Straight connector
159	2.8	Valves with Namur Interface	
	2.8.1	Solenoid valves with Namur Interface	
	2.8.1.1	3/2 way valves	
160	2.8.1.1.1	MNH 310 701/ MNOH 310 701 MNH 310 711/MNH 311 701 MNK 310 701/MNK 311 701 MNH 310 701 NPT/MNH 311 701 NPT	G 1/4" G 1/4" G 1/4" low power 1/4" NPT
161	2.8.1.1.2	MNH 310 101/MNH 311 101 MNH 310 121/MNH 311 121 MNH 310 121 NPT/MNH 311 121 NPT	G 3/8" max. flow G 1/2" 1/2" NPT

Table of Contents

page 10

page

	2.8.1.2	5/2 way valves		
162	2.8.1.2.1	MNH 510 701/MNH 510 711 MNH 511 701/MNH 511 711 MNK 510 701/MNK 511 701 MNH 510 701 NPT/MNH 511 701 NPT	G 1/4" G 1/4" G 1/4" 1/4" NPT	single solenoid single solenoid single solenoid, low power
163	2.8.1.2.2	MNH 510 101/MNH 511 101 MNH 510 121/MNH 511 121 MNH 510 121 NPT/MNH 511 121 NPT	G 3/8" G 1/2" 1/2" NPT	single solenoid, max. flow single solenoid single solenoid
164	2.8.1.2.3	MNH 520 701/MNH 520 101/MNH 520 121 MNK 520 701 MNH 520 701 NPT/MNH 520 121 NPT	G 1/4" - G 3/8" - G 1/2" G 1/4" 1/4" NPT-1/2" NPT	double solenoid double solenoid, low power double solenoid
165	2.8.1.3	Namur Flex		
	2.8.1.4	5/3 way valves		
166	2.8.1.4	MNH 531 701/MNH 531 101/MNK 531 701 MNH 532 701/MNH 533 701 MNH 531 121 MNH 531 701 NPT/MNH 531 121 NPT	G 1/4" - G 3/8" G 1/4" G 1/2" 1/4" NPT-1/2" NPT	Centre closed Centre exh./press. Centre closed Centre closed
	2.8.2	Pneumatically actuated valves with Namur interface		
	2.8.2.1	3/2 way valves		
167	2.8.2.1	PN 310 701/PN 311 701/PN 310 121	G 1/4" - G 1/2"	
	2.8.2.2	5/2 way valves		
168	2.8.2.2	PN 510 701/PN 511 701/PN 510 121 PN 520 701/PN 520 121	G 1/4" - G 1/2" G 1/4" - G 1/2"	single pilot double pilot
	2.8.2.3	5/3 way valves		
169	2.8.2.3	PN 531 701/PN 531 121	G 1/4" - G 1/2"	
	2.8.3	Lever actuated valves with Namur interface		
170	2.8.3	HVN 311 701/HVRN 320 701 HVN 511 701/HVRN 520 701	G 1/4" G 1/4"	3/2 way 5/2 way
	2.8.4	Accessories for Actuator control		
171	2.8.4.1	DSVN 5		Pressure applied safety valve
	2.8.4.2	Flow regulators with Namur interface		
172	2.8.4.2.1	DRN 3 601/DRN 3 611/DRN 3 128		for 3-way Namurvalves
173	2.8.4.2.2	DRN 5 601/DRN 6 611		for 5-way Namurvalves
174	2.8.4.3	UB 701		Air-recirculation block for single acting actuators
175	2.8.4.4	SENR 20/SENR 207		Quick exhaust block with non-return valve
176	2.8.4.5	PN 411 701/P 411 121		Safety-short-cut when using manual gearbox
177	2.8.4.6	BHN 601/BHN 601 01 BHN 611 01 BHN 420 701		Manual block and bleed valves Manual block and block valve Manual short-cut valve
178	2.8.4.7	CBN 700		Control-block for butterfly-valves with inflatable valve-seat
179	2.8.4.8	HVRZN 731 701/HVRZN 731 702		Pneumo-manual override for positioners
180	2.8.4.9	ZVP 701/ZVP 101/ ZVP 121/ZVP121-701		Plates for cylinder-valve combinations
181	2.8.4.10	ZPN 5A/ZPN 5K/ZPN 8/ZPN 6-5 FPNW 22-1/4 ZPN 6-10 ZPN 701-90 GPN-1/4		Spacer-plates Conversion for Namur-valve into in-line valve Adaptor-plate for 1/4"-1/2" 90° interface turn-plate For generating threaded ports on accessories

page

183	2.9	“Hafner on the Rocks” – Low-Temperature Valves		
	2.9.1	Manually Actuated Valves		
	2.9.1.1	Push-Pull-Valves		
184	2.9.1.1	BH 311 701 TT/BH 320 701 TT BH 511 701 TT/BH 520 701 TT	G 1/4" G 1/4"	3/2 way 5/2 way
	2.9.2	Lever-Valves		
185	2.9.2.1	HV 311 501 TT/HV 311 701 TT HVR 320 501 TT/HVR 320 701 TT	G 1/8" - G 1/4" G 1/8" - G 1/4"	3/2, spring return 3/2, indexed
186	2.9.2.2	HV 511 501 TT/HV 511 701 TT HVR 520 501 TT/HVR 520 701 TT	G 1/8" - G 1/4" G 1/8" - G 1/4"	5/2, spring return 5/2, indexed
187	2.9.2.3	HV 53_ 501 TT/HV 53_ 701 TT HVR 53_ 501 TT/HVR 53_ 701 TT	G 1/8" - G 1/4" G 1/8" - G 1/4"	5/3, spring return 5/3, indexed
	2.9.3	Pneumatically Actuated Valves		
188	2.9.3.1	P 310 501 TT/P 310 701 GTT P 311 501 TT/P 311 701 GTT P 320 501 TT/P 320 701 GTT	G 1/8" - G 1/4" G 1/8" - G 1/4" G 1/8" - G 1/4"	3/2, air spring return 3/2, spring return 3/2, double pilot
189	2.9.3.2	P 510 501 GTT/P 510 701 GTT P 511 501 GTT/P 511 701 GTT P 520 501 GTT/P 520 701 GTT	G 1/8" - G 1/4" G 1/8" - G 1/4" G 1/8" - G 1/4"	5/2, air spring return 5/2, spring return 5/2, double pilot
190	2.9.3.3	P 53_ 501 GTT/P 53_ 701 GTT	G 1/8" - G 1/4"	5/3 way
	2.9.4	Solenoid Valves		
	2.9.4.1	3/2-way valves		
191	2.9.4.1.1	MH 311 012 TT/MH 311 015 TT MH 311 013 TT/ MH 311 017 TT	M5 - G 1/8" G 1/8" - G 1/4"	direct actuated banjo
192	2.9.4.1.2	MH 310 501 TT/MOH 310 501 TT MH 310 701 GTT/MOH 310 701 GTT MH 320 501 TT/MH 320 701 GTT	G 1/8" G 1/4" G 1/8" - G 1/4"	single solenoid single solenoid double solenoid
	2.9.4.2	5-way G-type valves In-line and manifold use (dual)		
193	2.9.4.2.1	MH 510 501 GTT/MH 510 701 GTT	G 1/8" - G 1/4"	5/2, air spring return
194	2.9.4.2.2.	MH 520 501 GTT/MH 520 701 GTT MH 53_ 501 GTT/MH 53_ 701 GTT	G 1/8" - G 1/4" G 1/8" - G 1/4"	5/2, double solenoid 5/3 way
	2.9.4.3	5-way valves base-mounted		
195	2.9.4.3.1	MH 510 304 TTMH 510 504 TT MH 510 704 TT	all ports in plate	5/2 air spring return
196	2.9.4.3.2	MH 520 304 TT/ MH 520 504 TT MH 520 704 TT MH 53_ 304 TT/MH 53_ 504 TT MH 53_ 704 TT	all ports in plate all ports in plate	5/2 double solenoid 5/3 way
	2.9.5	Valves with Namur Interface		
	2.9.5.1	3/2-way solenoid valves		
197	2.9.5.1	MNH 310 701 TT/MNH 311 701 TT	G 1/4"	
	2.9.5.2	5-way solenoid valves		
198	2.9.5.2.1	MNH 510 701 TT/MNH 510 711 TT MNH 511 701 TT/MNH 511 711 TT	G 1/4" G 1/4"	air spring return spring return
199	2.9.5.2.2	MNH 520 701 TT MNH 531 701 TT	G 1/4" G 1/4"	double solenoid 5/3 way
	2.9.5.3	Flow regulators with Namur interface		
200	2.9.5.3	DRN 3 611 TT/DRN 5 611 TT		

Table of Contents

page 12

page

201	2.10	Heavy Metal – Stainless Steel Valves		
	2.10.1	Manual valves made from Stainless Steel		
202	2.10.1.1	HV 311 701/HVR 320 701 VES	G 1/4"	3 way
203	2.10.1.2	HV 511 701/HVR 520 701 VES	G 1/4"	5/2 way
		HV 53_ 701/HVR 53_ 701 VES	G 1/4"	5/3 way
	2.10.2	Pneumatically actuated valves made from Stainless Steel		
204	2.10.2.1	P 310 701 VES (NPT)/P 311 701 VES (NPT)	G 1/4"	3 way
		P 310 121 VES (NPT)/P 311 121 VES (NPT)	G 1/2"	3 way
205	2.10.2.2	P 510 701 VES (NPT)/P 511 701 VES (NPT)	G 1/4"	5/2 way
		P 510 121 VES (NPT)/P 511 121 VES (NPT)	G 1/2"	5/2 way
206	2.10.2.3	P 520 701 VES (NPT)/P 520 121 VES (NPT)	G 1/4" - G 1/2"	5/2 way
		P 53_ 701 VES (NPT)/P 53_ 121 VES (NPT)	G 1/4" - G 1/2"	5/3 way
	2.10.3	Solenoid valves made from Stainless Steel		
207	2.10.3.1	MH 311 015 VES	G 1/8"	direct actuated
208	2.10.3.2	MH 310 701 VES/KES / MOH 310 701 VES/KES	G 1/4"	3/2 way
		MH 310 701 VES/KES NPT	1/4" NPT	3/2 way
		MOH 310 701 VES/KES NPT	1/4" NPT	3/2 way
209	2.10.3.3	MH 310 121 VES	G 1/2"	3/2 way
		MH 310 121 VES NPT	1/2" NPT	3/2 way
210	2.10.3.4	MH 510 701 VES/MH 510 701 KES	G 1/4"	5/2 way
		MH 510 701 VES NPT/MH 510 701 KES NPT	1/4" NPT	5/2 way
		MH 510 121 VES/MH 510 121 VES NPT	G 1/2"-1/2" NPT	5/2 way
211	2.10.3.5	MH 520 701 VES/MH 520 701 KES	G 1/4"	5/2 way
		MH 520 701 VES NPT/MH 520 701 KES NPT	1/4" NPT	5/2 way
		MH 520 121 VES/MH 520 121 VES NPT	G 1/2"-1/2" NPT	5/2 way
212	2.10.3.6	MH 53_ 701 VES/MH 53_ 701 KES	G 1/4"	5/3 way
		MH 53_ 701 VES NPT/MH 53_ 701 KES NPT	1/4" NPT	5/3 way
		MH 53_ 121 VES/MH 53_ 121 KES NPT	G 1/2"-1/2" NPT	5/3 way
	2.10.4	Stainless Steel valves with Namur interface		
213	2.10.4.1	MNH 310 701 VES/KES	3/2 way	
		MNH 311 701 VES/KES		
		MNH 310 701 VES/KES NPT	1/4" NPT	
		MNH 311 701 VES/KES NPT	1/4" NPT	
214	2.10.4.2	MNH 510 701 VES/KES	5/2 way	single solenoid
		MNH 511 701 VES/KES		
		MNH 520 701 VES/KES	5/2 way	double solenoid
		MNH 510 701 VES/KES NPT	1/4" NPT	single solenoid
		MNH 511 701 VES/KES NPT	1/4" NPT	single solenoid
		MNH 520 701 VES/KES NPT	1/4" NPT	double solenoid
215	2.10.4.3	MNH 350 701 VES/KES		Namur-Flex
		MNH 351 701 VES/KES		Namur-Flex
		MNH 350 701 VES/KES NPT	1/4" NPT	Namur-Flex
		MNH 351 701 VES/KES NPT	1/4" NPT	Namur-Flex
216	2.10.4.4	DRN 3 611 VES/DRN 5 611 VES/DRF 3 611 VES		flow regulators
217	2.10.4.5	UB 701 VES	G 1/4"	air-recirculation
218	2.10.4.6	PN 310 701 VES/PN 311 701 VES	G 1/4"	3/2 way Namur
		PN 510 701 VES/PN 511 701 VES	G 1/4"	5/2 way Namur
		PN 520 701 VES	G 1/4"	5/2 way Namur
		PN 531 701 VES	G 1/4"	5/3 way Namur

page

219	2.11	Coils and Connectors	
220	2.11.1	MA 16/MA 16 L	Solenoid system 16 mm
221	2.11.2	MA 22/MA 22 L/MA 22 D	Standard coils 22 mm
222	2.11.3	ST 16/ST 22/ST 22 L 500/ST 30 ATEX	Connectors
223	2.12	Products for Explosion hazardous Environment	
224	2.12.1	Non-electric valves for explosion hazardous environment	
	2.12.2	Solenoid valves for explosion hazardous environment	
225	2.12.2.0	General order information	
	2.12.2.1	Ex m	
226	2.12.2.1.1	Aluminum valves, standard temperature (-20°C on request)	
228	2.12.2.1.2	Stainless steel valves, standard temperature (-20°C on request)	
229	2.12.2.1.3	Solenoid coil: MA 22 EEx MII T4	
	2.12.2.2	Ex ia	
230	2.12.2.2.1	Aluminum valves, standard temperature	
231	2.12.2.2.2	Aluminum valves, low temperature	
232	2.12.2.2.3	Stainless steel valves, standard temperature	
233	2.12.2.2.4	Stainless steel valves, low temperature	
234	2.12.2.2.5	Solenoid coil: MA 30 EEx ia tD II CT6	
	2.12.2.3	Ex nA	
235	2.12.2.3.1	Aluminum valves, standard temperature	
236	2.12.2.3.2	Stainless steel valves, standard temperature	
237	2.12.2.3.3	Solenoid coil: MA __ EEx nA T5	
	2.12.2.4	Ex e mb	
238	2.12.2.4.1	Aluminum valves, standard temperature	
239	2.12.2.4.2	Aluminum valves, low temperature	
240	2.12.2.4.3	Stainless steel valves, low temperature	
241	2.12.2.4.4	Solenoid coil: MA 52 EEx e mb IIC T6	

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
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 msek.

Operation and required air-quality:

The valves are designed for being used with cleaned and lubricated or cleaned and unlubricated compressed air.

Required Air-quality-level in accordance to ISO 8573-1:2010: 7 – 4 – 4 for particles – water – oil

Lubrication:

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

Voltage tolerance:

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

Standard materials used for Hafner-valves:

Bodies	standard VES / KES chapter 2.10	anodised aluminum 1.4404
Spool		stainless steel 1.4104
Sealing-system	standard low temperature chapter 2.9 1/4" VES / KES chapter 2.10 1/2" VES chapter 2.10	brass & NBR brass & PUR stainless steel & PUR stainless steel & FKM
Other inner parts	standard low temperature chapter 2.9 VES / KES chapter 2.10	brass, POM, NBR brass, POM, NBR stainless steel, POM, FKM
Actuation elements	BA-valves HV BH BHP	PA 6.6 30 % glass filled Thermoset resin PA 6.6 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, operator tube 1.4305 PA 6.6 30 % glass filled, 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.

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 ..	2.6.1.1	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 ..	2.6.1.1	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 ..	2.6.1.1	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 ..	2.6.1.1	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	2.6.1.2	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	2.6.1.2	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	2.6.1.2	MD 310 403	MOD 310 403	2.5.1.2.4	n.a.	n.a.	3/2 way valves	T
plate	plate	plate	G 1/4"	pif 4 mm	G 1/4"	RD 3.. 344	2.6.1.3	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	2.6.1.3	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	2.6.1.4	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"	R 3.. 703 G	2.6.1.5	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"	R 3.. 703 G	2.6.1.5	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	2.6.1.4	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	2.6.1.5	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	2.6.1.5	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	2.6.2.1	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	2.6.2.1	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	2.6.2.1	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	2.6.2.1	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	2.6.2.2	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	2.6.2.2	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	2.6.2.3	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	2.6.2.3	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	2.6.2.5	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	2.6.2.4	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	2.6.2.5	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 1/8"	pif 4 mm	G 1/8"	RD 5.. 344	2.6.2.6	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	2.6.2.6	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	2.6.2.7	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	2.6.2.7	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	2.6.2.8	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	2.6.2.8	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	2.6.2.9	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

Manufacturing Facility Halászi – Hungary

page 16



Hafner pneumatika Kft. Halászi – Hungary



More than 800 m² of manufacturing area.



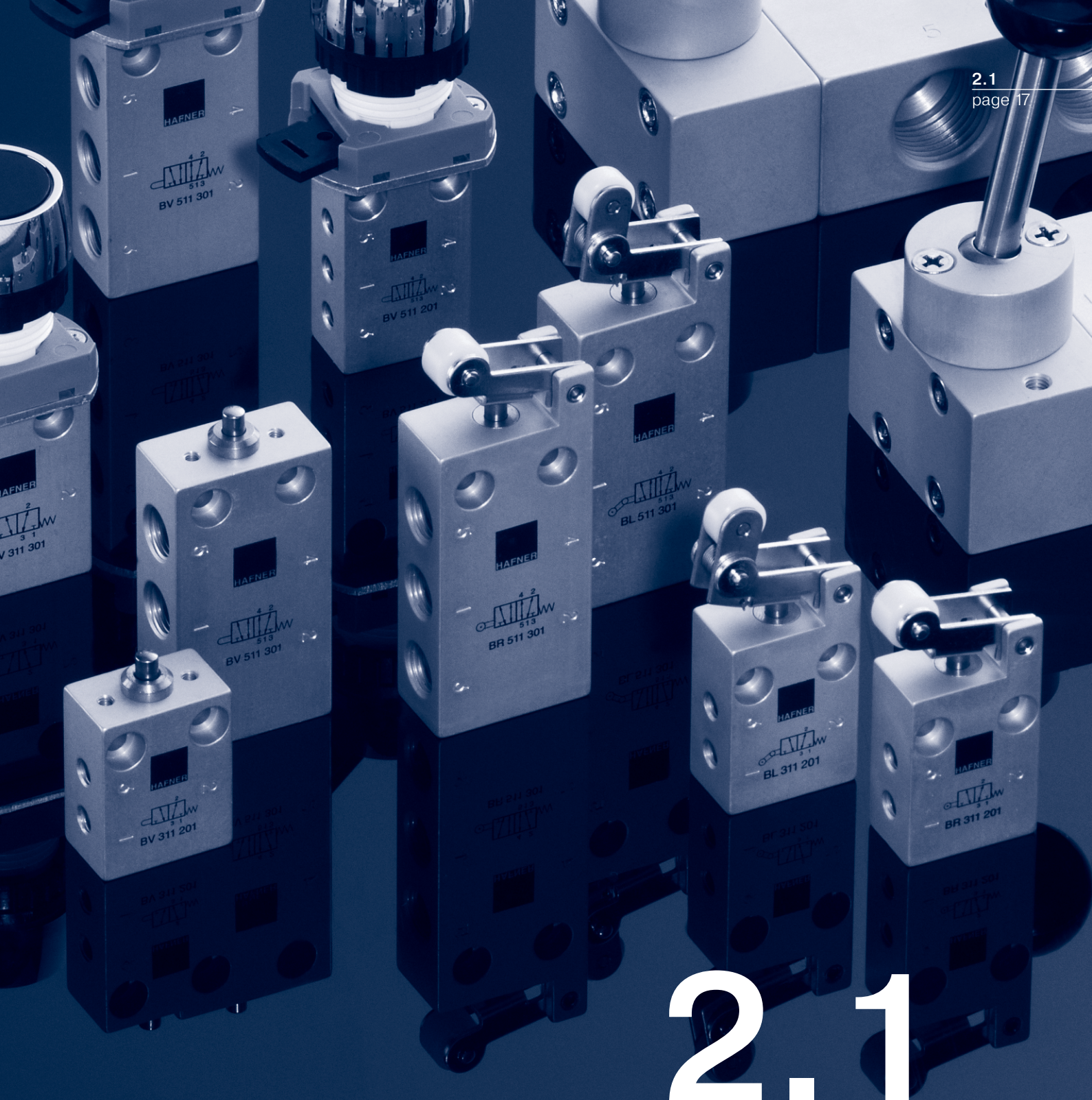
Latest CNC-equipment ...



... and tools.



Work-place in assembly area.



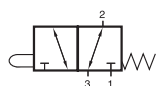
Mechanically Actuated Valves

Selected models are available for explosion hazardous environment. They are ATEX-Ex certified. For detailed information refer to chapter 2.12.

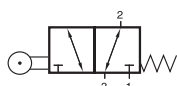


Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.9.

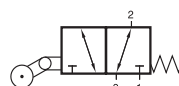
BV/BR/BL 311 201



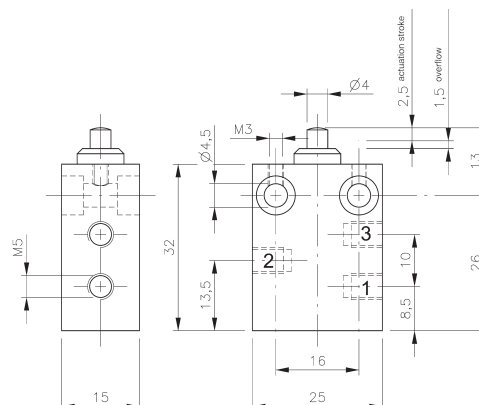
BV 311 201



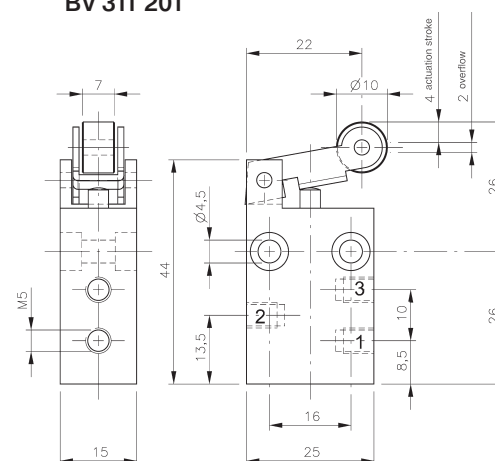
BR 311 201



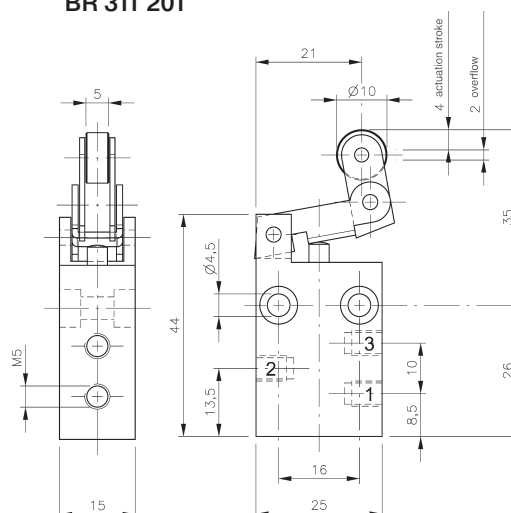
BL 311 201



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.

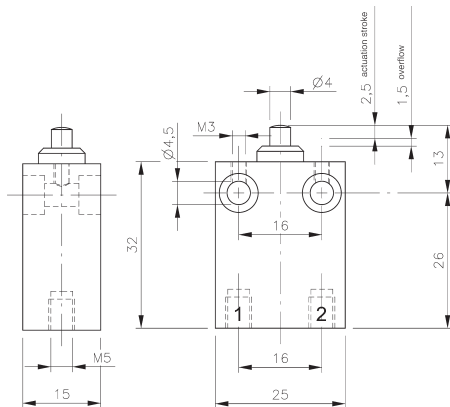
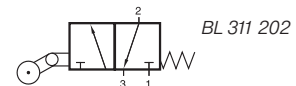
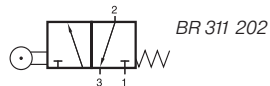
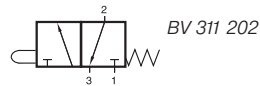
If pressure is applied to port 3 the function is normally open.

The use of the ports is interchangeable.

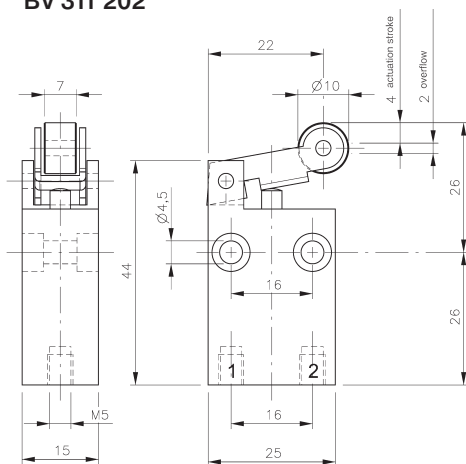
Exhaust can be throttled.

Valves can be used for technical vacuum too.

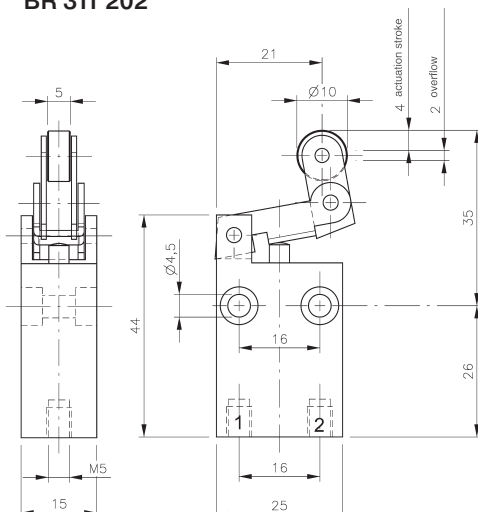
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,033 kg
BR 311 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,041 kg
BL 311 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,044 kg



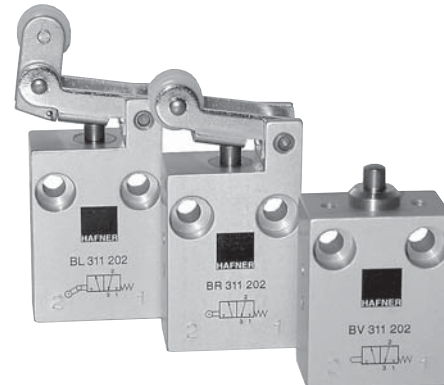
BV 311 202



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.

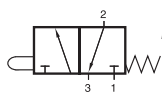
Exhaust through stem.

Normally open versions can be delivered on request.

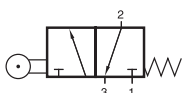
Valves can be used for technical vacuum too.

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

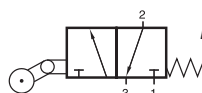
BV/BR/BL 311 243



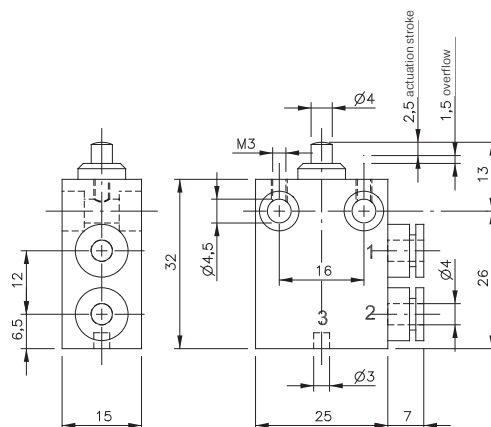
BV 311 243



BR 311 243



BL 311 243



BV 311 243

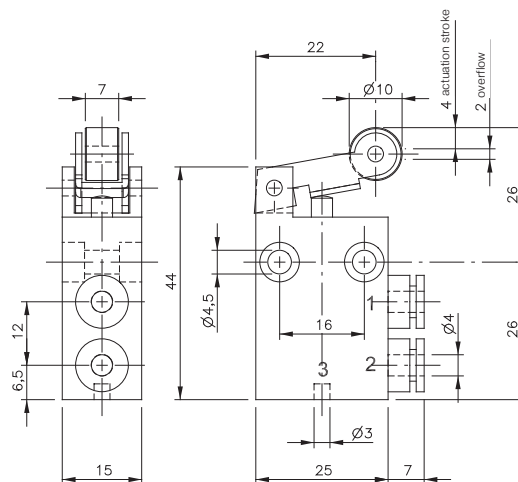
Mechanically actuated 3/2-way spool valve with mechanical spring. Ports 1 and 2 are on one side of the valve, equipped with 4 mm push-in fittings.

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

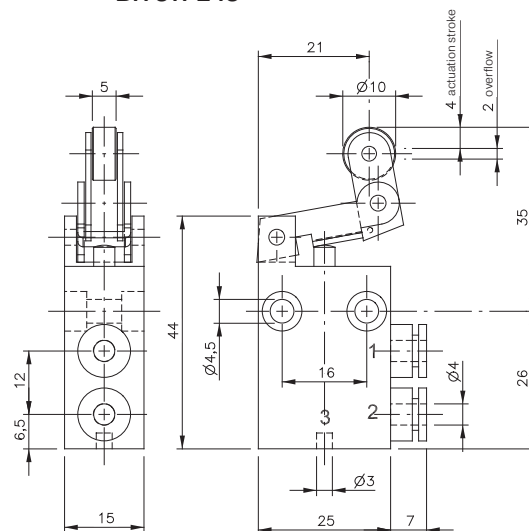
Exhaust through endcap.

Normally open versions can be delivered on request.

Valves can be used for technical vacuum too.

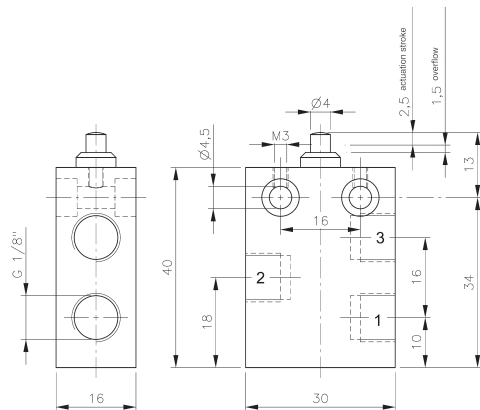
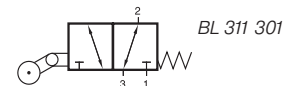
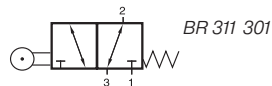
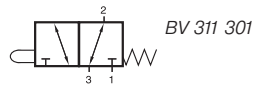


BR 311 243

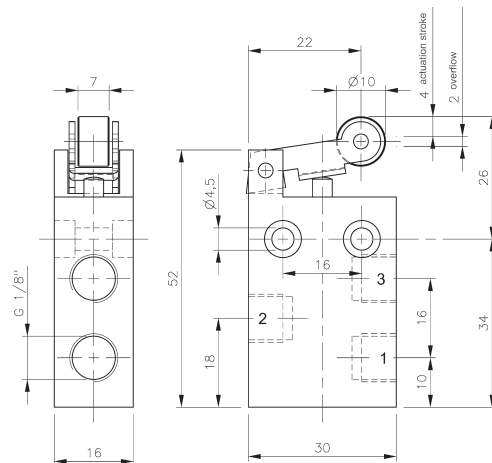


BL 311 243

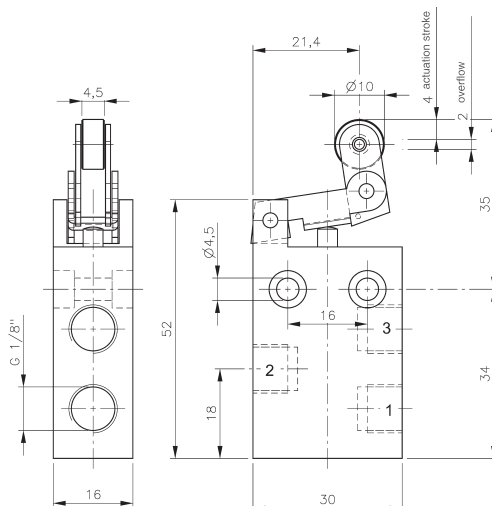
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	14 N	0,033 kg
BR 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	9 N	0,041 kg
BL 311 243	pif 4 mm	115 l/min	-0,9 - 10 bar	9 N	0,044 kg



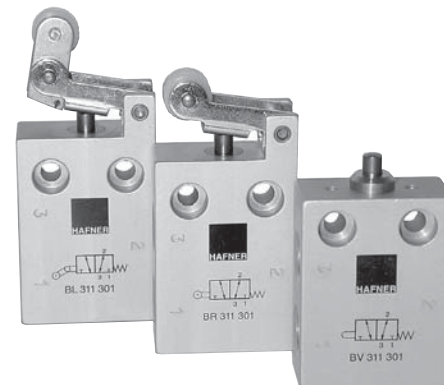
BV 311 301



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.

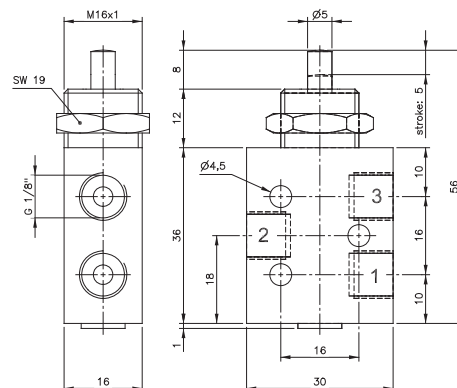
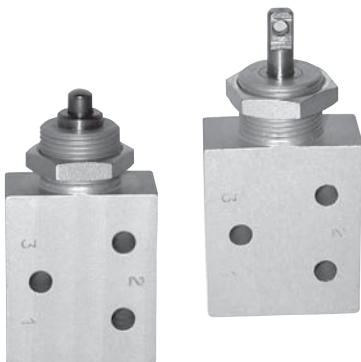
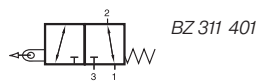
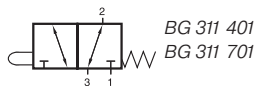
The use of the ports is interchangeable.

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

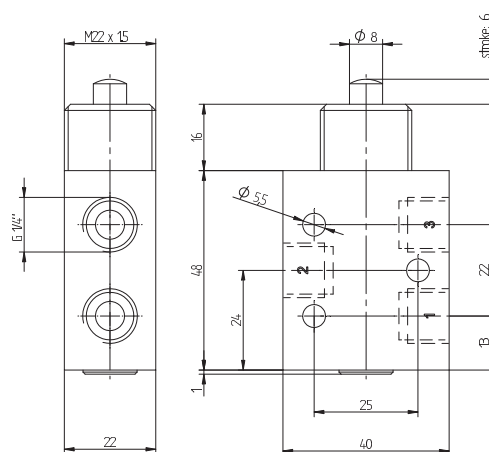
BG 311 701 heavy duty stem actuated 3/2-way spool valve with mechanical spring, G 1/4".

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.

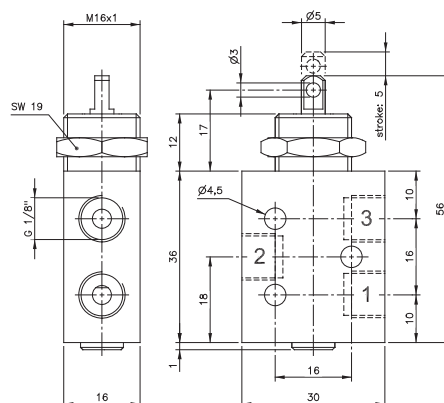
Suitable for wall or panel mounting. Nut for panel mounting M16 x 1 for G 1/8"-valves or M22 x 1,5 for G 1/4"-valves are included.



BG 311 701

The use of the ports is interchangeable.

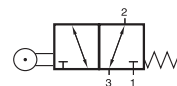
Exhaust can be throttled.



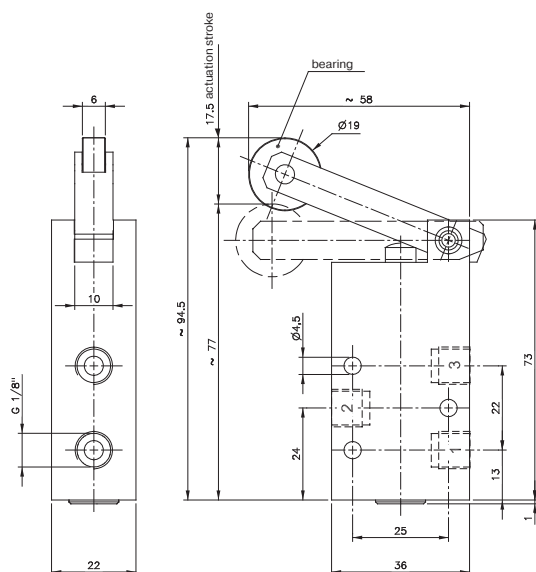
BZ 311 401

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

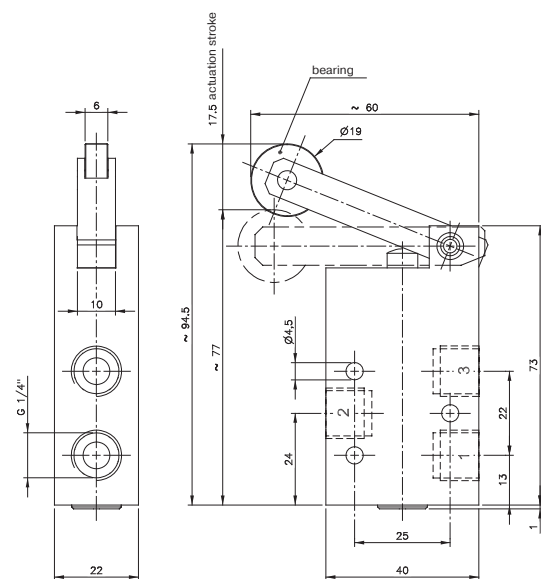




BR 311 501
BR 311 701



BR 311 501



BR 311 701



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.

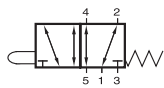
On request:
Roller-lever valves with idle return.

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.

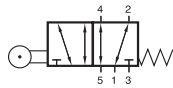
Valves can be used for technical vacuum too.

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	❄

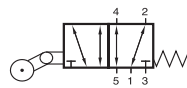
BV/BR/BL 511 201



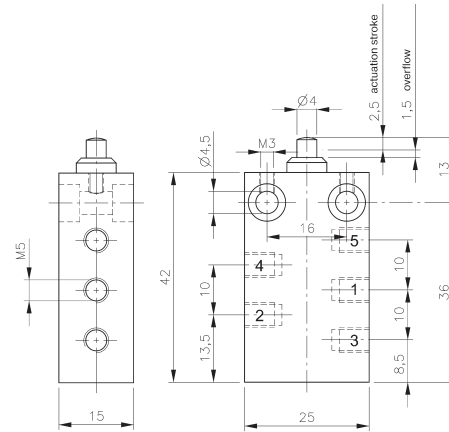
BV 511 201



BR 511 201



BL 511 201



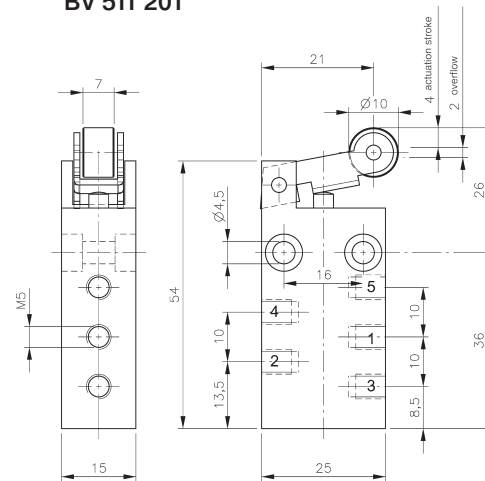
BV 511 201

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

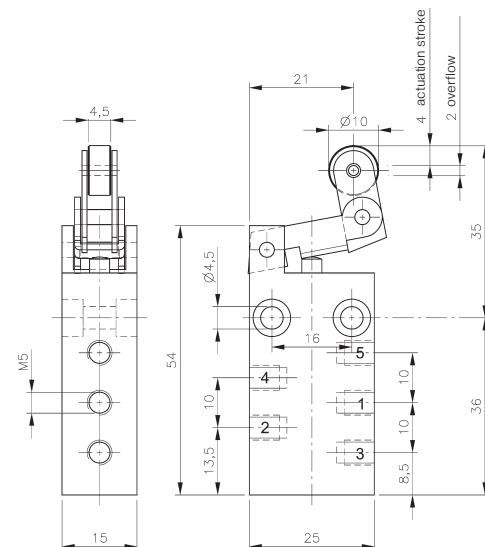
Normally open from 1 to 2 and from 4 to 5.
Operated open from 1 to 4 and 2 to 3.

Exhaust can be throttled.

Valves can be used for technical vacuum too.

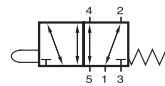


BR 511 201

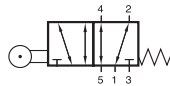


BL 511 201

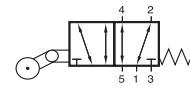
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BV 511 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,043 kg
BR 511 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,051 kg
BL 511 201	M5	125 l/min	-0,9 - 10 bar	9 N	0,054 kg



BV 511 301



BR 511 301



BL 511 301

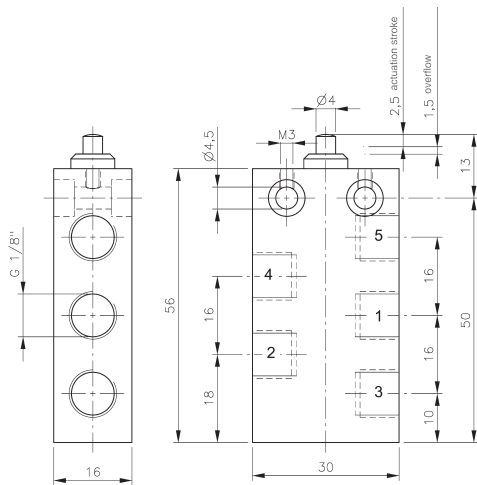


Mechanically actuated 5/2-way spool valve with mechanical spring.

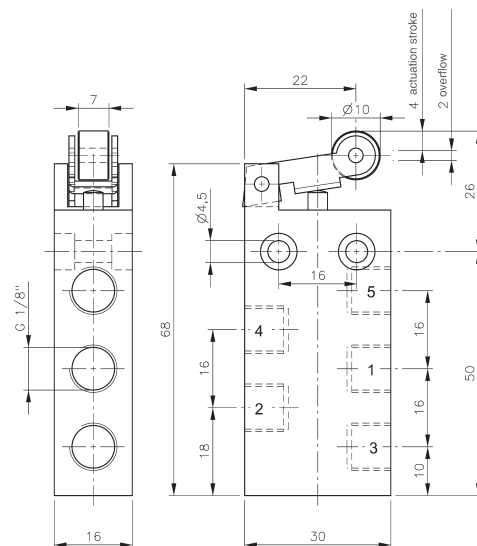
Normally open from 1 to 2 and from 4 to 5.
Operated open from 1 to 4 and 2 to 3.

Exhaust can be throttled.

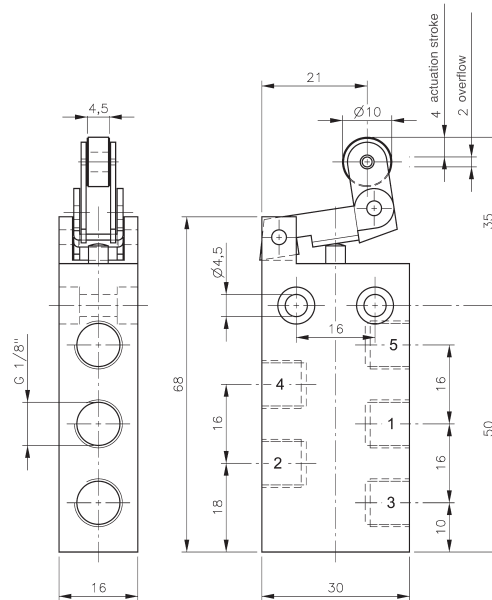
Valves can be used for technical vacuum too.



BV 511 301

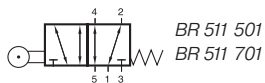


BR 511 301



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



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.

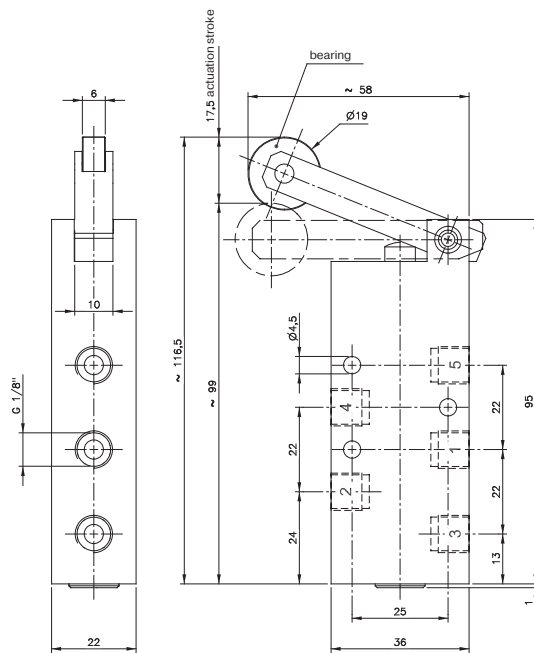
On request:

Roller-lever valves with idle return.

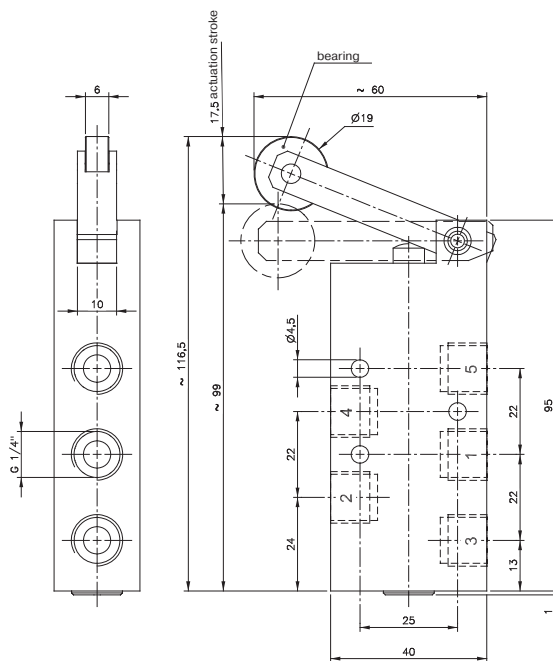
Low temperature version:

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





2.2

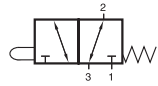
Valves for Panel Mounting

Selected models are available for explosion hazardous environment. They are ATEX-Ex certified. For detailed information refer to chapter 2.12.

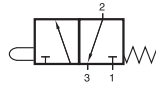


Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.9.

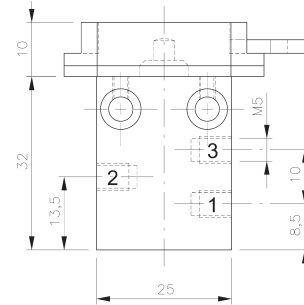
BA 311 201/BA 311 202/BA 311 203 BA 311 243/BA 311 301



BA 311 201
BA 311 301



BA 311 202
BA 311 203
BA 311 243



BA 311 201

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.

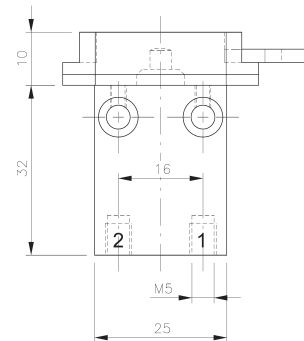
For the valve with the ports on the bottom (type 202) please refer to page 2.1.1.2.

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.

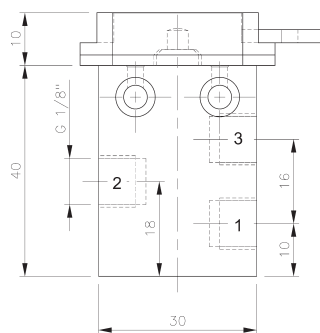
Normally open versions of BA 311 203 and BA 311 243 can be delivered on request.

The actuating elements are displayed on page 2.2.3.

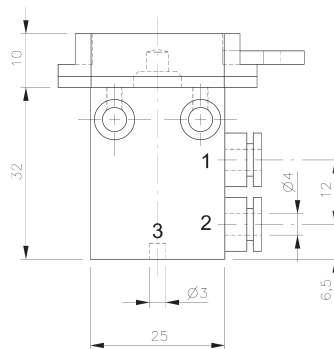
Selected valves can be used for technical vacuum too.



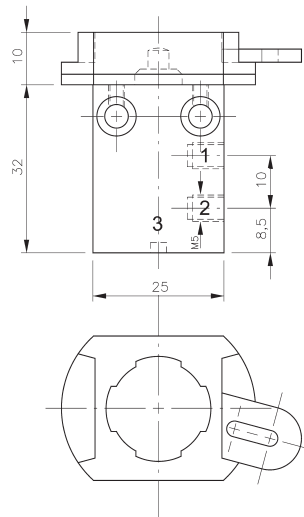
BA 311 202



BA 311 301

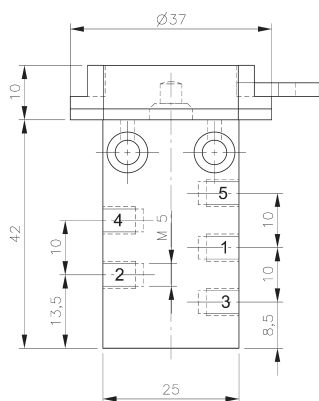
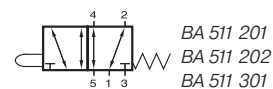


BA 311 243

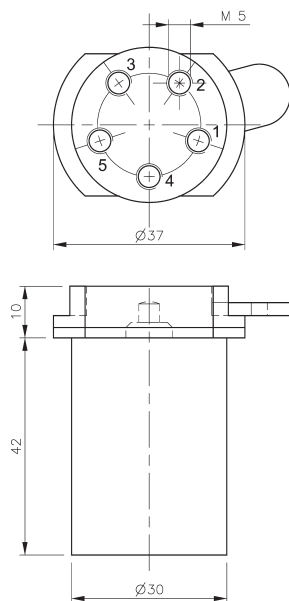


BA 311 203

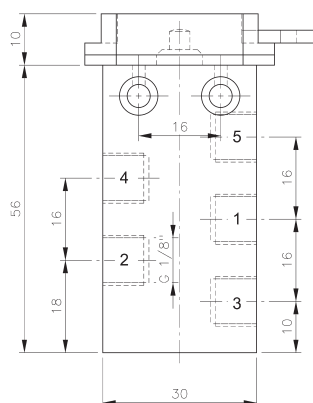
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BA 311 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,043 kg
BA 311 202	M5	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 203	M5	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 243	pif 4 mm	125 l/min	0 - 10 bar	14 N	0,043 kg
BA 311 301	G 1/8"	280 l/min	-0,9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



BA 511 201



BA 511 202



BA 511 301

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.

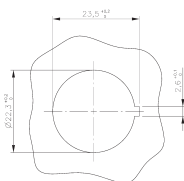
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BA 511 201	M5	125 l/min	-0,9 - 10 bar	14 N	0,053 kg
BA 511 202	M5	125 l/min	0 - 10 bar	14 N	0,095 kg
BA 511 301	G 1/8"	280 l/min	-0,9 - 10 bar	14 N	0,075 kg 

Ø 22 mm Actuators for Panel Mounting

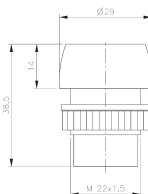


Actuating elements for valves displayed on page 2.2.1 and 2.2.2.

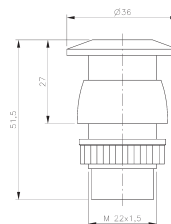
Declaration of manufacturer that actuation elements have no intrinsic ignition source can be supplied on request.



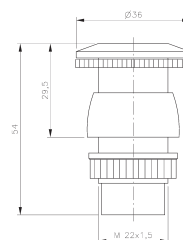
Panel mounting hole



BA 221



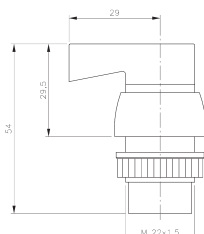
BA 222



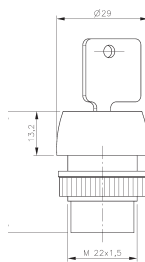
BA 223



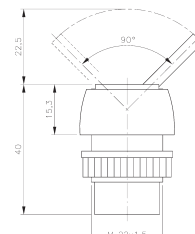
BA 221 SSK



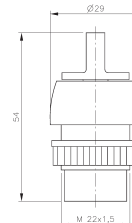
BA 224



BA 225



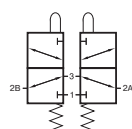
BA 226



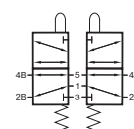
BA 227 01

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

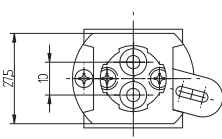
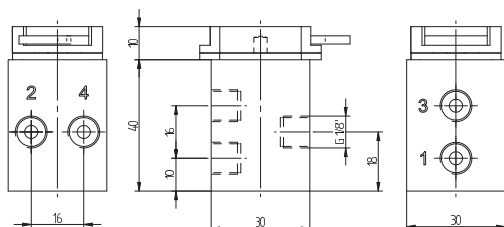
* available on request: for 30 mm panel mounting hole.



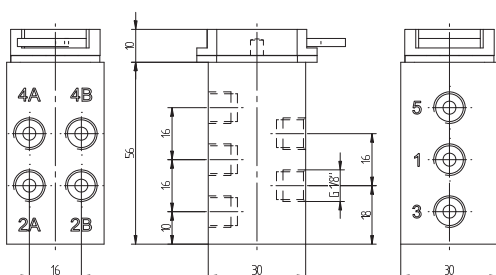
BA 430 301



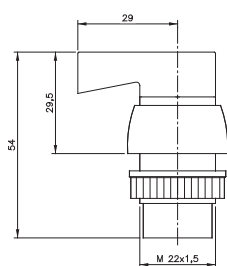
BA 730 301



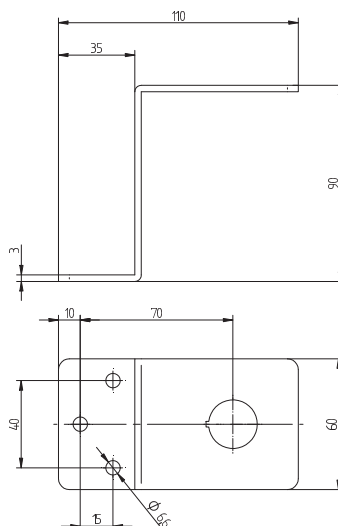
BA 430 301



BA 730 301



BA 334 01



BW BA 22



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.

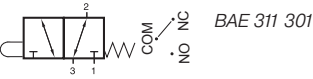
Please note: Although the valves have a mechanic spring inside, the actuator is with detent.

BW BA 22

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

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



The BAE 311 301 is a 3/2-way spool valve ported G 1/8" that can either be used normally closed (pressure at port 1) or normally open (pressure at port 3).

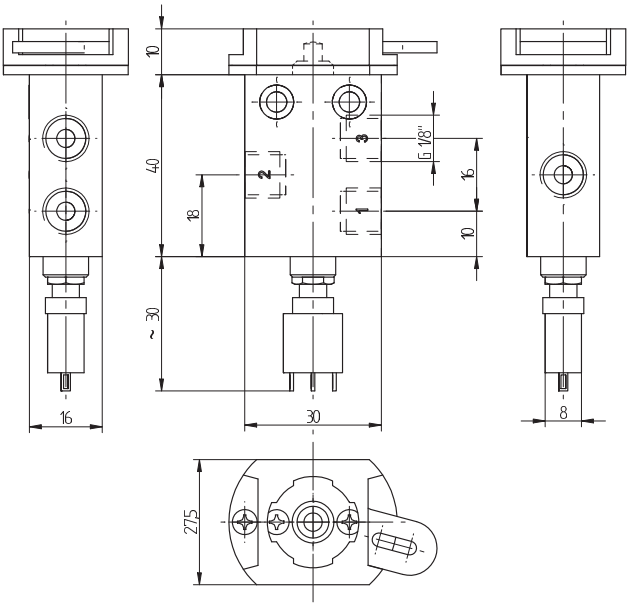
The valve includes an electric switch that is actuated at the same time.

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, BA 511 201 and BA 511 301 on demand.

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

Please order including actuation element.

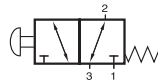


BAE 311 301

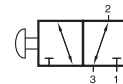
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BAE 311 301	G 1/8"	280 l/min	0 - 10 bar	17 N	0,08 kg

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

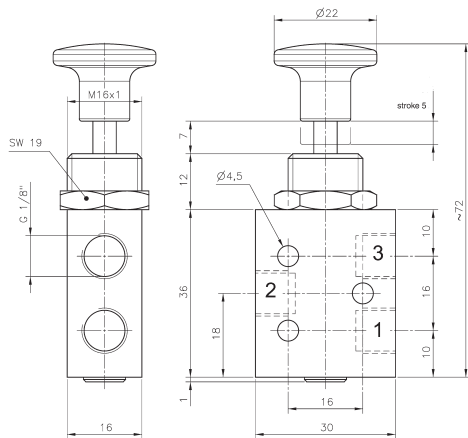
2.2.6
page 33



BH 311 401
BH 311 701



BH 320 401
BH 320 701



BH 311 401/BH 320 401



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

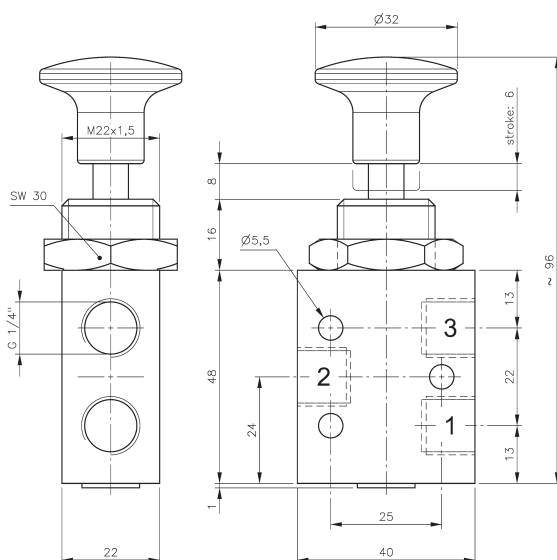
If pressure is applied to port 1 the function is normally closed.

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.

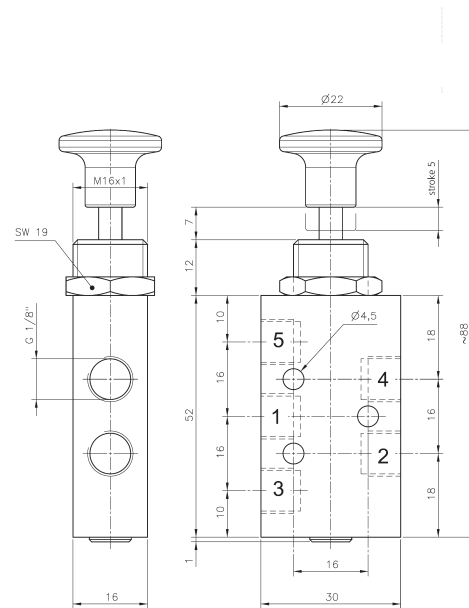
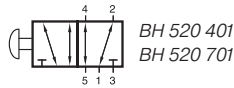
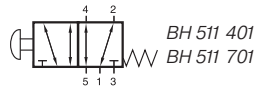
Selected valves can be used for technical vacuum too.



BH 311 701/BH 320 701

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 520 401

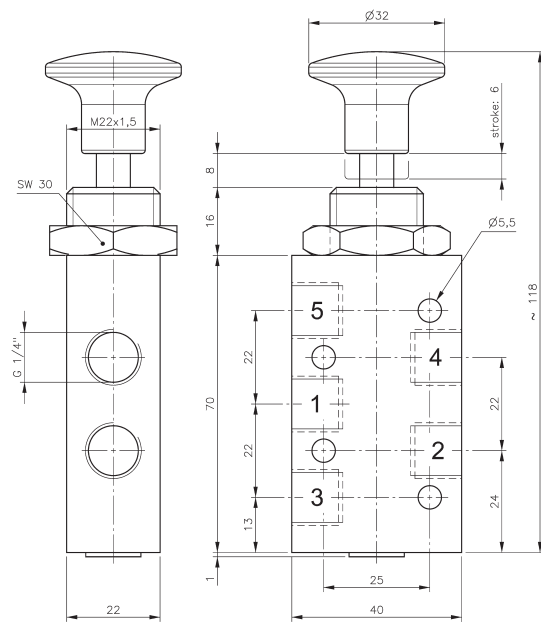
Manually actuated 5/2-way spool valve either with spring return to outer position (type 511) or with two stable positions (type 520).

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.

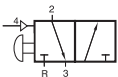
Suitable for wall or panel mounting. Nut for panel mounting, M16 x 1 for G 1/8"-valves or M22 x 1,5 for G 1/4"-valves is included.

Selected valves can be used for technical vacuum too.

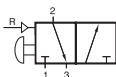


BH 511 701/BH 520 701

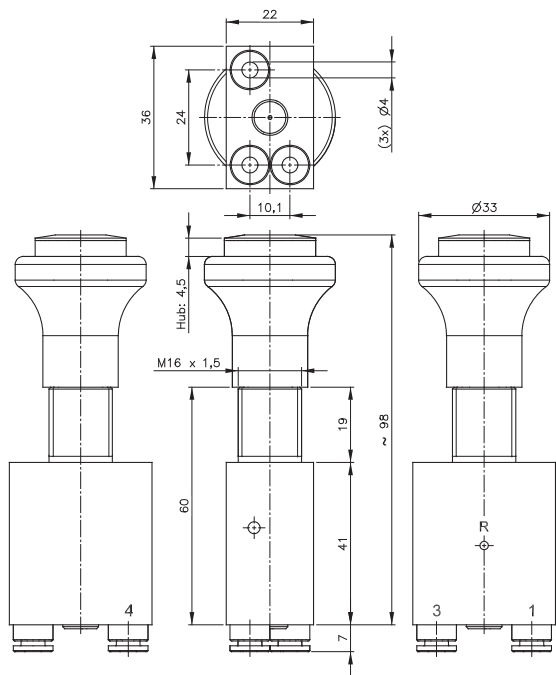
Type	Port size	Air flow	Operating press.	Actuating force	Weight
BH 511 401	G 1/8"	450 l/min	1 - 10 bar	11 N	0,080 kg
BH 520 401	G 1/8"	450 l/min	1 - 10 bar	12 N	0,080 kg
BH 511 701	G 1/4"	1250 l/min	-0,9 - 10 bar	17 N	0,180 kg ❄️
BH 520 701	G 1/4"	1250 l/min	-0,9 - 10 bar	18 N	0,180 kg ❄️



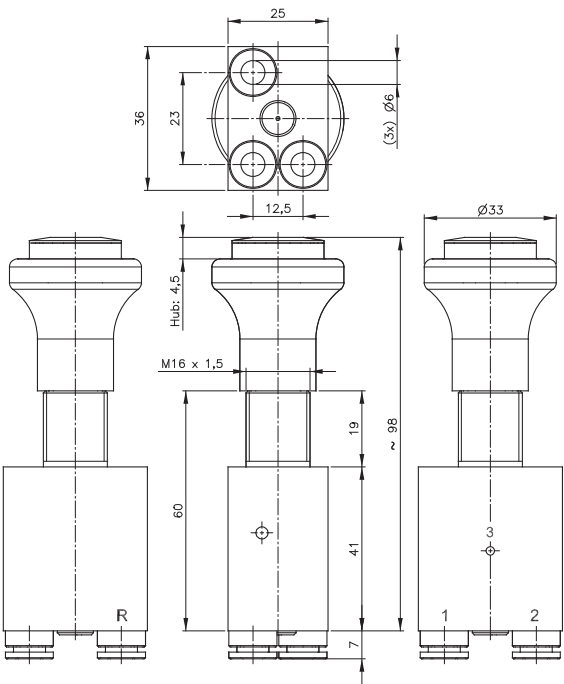
BHP 320 442



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.

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:

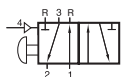
Colour code	Colour of knob	Colour of indicator
1	black	white
2	red	white
3	green	red
4	yellow	white
5	blue	white

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

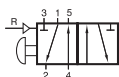
Type	Function	Ports	Air flow	Operating press.	Weight
BHP 320 442 _	3/2-way	pif 4 mm	300 l/min	1 - 16 bar	0,13 kg
BHP 320 462 _	3/2-way	pif 6 mm	300 l/min	1 - 16 bar	0,13 kg

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.

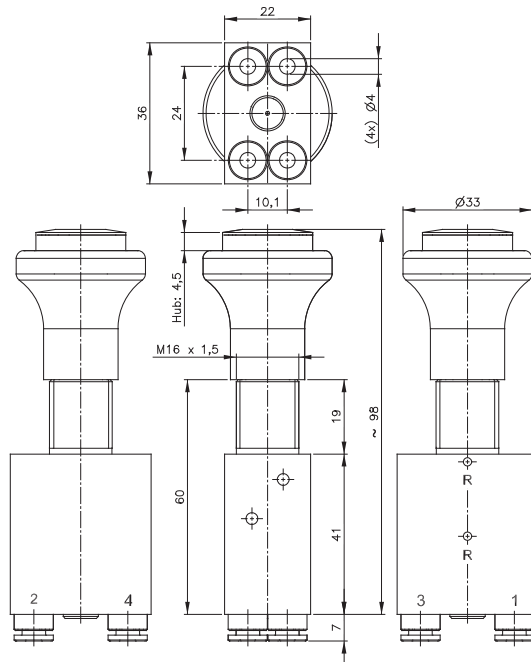
Ports on the bottom of the valve are equipped with integrated push-in fittings. Exhaust is undeducted.

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.

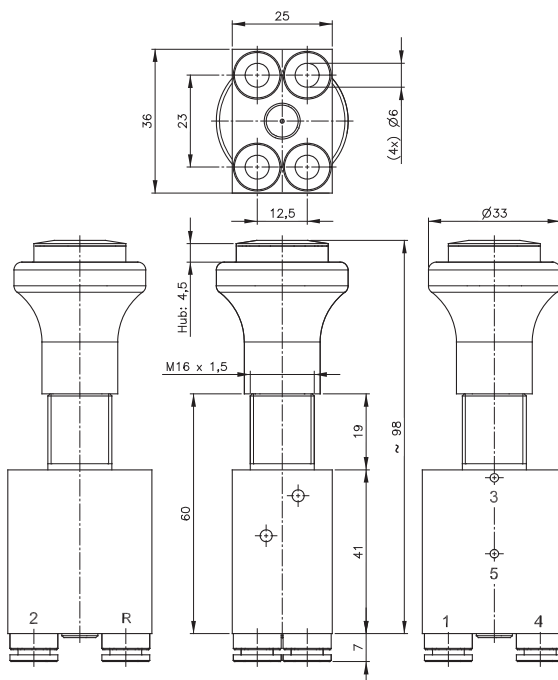
The following knob-colours are available:

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.

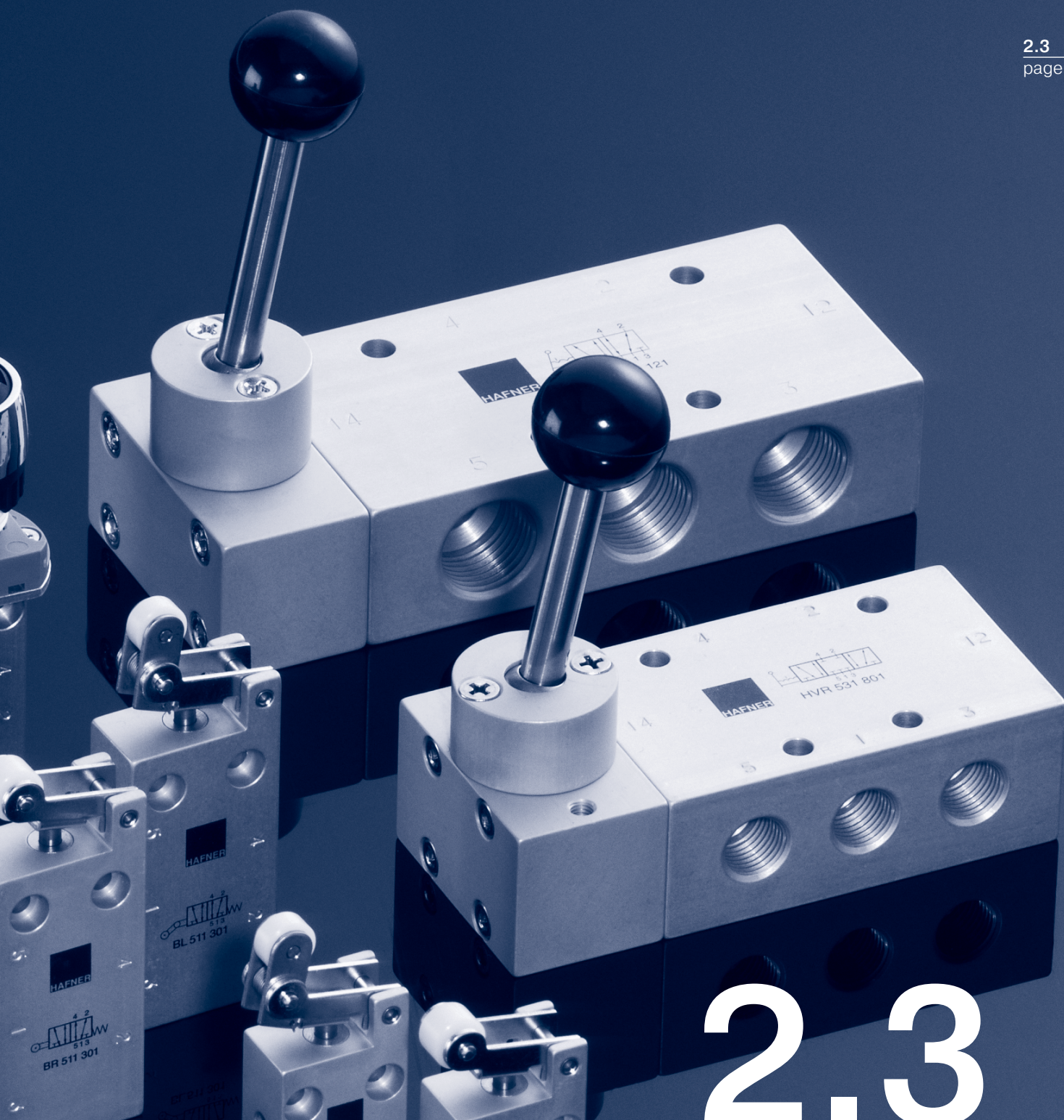


BHP 520 442



BHP 520 462

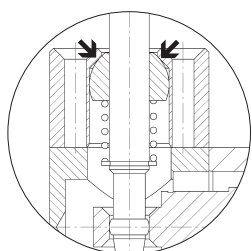
Type	Function	Ports	Air flow	Operating press.	Weight
BHP 520 442 _	5/2-way	pif 4 mm	300 l/min	1 - 16 bar	0,13 kg
BHP 520 462 _	5/2-way	pif 6 mm	300 l/min	1 - 16 bar	0,13 kg



2.3

Lever Actuated Valves

Selected valves can be used for technical vacuum too.



Instead of a rubber-gaiter 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 2.9.

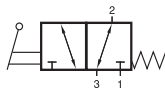


Selected models are available in stainless steel.
For detailed information refer to chapter 2.10.

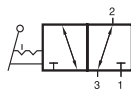


Selected models can be equipped with FKM seals for high temperature environment up to 120 °C.

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



HV 311 501
HV 311 701
HV 311 801
HV 311 701 NPT



HVR 320 501
HVR 320 701
HVR 320 801
HVR 320 701 NPT



Lever actuated 3/2-way spool valve.

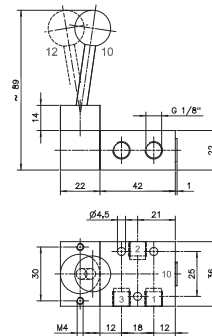
Type HV spring return
Type HVR indexed

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

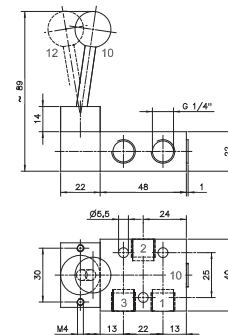
If pressure is applied to port 3 the function is normally open.

The lever is sealed by using a metal ball.

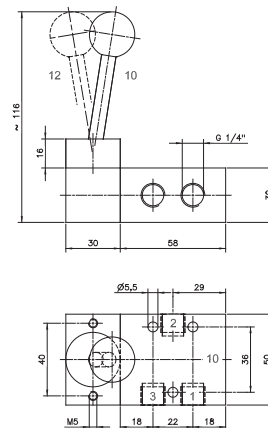
Exhaust can be throttled.



HV 311 501/HVR 320 501



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

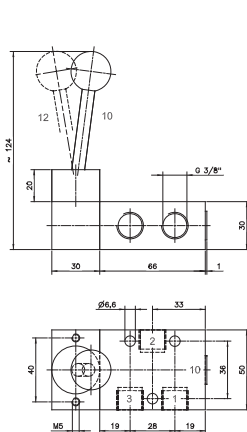


HV 311 801/HVR 320 801

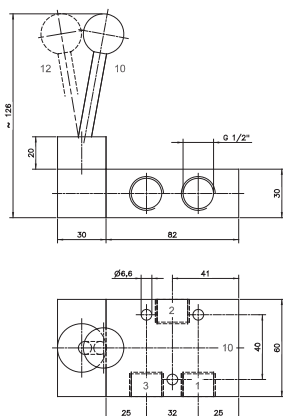
Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 311 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,19 kg ❄️
HV 311 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,20 kg ❄️ 🏠
HV 311 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,46 kg
HVR 320 501	indexed	G 1/8"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

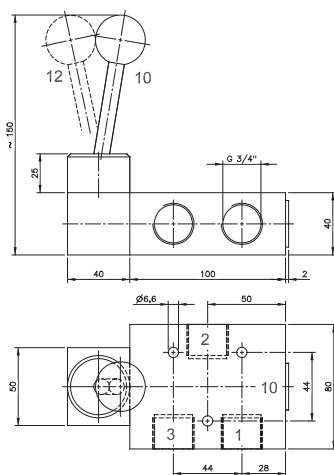
2.3.1.2
page 39



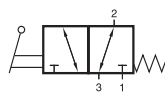
HV 311 101/HVR 320 101



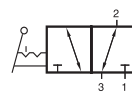
**HV 311 121/HVR 320 121
HV 311 121 NPT/HVR 320 121 NPT**



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.

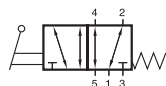
If pressure is applied to port 3 the function is normally open.

The lever is sealed by using a metal ball.

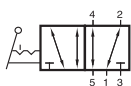
Exhaust can be throttled.

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

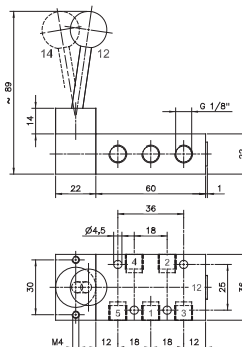
HV 511 501/HV 511 701/HV 511 801 HVR 520 501/HVR 520 701/HVR 520 801



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



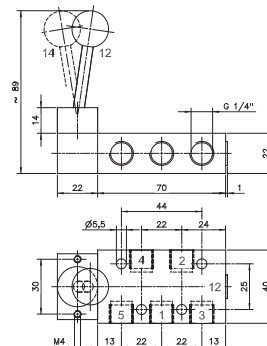
HV 511 501/HVR 520 501

Lever actuated 5/2-way spool valve.

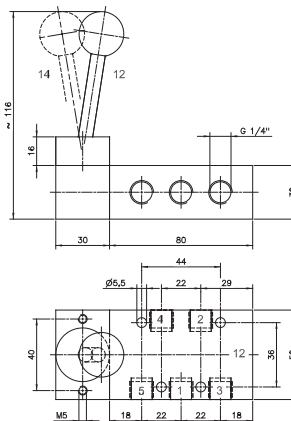
Type HV spring return
Type HVR indexed

The lever is sealed by using a metal ball.

Exhaust can be throttled.



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

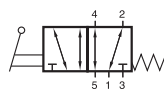


HV 511 801/HVR 520 801

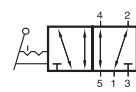
Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 511 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 511 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HV 511 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HVR 520 501	indexed	G 1/8"	650 l/min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

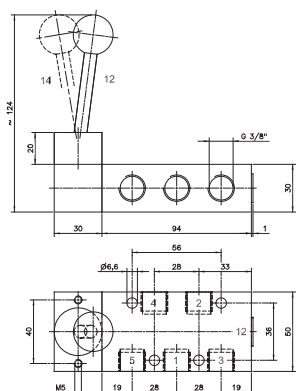
2.3.2.2
page 41



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

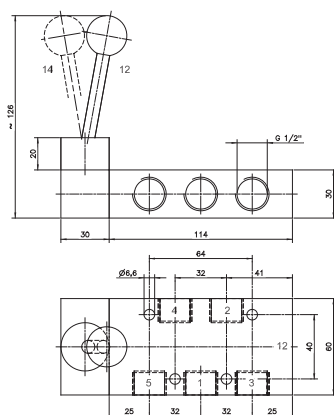


Lever actuated 5/2-way spool valve.

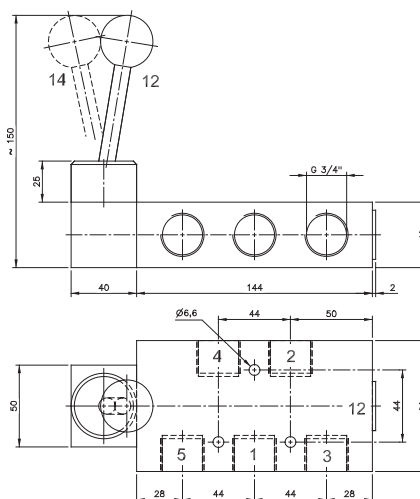
Type HV spring return
Type HVR indexed

The lever is sealed by using a metal ball.

Exhaust can be throttled.



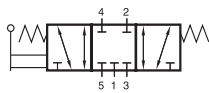
**HV 511 121/HVR 520 121
HV 511 121 NPT/HVR 520 121 NPT**



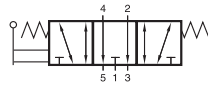
HV 511 181/HVR 520 181

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

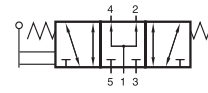
HV 53_ 501/HV 53_ 701/HV 53_ 801 HVR 53_ 501/HVR 53_ 701/ HVR 53_ 801



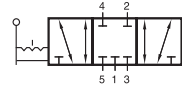
HV 531 501
HV 531 701
HV 531 801
HV 531 701 NPT



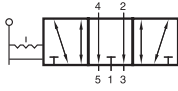
HV 532 501
HV 532 701
HV 532 801
HV 532 701 NPT



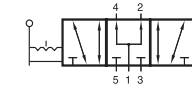
HV 533 501
HV 533 701
HV 533 801
HV 533 701 NPT



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.

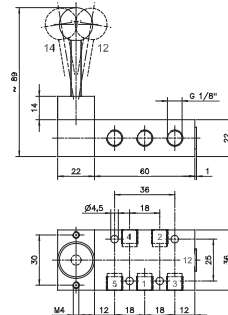
Type HV spring return to middle position
Type HVR indexed

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

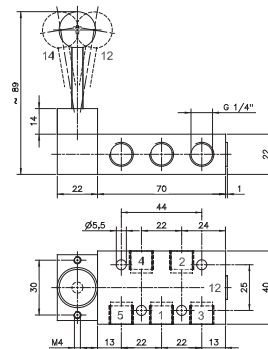
When ordering please complete the type number by 1, 2 or 3 according to the type required.

The lever is sealed by using a metal ball.

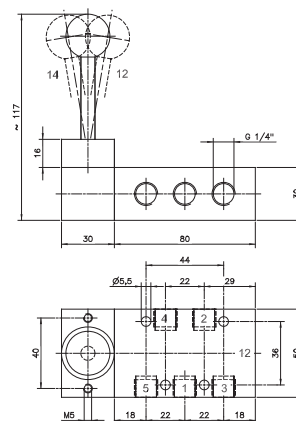
Exhaust can be throttled.



HV 53_ 501/HVR 53_ 501



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

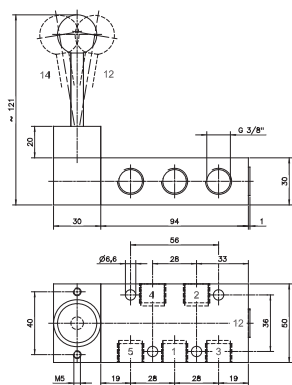
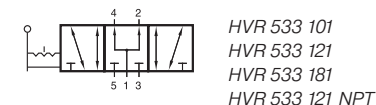
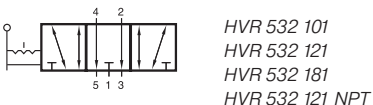
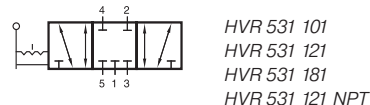
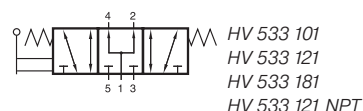
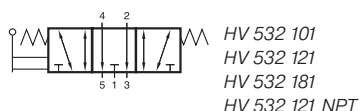
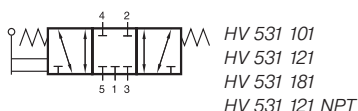


HV 53_ 801/HVR 53_ 801

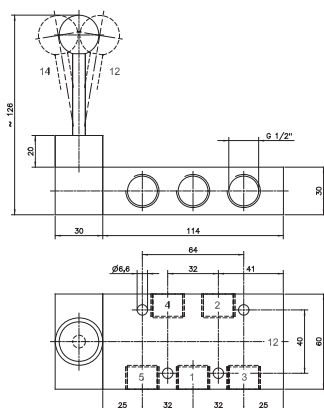
Type	Function	Port size	Air flow	Operating press.	Actuating force	Weight
HV 53_ 501	spring ret.	G 1/8"	650 l/min	1 - 10 bar	20 N	0,22 kg
HV 53_ 701	spring ret.	G 1/4"	1250 l/min	1 - 10 bar	20 N	0,24 kg
HV 53_ 801	spring ret.	G 1/4"	1450 l/min	1 - 10 bar	25 N	0,55 kg
HVR 53_ 501	indexed	G 1/8"	650 l/min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

2.3.3.2
page 43



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.

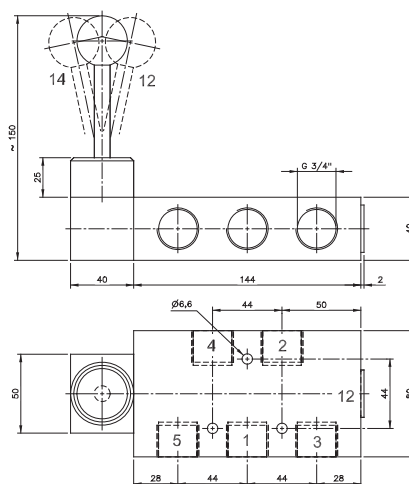
Type HV spring return to middle position
Type HVR indexed

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.

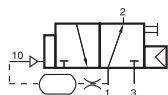


HV 53_ 181/HVR 53_ 181

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

Examples for customer-specific products

page 44



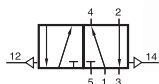
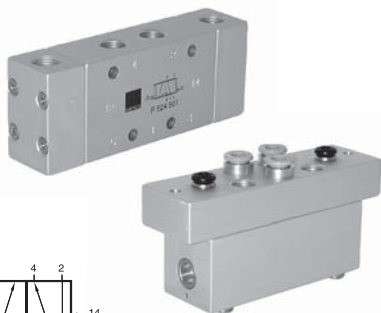
SUH 310 502

3/2-way G 1/8" impulse valve with manual override. Valve is interrupting a pneumatic signal after a defined time-period, pressing the manual override brings the signal back.



P 510 801 METS

Single-pilot 5/2-way valve with metric ports. Head is offering two pilot ports, both M10 x 1.



P 524 501/P 524 502/P 524 404

5/2-way Bleed valves.
Negative switching double pilot valve.



PH 520 502

Double pilot G 1/8" valve with manual override. Valve offers 2 pins that stick out at the ends of the valve. Those can be used as manual override or to indicate the position. Versions to be put onto manifold plates orifice size 5 mm have also been manufactured.



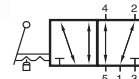
P 310 701 VIT

Pneumatically actuated 3/2-way valve G 1/4" with FKM seals.
Temperature range 0° C to 120° C.



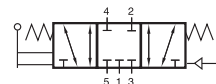
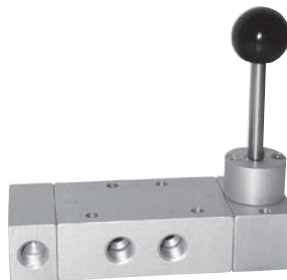
HVR 520 701

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.



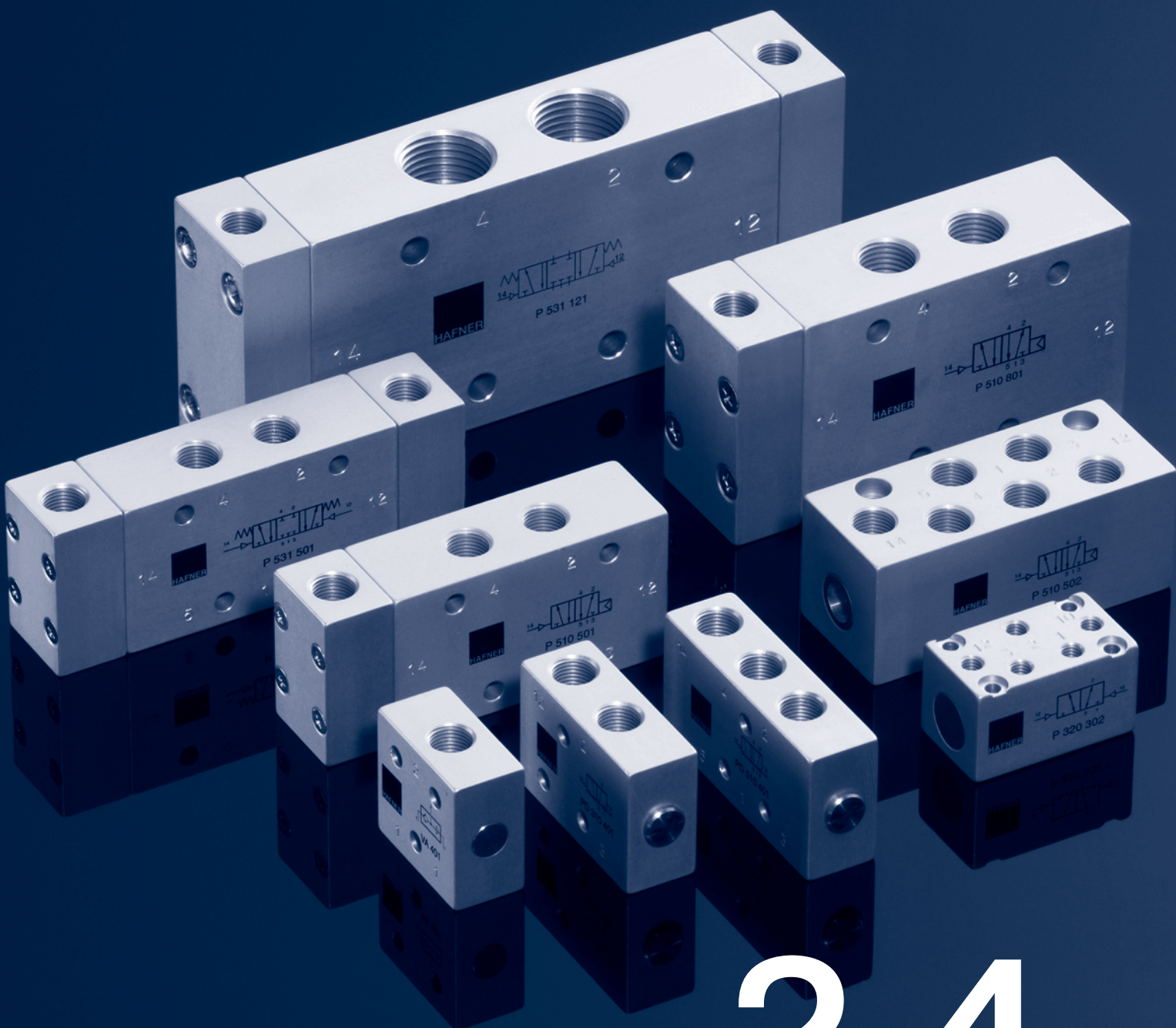
HVR 520 801 Z

G 1/4" 5/2-way lever actuated valve, indexed. Valve can not be switched without thoroughly pulling the lever. This feature can also be included into 3/2-way valves, 5/3-way valves, valves with Namur-interface or valves with spring return. Valve can be used where prevention against unintended actuation is in need.



HVP 531 501

Lever actuated 5/3-way valve, centre position closed, with spring return to middle position. When a pneumatic signal is applied to port 12, spool moves to or is held in the position where 1 is open to 2 and 4 to 5. Commercial vehicle application.



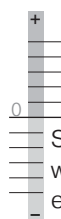
2.4

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 2.9.

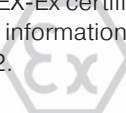


Selected models can be equipped with FKM seals for high temperature environment up to 120 °C.

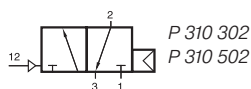


316 Selected models are available in stainless steel.
For detailed information refer to chapter 2.10.

Selected models are available for explosion hazardous environment. They are ATEX-Ex certified.
For detailed information refer to chapter 2.12.



P 310 302/P 310 502



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

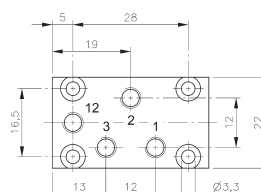
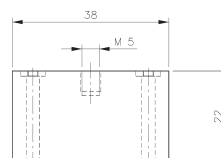
If pressure is attached to port 1 the function is normally closed.

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

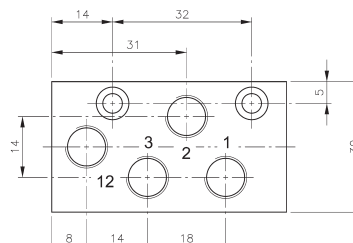
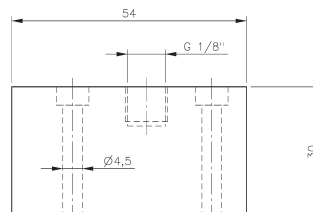
Do not attach pressure at port 2.

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

Exhaust can be throttled.



P 310 302

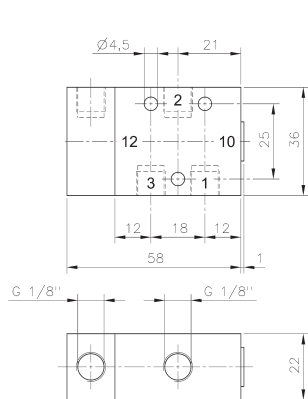


P 310 502

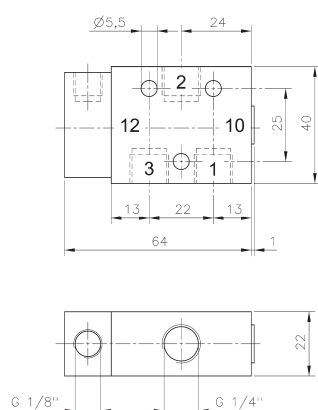
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 302	M5	180 l/min	2 - 10 bar	the same	0,05 kg
P 310 502	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg

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

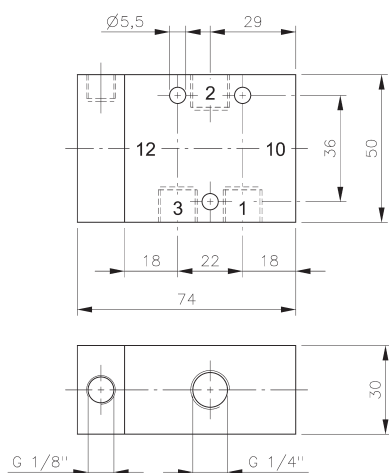
2.4.1.2
page 47



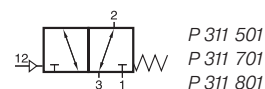
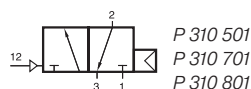
P 310 501/P 311 501



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.

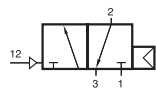
Pressure can only be attached to port 2 if valve has a mechanical spring (type P 311 __ _).

Exhaust can be throttled.

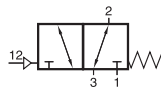
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 310 501	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg
P 310 701	G 1/4"	1250 l/min	2 - 10 bar	the same	0,14 kg
P 310 801	G 1/4"	1450 l/min	1,5 - 10 bar	the same	0,29 kg
P 311 501	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,13 kg
P 311 701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



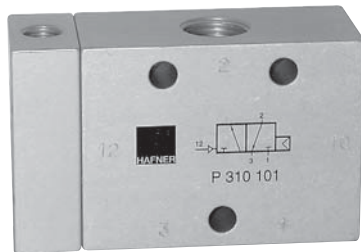
P 310 101/P 310 121/P 310 181 P 311 101/P 311 121/P 311 181



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.

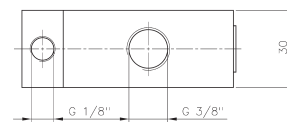
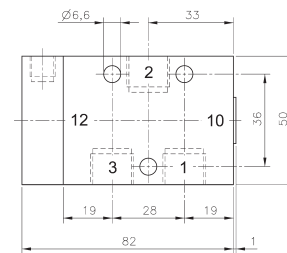
Type P 311 __ with mechanical spring return.

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

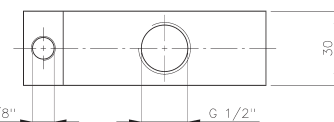
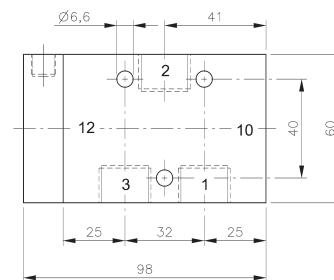
If pressure is applied to port 3 the function is normally open.

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

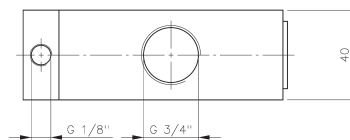
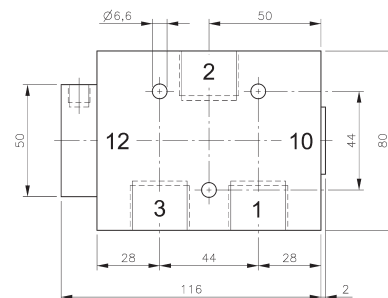
Exhaust can be throttled.



P 310 101/P 311 101



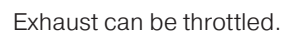
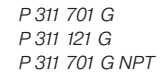
P 310 121/P 311 121
P 310 121 NPT/P 311 121 NPT



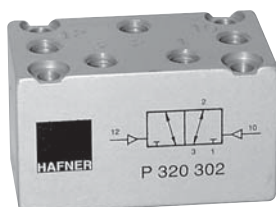
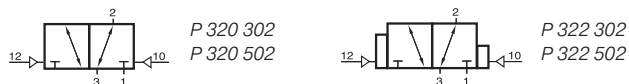
P 310 181/P 311 181

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

2.4.1.4
page 49



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



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

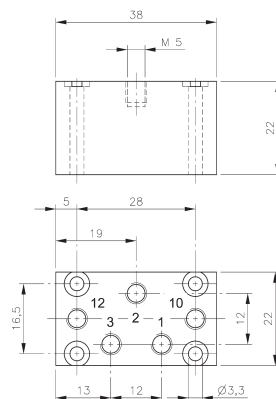
Type P 320 __ __ double pilot

Type P 322 __ __ double pilot dominating at port 12

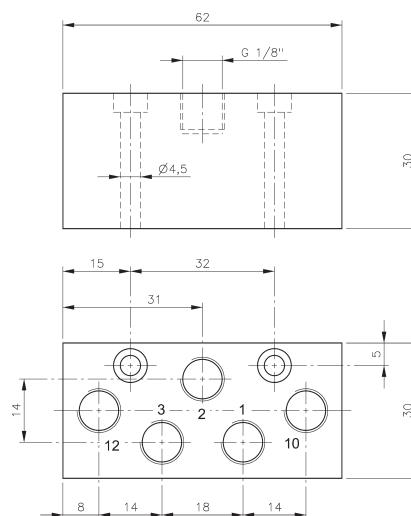
If signal is applied to 12 the valve is open
from 1 to 2 and 3 is blocked.

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

Exhaust can be throttled.



P 320 302/P 322 302

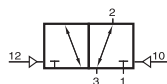


P 320 502/P 322 502

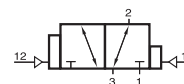
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 320 302	M5	180 l/min	1 - 10 bar	2,5 - 10 bar	0,05 kg
P 320 502	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,13 kg 
P 322 302	M5	180 l/min	1 - 10 bar	2,5 - 10 bar	0,05 kg
P 322 502	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,13 kg

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

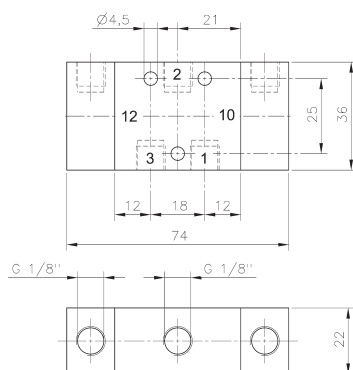
2.4.1.6
page 51



P 320 501
P 320 701 G
P 320 801



P 322 501
P 322 701 G



P 320 501/P 322 501



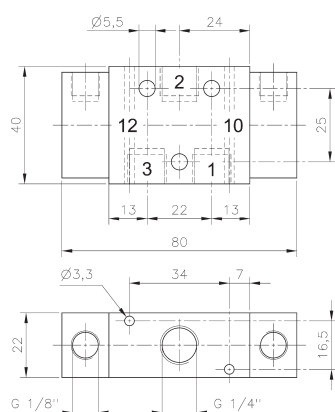
Pneumatically actuated 3/2-way spool valve
actuated by impulse.

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 2.6.1.5.

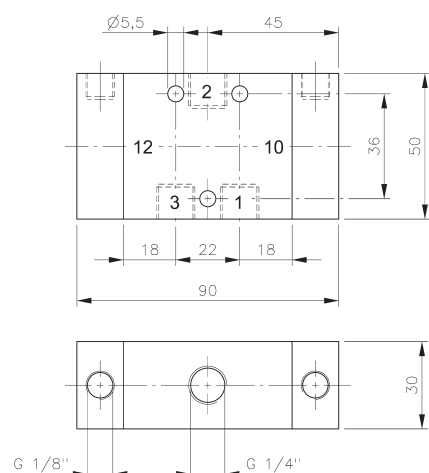
If signal is applied to 12 the valve is open
from 1 to 2 and 3 is blocked.
If signal is applied at 10 the valve is open
from 2 to 3.

Operating pressure can also be applied to 2.

Exhaust can be throttled.



P 320 701 G/P 322 701 G

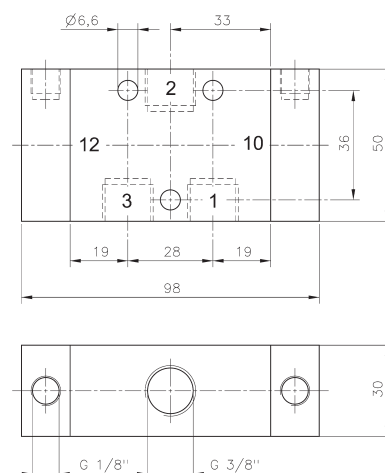
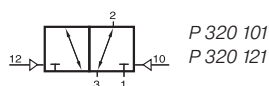


P 320 801

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.

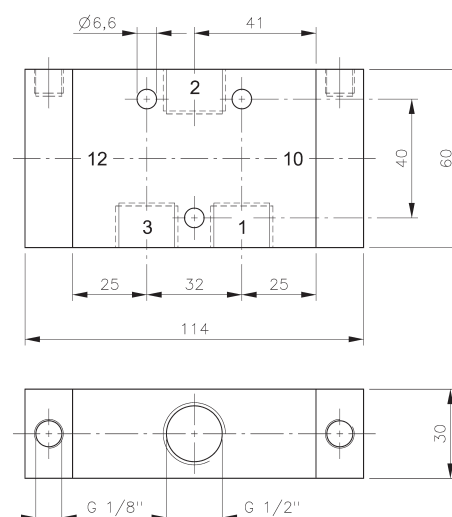
If signal is applied to 12 the valve is open from 1 to 2 and 3 is blocked.

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

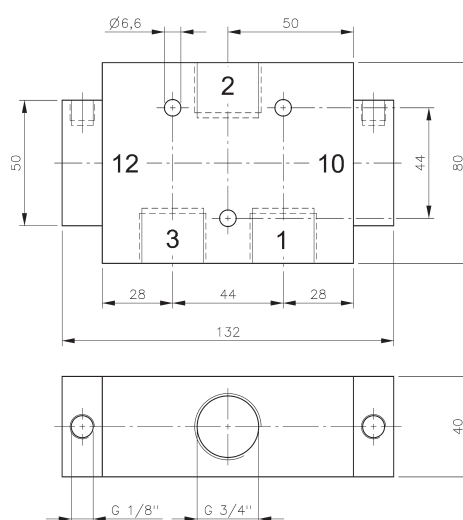
Operating pressure can also be applied to 2.

Position is kept until next pneumatic signal is applied.

Exhaust can be throttled.

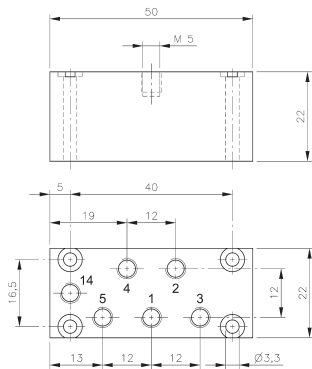
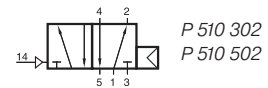


P 320 121

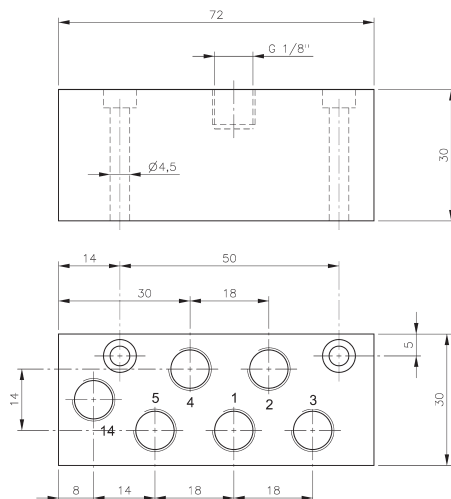


P 320 181

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.

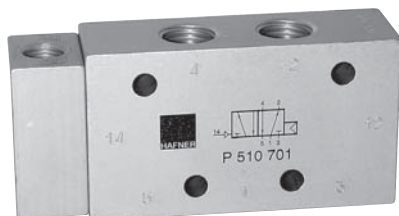
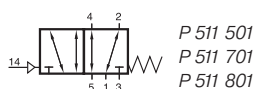
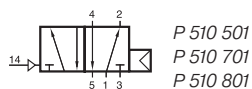
Operating pressure and actuating pressure should be at the same level.

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



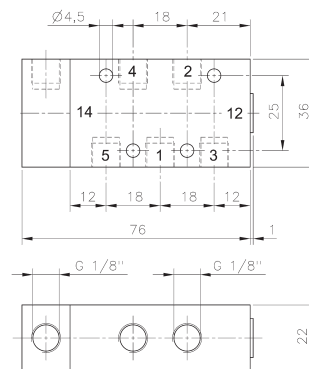
Pneumatically actuated 5/2-way spool valve.

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

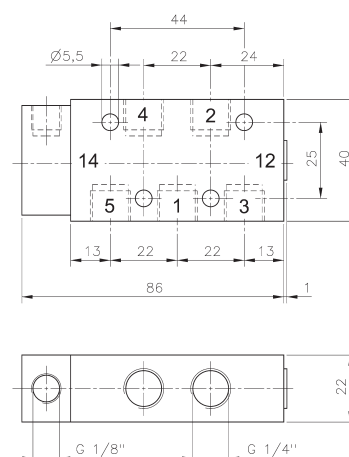
Type P 511 ___ with mechanical spring return.

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.

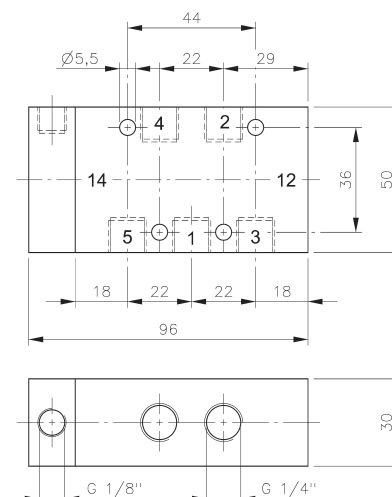
Exhaust can be throttled.



P 510 501/P 511 501



P 510 701/P 511 701

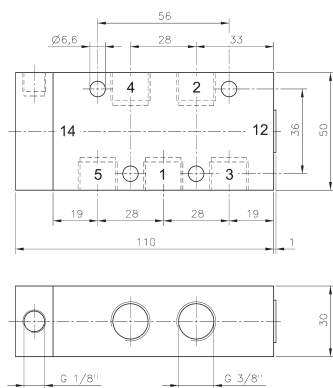


P 510 801/P 511 801

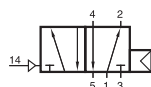
Type	Port size	Air flow	Operating press.	Actuating press.	Weight	
P 510 501	G 1/8"	650 l/min	2 - 10 bar	the same	0,16 kg	Ex
P 510 701	G 1/4"	1250 l/min	2 - 10 bar	the same	0,18 kg	Ex 316
P 510 801	G 1/4"	1450 l/min	1,5 - 10 bar	the same	0,38 kg	Ex
P 511 501	G 1/8"	650 l/min	1 - 10 bar	3 - 10 bar	0,16 kg	
P 511 701	G 1/4"	1250 l/min	1 - 10 bar	3 - 10 bar	0,18 kg	316
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

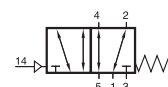
2.4.2.3
page 55



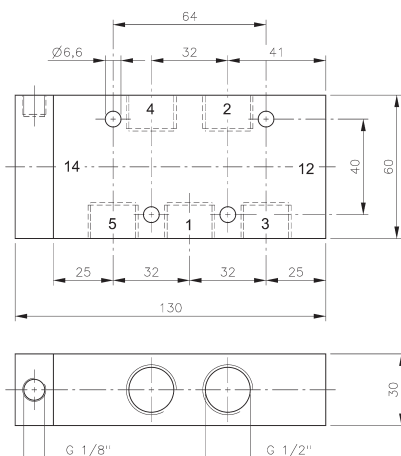
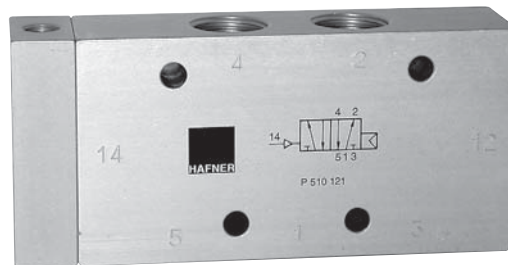
P 510 101/P 511 101



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**

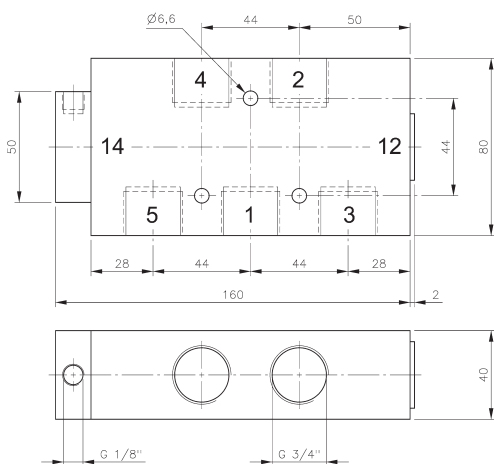
Pneumatically actuated 5/2-way spool valve.

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.

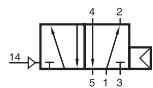


P 510 181/P 511 181

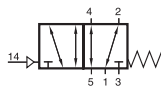
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
P 510 101	G 3/8"	2250 l/min	1,5 - 10 bar	the same	0,42 kg
P 510 121	G 1/2"	3000 l/min	1 - 10 bar	the same	0,59 kg
P 510 181	G 3/4"	6000 l/min	1 - 10 bar	the same	1,18 kg
P 511 101	G 3/8"	2250 l/min	1 - 10 bar	3 - 10 bar	0,42 kg
P 511 121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



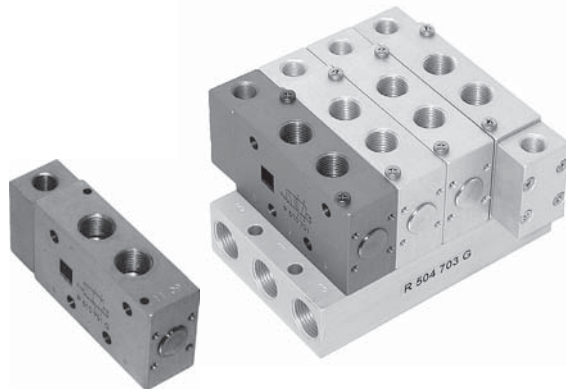
P 510 501 G/P 510 701 G/P 510 121 G P 511 501 G/P 511 701 G/P 511 121 G



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.

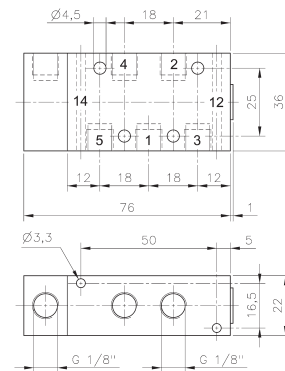
Type P 511 ___ with mechanical spring return.

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.

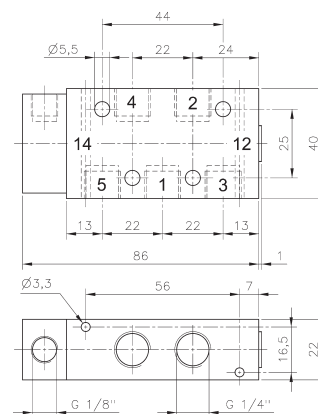
Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.6.2.2, manifolds for valves type 701 G are displayed on page 2.6.2.3, manifolds for valves type 121 G are displayed on page 2.6.2.5.

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.

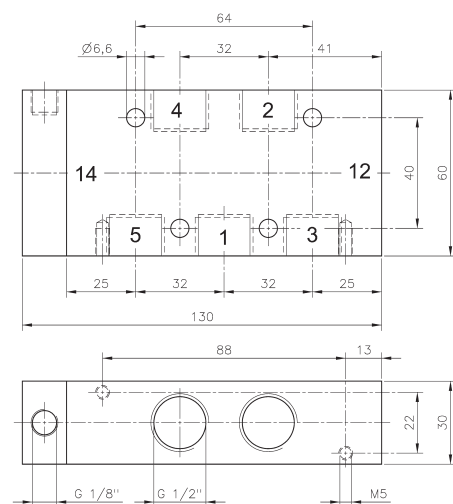
Exhaust can be throttled.



P 510 501 G/P 511 501 G

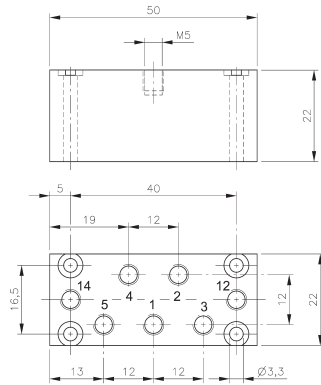
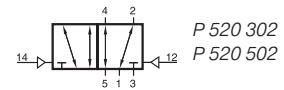


P 510 701 G/P 511 701 G
P 501 701 G NPT/P 511 701 G NPT

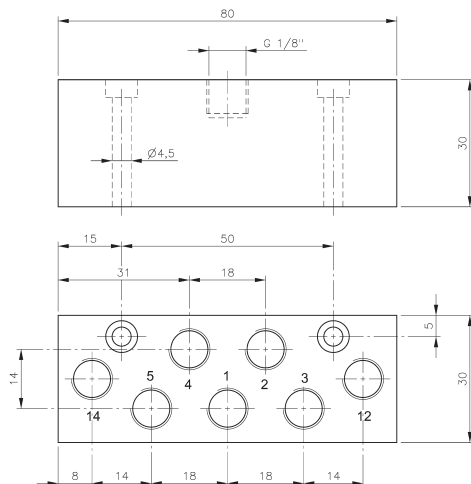


P 510 121 G/P 511 121 G

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.

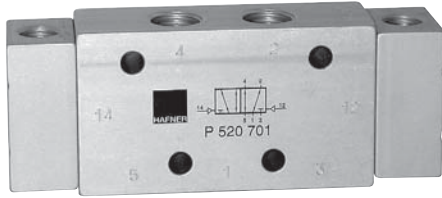
Position is kept until next pneumatic signal
is applied.

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



Pneumatically actuated 5/2-way spool valve.

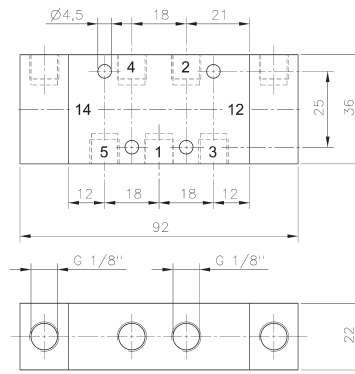
Type P 520 ___ double pilot

Type P 522 __ double pilot dominating at port 14

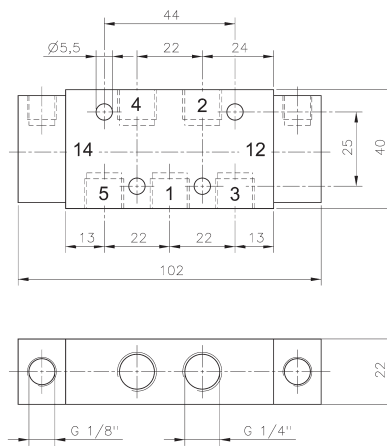
If signal is applied to 14 the valve is open from 1 to 4 and 2 to 3, 5 is closed.

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

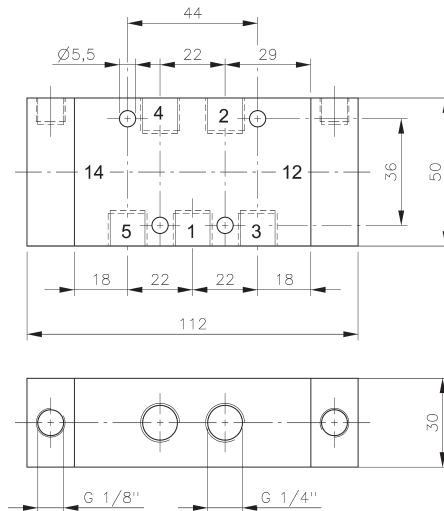
Exhaust can be throttled.



P 520 501/P 522 501

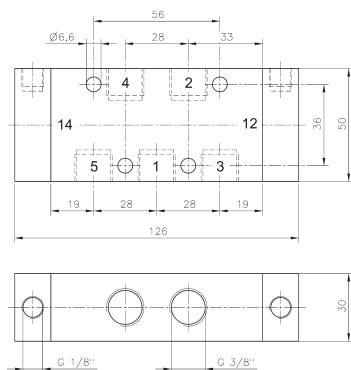
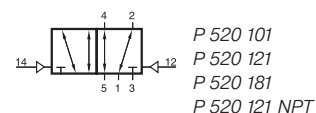


P 520 701/ P 522 701

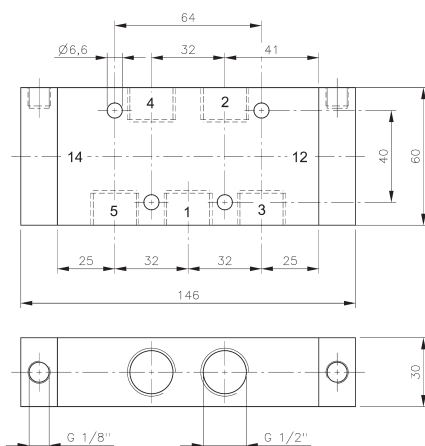


P 520 801

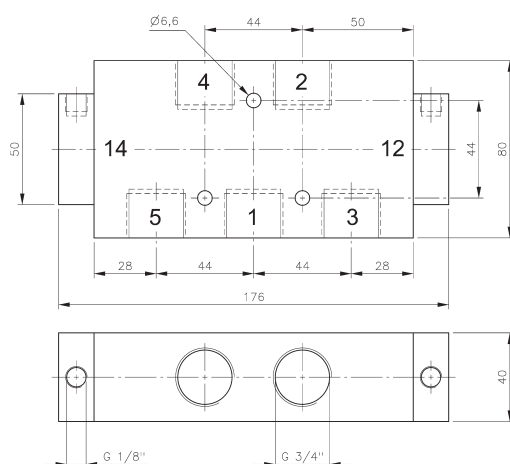
Type	Port size	Air flow	Operating press.	Actuating press.	Weight	
P 520 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg	
P 522 501	G 1/8"	650 l/min	1 - 10 bar	2,5 - 10 bar	0,20 kg	
P 520 701	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22 kg	 
P 522 701	G 1/4"	1250 l/min	1 - 10 bar	2,5 - 10 bar	0,22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



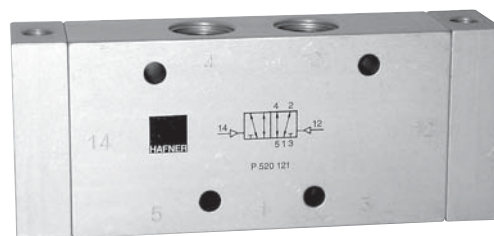
P 520 101



P 520 121/P 520 121 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.

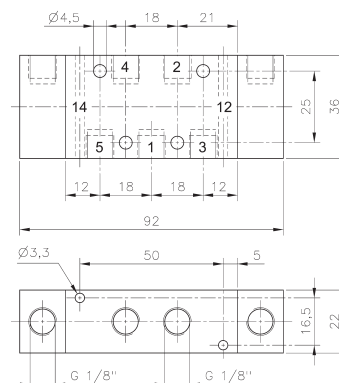
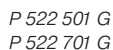
Position is kept until next pneumatic signal is applied.

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 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.

Valves can either be used in-line or on a manifold plate. Manifolds for valves type 501 G are displayed on page 2.6.2.2, manifolds for valves type 701 G are displayed on page 2.6.2.3, manifolds for valves type 121 G are displayed on page 2.6.2.5.

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.

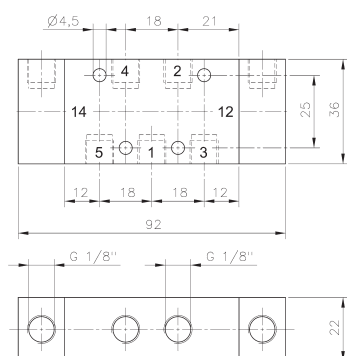
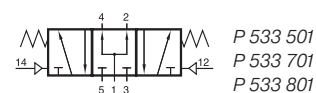
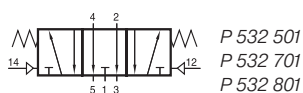
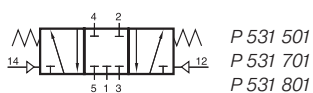
Exhaust can be throttled.



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



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	



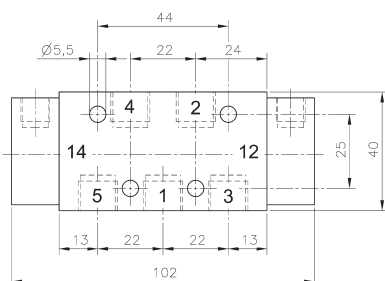
P 53_ 501

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

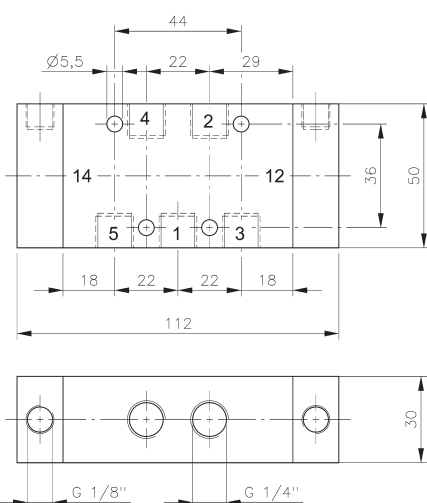
Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurised

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

Exhaust can be throttled.



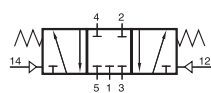
P 53_ 701



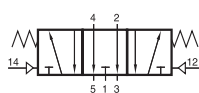
P 53_ 801

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 

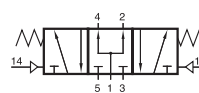
P 53_ 101/P 53_ 121/P 53_ 181



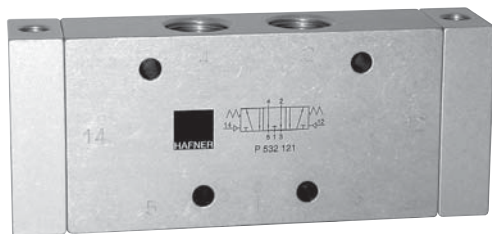
P 531 101
P 531 121
P 531 181
P 531 121 NPT



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

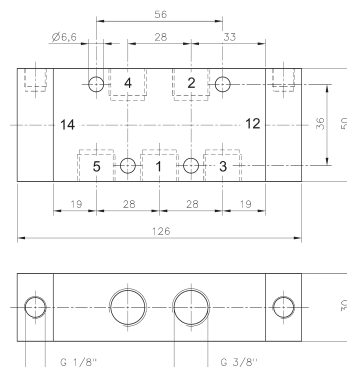


Pneumatically actuated 5/3-way spool valve with spring return to middle position.

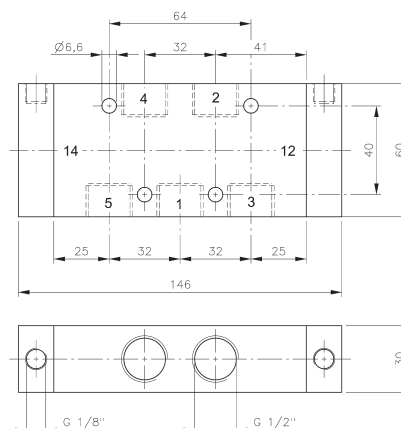
Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurised

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

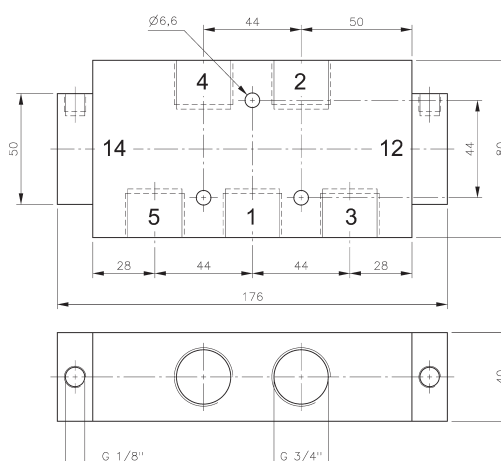
Exhaust can be throttled.



P 53_ 101

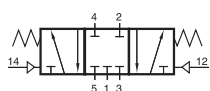


P 53_ 121/P 53_ 121 NPT

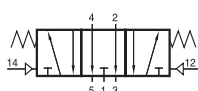


P 53_ 181

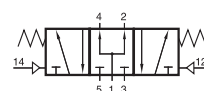
Type	Port size	Air flow	Operating press.	Actuating force	Weight
P 53_ 101	G 3/8"	2250 l/min	1 - 10 bar	3 - 10 bar	0,49 kg
P 53_ 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,69 kg
P 53_ 181	G 3/4"	6000 l/min	1 - 10 bar	3 - 10 bar	1,22 kg
P 53_ 121 NPT	1/2" NPT	3000 l/min	1 - 10 bar	3 - 10 bar	0,69 kg



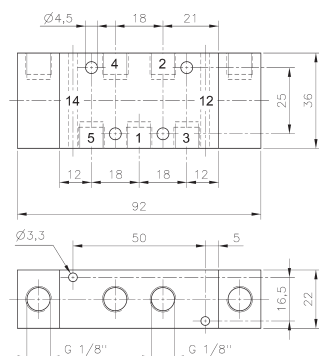
P 531 501 G
P 531 701 G
P 531 121 G
P 531 701 G NPT



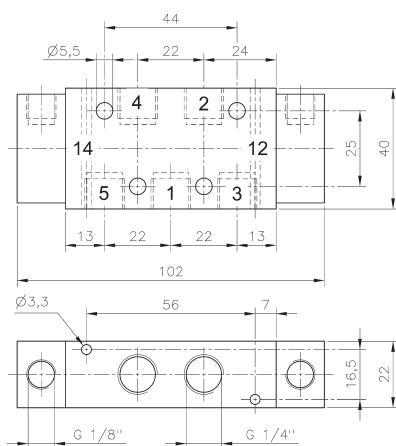
P 532 501 G
P 532 701 G
P 532 121 G
P 532 701 G NPT



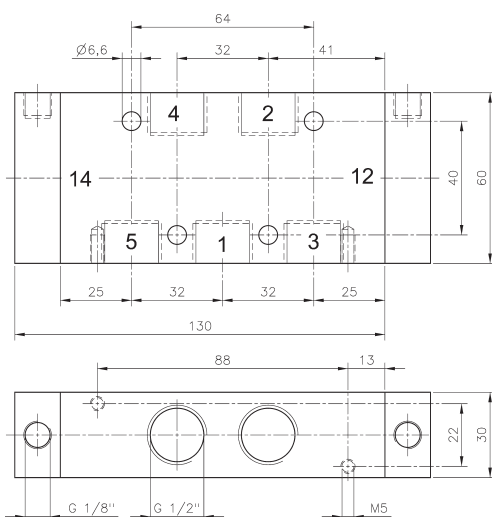
P 533 501 G
P 533 701 G
P 533 121 G
P 533 701 G NPT



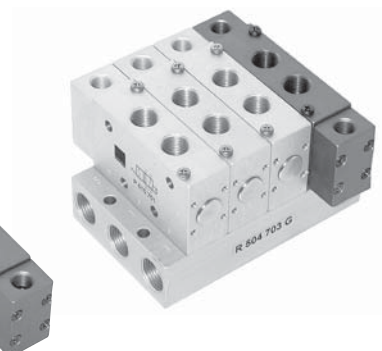
P 53_ 501 G



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



P 53_ 121 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 2.6.2.2, manifolds for valves type 701 G are displayed on page 2.6.2.3, manifolds for valves type 121 G are displayed on page 2.6.2.5.

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.

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

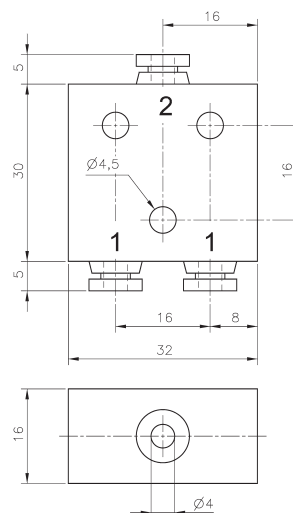
The AND-gate has two inputs 1 and one output 2.

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

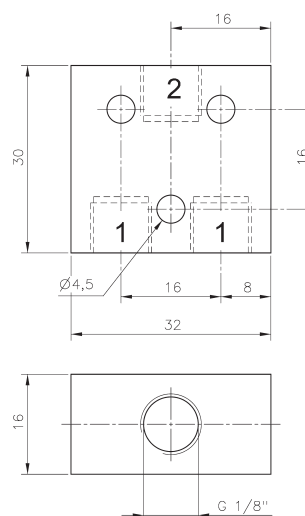
Function: Only when both inputs are pressurised output 2 is pressurised.

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.

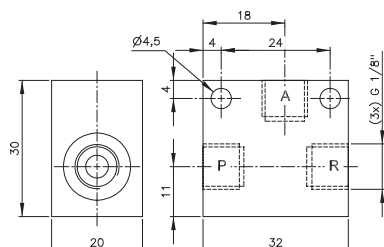
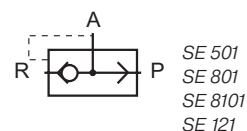


VA 341/ES 341



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

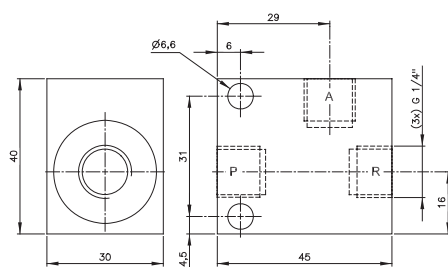


Quick-exhaust valve series which can also be used as non-return valve.

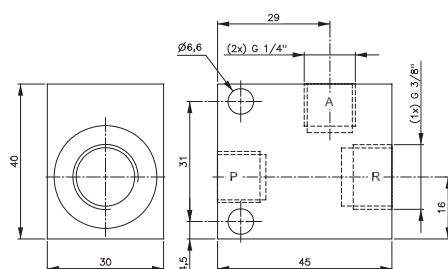
If used as a non-return valve please plug port R.
Open from P to A, closed from A to P.

Temperature range: -20° C to +80° C

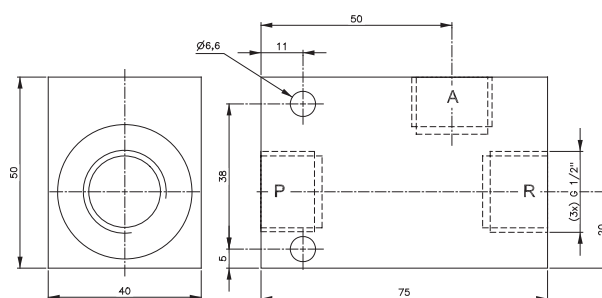
Stainless steel version as well as low temperature version available on request.



SE 801



SE 8101



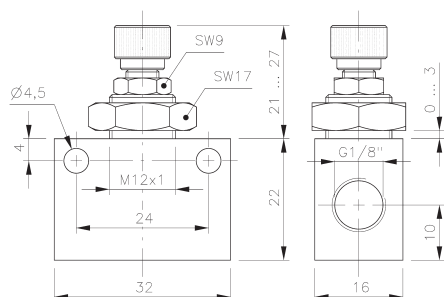
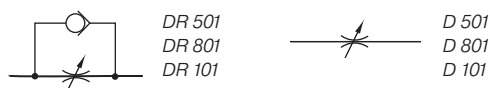
SE 121

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

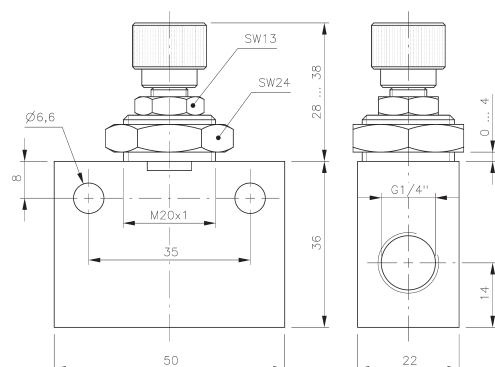
P 311 501 SR/P 411 701 SR
P 411 701 SR NPT

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

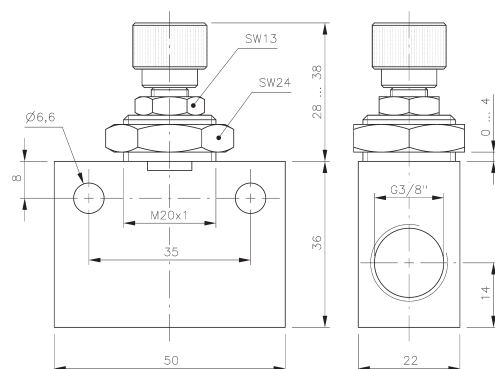
2.4.4.4
page 67



DR 501/D 501



DR 801/D 801



DR 101/D 101



Block form flow regulator.

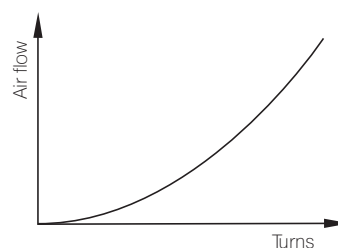
Type DR
uni-directional block form flow regulator.
Air streaming in the direction of the throttle can be regulated by turning the spindle. In the opposite direction air streams unthrottled.

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

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

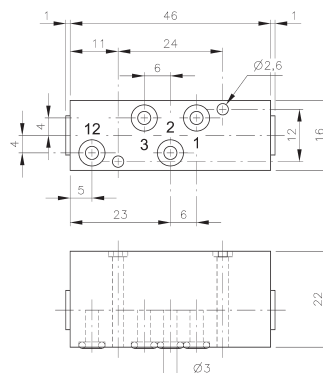
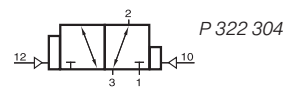
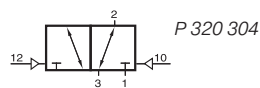
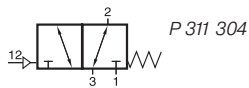
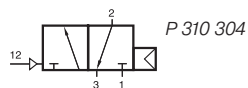
Adjustment can be locked.

Suitable for wall and panel mounting.
Nut is included.

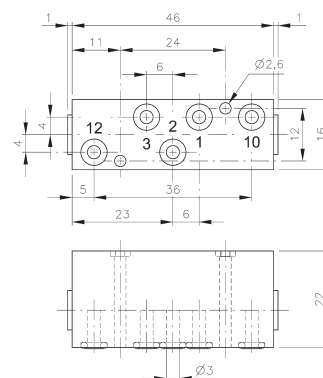


Type	Port size	Air flow	Airflow in opposite direction	Operating press.	Weight
D 501	G 1/8"	450 l/min	450 l/min	0,5 - 10 bar	0,04 kg
D 801	G 1/4"	1150 l/min	1150 l/min	0,5 - 10 bar	0,13 kg
D 101	G 3/8"	1450 l/min	1450 l/min	0,5 - 10 bar	0,13 kg
DR 501	G 1/8"	450 l/min	450 l/min	2 - 10 bar	0,04 kg
DR 801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

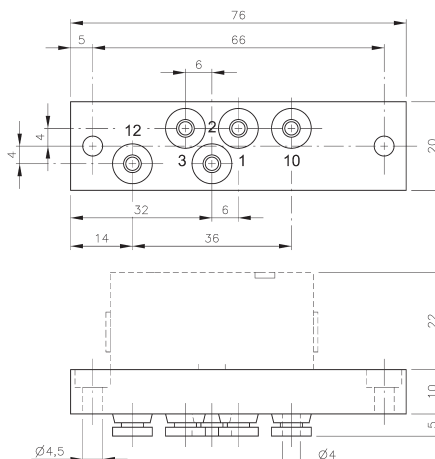
Pneumatically actuated 3/2-way spool valves.
To be assembled to plate RP 3 344.

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.

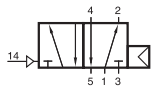


RP 3 344

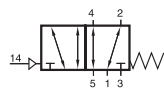
Type	Port size	Air flow	Operating press.	Actuating press	Weight
P 310 304	Ø 3 mm	280 l/min	2 - 10 bar	the same	0,04 kg
P 311 304	Ø 3 mm	280 l/min	2 - 10 bar	3 - 10 bar	0,04 kg
P 320 304	Ø 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,04 kg
P 322 304	Ø 3 mm	280 l/min	2 - 10 bar	2,5 - 10 bar	0,04 kg
RP 3 344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

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

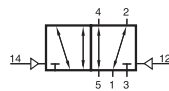
2.4.5.2
page 69



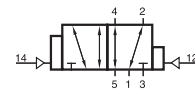
P 510 304



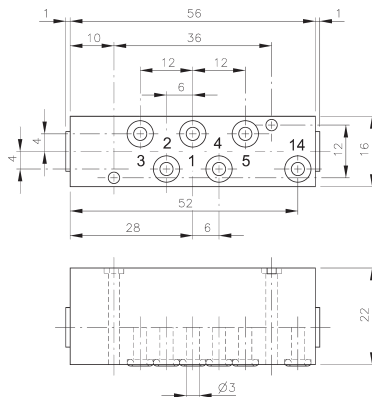
P 511 304



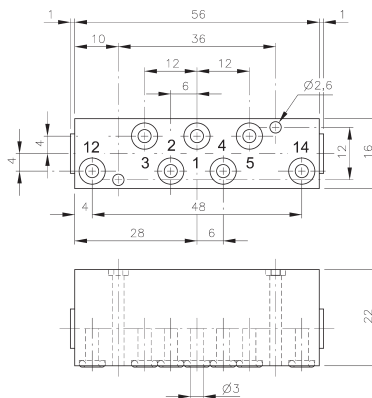
P 520 304



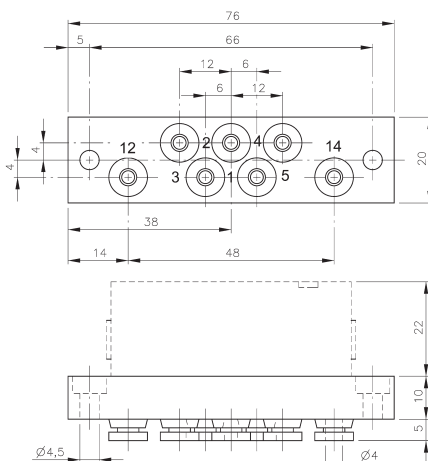
P 522 304



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.

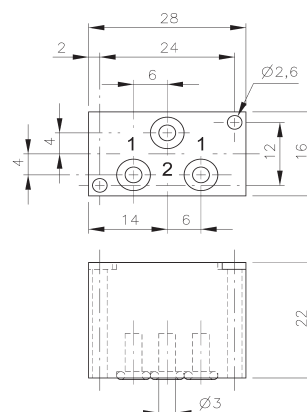
The dual-pressure valve is used when at least 2 signals are required before a signal is passed on.

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

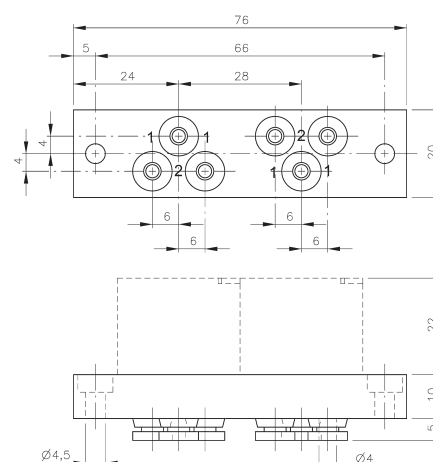
If two different pressures are applied the lower pressure is fed to output 2.

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.

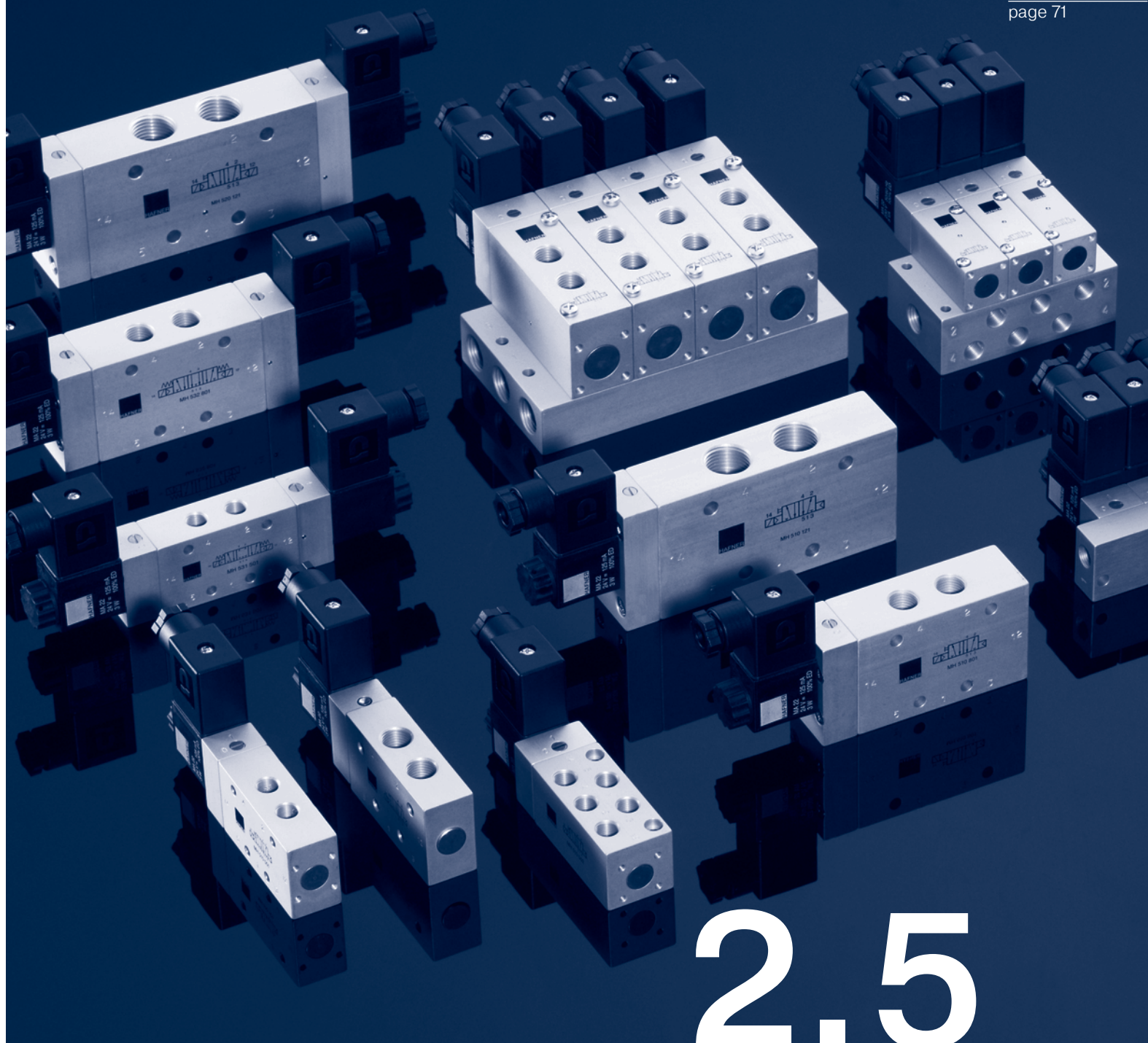


VA 304/ES 304



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 2.9.

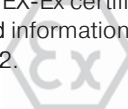


316 Selected models are available in stainless steel.
For detailed information refer to chapter 2.10.

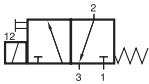


Selected models can be equipped for high temperature environments up to 80 °C, DC only!

Selected models are available for explosion hazardous environment. They are ATEX-Ex certified.
For detailed information refer to chapter 2.12.



MD 311 010



MD 311 010



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

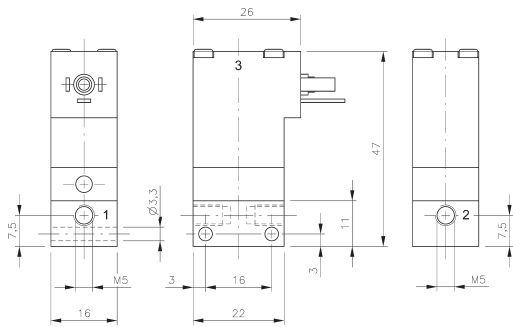
By closing port 3 valve can be converted into a 2/2-way valve.

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

For details about solenoid system, please refer to
page 2. 11. 1.

Valves are generally equipped with manual
override to push.

Valves can be used for technical vacuum too.

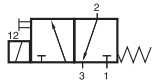


MD 311 010

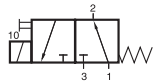
Type	Funktion	Port size	Air flow	Operating press.	Power consumption	Weight
MD 311 010	n.c.	M5	30 l/min	-0,9 - 10 bar	1,8 W = / 3 VA ~	0,05 kg

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

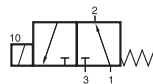
2.5.1.1.2
page 73



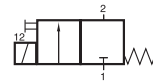
MH 311 012
MH 311 015



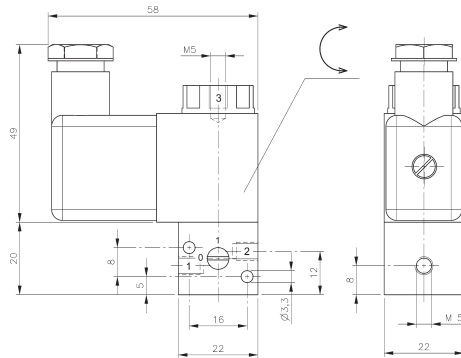
MOH 311 012
MOH 311 015



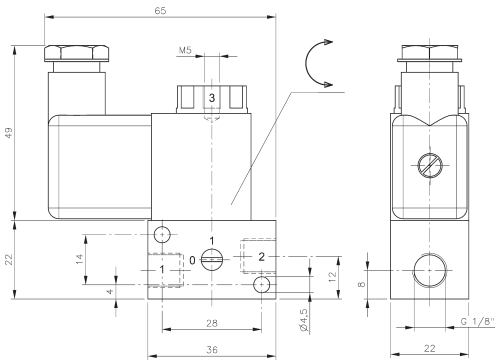
MX 311 012
MX 311 015



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:

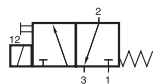
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves can be used for technical vacuum too.

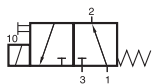
Type	Ways	Function	Port size			Air flow	Operating pressure	Power-consumption	Weight
			1	2	3				
MH 311 012	3/2	n.c.	M5	M5	M5	40 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,12 kg
MH 311 015	3/2	n.c.	G 1/8"	G 1/8"	M5	50 l/min	-0,9 - 10 bar	3 W = / 5 VA ~	0,14 kg
MOH 311 012	3/2	n.o.	M5	M5	M5	40 l/min	-0,9 -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



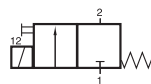
MH 311 305/MH 311 309/MOH 311 305 MOH 311 309/MH 211 305/MH 211 309



MH 311 305
MH 311 309



MOH 311 305
MOH 311 309



MH 211 305
MH 211 309



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

Type MH 311 _ _ _

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

Type MOH 311 _ _ _

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

Type MH 211 _ _ _

2/2-way valve n.c.

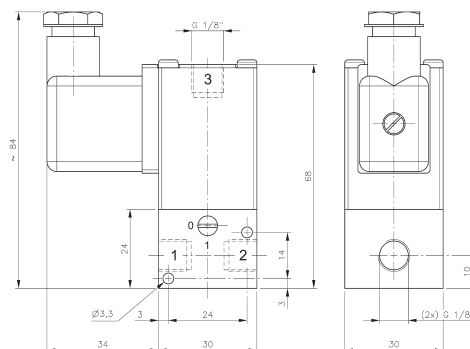
Please notice:

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

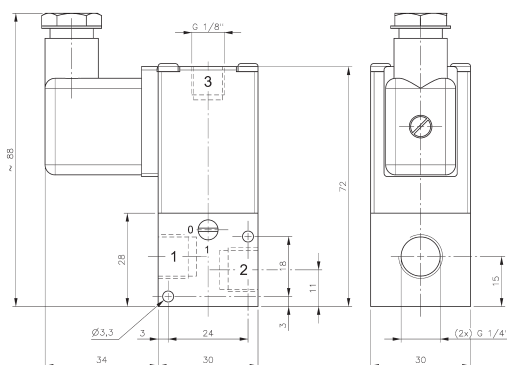
Available with solenoid operators:
230VAC, 24DC.

Valves are generally equipped with manual override.

Connector Industry B (22 mm).

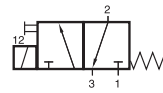


MH 311 305/MOH 311 305/MH 211 305

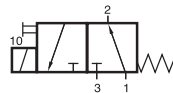


MH 311 309/MOH 311 309/MH 211 309

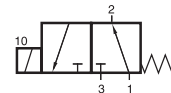
Type	Ways	Function	Port size			Air flow	Operating Power		Weight
			1	2	3		pressure	consumption	
MH 311 305	3/2	n.c.	G 1/8"	G 1/8"	G 1/8"	300 l/min	0 - 7 bar	7,5 W = /8,5 VA	~ 0,17 kg
MH 311 309	3/2	n.c.	G 1/4"	G 1/4"	G 1/8"	300 l/min	0 - 7 bar	7,5 W = /8,5 VA	~ 0,18 kg
MOH 311 305	3/2	n.o.	G 1/8"	G 1/8"	G 1/8"	300 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"	300 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"		300 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"		300 l/min	0 - 7 bar	7,5 W = /8,5 VA	~ 0,18 kg



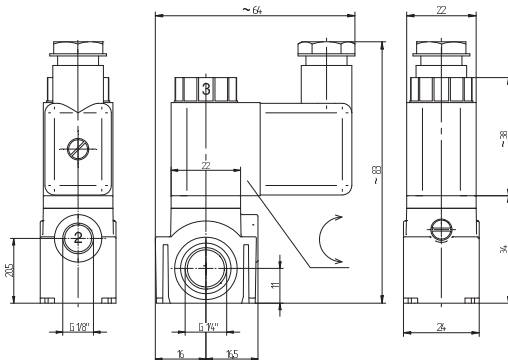
MH 311 105



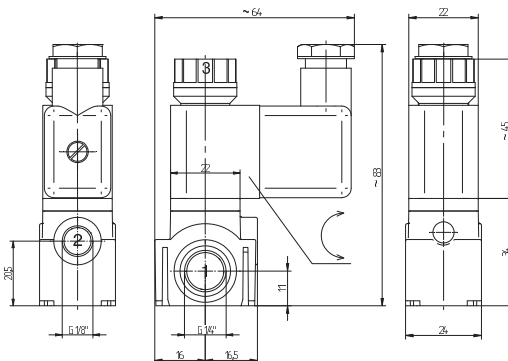
MOH 311 105



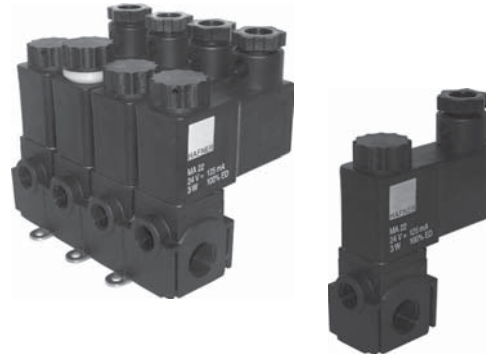
MX 311 105



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:

VBM 105

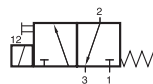
Set to connect two valves consisting of two brass clamping brackets and an NBR O-ring.

3015 – 1/4

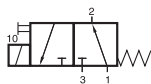
Plug to close one side of the two supply ports in the valve, brass, nickel plated G1/4" with O-ring seal.

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

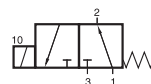
MH 311 014/MOH 311 014 MH 311 019/MX 311 019



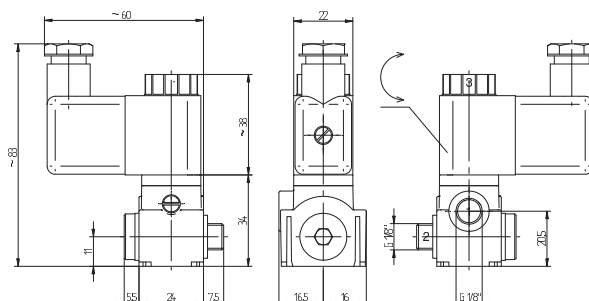
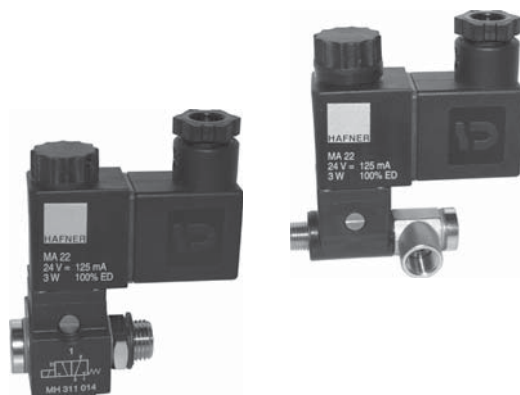
MH 311 014
MH 311 019



MOH 311 014



MX 311 019



MH 311 014/MOH 311 014

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

Orifice size 1.3 mm, max. pressure 7 bar.

Type MH 311 014:

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

Type MH 311 019 __:

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

Type MOH 311 014:

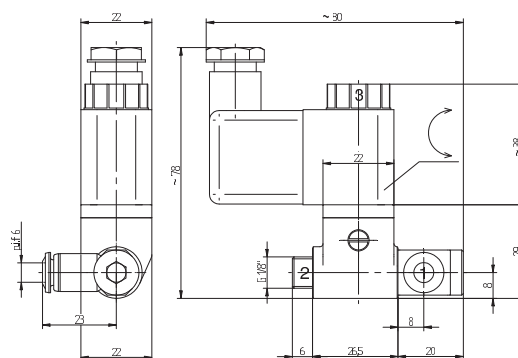
Normally open, port 1 at the top of the operator system, port 2 as banjo screw, exhaust at the body, manual override included, delivery with flat nut. Drawing displays MH-valve, for MOH ports 1 and 3 swapped.

Type MX 311 019 __:

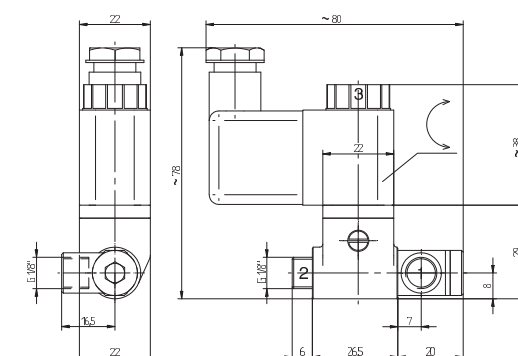
Normally open, port 1 swivel either 1/8" or 6 mm pif, port 2 as banjo screw, exhaust through operator system no manual override. Operator system is 8 mm longer than in drawing.

Available with solenoid operators:

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

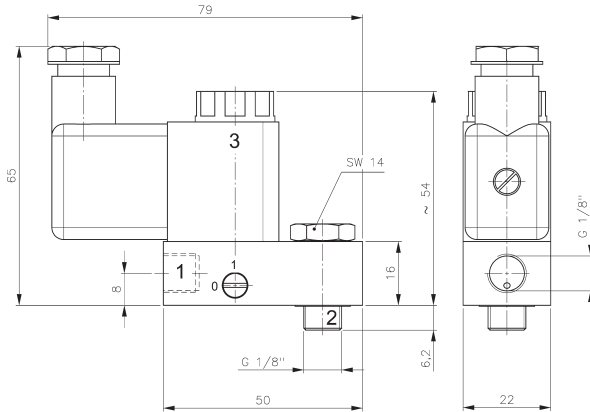
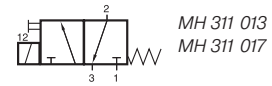


MH 311 019 6/MX 311 109 6

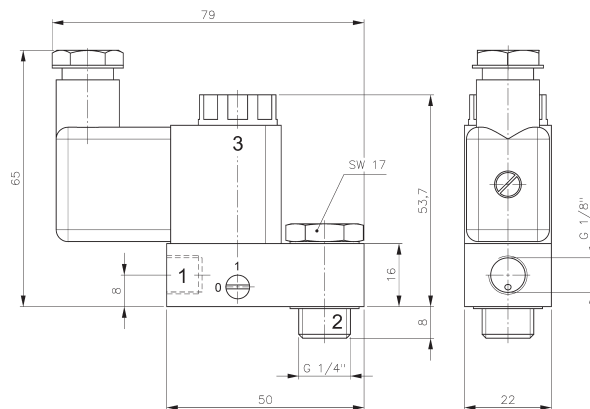


MH 311 019 1/8 / MX 311 019 1/8

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



MH 311 013



MH 311 017



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

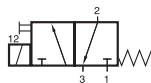
When assembling this type of valve to a spring-return actuator, please take into consideration that there is no exhaust air recirculation ("purge").

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.

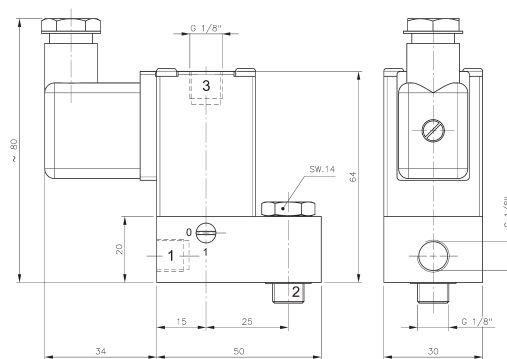
Port 2 is a banjo that can be screwed directly into the actuator that is to be controlled.

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

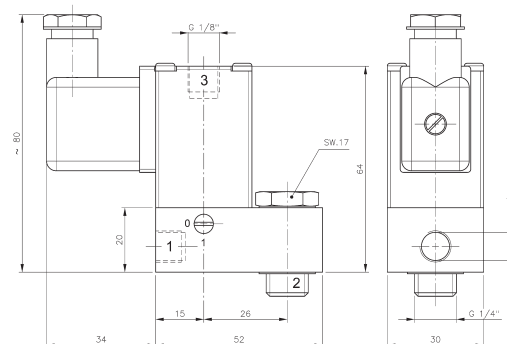
Available with solenoid operators:
230VAC, 24DC.

Valves are generally equipped with manual override.

Connector Industry B (22 mm)



MH 311 313



MH 311 317

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

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

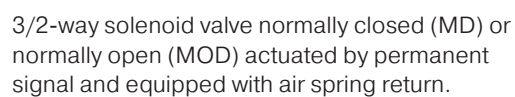
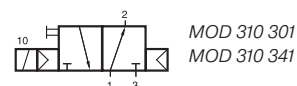
Instead of the standard banjo-screw, the valve can
also be equipped with a flow-regulating banjo-
screw.

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"	300 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"	300 l/min	0 - 7 bar	7,5 W = /8,5 VA ~	0,22 kg

2.5.1.1.8
page 79

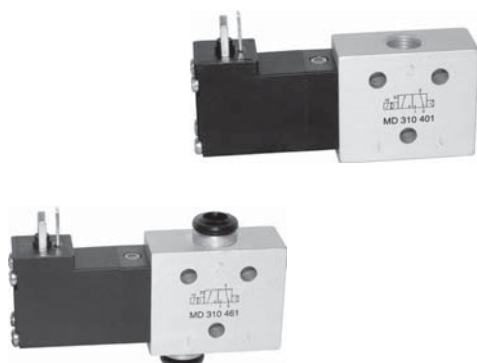
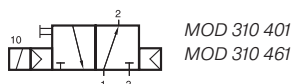
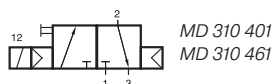


Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.11.1.

Valves are generally equipped with manual override to push.

HAFNER

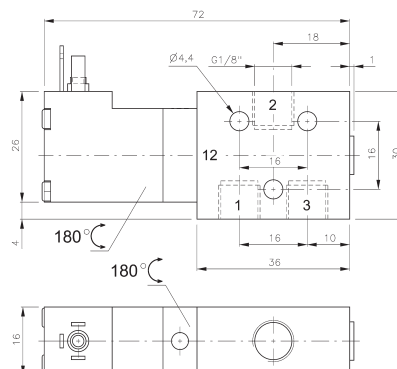
MD 310 401/MD 310 461 MOD 310 401/MOD 310 461



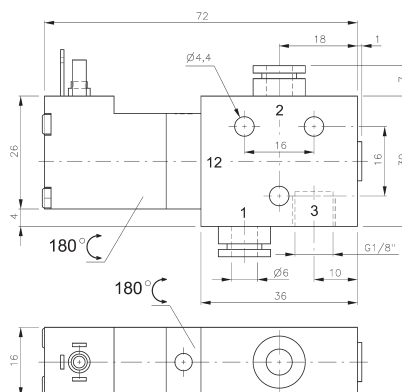
3/2-way solenoid valve normally closed (MD) or normally open (MOD) actuated by permanent signal and equipped with air spring return.

Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.11.1.

Valves are generally equipped with manual
override to push.



MD 310 401/MOD 310 401

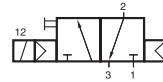


MD 310 461/MOD 310 461

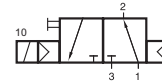
Type	Function	Port size 1 and 2	Air flow	Operating pressure	Power consumption	Weight
MD 310 401	n.c.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg
MD 310 461	n.c.	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,10 kg
MOD 310 401	n.o.	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,09 kg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

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

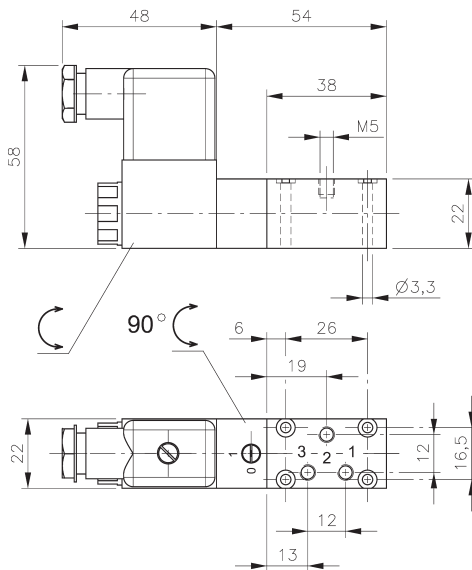
2.5.1.1.10
page 81



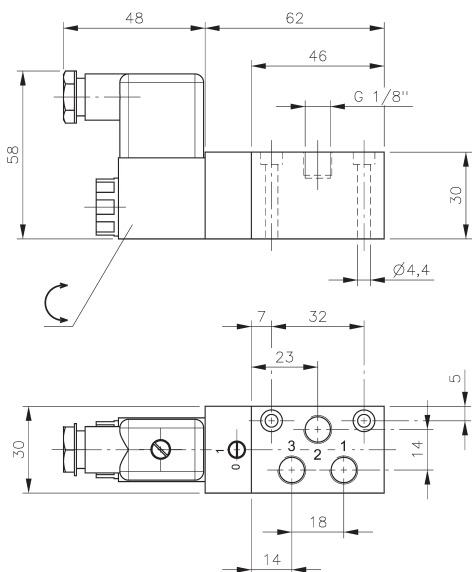
MH 310 302
MH 310 502



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.

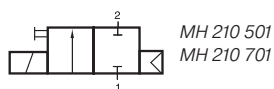
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

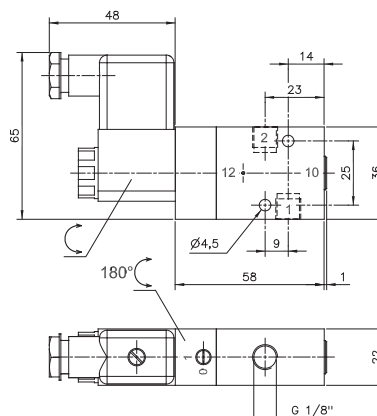


2/2-way solenoid valve, normally closed, actuated by permanent signal and equipped with air spring return.

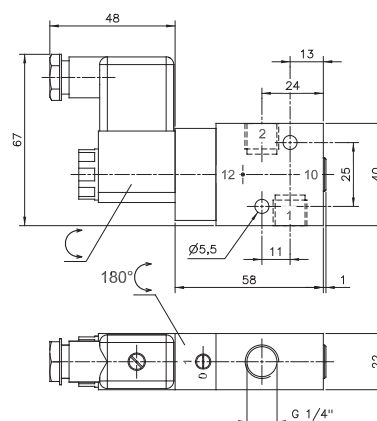
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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	Ex
MH 210 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg	Ex

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

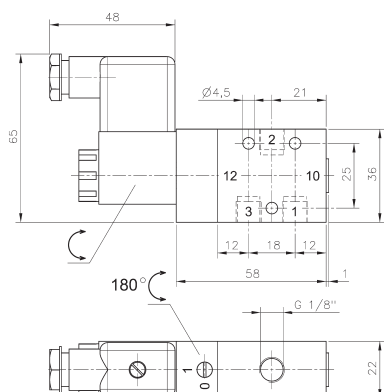
2.5.1.1.12
page 83

MH 310 501
MH 310 701
MH 310 801

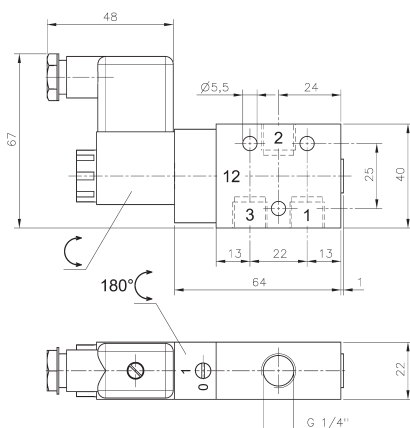
MOH 310 501
MOH 310 701
MOH 310 801

MEH 311 501
MEH 311 701
MEH 311 801

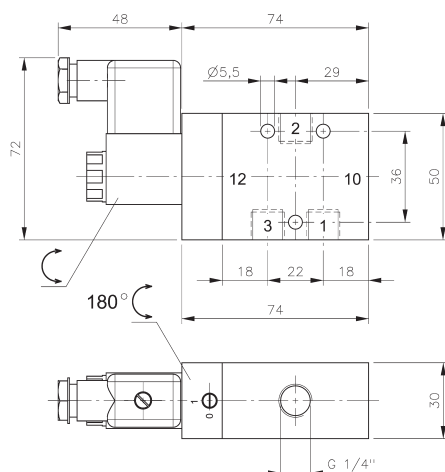
MEOH 311 501
MEOH 311 701
MEOH 311 801



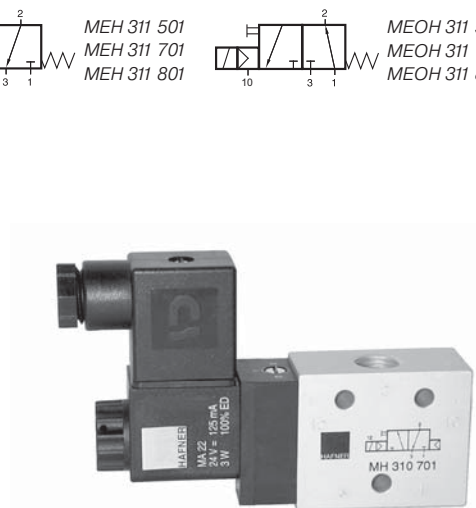
MH 310 501/MOH 310 501



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=.

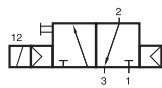
Valves are generally equipped with manual override.
If requested without manual override please order
M 310 ____ / MO 310 ____

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.
Version for vacuum on request.

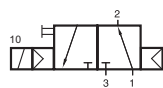
Please notice:
Do not close port 3 to convert into a 2-way valve.

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
MH 310 701	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg MK
MH 310 801	n.c.	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,39 kg
MOH 310 501	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MOH 310 701	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg MK
MOH 310 801	n.o.	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,39 kg

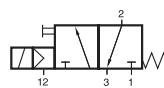
MH 310 101/MH 310 121/MH 310 181 MOH 310 101/MOH 310 121/MOH 310 181



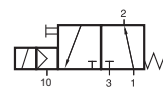
MH 310 101
MH 310 121
MH 310 181
MH 310 121 NPT



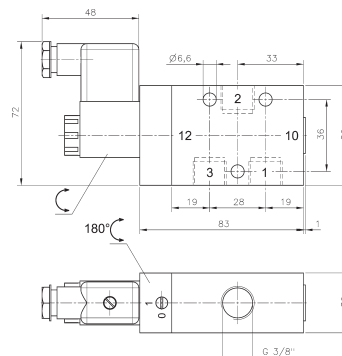
MOH 310 101
MOH 310 121
MOH 310 181
MOH 310 121 NPT



MEH 311 101
MEH 311 121
MEH 311 181



MEOH 311 101
MEOH 311 121
MEOH 311 181



MH 310 101/MOH 310 101

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

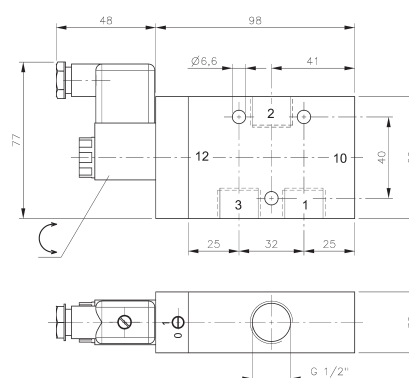
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

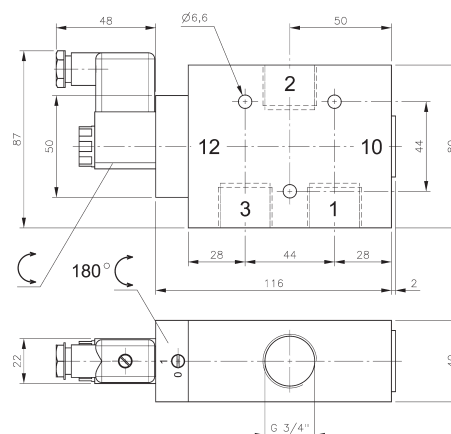
Valves are also available with external pilot feed.
Type: MEH 311 ___ (n.c.) or MEOH 311 ___ (n.o.).
Port 12: G 1/8".

Minimum actuation pressure: 3 bar.
Version for vacuum on request.

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



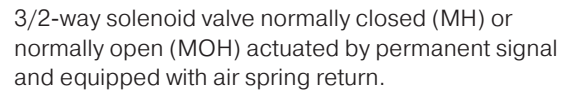
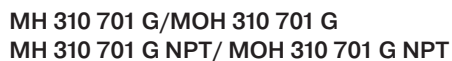
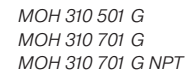
MH 310 121/MOH 310 121
MH 310 121 NPT/MOH 310 121 NPT



MH 310 181/MOH 310 181

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

2.5.1.1.14
page 85



Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds for valves type 501 G are displayed on page 2.6.1.4, manifolds for valves type 701 G are displayed on page 2.6.1.5.

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

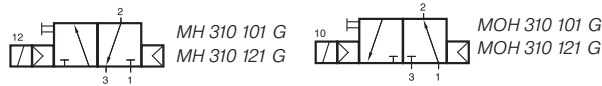
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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 for valves type 101 G are displayed on page 2.6.1.4, manifolds for valves type 121 G are displayed on page 2.6.1.5.

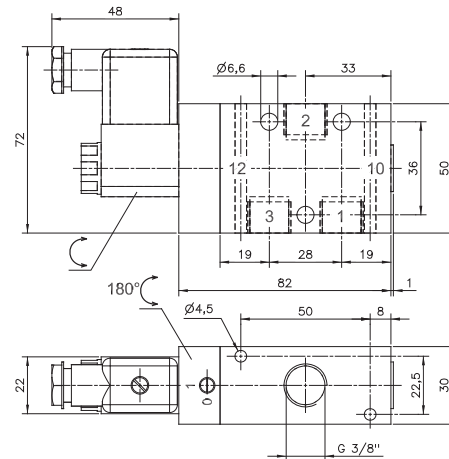
Normally open and normally closed products can be mixed on one plate.

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

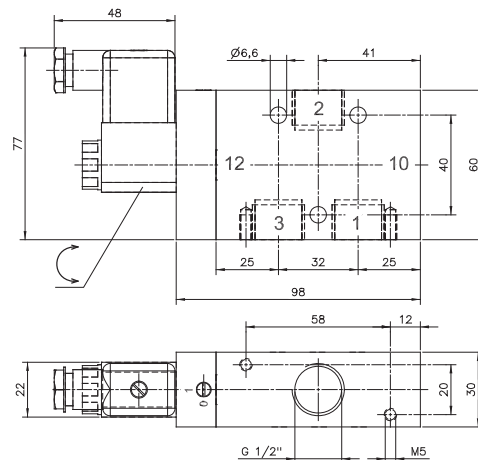
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

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



MH 310 101 G/MOH 310 101 G

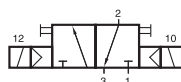


MH 310 121 G/MOH 310 121 G

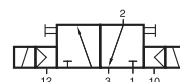
Type	Function	Port size	Air flow	Operating press.	Power consumption	Weight
MH 310 101 G	n.c.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MH 310 121 G	n.c.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,53 kg
MOH 310 101 G	n.o.	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,41 kg
MOH 310 121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

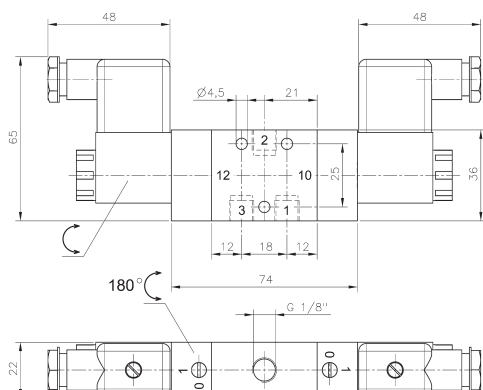
2.5.1.1.16
page 87



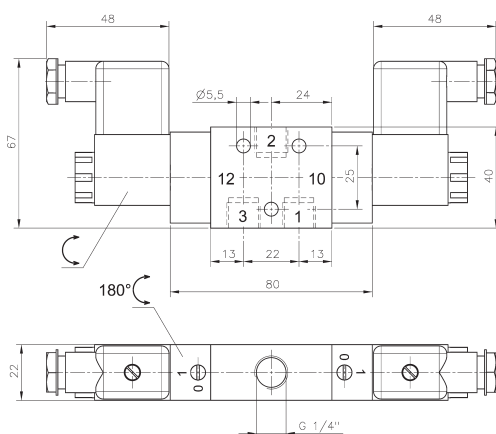
MH 320 501
MH 320 701
MH 320 801



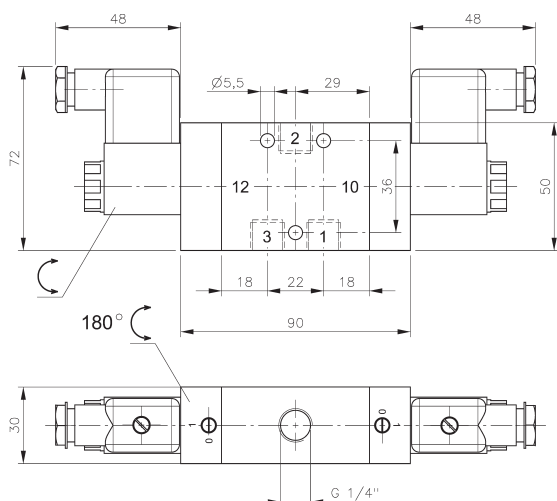
MEH 320 501
MEH 320 701
MEH 320 801



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=.

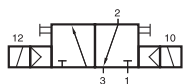
Valves are generally equipped with manual override. If requested without manual override please order type no. M 320 ____.

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.

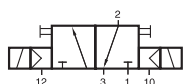
Version for vacuum on request.

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

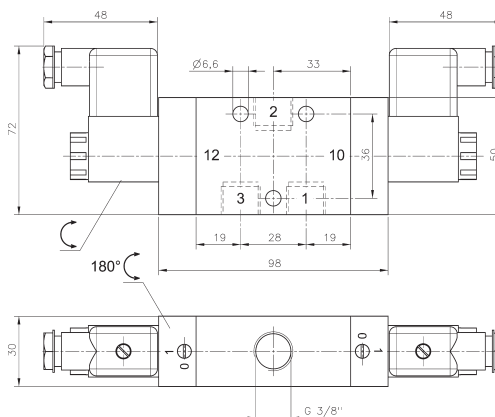
MH 320 101/MH 320 121/MH 320 181



MH 320 101
MH 320 121
MH 320 181



MEH 320 101
MEH 320 121
MEH 320 181



MH 320 101

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

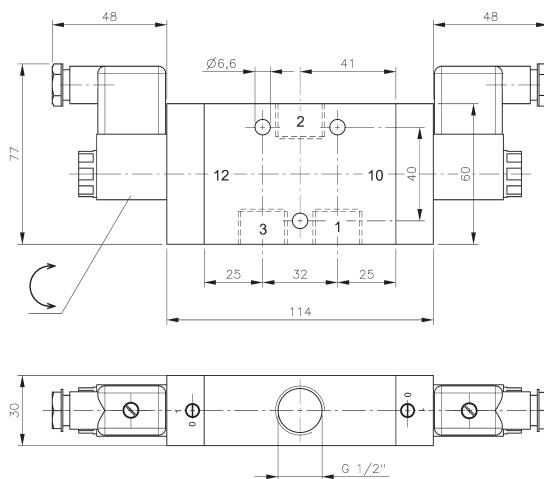
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

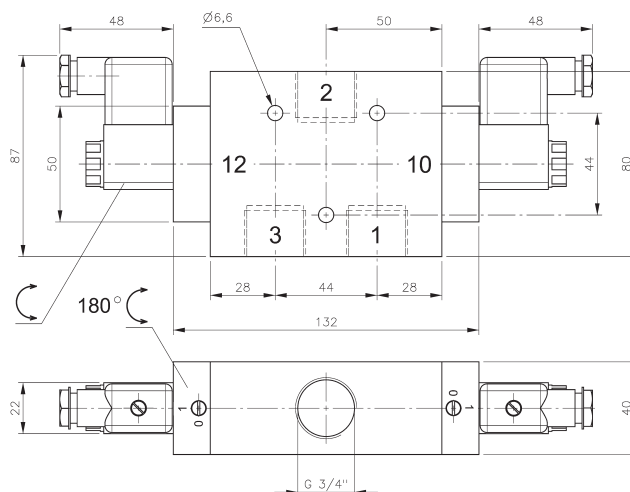
Valves are also available with external pilot feed.
Type: MEH 320 ____ .
Port 12: G 1/8\".

Minimum actuation pressure: 2,5 bar.

Version for vacuum on request.



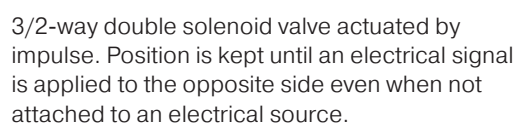
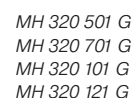
MH 320 121



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

2.5.1.1.18
page 89



Valves can either be used in-line or to be assembled onto a manifold plate. Manifolds for valves type 501 G and 101 G are displayed on page 2.6. 1.4, manifolds for valves type 701 G and 121 G are displayed on page 2.6. 1.5.

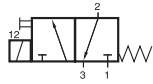
Please notice: Valves G1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

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 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	 MK
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



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 2.11.1.

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)

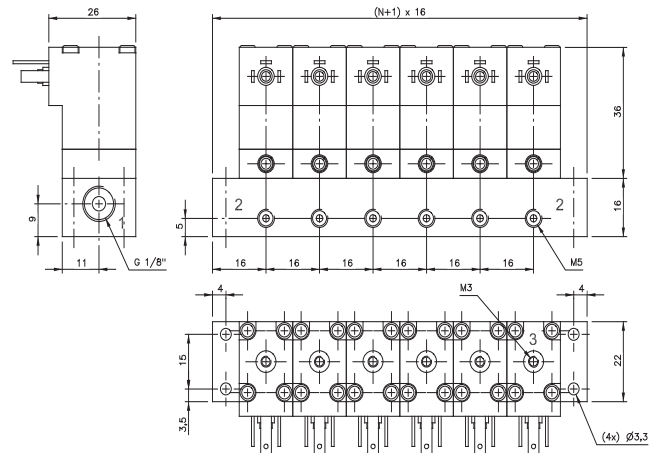
RD 3 144:

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

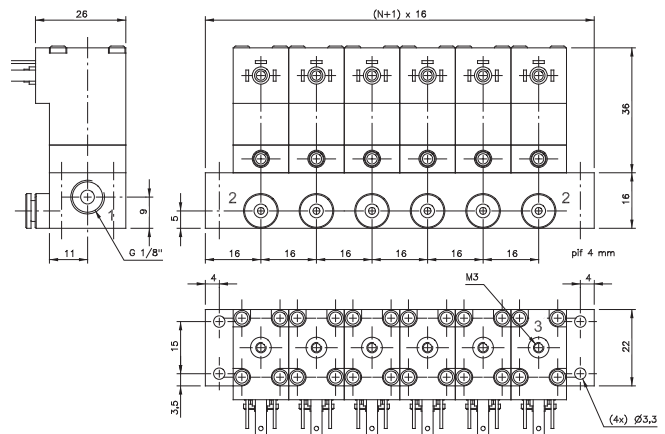
Plates are available with 2, 3, 4, 5, 6, 8, 10 and 12 positions, others on request.

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

Versions with common electrical connection (terminals) are displayed on page 2.7.2.1



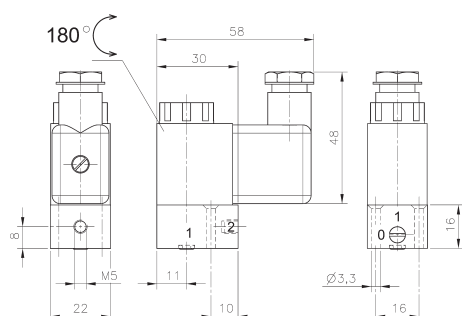
MD 311 104/RD 3__ 104



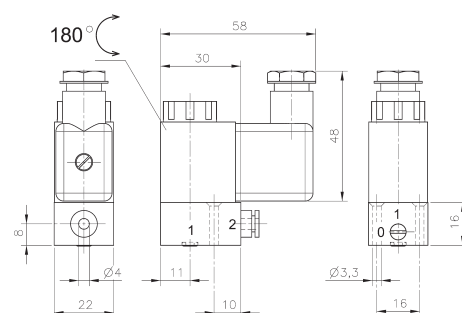
MD 311 104/RD 3__144

Valves can be used for technical vacuum too.

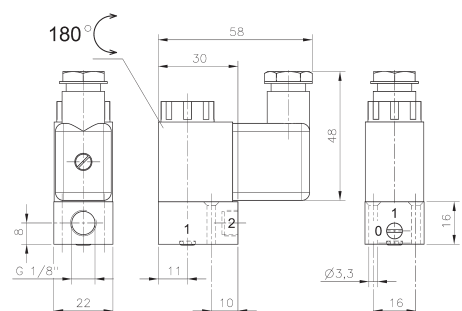
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MD 311 104	form C, 8 mm pin	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,06 kg
MD 311 104 L	flying leads	30 l/min	-0,9 - 10 bar	1,8 W = / 3,0 VA ~	0,07 kg



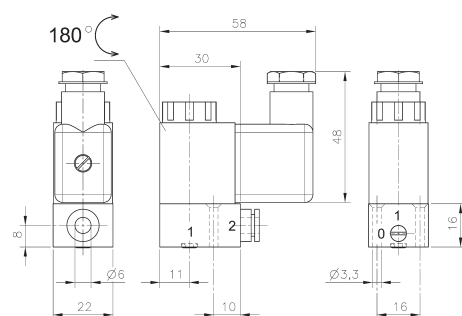
MH 312



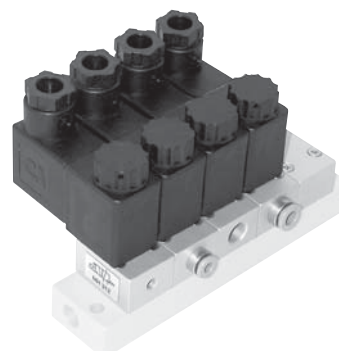
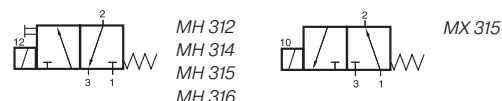
MH 314



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 2.6.1.1.

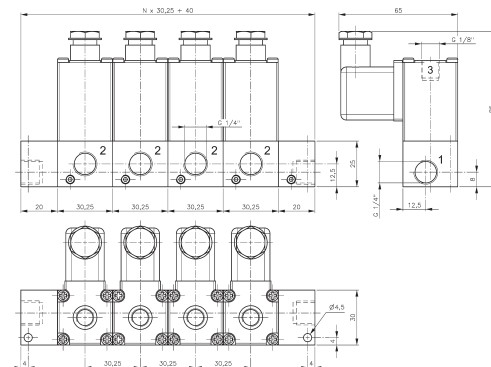
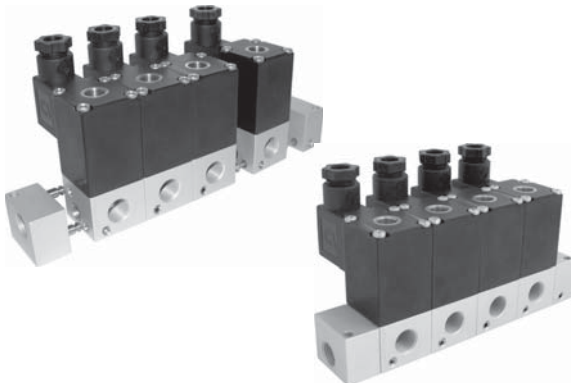
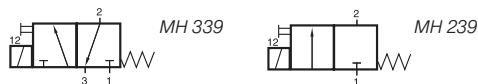
Blanking plates are also available: Type no. BP 3.

Mounting screws and seals are included.

Valves can be used for technical vacuum too.

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

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



Modular system MH 339/MH 239

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

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

Valves:

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

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

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

Available with solenoid operators:

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

Connector Industry B (22 mm).

Valves are generally equipped with manual override.

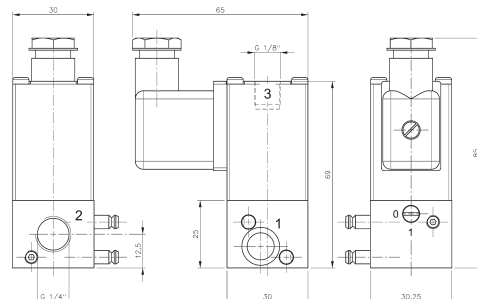
The system consists of:

End-plate right type R 33 R

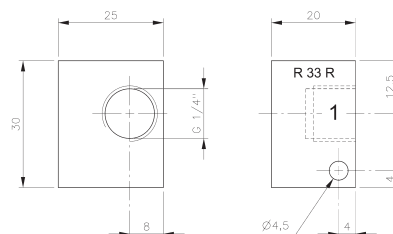
End-plate left type R 33 L

Individual valve 3/2-way type MH 339

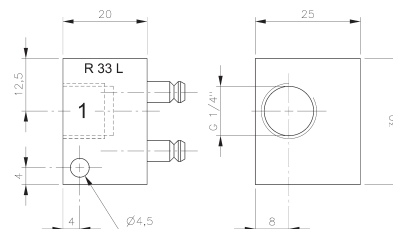
Individual valve 2/2-way type MH 229



Individual valve MH 339/MH 239



End-plate right R 33 R



End-plate left R 33 L

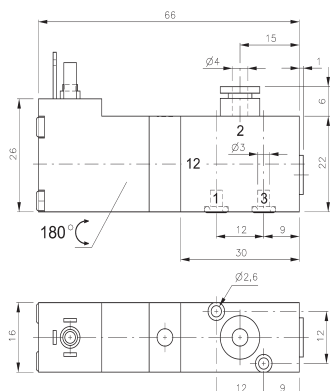
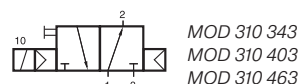
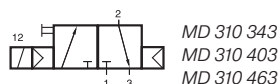
The end-plates can be equipped with DIN-rail mounting clips. For details, please refer to page 2.6.3.

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

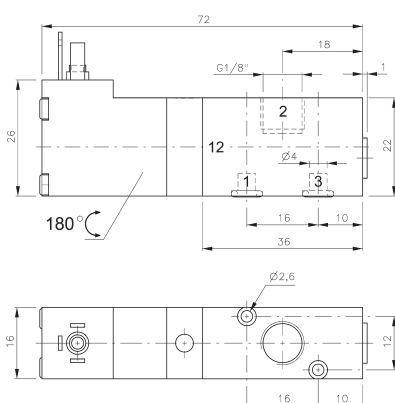
Type	Ways Function	Port size			Air flow	Operating Power		Weight
		1	2	3		pressure	consumption	
MH 339 3/2	n.c.		G 1/4" G 1/8"		300 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,18 kg	
MH 239 2/2	n.c.		G 1/4"		300 l/min	0 - 7 bar	7,5 W = /8,5 VA ~ 0,18 kg	
R 33 R	end-plate right	G 1/4"						0,04 kg
R 33 L	end-plate 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

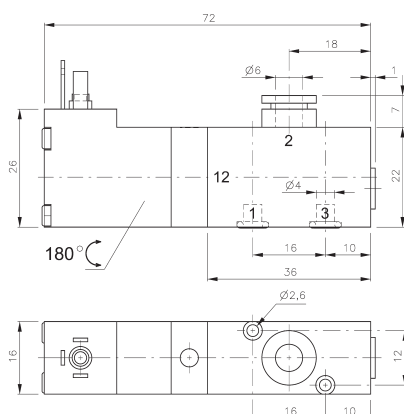
2.5.1.2.4
page 93



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 2.11.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.6.1.2.

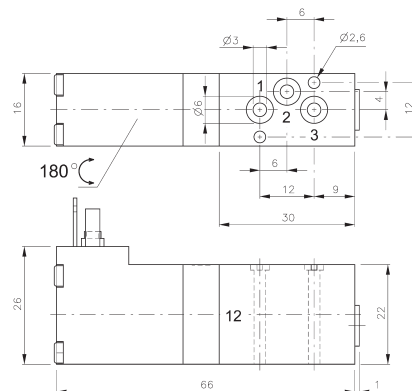
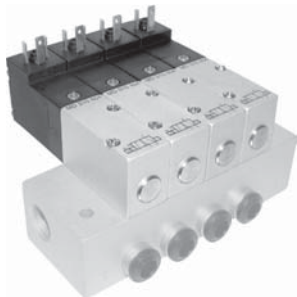
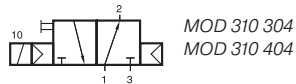
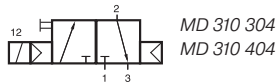
Valves normally open and normally closed can be mixed on one manifold plate!

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

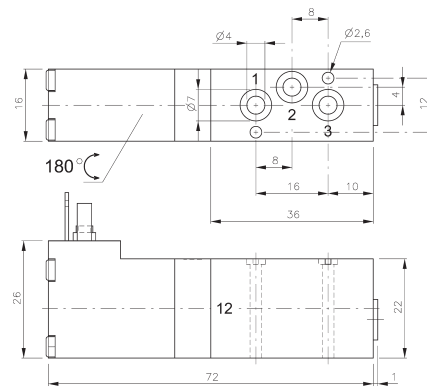
Mounting screws and seals are included.

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 2.11.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.6.1.3.

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.

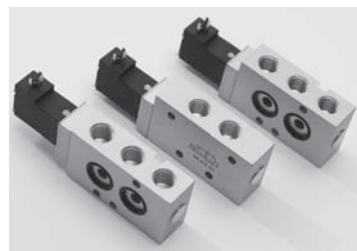
Mounting screws and seals are included.

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

2.5.1.3
page 95

MK

The MK- series is a combination of the 1.8 Watt / 3.0 VA solenoid-system MA 16 (detailed information on page 2.11.1) and the G 1/4" valves of the 700-series with a flow of 1.250 NL/min. The following valves are available:

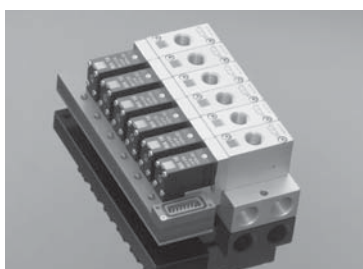


MK 310 701	3/2-way single solenoid, n.c.	in-line	description on page 2.5.1.1.12
MOK 310 701	3/2-way single solenoid, n.o.	in-line	page 2.5.1.1.12
MK 310 701 G	3/2-way single solenoid, n.c.	dual use	page 2.5.1.1.14
MOK 310 701 G	3/2-way single solenoid, n.o.	dual use	page 2.5.1.1.14
MK 320 701	3/2-way 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 2.8.

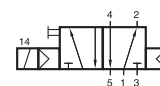
- ## Advantages
- **High flow**
 - **Compact design**
 - **Low power consumption**



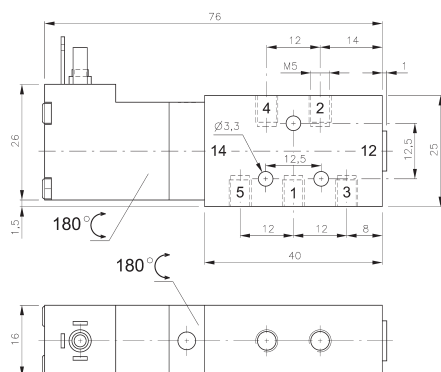
The valves are also used for the **22 mm terminals**, described in chapter 2.7.

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

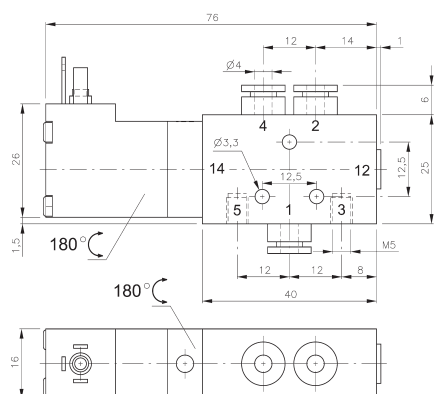
2.5.2.1.1
page 97



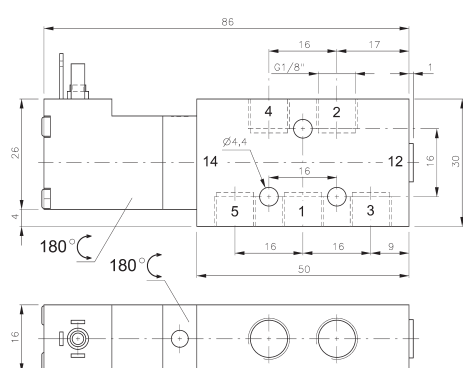
MD 510 301
MD 510 341
MD 510 401
MD 510 461



MD 510 301



MD 510 341



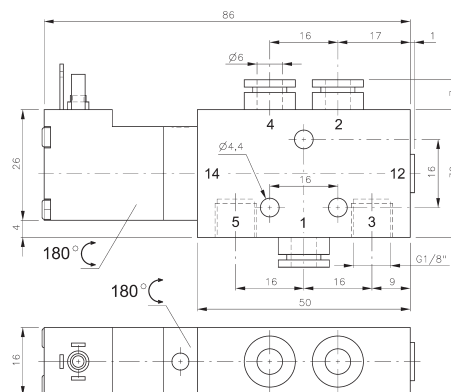
MD 510 401



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 2.11.1.

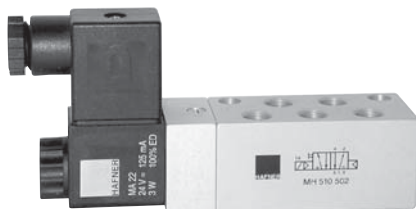
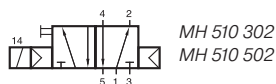
Valves are generally equipped with manual override
to push.



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

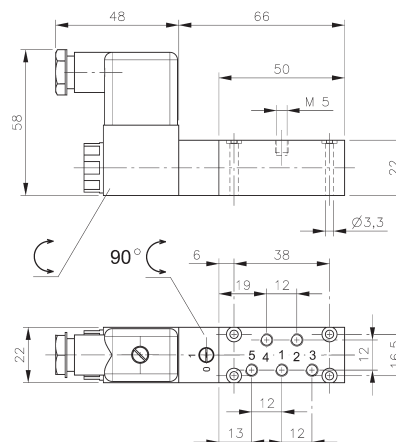
MH 510 302/MH 510 502



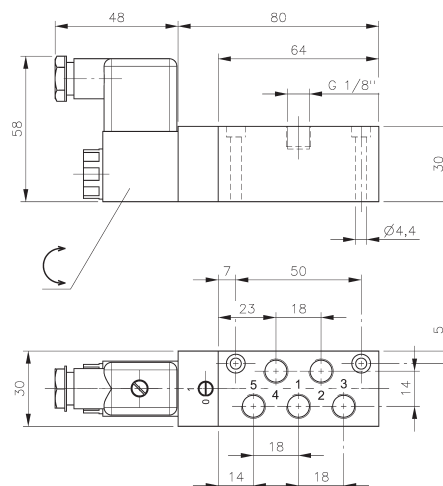
5/2-way solenoid valve actuated by permanent signal and equipped with air spring return.

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

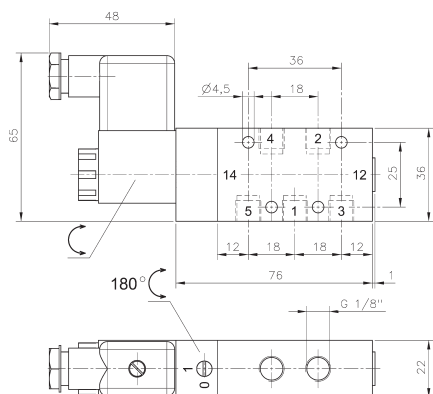


MH 510 502

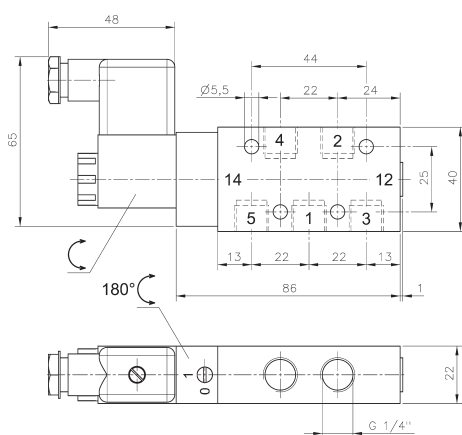
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 510 302	M5	180 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg
MH 510 502	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg

MH 510 501/MH 510 701/MH 510 801

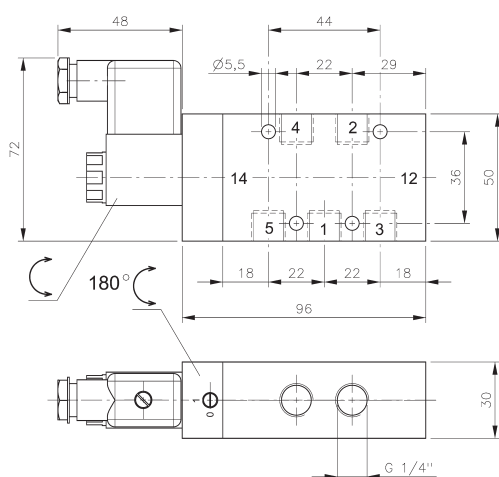
2.5.2.1.3
page 99



MH 510 501



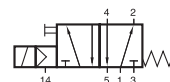
MH 510 701



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=.

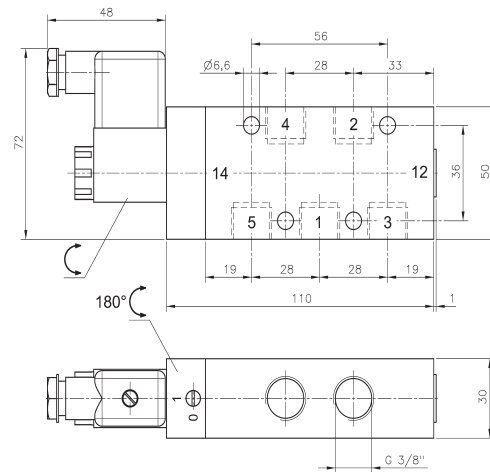
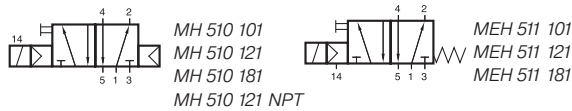
Valves are generally equipped with manual override. If requested without manual override please order M 510 ____.

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.

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 ____.

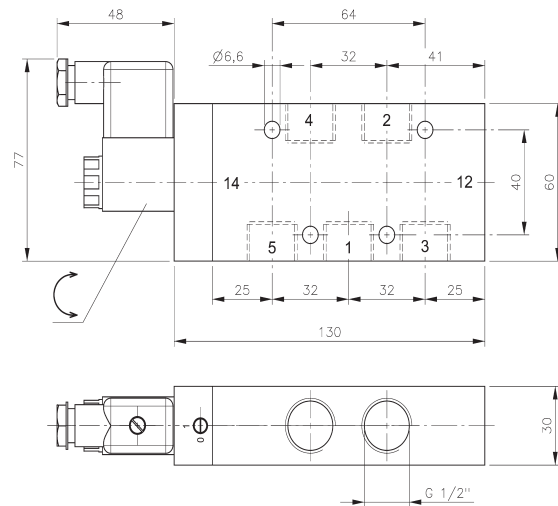
Valves are also available with external pilot feed.

Type: MEH 511 _____.

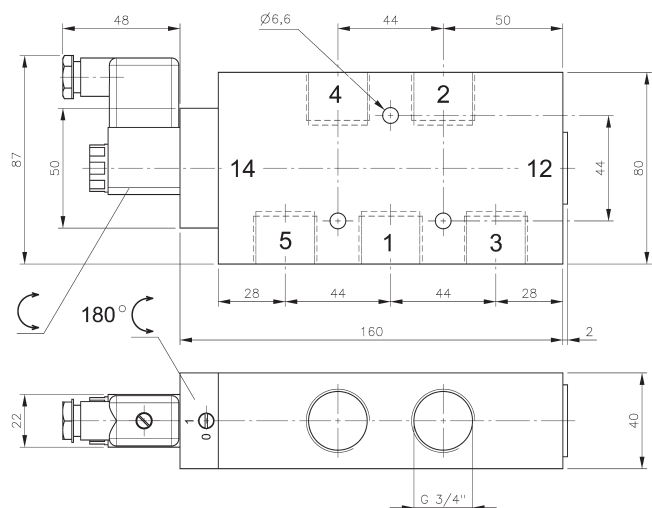
Port 14: G 1/8".

Minimum actuation pressure: 3 bar.

Version for vacuum on request.



MH 510 121/MH 510 121 NPT



MH 510 181

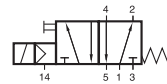
Type	Port size	Air flow	Operating press.	Power consumption	Weight	
MH 510 101	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,50 kg	
MH 510 121	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,67 kg	 
MH 510 181	G 3/4"	6000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,29 kg	
MH 510 121 NPT	1/2" NPT	3000 l/min	1 -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

MH 510 501 G/MH 510 701 G

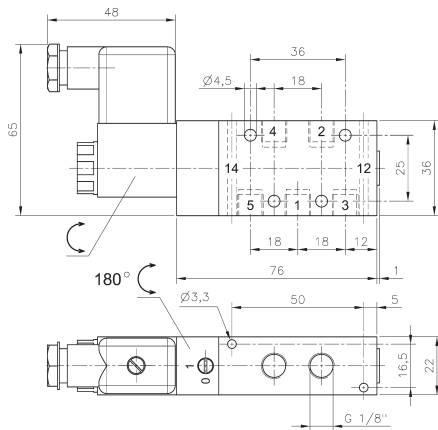
2.5.2.1.5
page 101



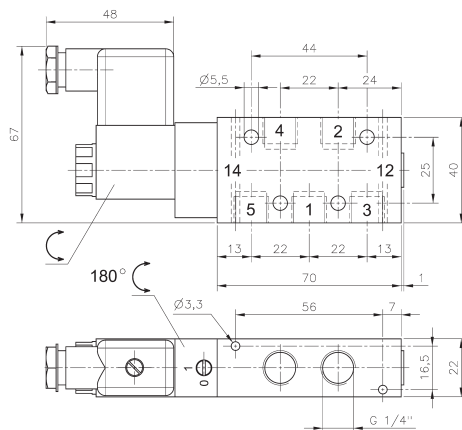
MH 510 501 G
MH 510 701 G
MH 510 701 G NPT



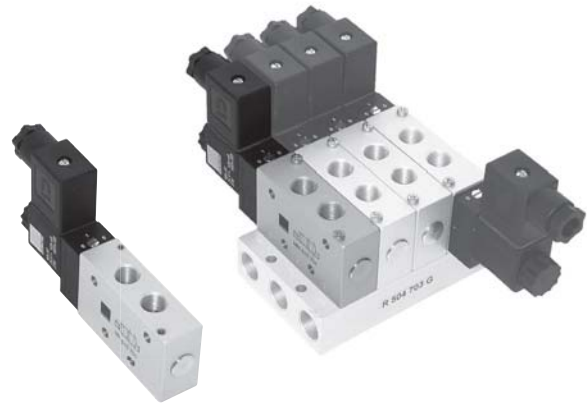
MEH 511 501 G
MEH 511 701 G



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 2.6.2.2, manifolds for valves type 701 G are displayed on page 2.6.2.3.

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.

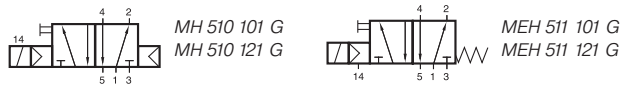
Port 14: M5.

Minimum actuation pressure: 3 bar.

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  MK
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 2.6.2.4, manifolds for valves type 121 G are displayed on page 2.6.2.5.

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 510 G

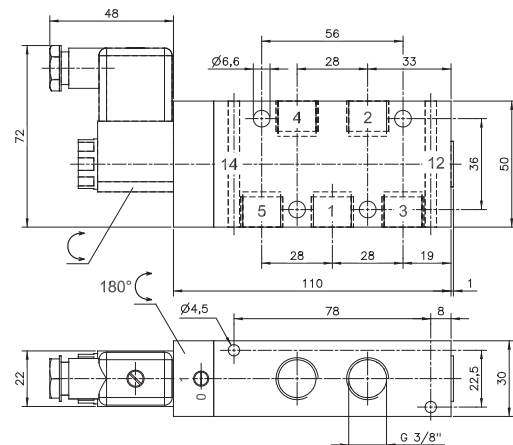
Valves are also available with external pilot feed.

Type: MEH 511 _ _ _ G.

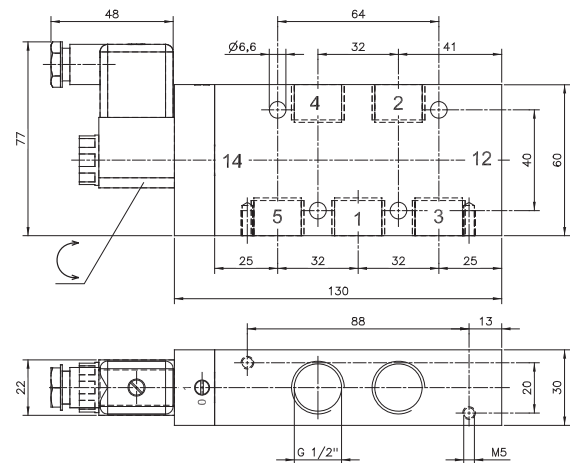
Port 14: G 1/8".

Minimum actuation pressure: 3 bar.

Version for vacuum on request.



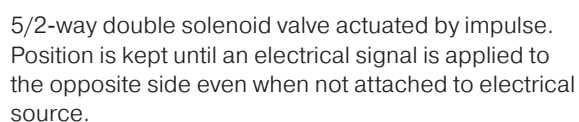
MH 510 101 G



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	

2.5.2.1.7
page 103



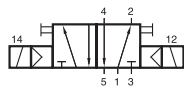
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.11.1.

Valves are generally equipped with manual override to push.



Type	Ports 1, 2, 4	Air flow	Operating press.	Power consumption	Weight
MD 520 301	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 520 341	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 520 401	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg
MD 520 461	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,16 kg

MH 520 302/MH 520 502



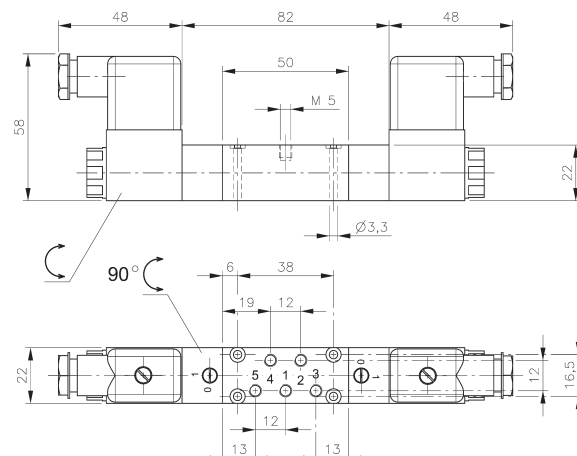
MH 520 302
MH 520 502



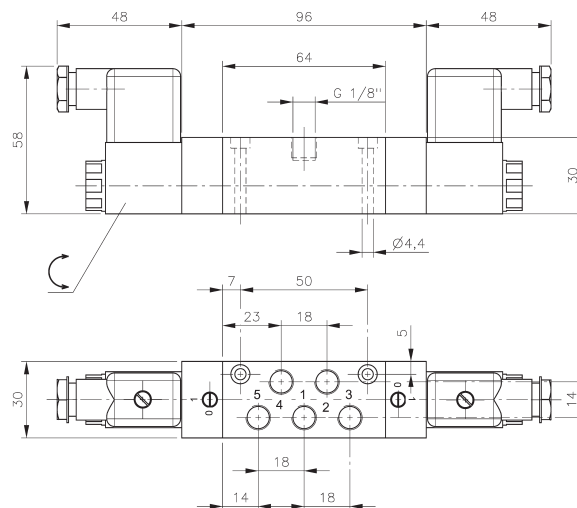
5/2-way double solenoid valve actuated by impulse. Position is kept until an electrical signal is applied to the opposite side even when not attached to electrical source.

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 ____.



MH 520 302

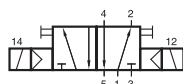


MH 520 502

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

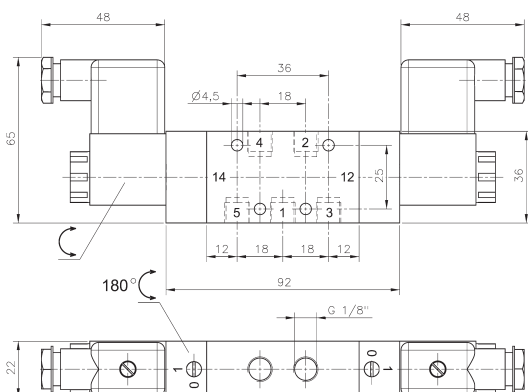
2.5.2.1.9
page 105



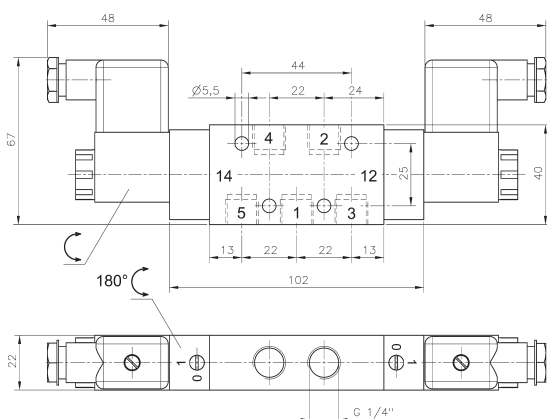
MH 520 501
MH 520 701
MH 520 801



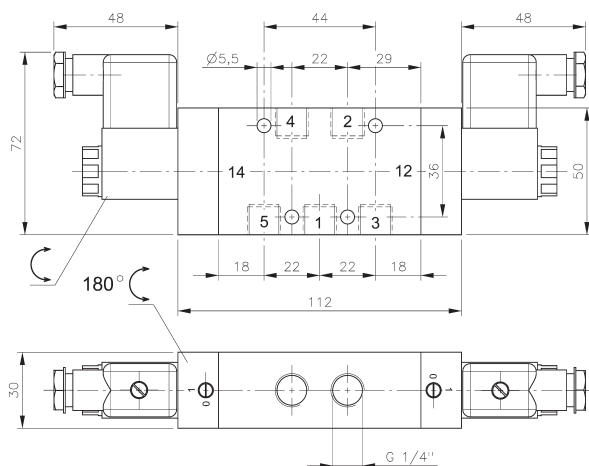
MEH 520 501
MEH 520 701
MEH 520 801



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 ____.

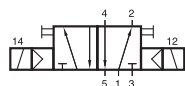
Ports 12 and 14 series 501 and 701: M5,
series 801: G 1/8\".

Minimum actuation pressure: 2,5 bar.

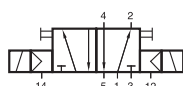
Version for vacuum on request.

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

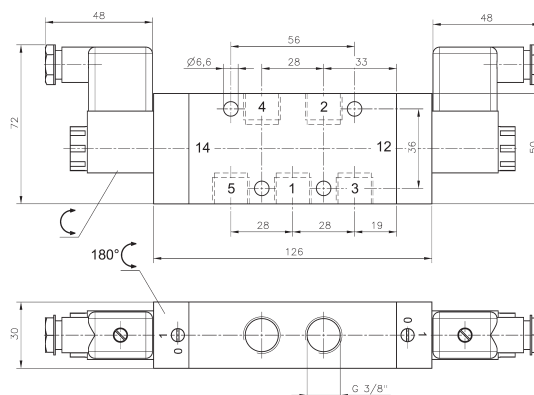
MH 520 101/MH 520 121/MH 520 181



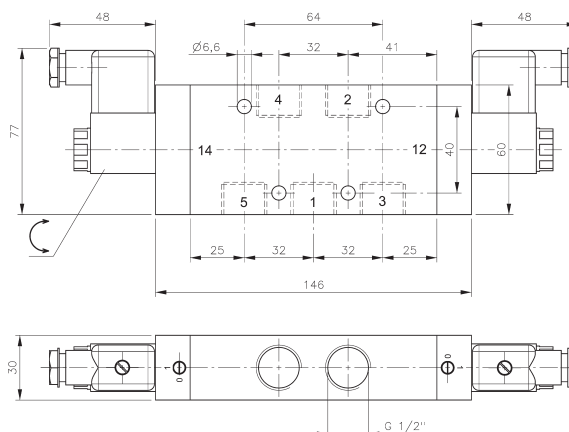
MH 520 101
MH 520 121
MH 520 181
MH 520 121 NPT



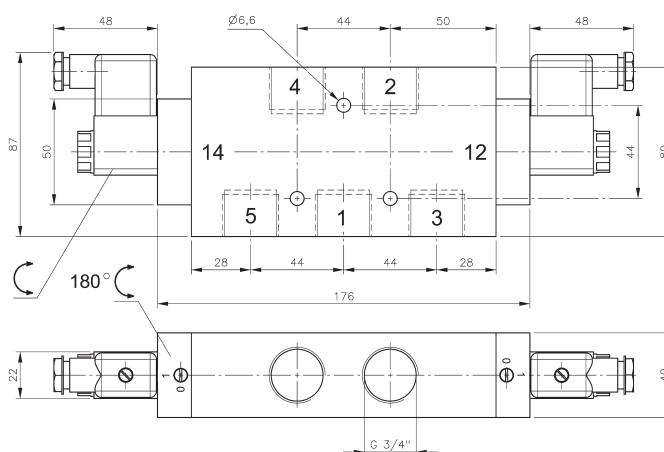
MEH 520 101
MEH 520 121
MEH 520 181



MH 520 101



MH 520 121/ MH 520 121 NPT



MH 520 181

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=.

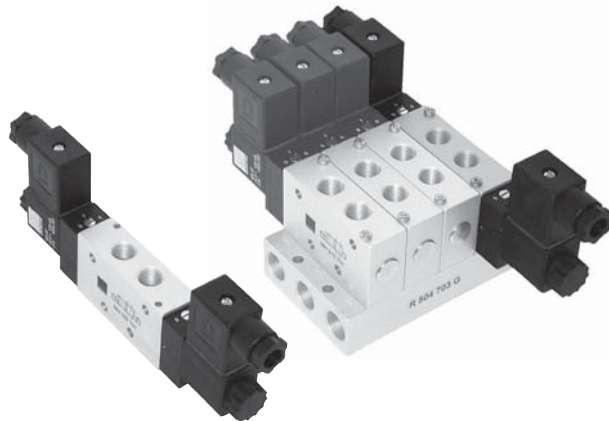
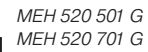
Valves are generally equipped with manual override.
If requested without manual override please order
M 520 ____.

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

Version for vacuum on request.

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

2.5.2.1.11
page 107



The technical drawing illustrates the GWS 1000-2000 pump assembly from two perspectives: a top view and a side view.

Top View Dimensions:

- Overall width: 48
- Overall height: 67
- Distance between mounting flanges: 102
- Flange diameter: $\varnothing 5,5$
- Internal hole diameters: 4, 2, 12, 14
- Internal hole positions: 22, 24, 13, 22, 22, 13
- Mounting flange thickness: 25
- Mounting flange width: 40

Side View Dimensions:

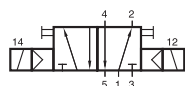
- Overall length: 56
- Overall height: 22
- Mounting flange diameter: $\varnothing 3,3$
- Mounting flange thickness: 7
- Internal hole diameter: $\varnothing 16,5$
- Internal hole position: 16,5
- Internal hole diameter: $\varnothing 10$
- Internal hole position: 10
- Thread specification: G 1/4"

A curved arrow indicates a rotation of 180° .

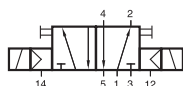
Version for vacuum on request.



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 2.6.2.4, manifolds for valves type 121 G are displayed on page 2.6.2.5.

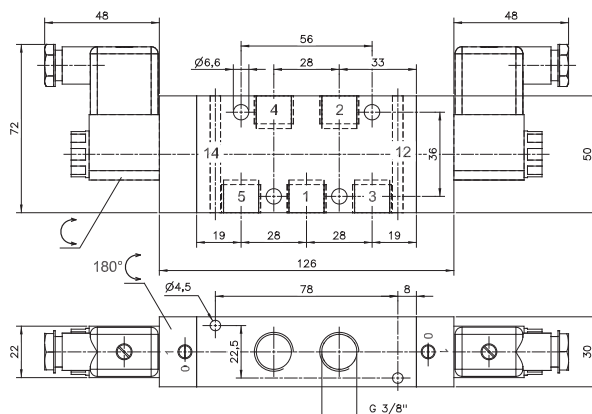
Please notice: Valves G 1/2" have to be assembled onto the plate by fixing screws from the bottom through the plate into the valve.

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

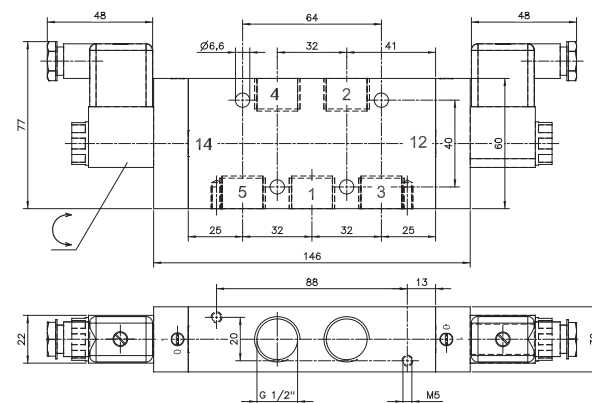
Valves are generally equipped with manual override. If requested without manual override please order M 520 ___ G

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.

Version for vacuum on request.



MH 520 101 G

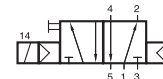


MH 520 121 G

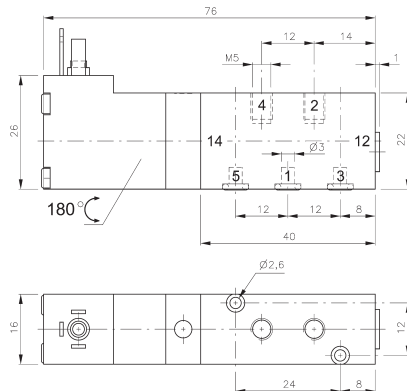
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 101 G	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 520 121 G	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	0,84 kg

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

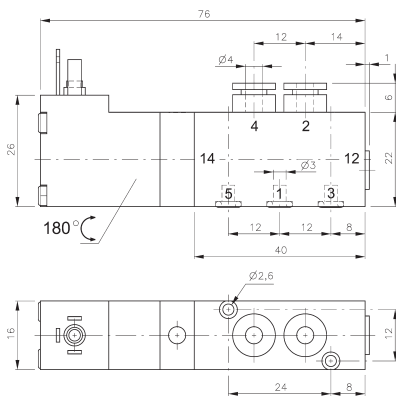
2.5.2.2.1
page 109



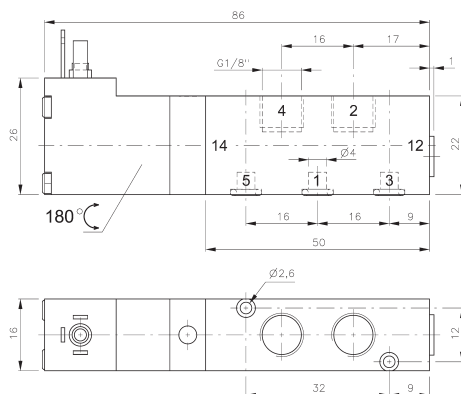
MD 510 303
MD 510 343
MD 510 403
MD 510 463



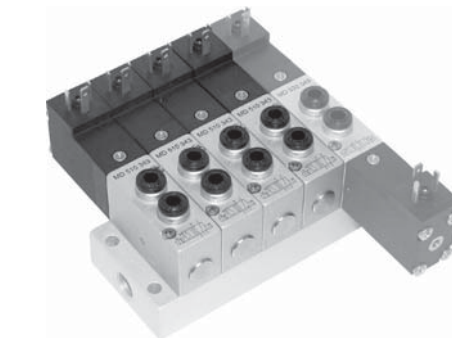
MD 510 303



MD 510 343



MD 510 403



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.

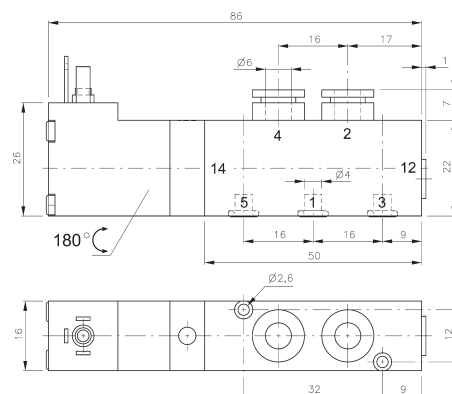
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.11.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.6.2.1.

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

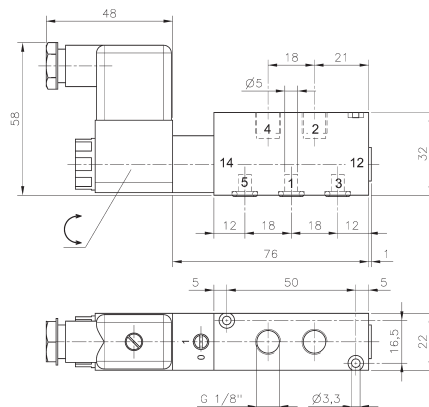
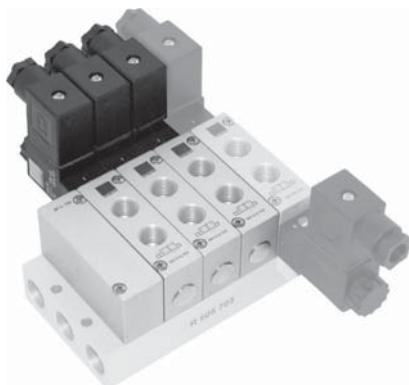
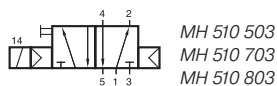
Mounting screws and seals are included.



MD 510 463

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.

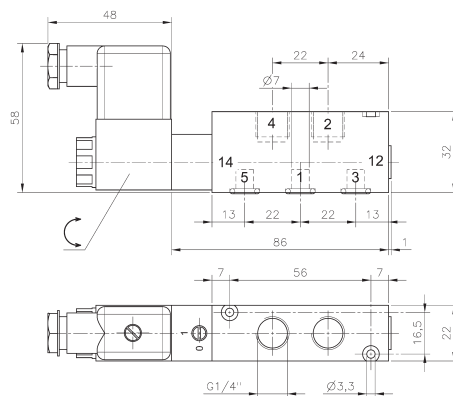
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

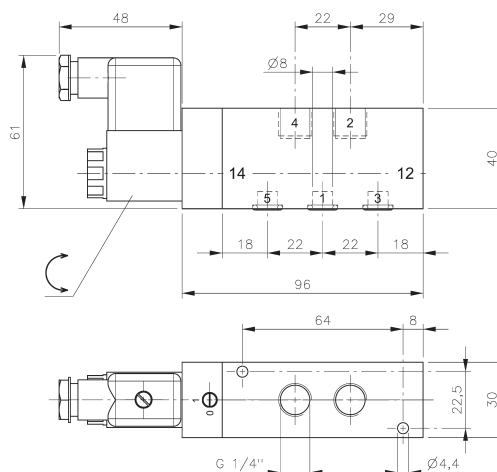
Manifolds for valves type 503 are displayed on
page 2.6.2.2, manifolds for valves type 703 are
displayed on page 2.6.2.3, manifolds for valves
type 803 are displayed on page 2.6.2.5.

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

Mounting screws and seals are included.

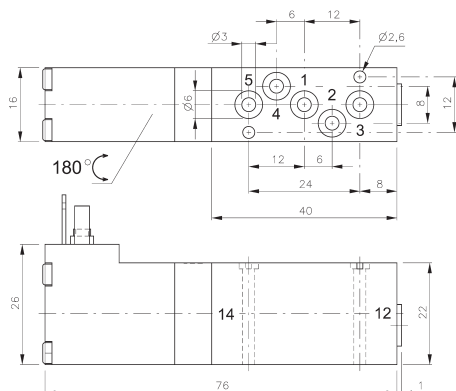
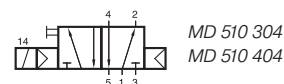


MH 510 703

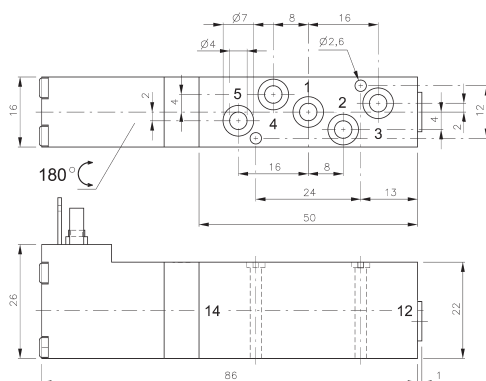


MH 510 803

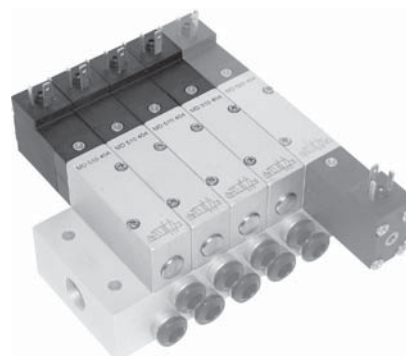
Type	Ports 2, 4	Air flow	Operating press.	Power consumption	Weight
MH 510 503	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,22 kg MK
MH 510 703	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg MK
MH 510 803	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,42 kg



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 2.11.1.

Valves are generally equipped with manual override
to push.

Manifolds are displayed on page 2.6.2.6.

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

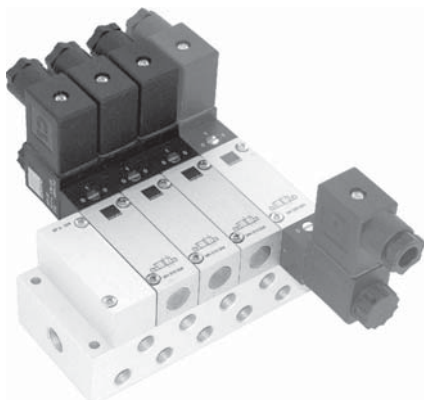
Mounting screws and seals are included.

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 510 304
MH 510 504
MH 510 704



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

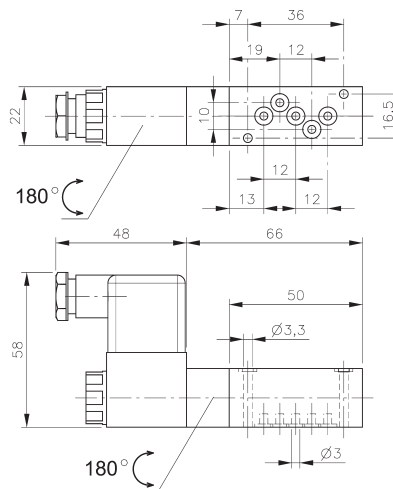
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

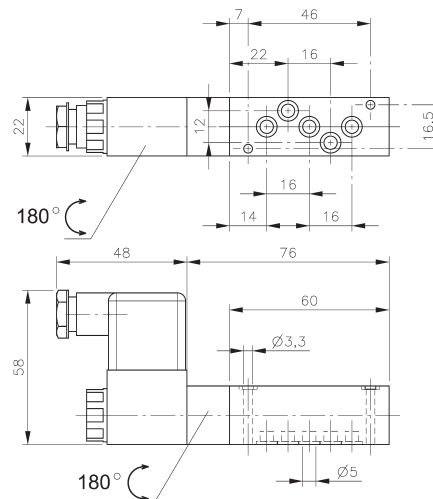
Manifolds for valves type 304 and 504 are displayed
on page 2.6.2.7, manifolds for valves type 704 are
displayed on page 2.6.2.8 and 2.6.2.9.

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

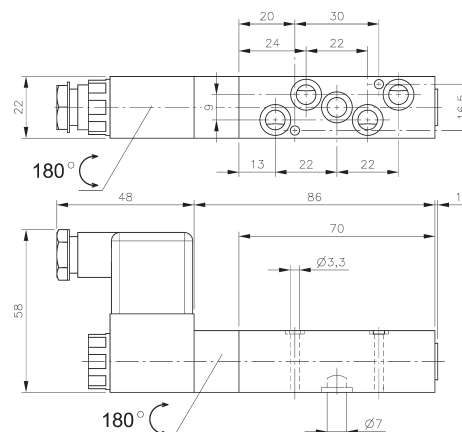
Mounting screws and seals are included.



MH 510 304



MH 510 504



MH 510 704

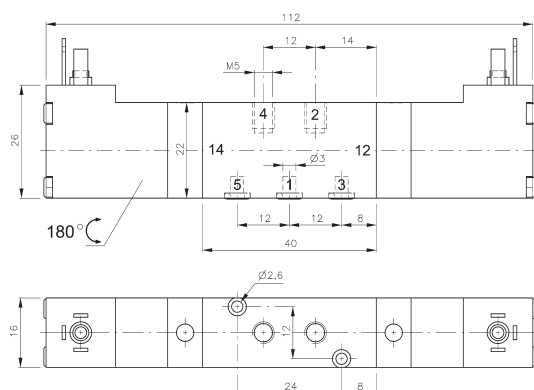
Type	Port size	Air flow	Operating press.	Power cons.	Weight
MH 510 304	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,18 kg ❄
MH 510 504	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,19 kg ⚠❄MK
MH 510 704	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,20 kg ⚠❄MK

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

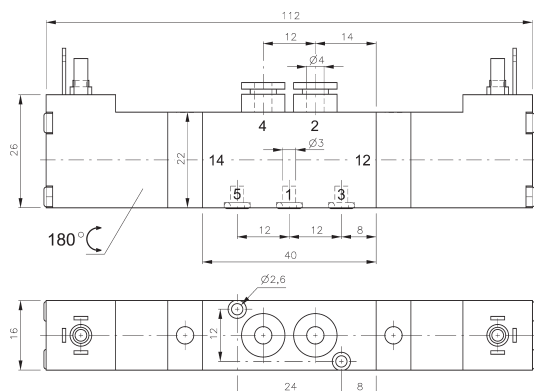
2.5.2.2.5
page 113



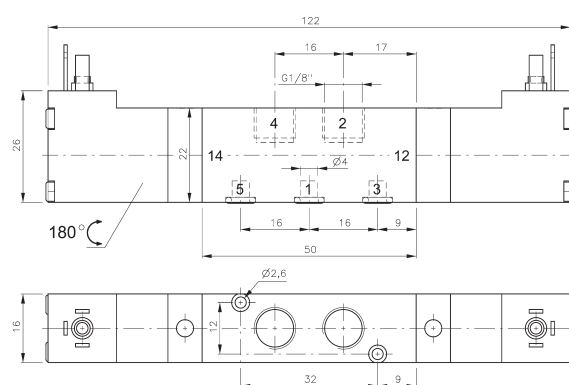
MD 520 303
MD 520 343
MD 520 403
MD 520 463



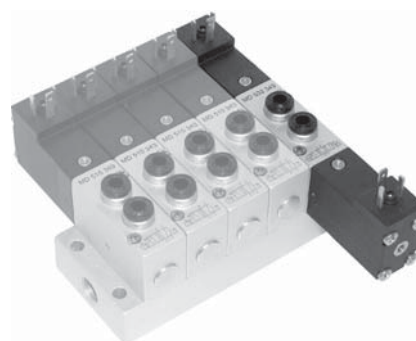
MD 520 303



MD 520 343



MD 520 403



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.

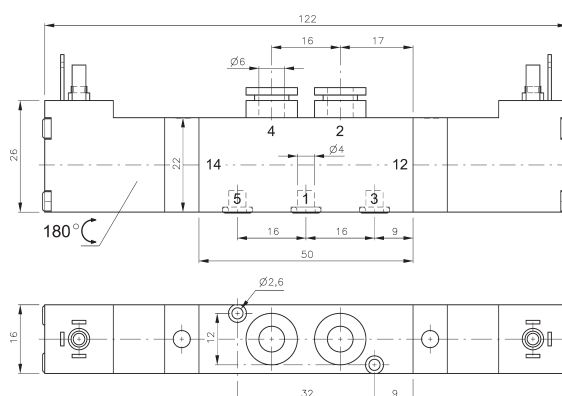
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V= either for connector form C ISO 15217 or with flying leads, standard cable length 500 mm. For details about solenoid system, please refer to page 2.11.1.

Valves are generally equipped with manual override to push.

Manifolds are displayed on page 2.6.2.1.

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

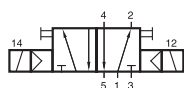
Mounting screws and seals are included.



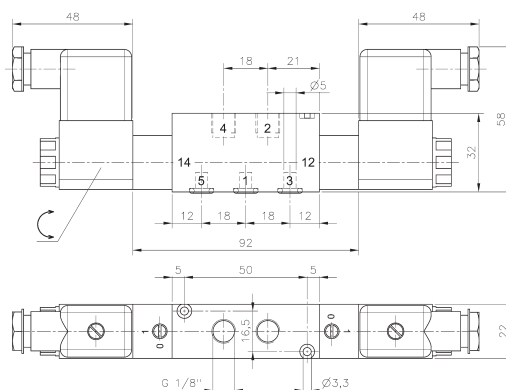
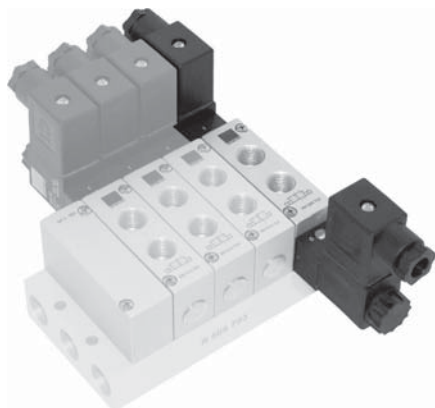
MD 520 463

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



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=.

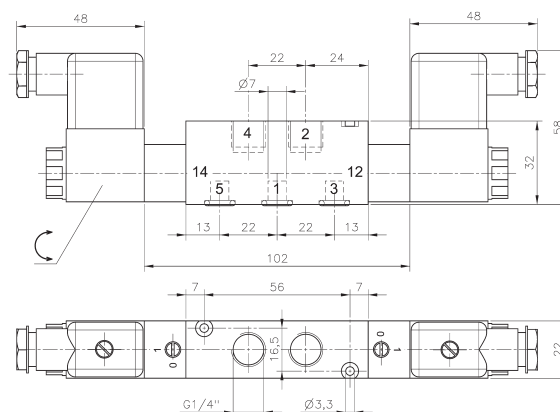
Valves are generally equipped with manual override. If requested without manual override please order M 520 _ _ _.

Manifolds for valves type 503 are displayed on page 2.6.2.2, manifolds for valves type 703 are displayed on page 2.6.2.3, manifolds for valves type 803 are displayed on page 2.6.2.5.

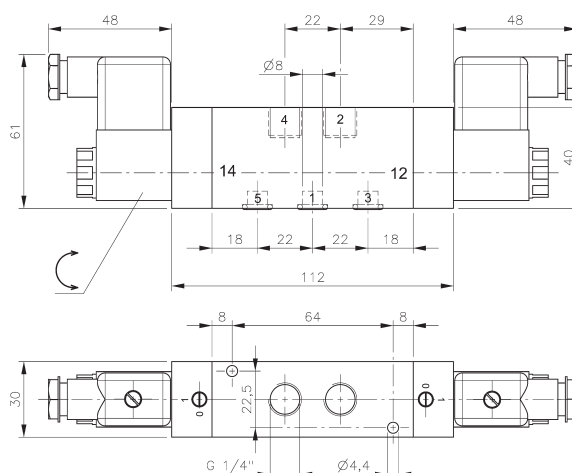
Blanking plates are also available type BP 5 503, BP 5 703 or BP 5 803.

Mounting screws and seals are included.

MH 520 503

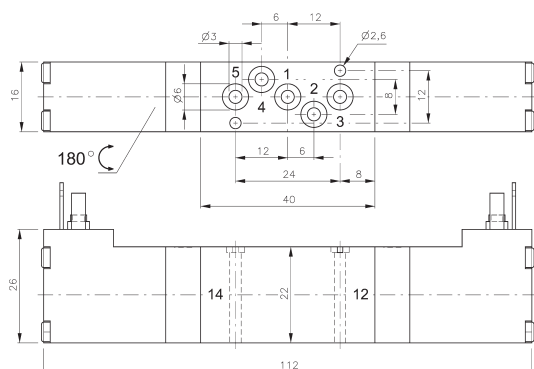
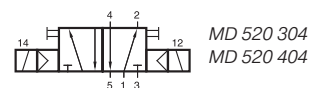


MH 520 703

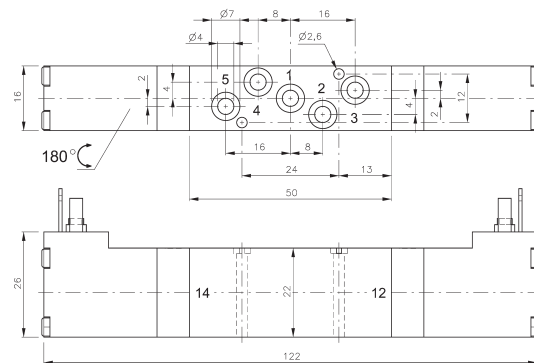


MH 520 803

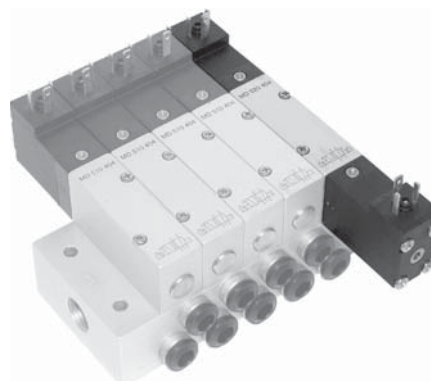
Type	Ports 2, 4	Air flow	Operating press.	Power consumption	Weight
MH 520 503	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,31 kg MK
MH 520 703	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,33 kg MK
MH 520 803	G 1/4"	1450 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,56 kg



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 2.11.1.

Valves are generally equipped with manual override to push.

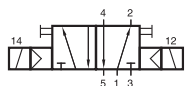
Manifolds are displayed on page 2.6.2.6.

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

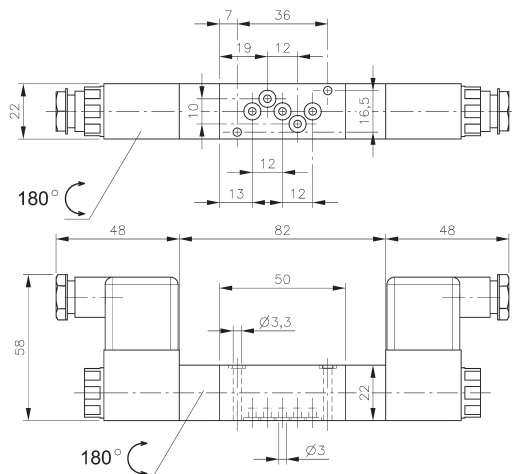
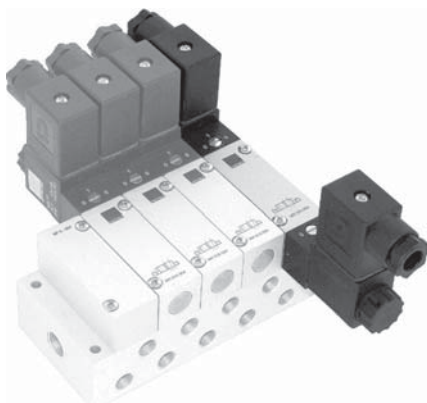
Mounting screws and seals are included.

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 520 304
MH 520 504
MH 520 704



MH 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 source. All the ports are in the plate.

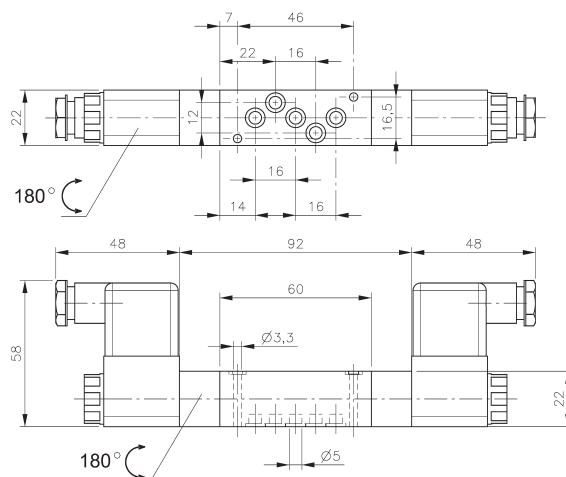
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

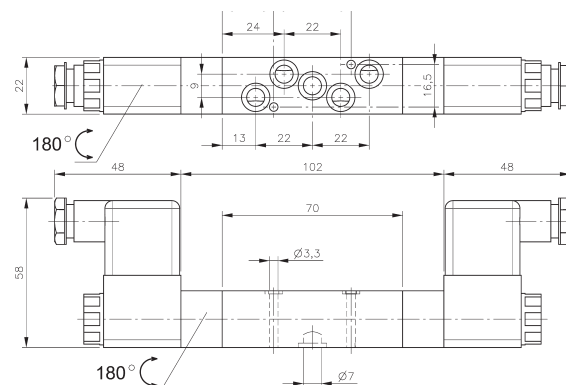
Manifolds for valves type 304 and 504 are displayed on page 2.6.2.7, manifolds for valves type 704 are displayed on page 2.6.2.8 and 2.6.2.9.

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

Mounting screws and seals are included.



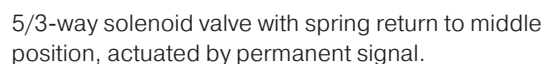
MH 520 504



MH 520 704

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

2.5.3.1.1
page 117



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 2.11.1.

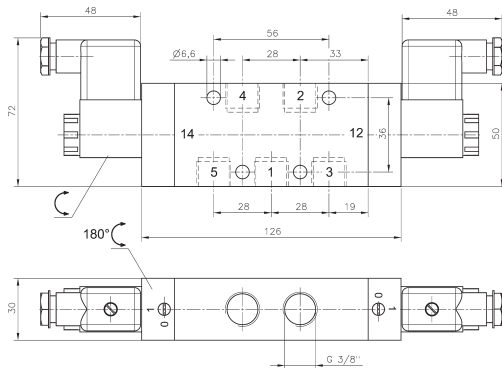
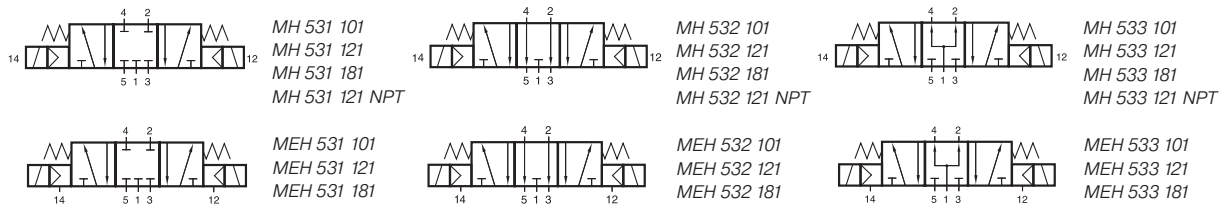
Valves are generally equipped with manual override to push.



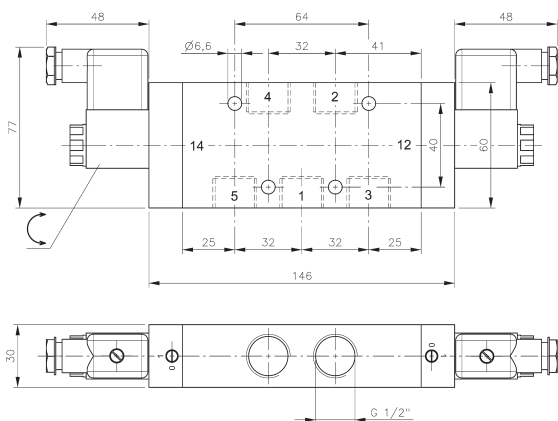
Type	Ports 1, 2, 4	Air flow	Operating press.	Powerconsumption	Weight
MD 53_ 301	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 53_ 341	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_ 401	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg
MD 53_ 461	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,16 kg

MH 53_ 101/MH 53_ 121/MH 53_ 181

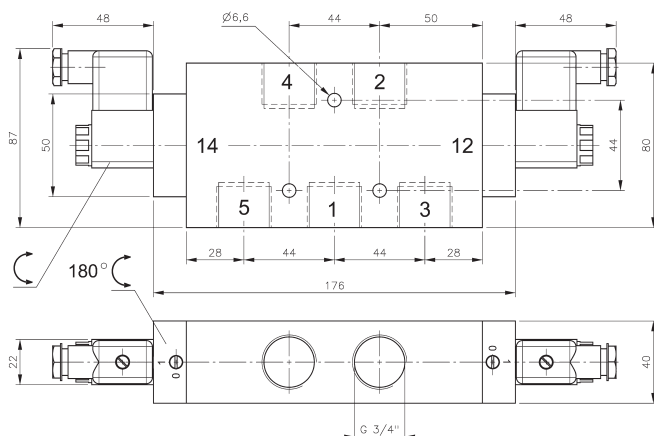
2.5.3.1.3
page 119



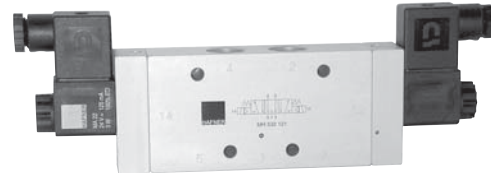
MH 53_101



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".

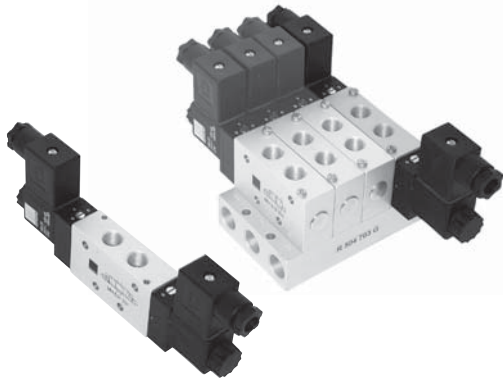
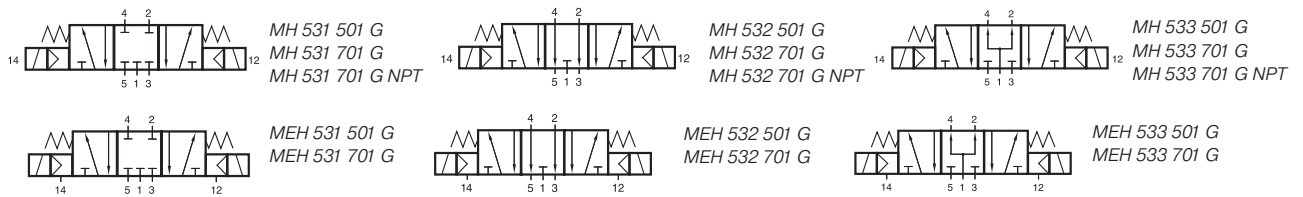
Minimum actuation pressure: 3 bar.

Version for vacuum on request.

Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 53_ 101	G 3/8"	2250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,66 kg
MH 53_ 121	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,84 kg
MH 53_ 181	G 3/4"	6000 l/min	3 - 10 bar	3 W = / 5 VA ~	1,45 kg
MH 53_ 121 NPT	1/2" NPT	3000 l/min	3 - 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 2.6.2.2, manifolds for valves type 701 G are displayed on page 2.6.2.3.

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

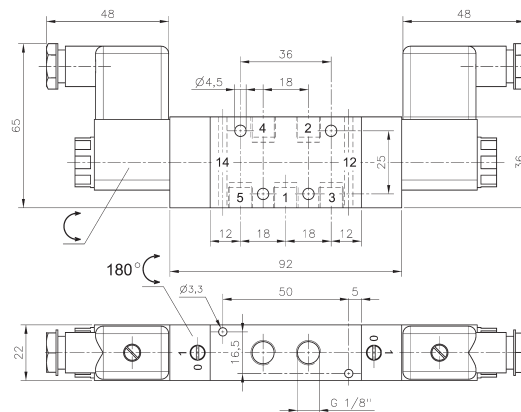
Valves are generally equipped with manual override. If requested without manual override please order M 53 G.

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

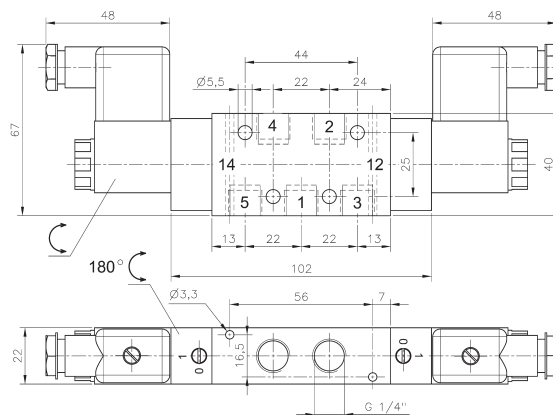
Ports 12 and 14: M5.

Minimum actuation pressure: 3 bar.

Version for vacuum on request.

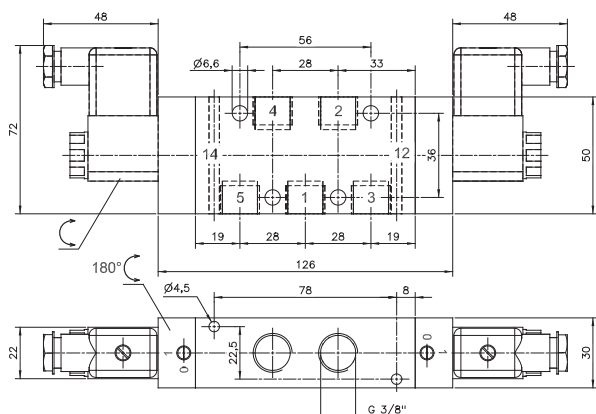
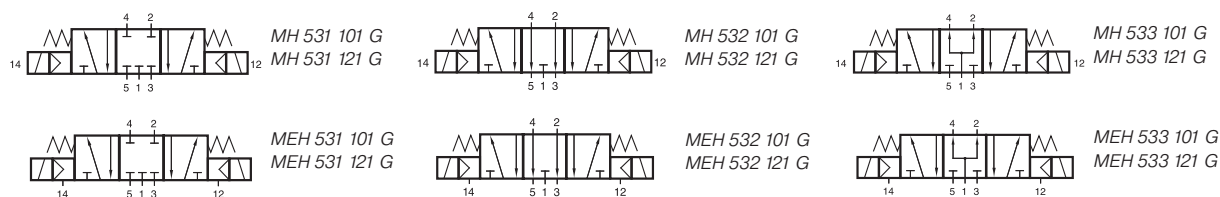


MH 53_ 501 G

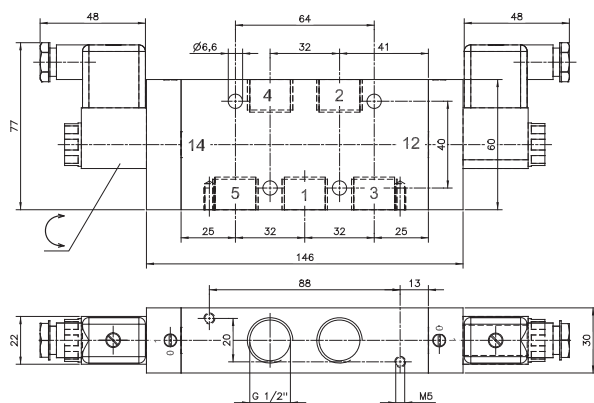


MH 53_701 G/MH 53_701 G NPT

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   MK
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 2.6.2.4, manifolds for valves type 121 G are displayed on page 2.6.2.5.

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).

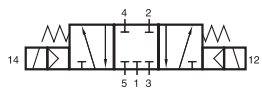
Ports 12 and 14: G 1/8".

Minimum actuation pressure: 3 bar.

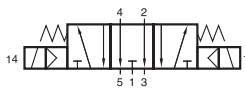
Version for vacuum on request.

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

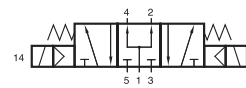
MD 53_ 303/MD 53_ 343 MD 53_ 403/MD 53_ 463



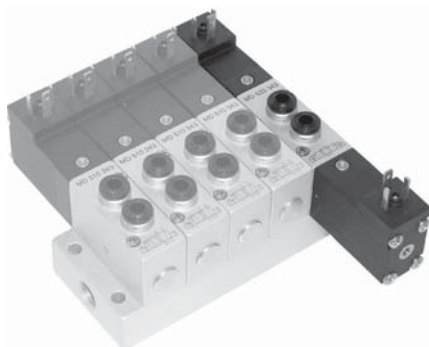
MD 531 303
MD 531 343
MD 531 403
MD 531 463



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.

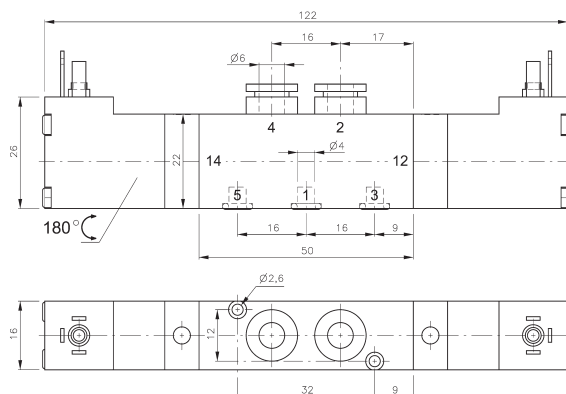
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.11.1.

Valves are generally equipped with manual override
to push.

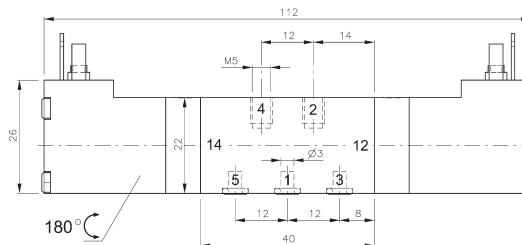
Manifolds are described on page 2.6.2.1.

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

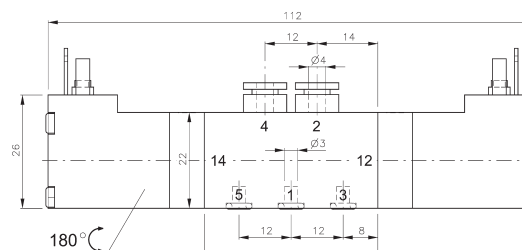
Mounting screws and seals are included.



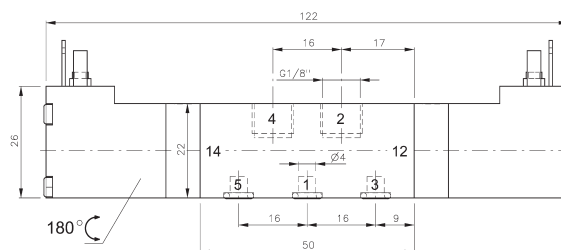
MD 53_ 463



MD 53_ 303

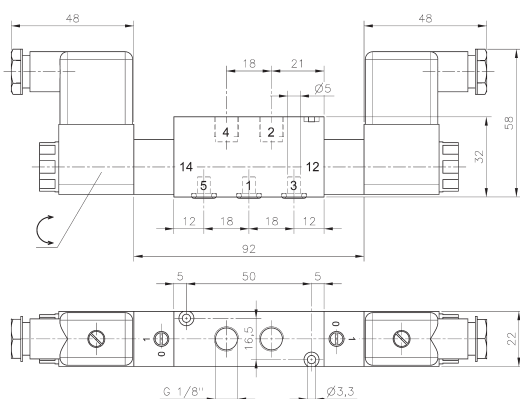
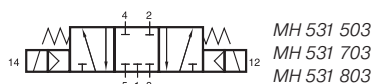


MD 53_ 343

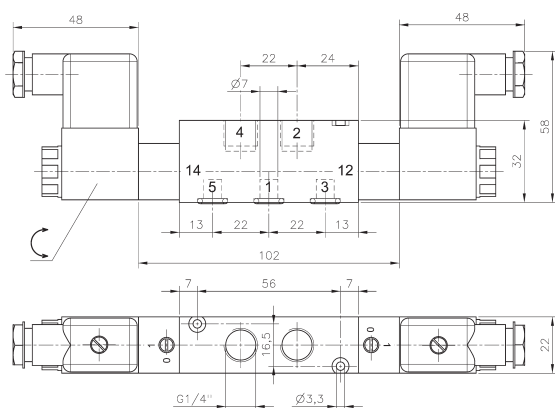


MD 53_ 403

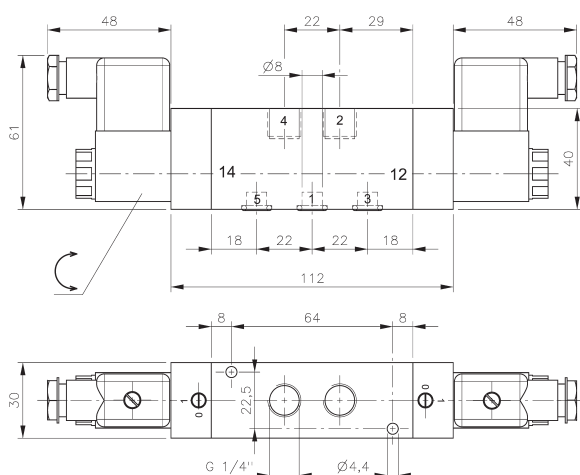
Type	Ports 1, 2, 4	Air flow	Operating press.	Power consumption	Weight
MD 53_ 303	M5	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,13 kg
MD 53_ 343	pif 4 mm	280 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_ 403	G 1/8"	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,14 kg
MD 53_ 463	pif 6 mm	450 l/min	3 - 10 bar	1,8 W = / 3,0 VA ~	0,15 kg



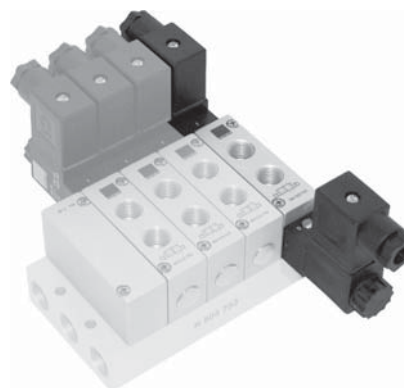
MH 53_ 503



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).

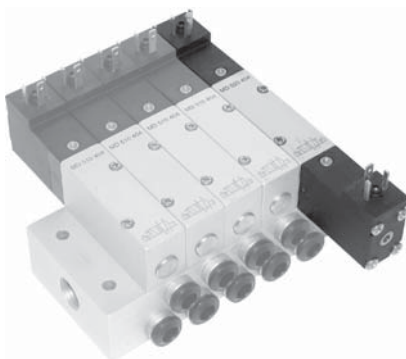
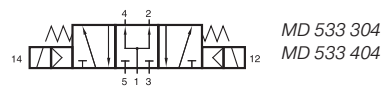
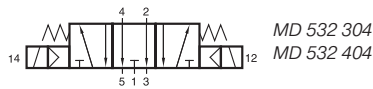
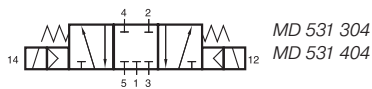
Manifolds for valves type 503 are displayed on page 2.6.2.2, manifolds for valves type 703 are displayed on page 2.6.2.3, manifolds for valves type 803 are displayed on page 2.6.2.5.

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.

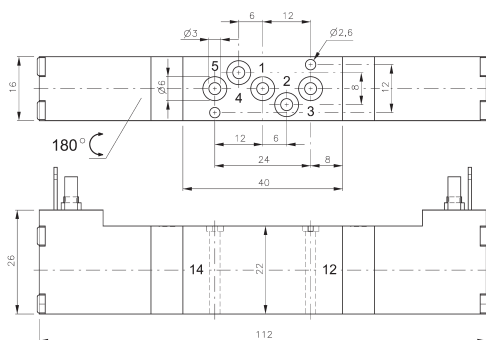
Available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=,
12V=, 6V= either for connector form C ISO 15217
or with flying leads, standard cable length 500 mm.
For details about solenoid system, please refer to
page 2.11.1.

Valves are generally equipped with manual override to push.

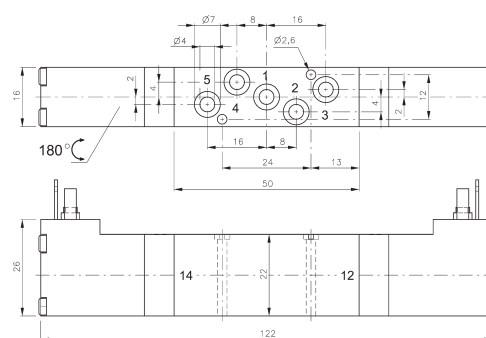
Manifolds are described on page 2.6.2.6.

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

Mounting screws and seals are included.



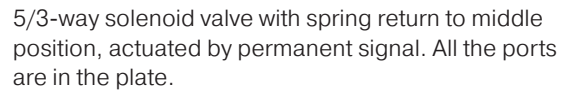
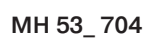
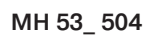
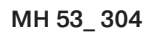
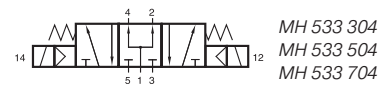
MD 53_304



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

2.5.3.2.4
page 125



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

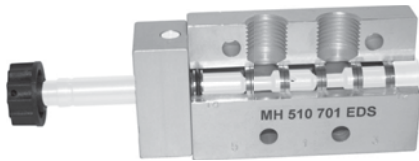
Valves are generally equipped with manual override.
If requested without manual override please order
M 53_ ___ (please add 1 digit for type and 3 for size).

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

Examples for customer-specific products



Version EDS and BMF

For applications where a valve with an aluminum body is appropriate but brass is not, we can deliver selected models either „brass-free to the outside“ (version EDS) or totally „brass-free“ (version EDS).

Materials used:

	EDS	BMF
	<i>Brass-free to the outside</i>	<i>Entirely brass-free</i>
Body and head	Aluminum	Aluminum
Manual override	1.4404	1.4404
Operator tube	Stainless steel	Stainless steel
Seat below plunger	Brass	1.4404
Sealing system	Brass / NBR	1.4404 / PUR
Spool	Stainless steel	Stainless steel
Piston	Brass / NBR	1.4404 / PUR
Rubber parts	FKM	FKM
Endcap	1.4404	1.4404
Screws	A2	A2



MSV 311 030

Direct actuated 3/2-way valve for vacuum use, orifice size 3 mm.



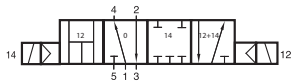
MHP 520 501

G 1/8" 2-position valve, actuated from one side pneumatically, from the other side with a solenoid. Also available with external pilot-feed and in other sizes.



RS 4

Connection for operator of direct actuated 3-way-valves can be used to capture exhaust for n.c. valves as well as supply for n.o. valves. Standard: 2, 4, 6 stations, others on request.



MH 541 701

5/4-way solenoid valve, actuated by permanent signal.



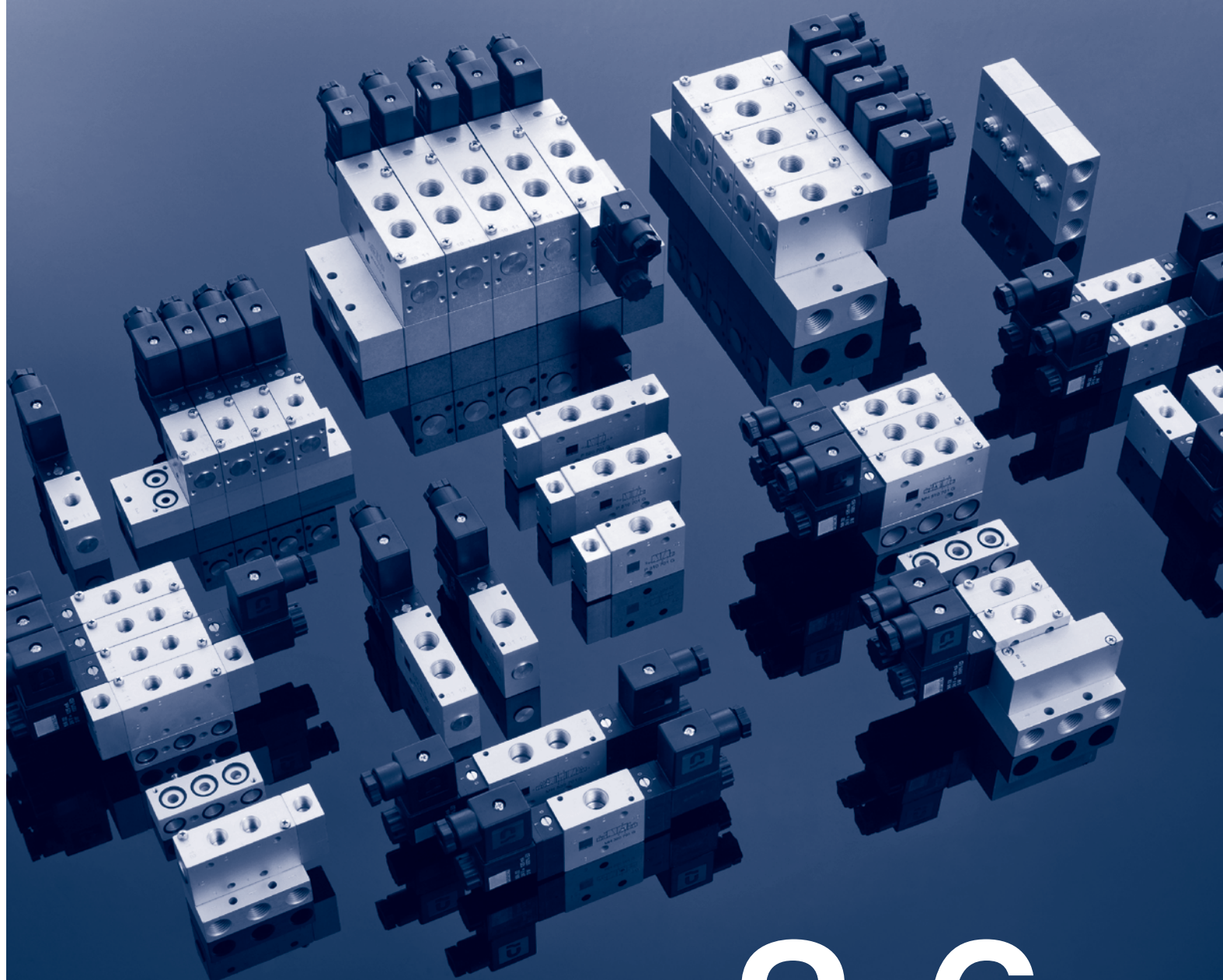
MH 510 714 B

5/2-way solenoid valve with an orifice size of 7 mm for the packaging industry. Valve is actuated by permanent signal and equipped with air spring return. A version for valve terminal assembling is also available, type MH 510 714 BT.



MH 510 704 J

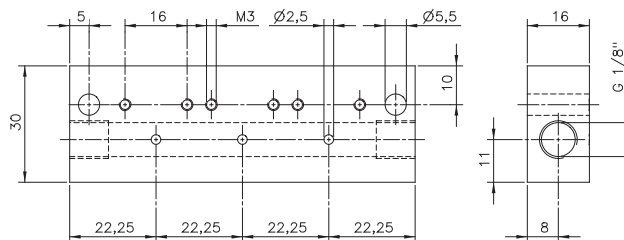
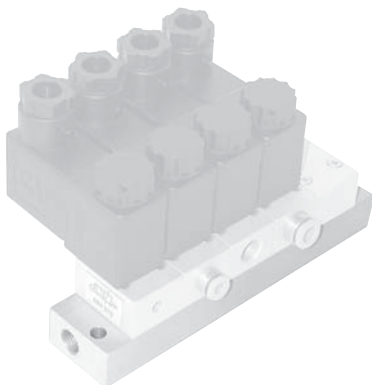
Range of 35 mm wide valves with an orifice size of 7 mm for the packaging industry. Range consists of single and double solenoid valves as well as of 5/3-way valves. Pilot actuated products are also available.



2.6

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

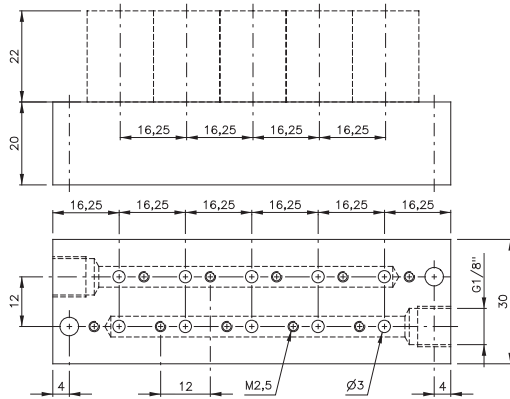
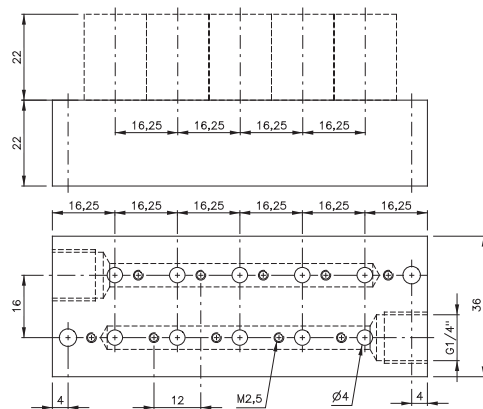
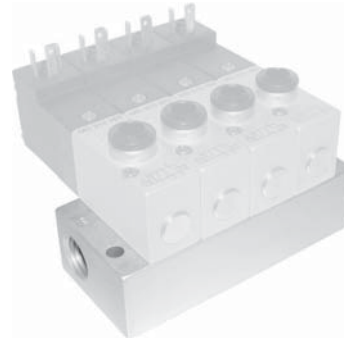
R _ _ Orifice size: 8,5 mm

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.

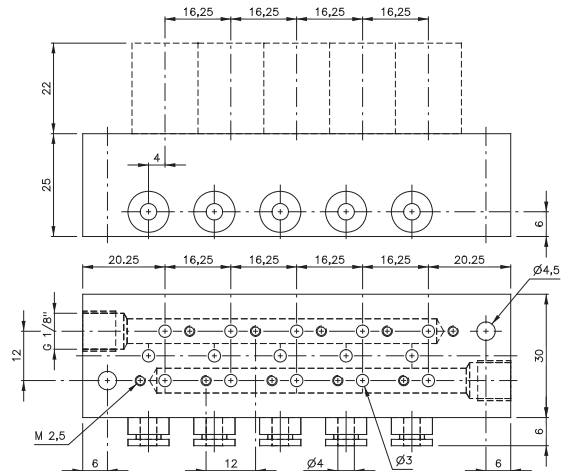
The following valves can be assembled to the manifold plate type **RD 3__ 464** (pif 6 mm):

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

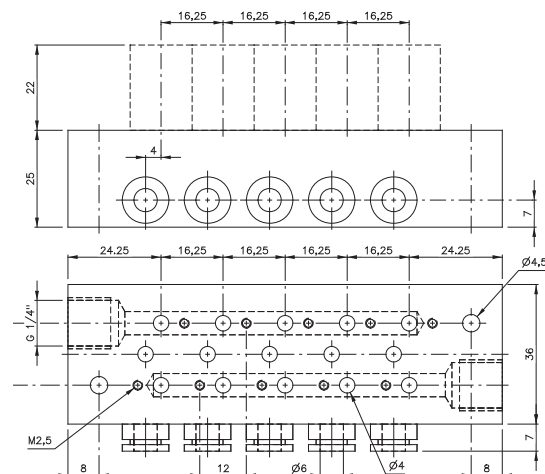
Blanking plates are also available type BP 3 464.

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.

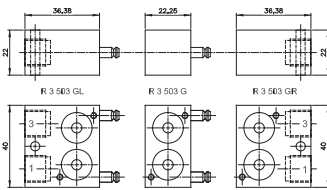


RD 3__ 344 Orifice size: 5 mm

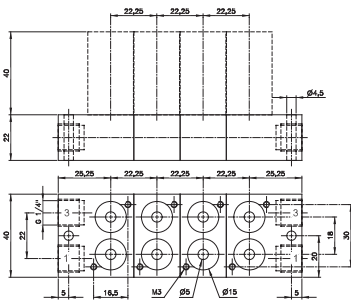


RD 3__ 464 Orifice size: 6 mm

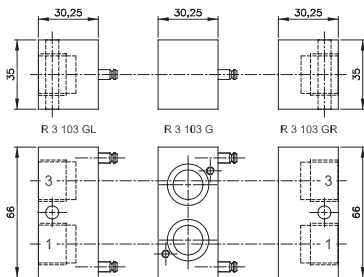
Stations	Type	Weight	Available	Type	Weight	Available
2	RD 302 344	0,13 kg	from stock	RD 302 464	0,15 kg	from stock
3	RD 303 344	0,16 kg	from stock	RD 303 464	0,19 kg	from stock
4	RD 304 344	0,19 kg	from stock	RD 304 464	0,23 kg	from stock
5	RD 305 344	0,22 kg	from stock	RD 305 464	0,26 kg	from stock
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



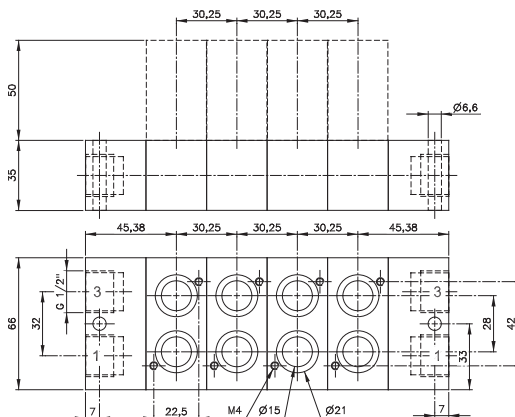
Parts of modular manifold RB 3__ 503 G



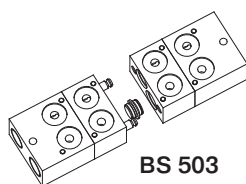
RB 3__ 503 G Orifice size: 10 mm



Parts of modular manifold RB 3__ 103 G



RB 3__ 103 G Orifice size: 19 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.



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__ 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:

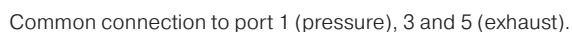
End-plates of series 103 G are not offering an individual valve-position.

The plates can also be ordered assembled by the manufacturer. In this case order RB 3__ 503 G (1/8") or RB 3__ 103 G (3/8"). 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 3 103 GR	End-plate right	0,14 kg
R 3 103 GL	End-plate left	0,15 kg
R 3 103 G	Individual position	0,12 kg





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**:

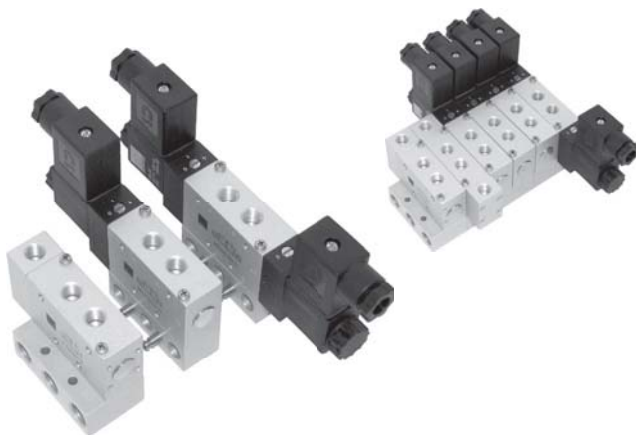
5/2 single sol.	G 1/8"	MD 510 403	page 2.5.2.2.1
5/2 single sol.	pif 6 mm	MD 510 463	page 2.5.2.2.1
5/2 double sol.	G 1/8"	MD 520 403	page 2.5.2.2.5
5/2 double sol.	pif 6 mm	MD 520 463	page 2.5.2.2.5
5/3-way	G 1/8"	MD 53_ 403	page 2.5.3.2.1
5/3-way	pif 6 mm	MD 53_ 463	page 2.5.3.2.1

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 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 __ 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:

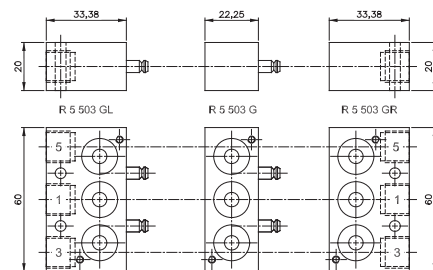
5/2 air spring	G 1/8"	P 510 501 G	page 2.4.2.4
5/2 mech. spring	G 1/8"	P 511 501 G	page 2.4.2.4
5/2 double pilot	G 1/8"	P 52_ 501 G	page 2.4.2.8
5/3	G 1/8"	P 53_ 501 G	page 2.4.3.3

The system consists of:

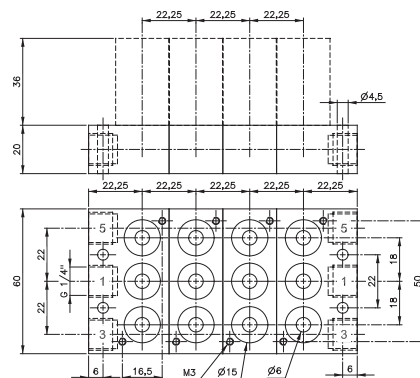
End-plate right	type R 5 503 GR
End-plate left	type R 5 503 GL
Individual position	type R 5 503 G

Blanking plates are also available type BP 5 503.

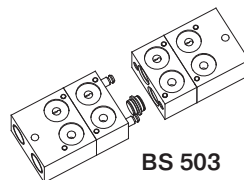
The plates can also be ordered assembled by the manufacturer. In this case order RB 5 __ 503 G. Please add two digits for the number of positions required.



Parts of modular manifold **RB 5 __ 503 G**



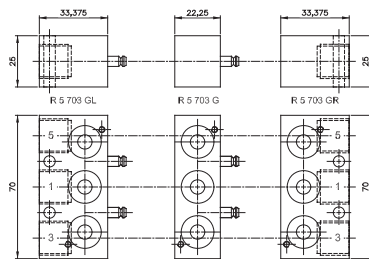
RB 5 __ 503 G Orifice size: 10 mm



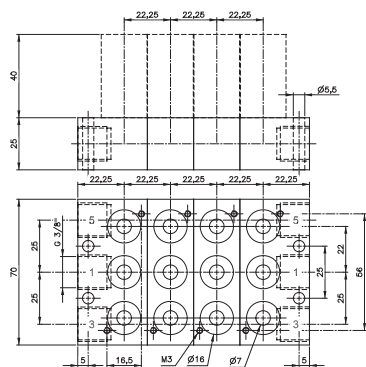
BS 503

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.

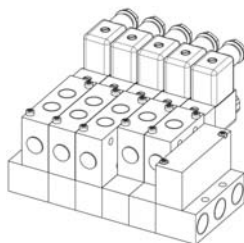
Type	Function	Weight
R 5 503 GR	End-plate right	0,08 kg
R 5 503 GL	End-plate left	0,08 kg
R 5 503 G	Individual position	0,06 kg



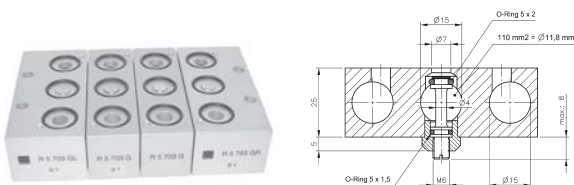
Parts of modular manifold RB 5__703 G



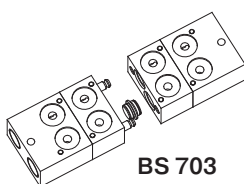
RB 5__703 G Orifice size: 15 mm



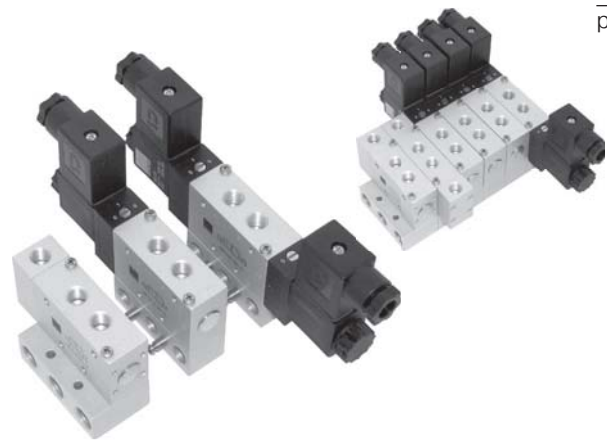
1.) Combination of 3- and 5-way valves



2.) Individual valve isolation



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 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__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:

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.

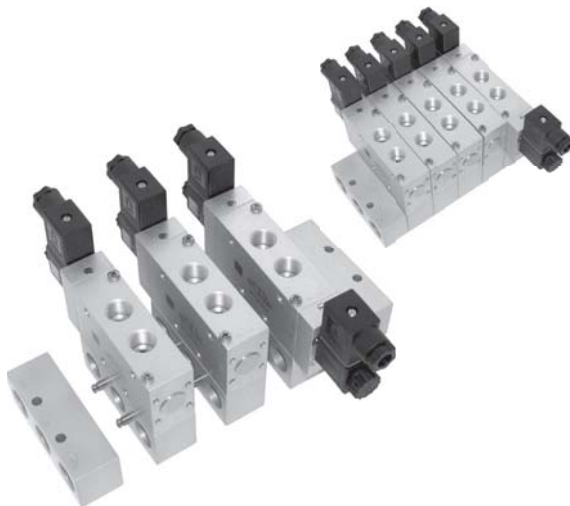
The system consists of:

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

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:

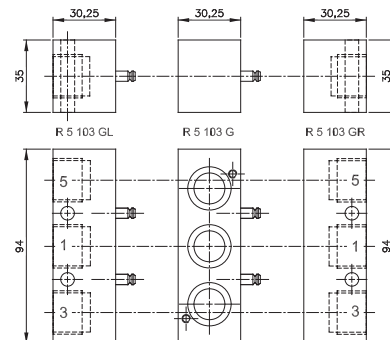
End-plate right	type R 5 103 GR
End-plate left	type R 5 103 GL
Individual position	type R 5 103 G

Blanking plates are also available type BP 5 103.

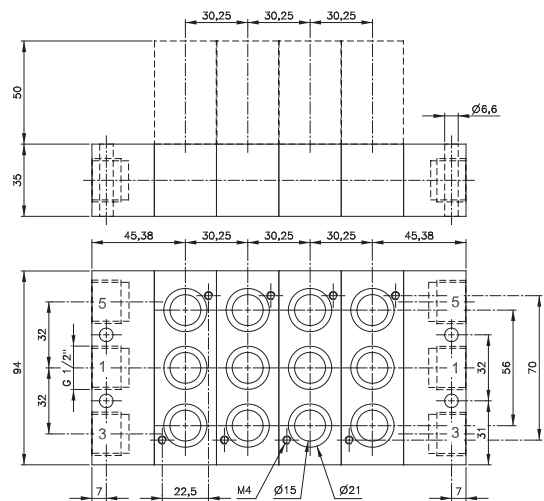
Please notice:

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.

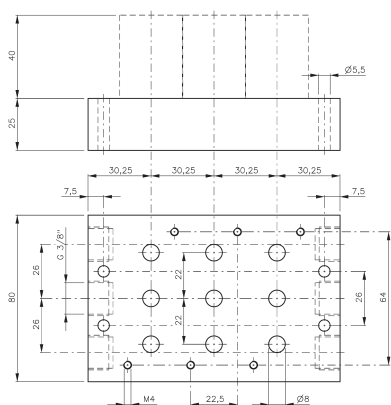


Parts of modular manifold RB 5 __ 103 G



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



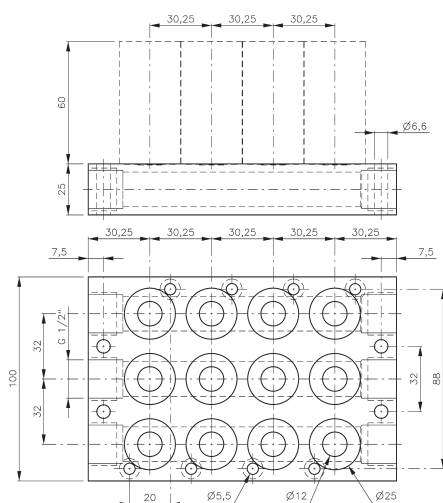
Common connection to port 1 (pressure), 3 and 5 (exhaust).

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**:

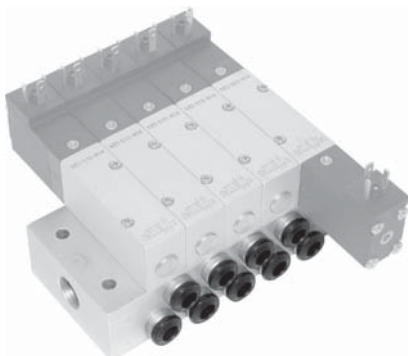
5/2 single sol.	G 1/2"	MH 510 121 G	page 2.5.2.1.6
5/2 double sol.	G 1/2"	MH 520 121 G	page 2.5.2.1.12
5/3 solenoid	G 1/2"	MH 53 121 G	page 2.5.3.1.5

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.	



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.

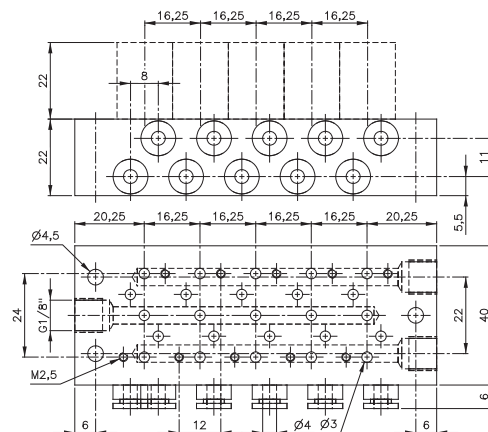
The following solenoid valves can be assembled to the manifold plate type **RD 5_464** (pif 6 mm):

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

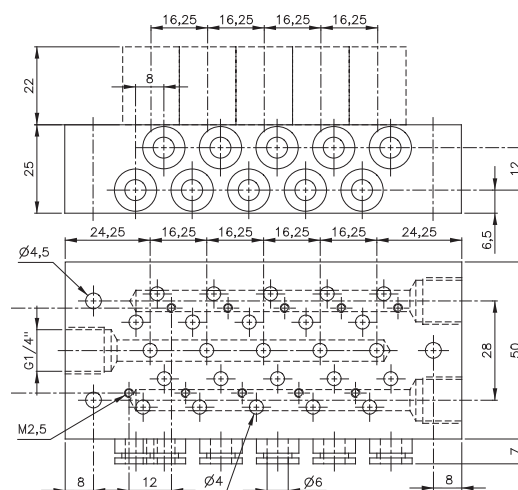
Blanking plates are also available type BP 5 464.

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.

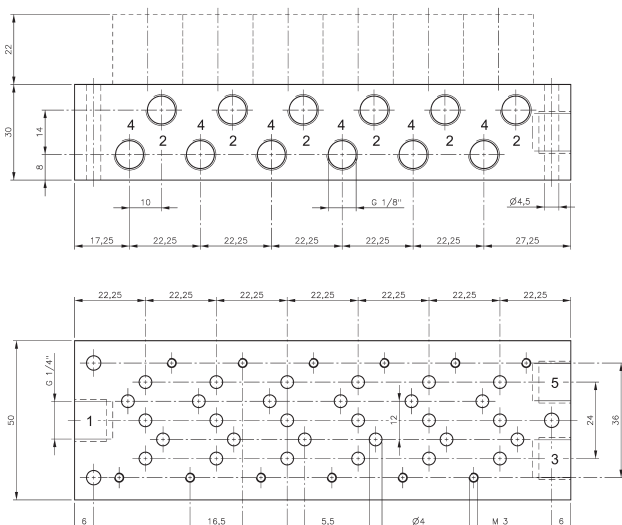


RD 5_344 Orifice size: 5 mm

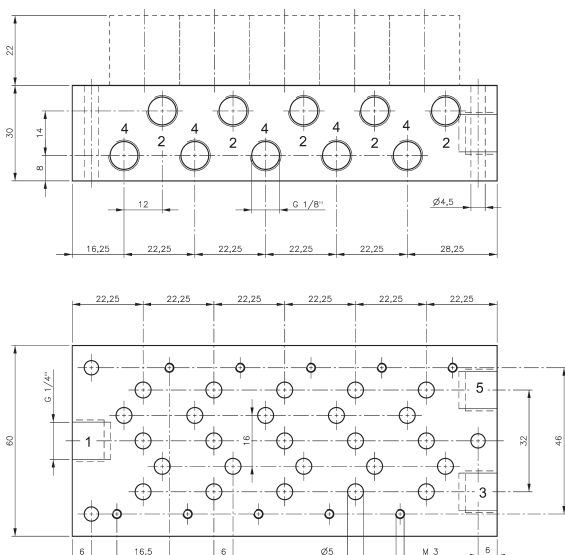


RD 5_464 Orifice size: 6 mm

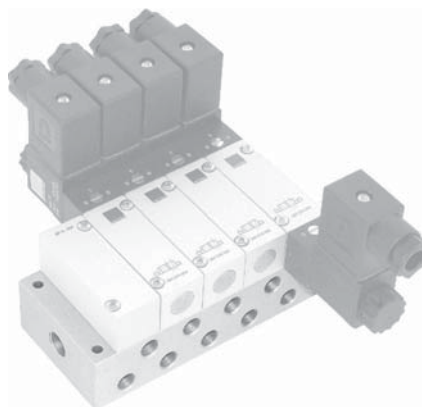
Stations	Type	Weight	Available	Type	Weight	Available
2	RD 502 344	0,14 kg	from stock	RD 502 464	0,21 kg	from stock
3	RD 503 344	0,18 kg	from stock	RD 503 464	0,27 kg	from stock
4	RD 504 344	0,22 kg	from stock	RD 504 464	0,33 kg	from stock
5	RD 505 344	0,26 kg	from stock	RD 505 464	0,38 kg	from stock
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

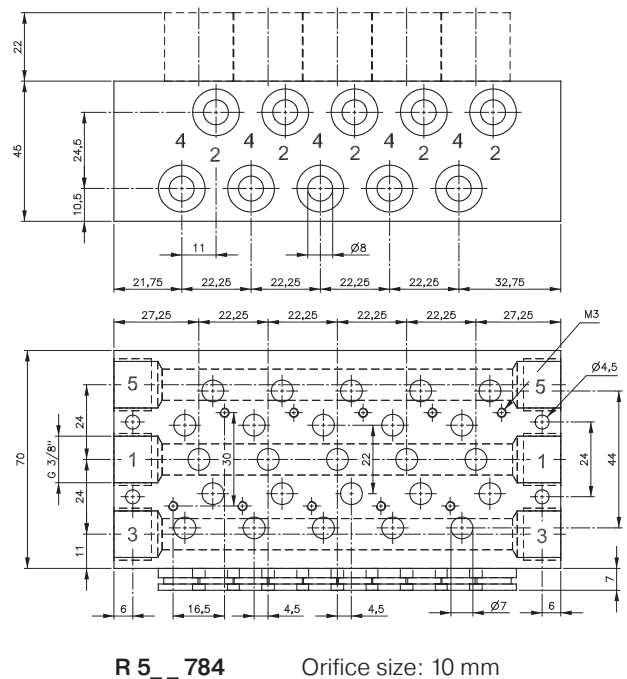
Blanking plates are also available type BP 5 304.

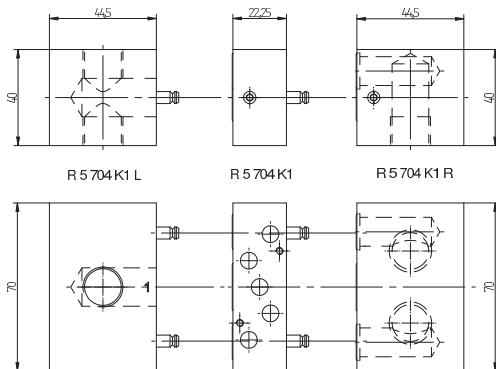
The following solenoid valves can be assembled to the manifold plate type **R 5__ 504** (G 1/8" orifice 5 mm):

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

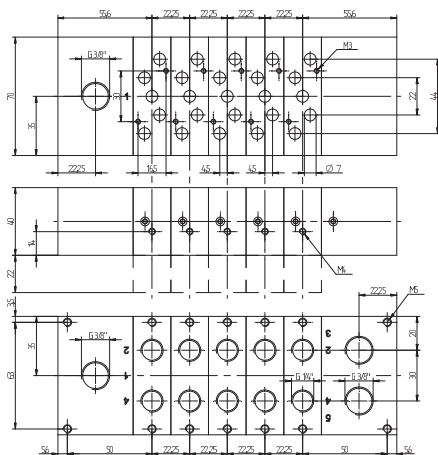
Blanking plates are also available type BP 5 504.

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

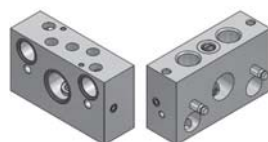




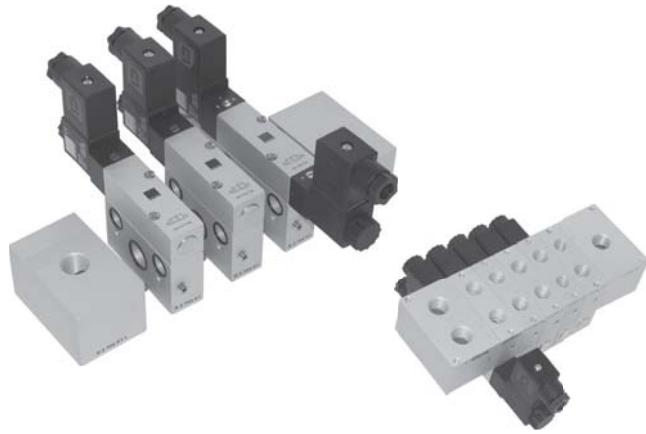
Parts of modular manifold RB 5__ 704 K1



RB 5__ 704 K1 Orifice size: 10 mm



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:

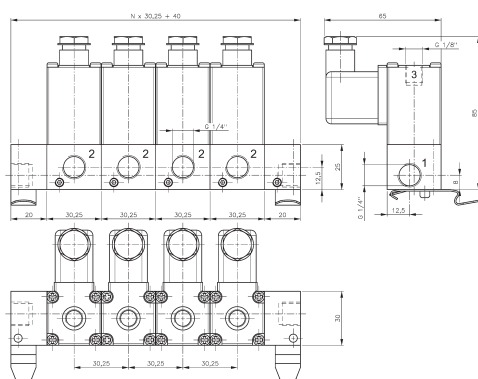
End-plates are not offering an individual valve-position.

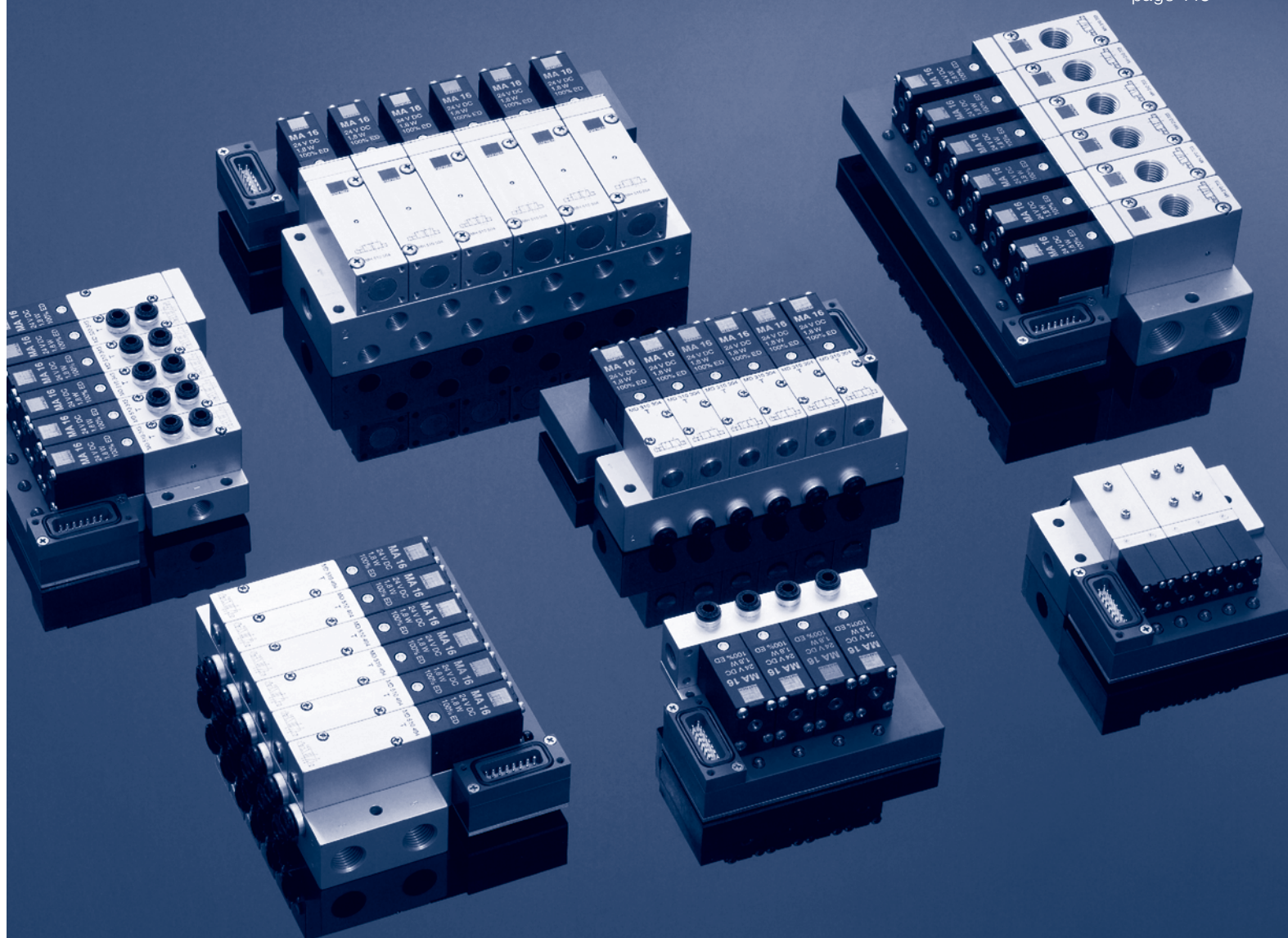
The plates can also be ordered assembled by the manufacturer. In this case order **RB 5__ 704 K1**. Please add two digits for the number of positions required.

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.

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





2.7

Valve Terminals

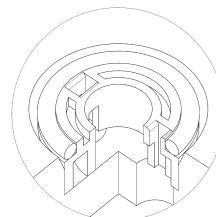
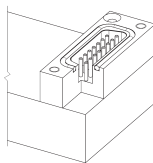
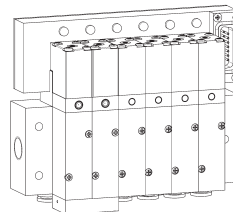
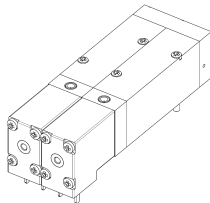
General Information on Valve Terminals

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.

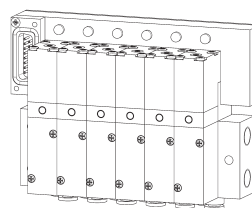
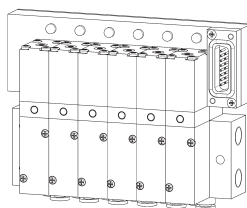
The system is highly water resistant. D-sub-connector and individual valve positions are sealed with NBR O-rings against water and humidity offering IP 65.



Seal at connector

Seal at valve

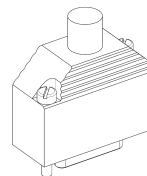
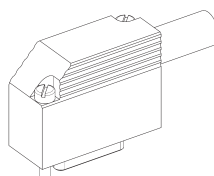
Position of the connector can be chosen at the right or at the left hand side of the terminal.



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 2.7.4.



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

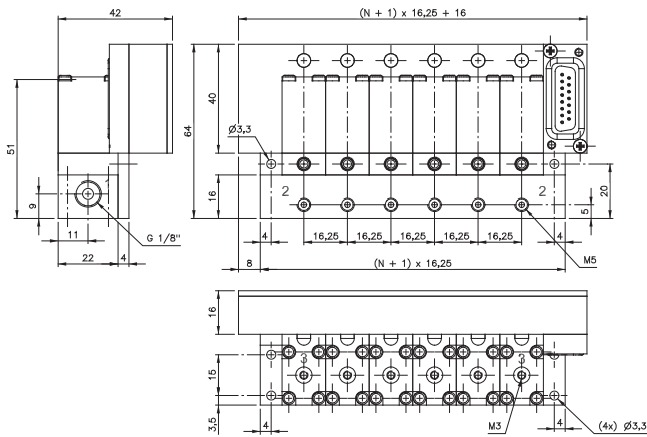
3 or 5: Defining if the plate is for 3- or 5-way valves

4, 5

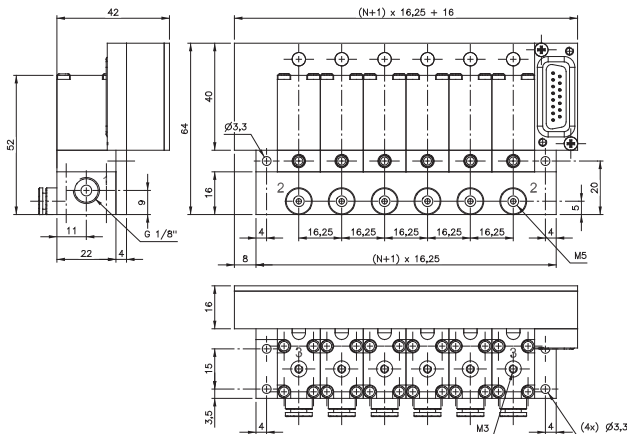
number of positions, 02 to 14

6, 7, 8

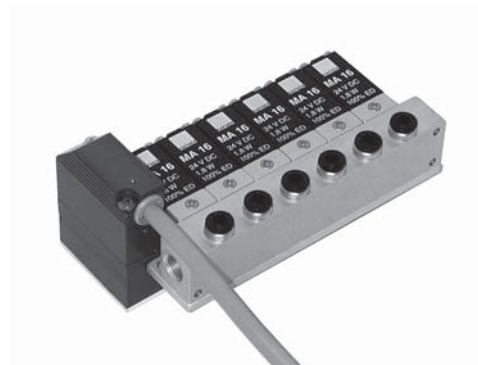
defining size and position of the ports, please refer to page 2.7.2.1 to 2.7.3.7



T_16 3_ _ 104



T_16 3_ _ 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.

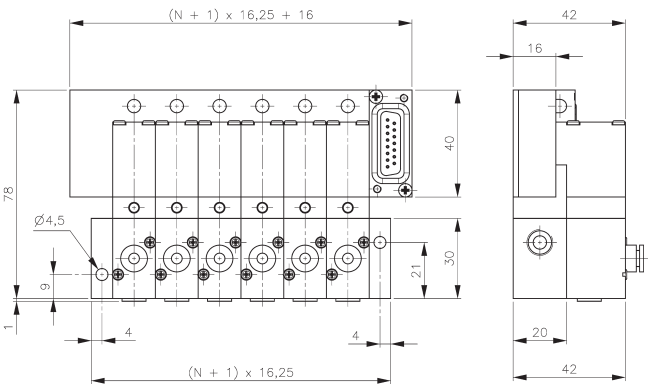
The terminal is available from 2 to 14 stations (4 to 12 preferred stock item). Every station is equipped with a varistor and a red LED for coils 24 V= or 24 V~.

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 2.6.1.2, type RD 3 _ _ 303.

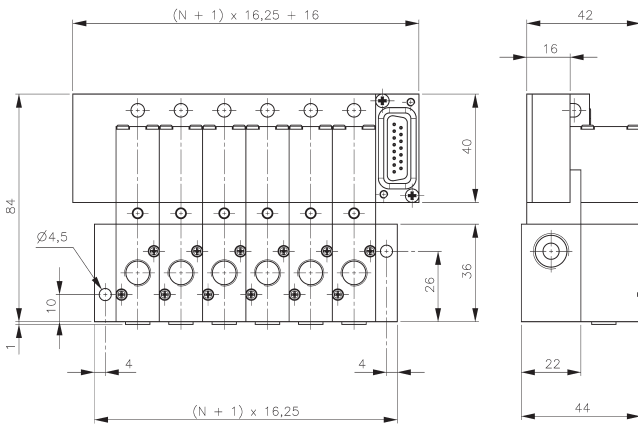
Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 310 343 T 24DC or MD 310 343 T 24AC).

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

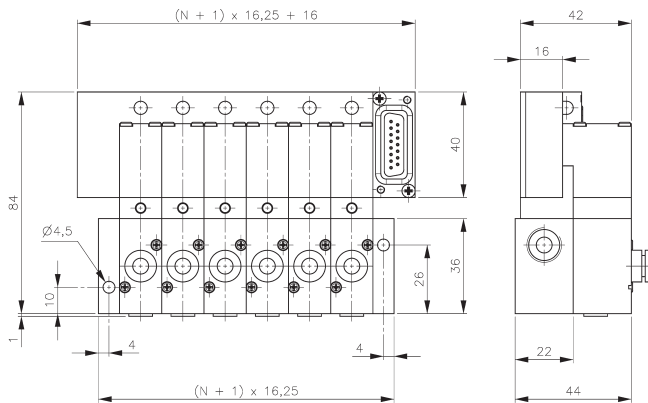
For additional order information please refer to page 2.7.1.



T_16 3__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.



T_16 3__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 2.6.1.2, 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).

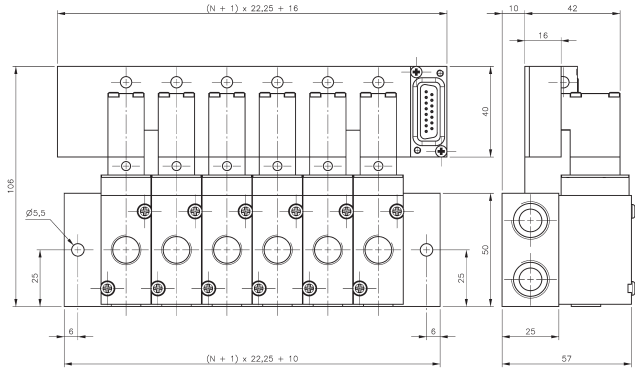
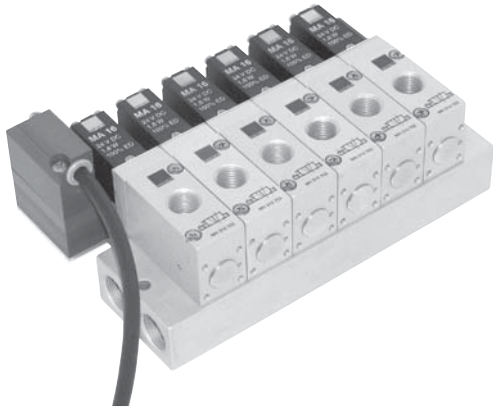
Blanking plates are also available type BP 3 403 T.

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 2.7.1.

T_22 3__703



T_22 3__703
equipped with valves type 703 T

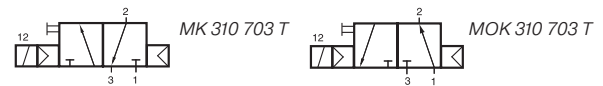
Valve terminal with 3-way valves, orifice size 7 mm, port 2 is in the valve, G 1/4".

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 2.6.1.5, type R 3__703.

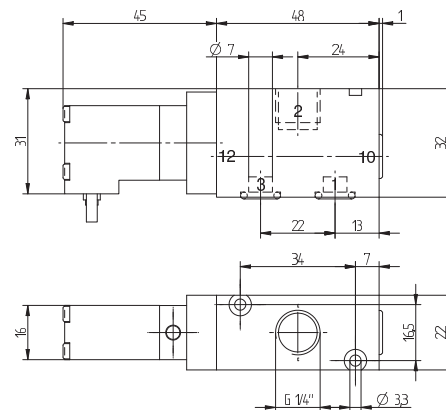
Blanking plates are also available type BP 3 703 T.

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.

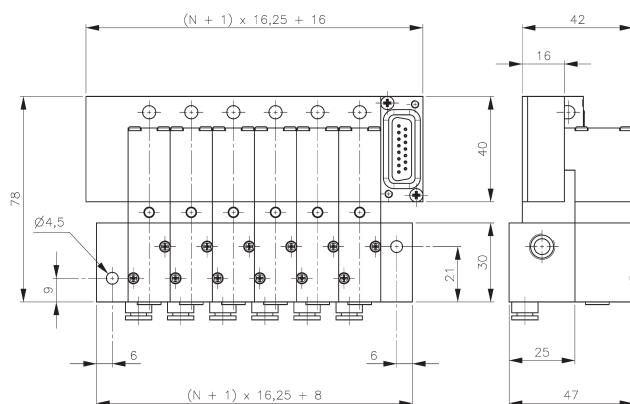
Valves 24 DC as well as 24 AC can be used on the terminals.



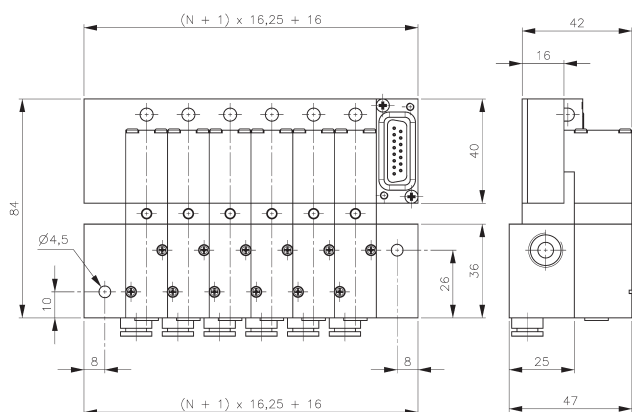
MK 310 703 T/MOK 310 703 T

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

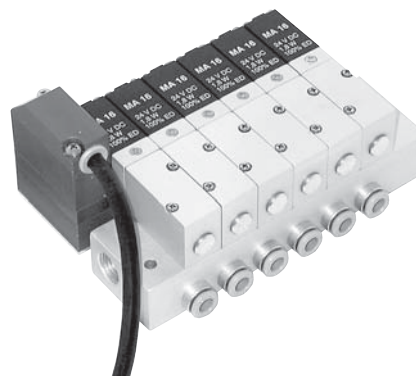
For additional order information please refer to page 2.7.1.



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 2.6.1.3, 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.

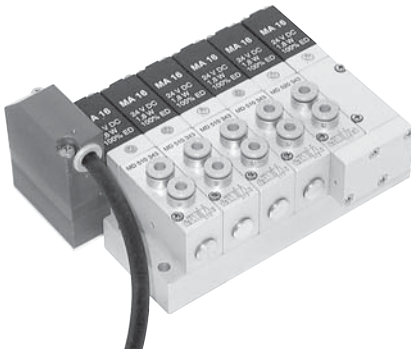
The following valves can be used on
T_163__344 n.c. and n.o. can be mixed.

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 2.7.1.



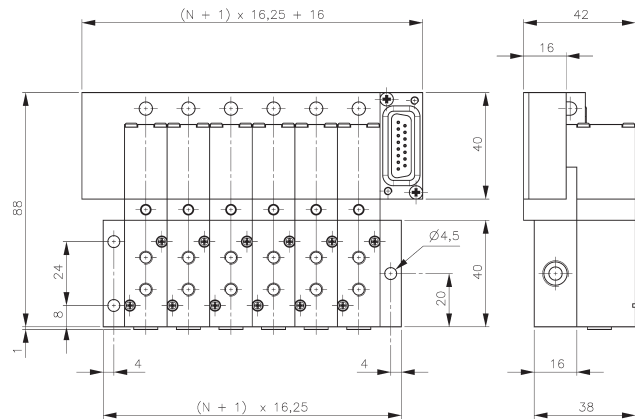
Valve terminal with 5-way valves, orifice size 3 mm, ports 2 and 4 are in the valve. Ports 2 and 4 are either equipped with thread M5 or with push-in fittings for 4 mm tube.

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~.

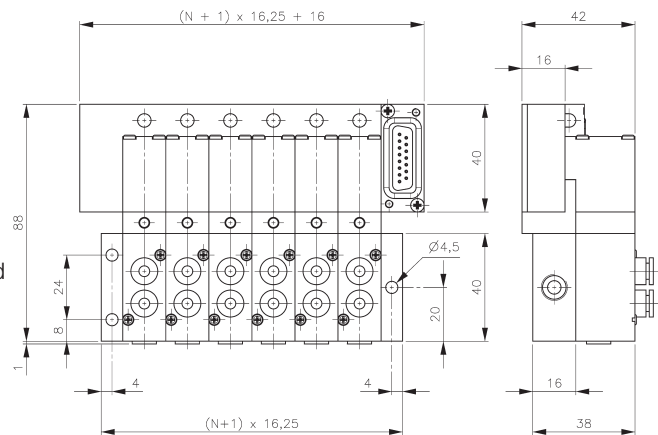
The pneumatic manifold is displayed and described on page 2.6.2.1, type RD 5__303.

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 2.7.1.

Blanking plates are also available type BP 5 303 T.



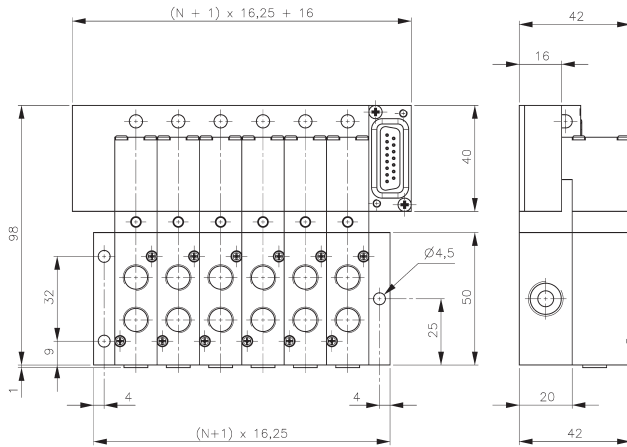
T_16 5_303
equipped with valves type 303 T



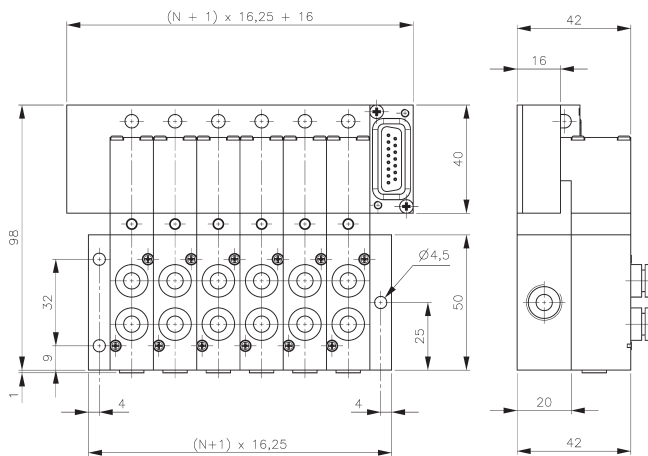
T_16 5__303
equipped with valves type 343 T

The following valves can be used on that type of valve terminal:

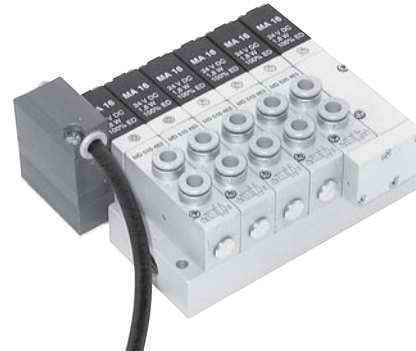
Type	Function	Page	Comment
MD 510 303 T	single sol.	2.5.2.2.1	
MD 510 343 T	single sol.	2.5.2.2.1	
MD 520 303 T	double sol.	2.5.2.2.5	double body
MD 520 343 T	double sol.	2.5.2.2.5	double body
MD 53_ 303 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description
MD 53 343 T	5/3-way	2.5.3.2.1	double body, 3 versions available, refer to description



T_16 5__403
equipped with valves type 403 T



T_16 5__403
equipped with valves type 463 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.

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 2.6.2.1, 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 2.7.1.

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 2.7.1.

T_22 5__ 503/T_22 5__ 703



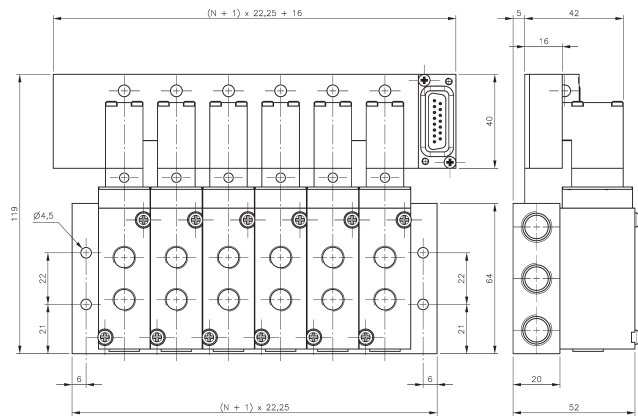
Valve terminal with 5-way valves, ports 2 and 4 are in the valve.
Type 503 orifice size 5 mm, G 1/8"
Type 703 orifice size 7 mm, G 1/4"

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~.

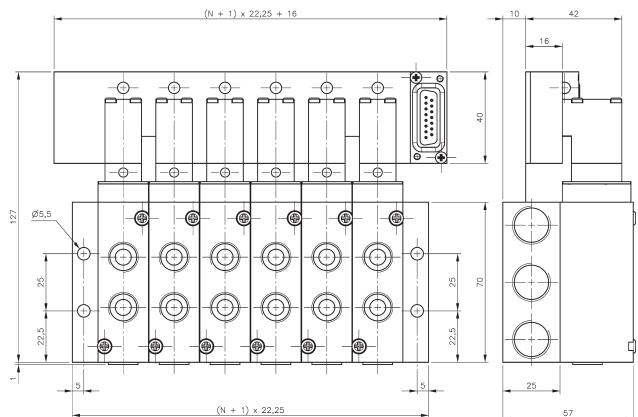
The pneumatic manifolds are displayed and described on page 2.6.2.2 type R 5__ 503, on page 2.6.2.3 type R 5__ 703.

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__ 503
equipped with valves type 503 T



T_22 5__ 703
equipped with valves type 703 T

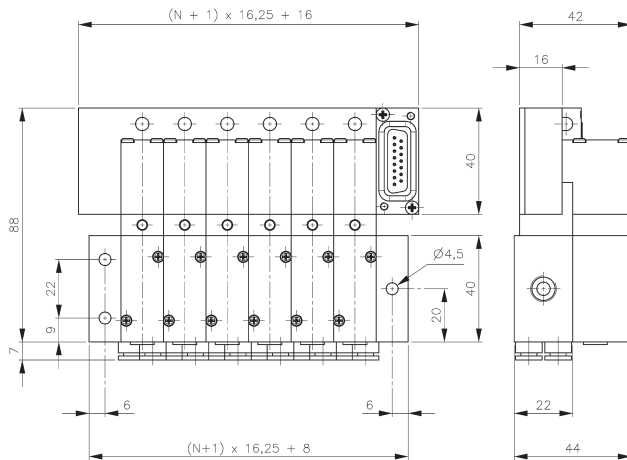
The following valves can be used on T_22 5__ 503:

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
MK53_ 503 T	5/3-way	2.5.3.2.2	double body, 3 versions available, refer to description

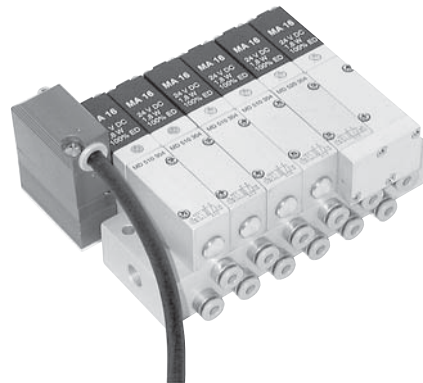
The following valves can be used on T_22 5__ 703:

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 2.7.1.



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 2.6.2.6, 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 2.7.1.

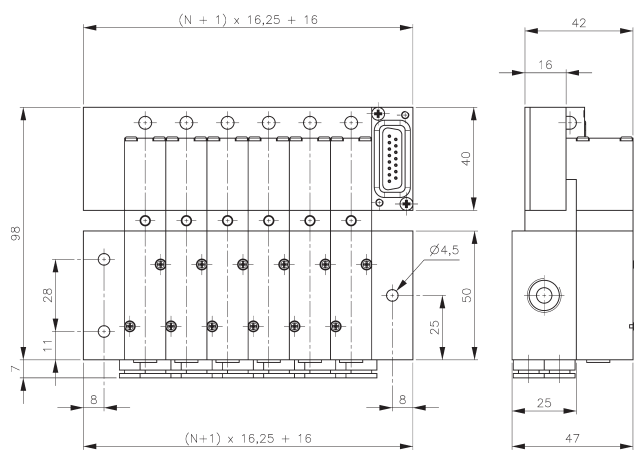
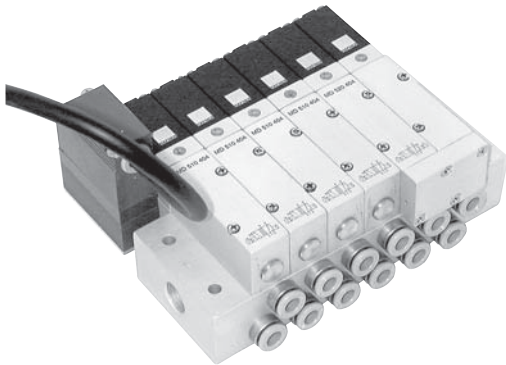
Blanking plates are also available type BP 5 344 T.

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 2.7.1.

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 2.6.2.6, type RD 5_ _ 464.

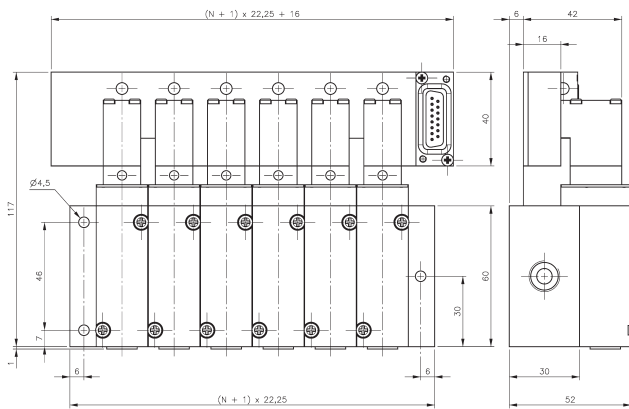
Valves for terminal use offer a solenoid turned by 180° and no 3rd pin (ground). For ordering please add a T to the regular type-number (e.g. MD 510 404 T 24DC or MD 510 404 T 24AC). "Double body valves" (5/2-way impulse and 5/3-way-valves) occupy 2 spaces as described on page 2.7.1.

Blanking plates are also available type BP 5 464 T.

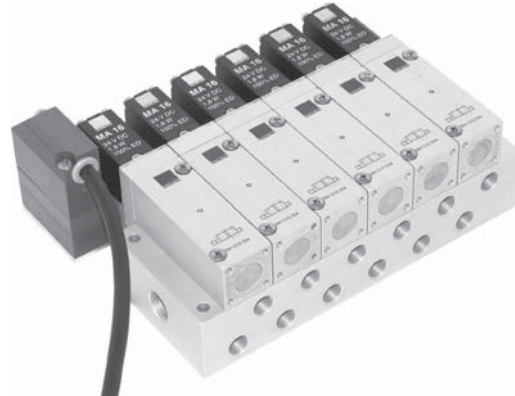
The following valves can be used on that type of valve terminal:

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 2.7.1.



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 2.6.2.7, 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.

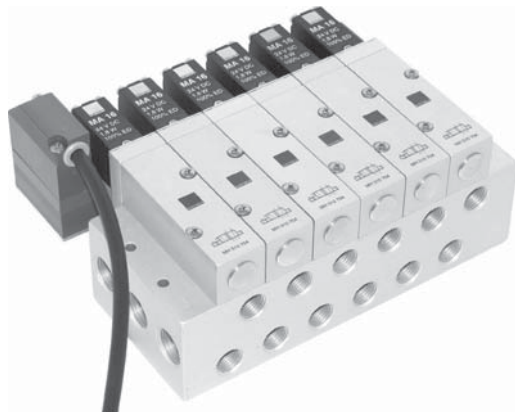
Blanking plates are also available type BP 5 504 T.

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 2.7.1.

T_22 5__704/T_22 5__784



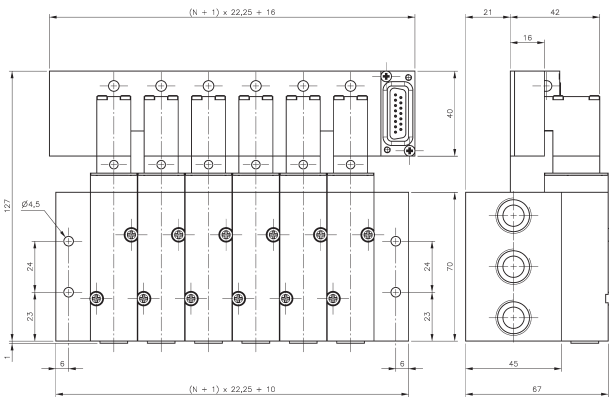
Valve terminal with 5-way valves, orifice 7 mm, all the ports are in the plate. Port 2 and 4 either G 1/4" (terminal 704) or push-in fittings for 8 mm tube (terminal 784).

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~.

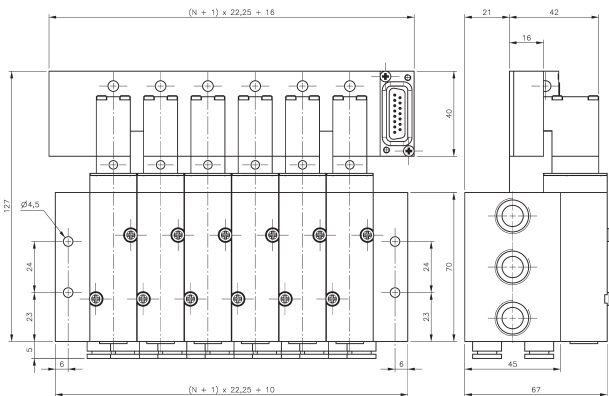
The pneumatic manifolds are displayed and described on page 2.6.2.8, type R 5__704 / 784.

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__704
equipped with valves type 704 T

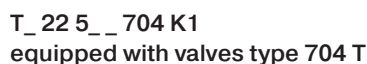


T_22 5__784
equipped with valves type 704 T

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

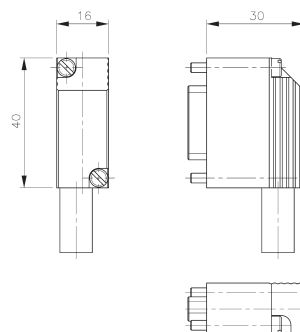
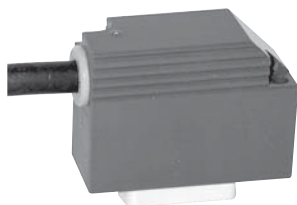
For additional order information please refer to page 2.7.1.



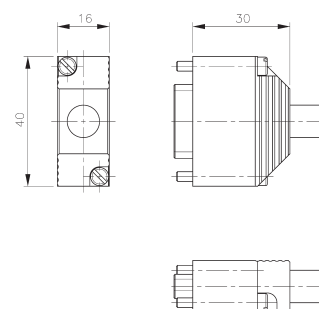
The valve terminals are also available with individual valve isolation. In certain industries the user appreciates, if he can take away air pressure at any valve on the plate individually. Valves can easily be exchanged by closing the plug in port 1 without interruption of the air-supply of the other valves. If requested, please order T 5 704 K1D1.

For additional order information please refer to page 2.7.1.

Connectors and Cable ST40 W__/ST40 G__



ST40 W__



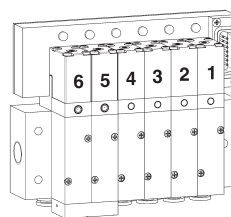
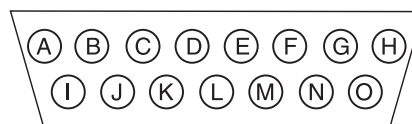
ST40 G__

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.

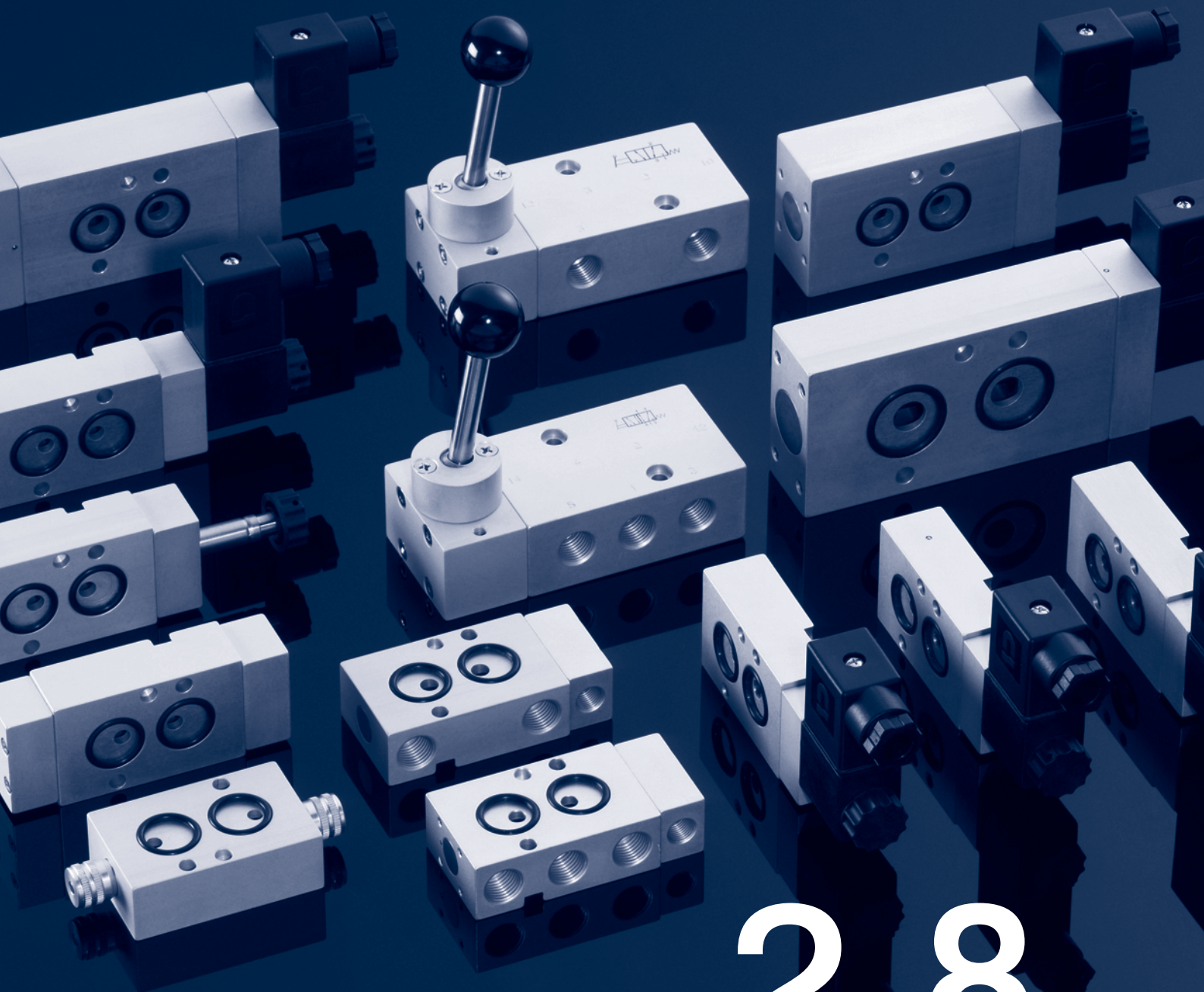
Relationship of valve-position, cable-colour and PINS in the connector

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 W6	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



2.8

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 2.9.

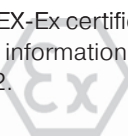


Selected models can be equipped for high temperature environments up to 80 °C, DC only!

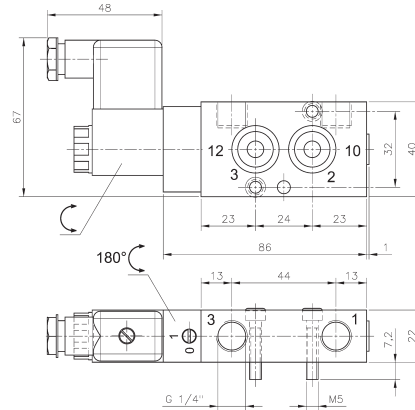
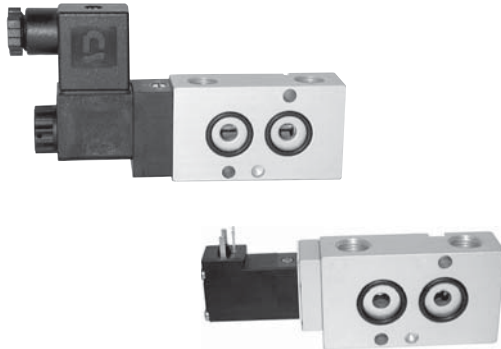
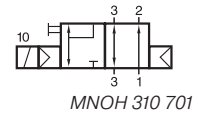
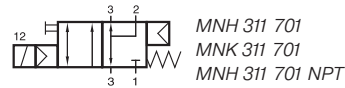
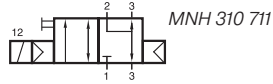
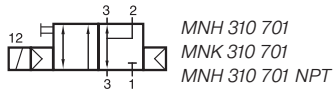


316 Selected models are available in stainless steel.
For detailed information refer to chapter 2.10.

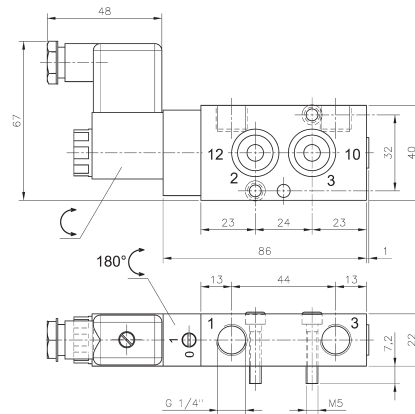
Selected models are available for explosion hazardous environment. They are ATEX-Ex certified.
For detailed information refer to chapter 2.12.



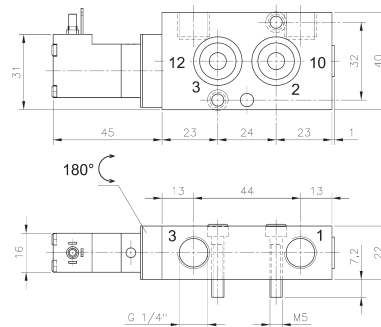
MNH 310 701/MNH 310 711/MNH 311 701 MNOH 310 701/MNK 310 701/MNK 311 701



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



MNH 310 711 ports 1 and 3 are swapped!



MNK 310 701/MNK 311 701

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

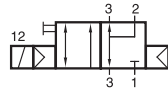
MNK with manual override to push with actuators 230V/50Hz, 110V/50Hz, 24V/50Hz, 24V=, 12V=, 6V=

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

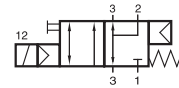
Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight	
MNH 310 701	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	Ex 316
MNOH 310 701	n.o.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	
MNH 310 711	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	Ex 316
MNH 311 701	n.c.	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	316
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	Ex 316
MNH 311 701 NPT	n.c.	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	316

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

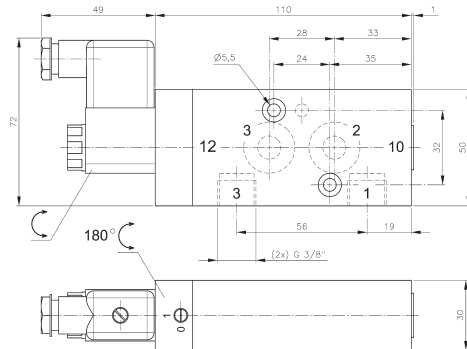
2.8.1.1.2
page 161



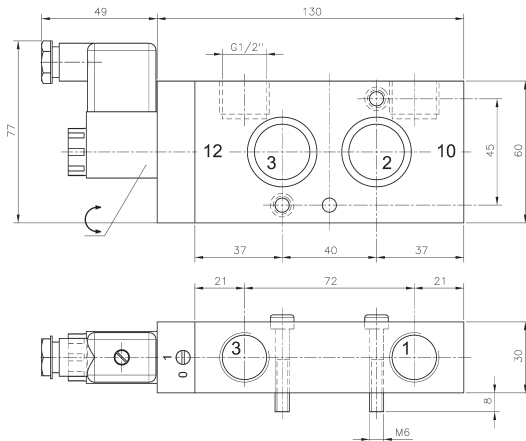
MNH 310 101
MNH 310 121
MNH 310 121 NPT



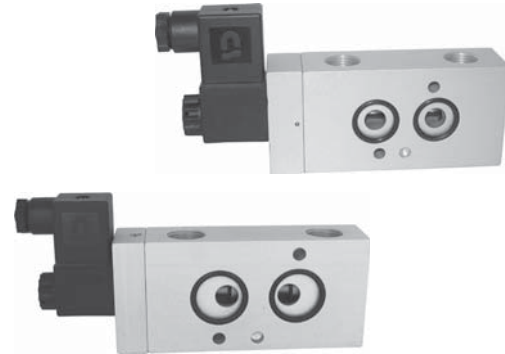
MNH 311 101
MNH 311 121
MNH 311 121 NPT



MNH 310 101/MNH 311 101



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



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

Type 101 according to 1/4" Namur standard
Type 121 according to 1/2" Namur standard

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

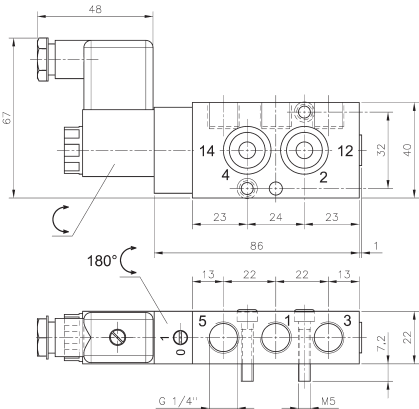
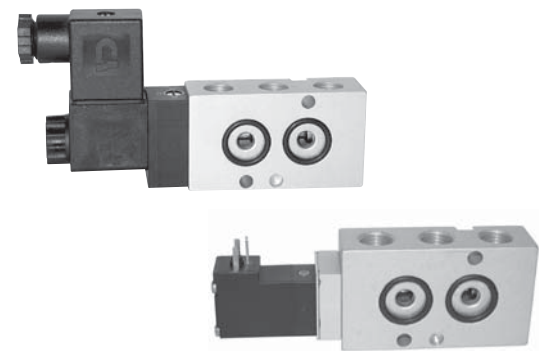
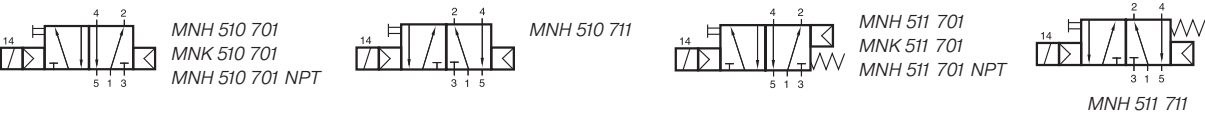
Available with actuators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

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

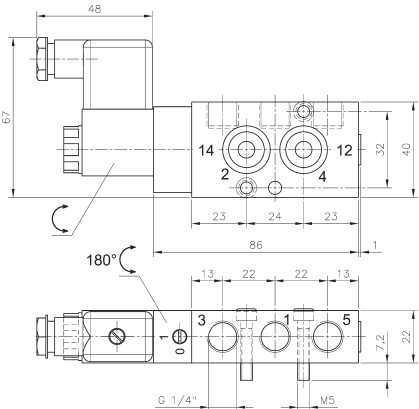
5/2-way solenoid valve, actuated by permanent signal. Interface according to 1/4" Namur standard.

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.

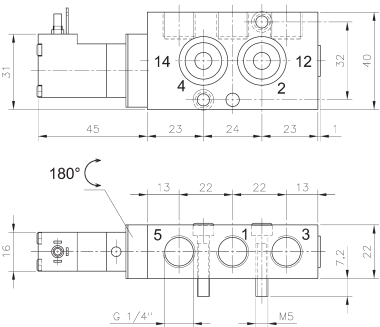
MNH generally with manual override to turn with actuators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

MNK with manual override to push with actuators 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	Ex 316
MNH 510 711	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,26 kg	Ex 316
MNH 511 701	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	316
MNH 511 711	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	316
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	Ex 316
MNH 511 701 NPT	1/4" NPT	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,26 kg	316

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

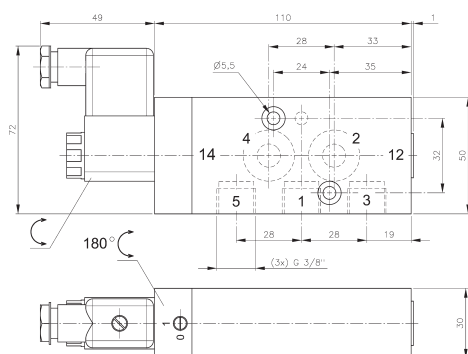
2.8.1.2.2
page 163



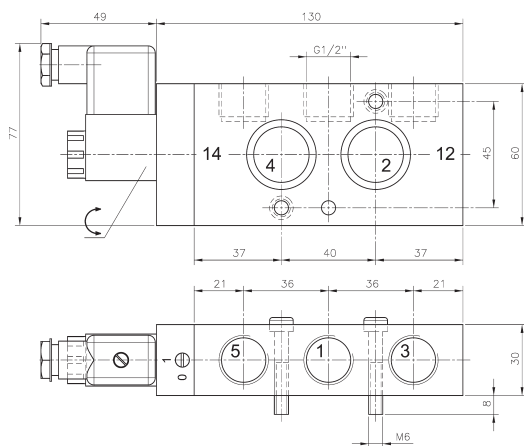
MNH 510 101
MNH 510 121
MNH 510 121 NPT



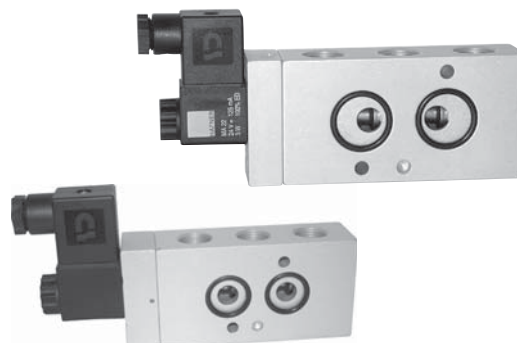
MNH 511 101
MNH 511 121
MNH 511 121 NPT



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.

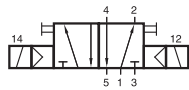
Available with actuators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

The valves are generally equipped with manual override to turn.

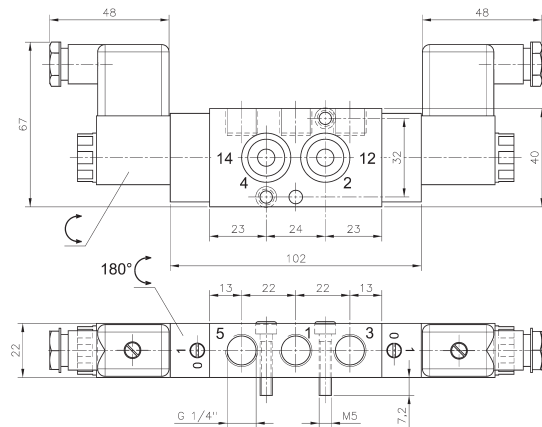
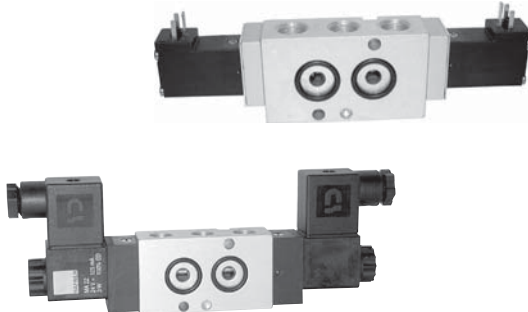
Delivery includes 1 pin, 2 screws, 2 O-rings.

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



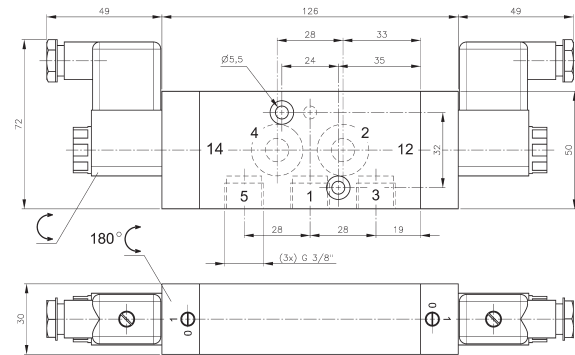
MNH 520 701/MNH 520 701 NPT

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

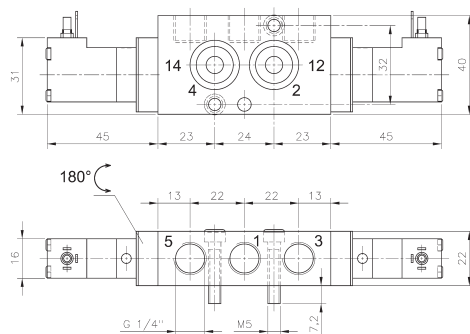
MNH generally with manual override to turn with
actuators 230V/50Hz, 110V/50Hz, 24V/50Hz,
48V=, 24V=, 12V=.

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

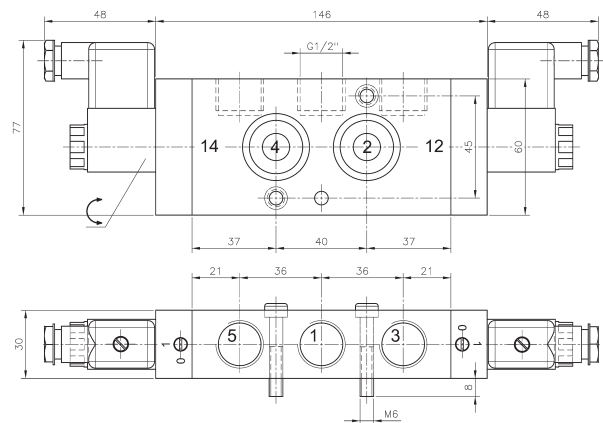
Delivery includes 1 pin, 2 screws, 2 O-rings.



MNH 520 101

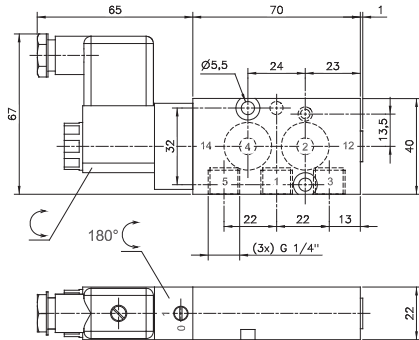
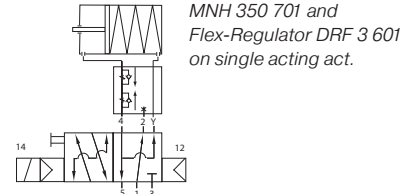
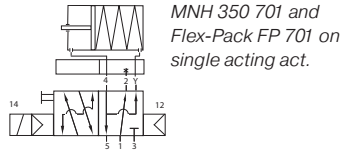
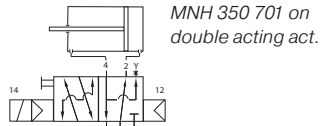


MNK 520 701

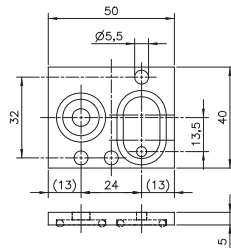


MNH 520 121/MNH 520 121 NPT

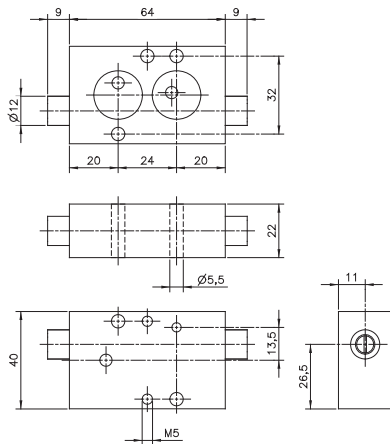
Type	Namur	Port size	Air flow	Operating press.	Power cons.	Weight
MNH 520 701	1/4"	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,35 kg 
MNH 520 101	1/4"	G 3/8"	2250 l/min	1,5 - 10 bar	3 W = / 5 VA ~	0,84 kg 
MNH 520 121	1/2"	G 1/2"	3000 l/min	1,0 - 10 bar	3 W = / 5 VA ~	0,87 kg 
MNK 520 701	1/4"	G 1/4"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

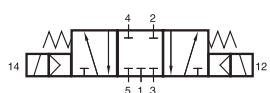
Type	Material	Orifice 4	Orifice 2-3	Weight
FP 701 K	PA	7 mm	4 mm	0,012 kg
FP 701 A	alu	7 mm	4 mm	0,016 kg
DRF 3 601	alu + brass	0,5 - 6 mm	4 mm	0,18 kg



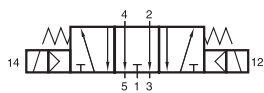
Type	Port size	Air flow	Operating press.	Power Cons.	Weight
MNH 350 701	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 350 701 NPT	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,24 kg
MNH 351 701 NPT	1/4" NPT	1250 l/min	2,5 -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



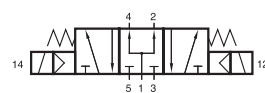
MNH 531 701/MNH 532 701/MNH 533 701 MNH 531 101/MNH 531 121/MNK 531 701



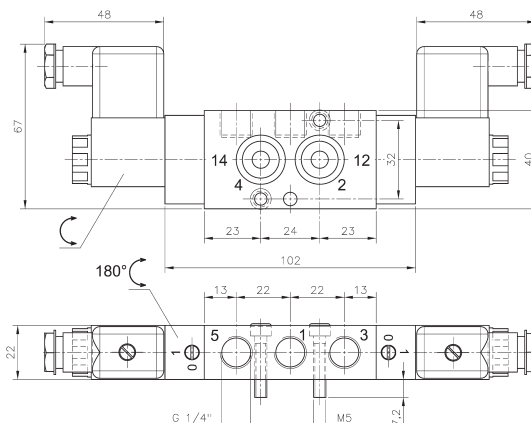
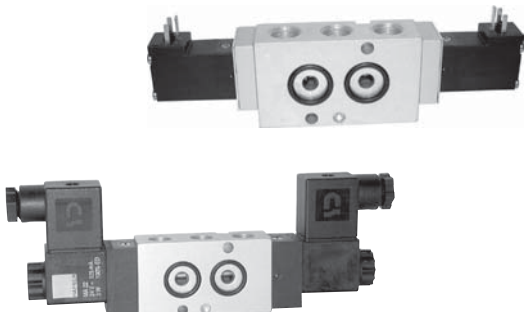
MNH 531 701
MNH 531 101
MNH 531 121
MNK 531 701
MNH 531 701 NPT
MNH 531 121 NPT



MNH 532 701



MNH 533 701



MNH 53_701/MNH 531 701 NPT

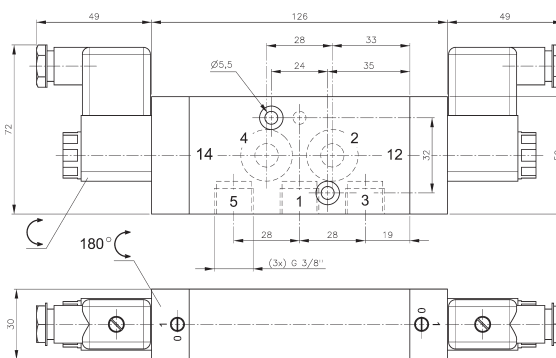
5/3-way solenoid valve with spring return to middle position. Interface according to Namur standard.

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

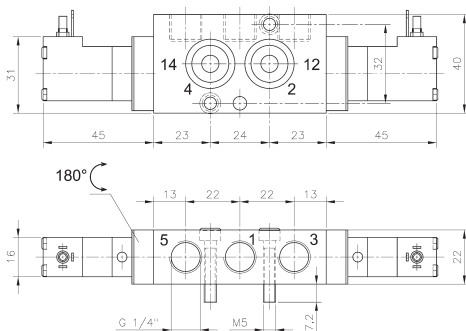
MNH generally with manual override to turn with actuators 230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

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

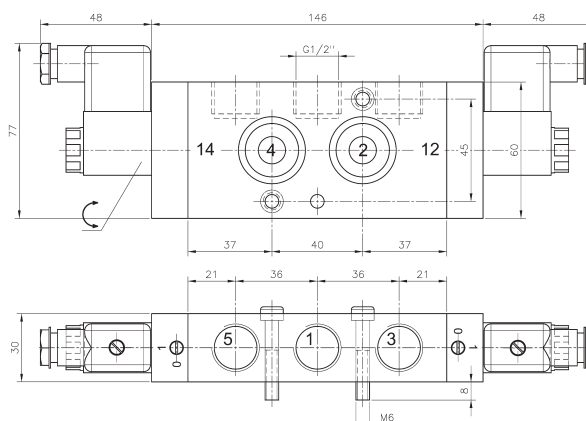
Delivery includes 1 pin, 2 screws and 2 O-rings.



MNH 531 101

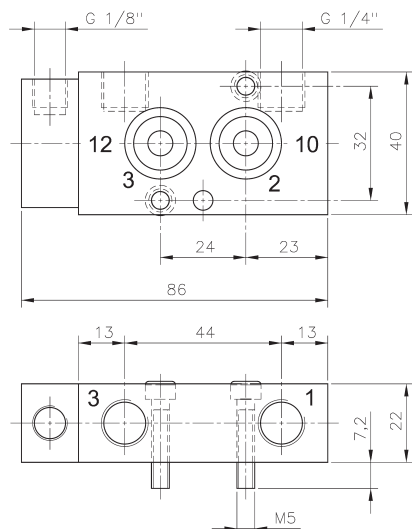


MNK 531 701

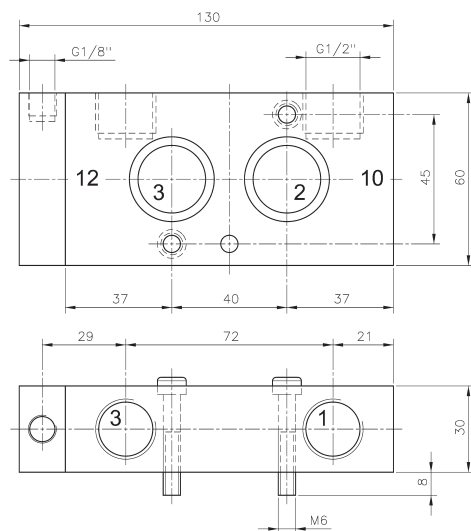


MNH 531 121/MNH 531 121 NPT

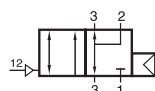
Type	Namur	Port size	Air flow	Operating press.	Power cons.	Weight
MNH 53_701	1/4"	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,36 kg ☼
MNH 531 101	1/4"	G 3/8"	2250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,84 kg
MNH 531 121	1/2"	G 1/2"	3000 l/min	3 - 10 bar	3 W = / 5 VA ~	0,87 kg ☼
MNK 531 701	1/4"	G 1/4"	1250 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 ☼



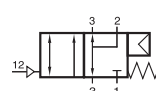
PN 310 701/PN 311 701



PN 310 121



PN 310 701
PN 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"

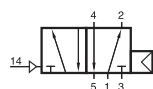
Delivery includes 1 pin, 2 screws, 2 O-rings.

NPT ported valves are available on request.

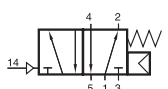
Type	Namur	Port size	Air flow	Operating press.	Actuation press.	Weight
PN 310 701	1/4"	G 1/4" - G 1/8"	1250 l/min	2 - 10 bar	the same	0,20 kg
PN 311 701	1/4"	G 1/4" - G 1/8"	1250 l/min	3 - 10 bar	3 - 10 bar	0,20 kg
PN 310 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	the same	0,62 kg



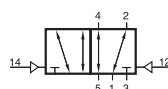
PN 510 701/PN 511 701/PN 510 121 PN 520 701/PN 520 121



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.

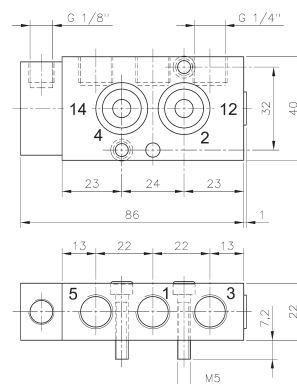
PN 510 701 and PN 510 121 with pneumatic spring. For valves with pure pneumatic spring operating and actuation pressure should be at the same level. PN 511 701 with combined mechanical and pneumatic spring return.

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

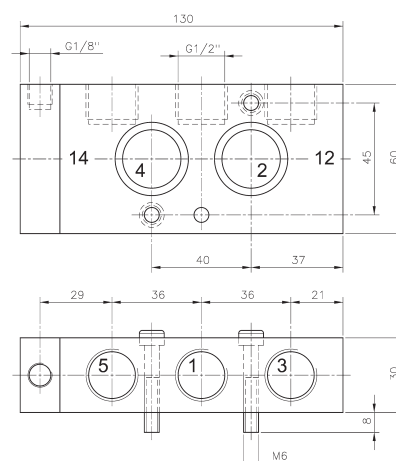
Port sizes type 121: 1, 3 and 5: G 1/2"
12 and 14: G 1/8"

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

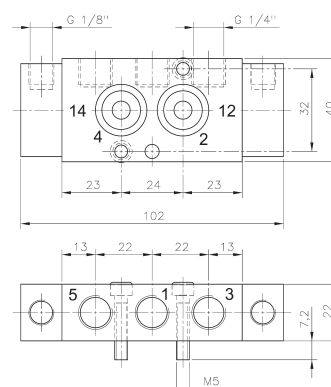
NPT ported valves are available on request.



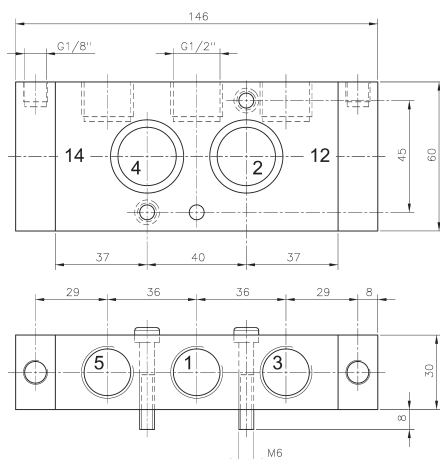
PN 510 701/PN 511 701



PN 510 121

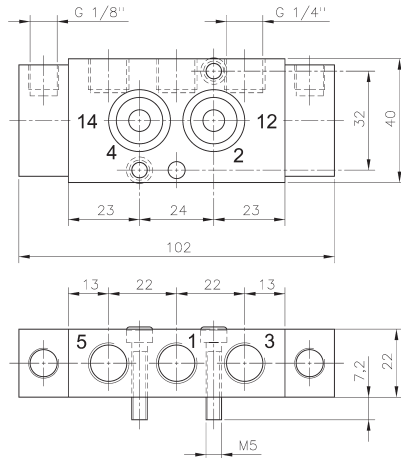
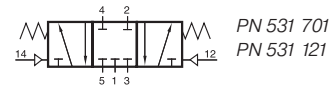


PN 520 701

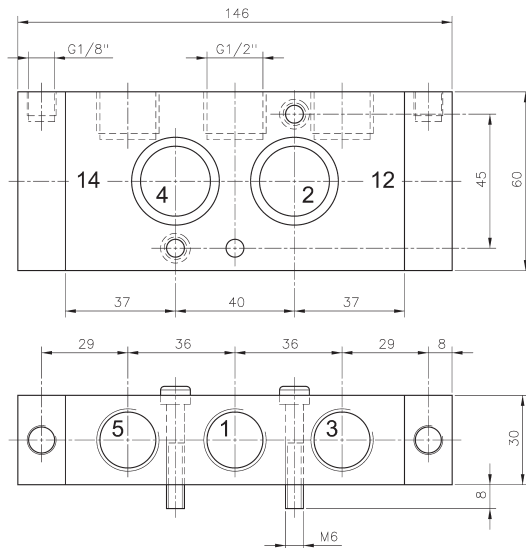


PN 520 121

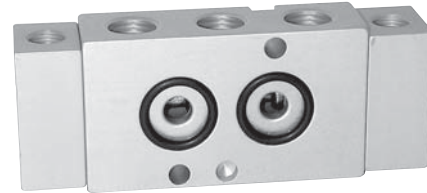
Type	Namur	Port size	Air flow	Operating press.	Actuating press.	Weight
PN 510 701	1/4"	G 1/4" - G 1/8"	1250 l/min	2 - 10 bar	the same	0,19 kg
PN 511 701	1/4"	G 1/4" - G 1/8"	1250 l/min	3 - 10 bar	3 - 10 bar	0,19 kg
PN 510 121	1/2"	G 1/2" - G 1/8"	3000 l/min	1 - 10 bar	the same	0,60 kg
PN 520 701	1/4"	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.

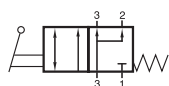
NPT ported valves are available on request.

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

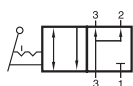


HVN 311 701/HVRN 320 701

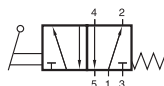
HVN 511 701/HVRN 520 701



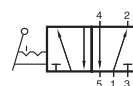
HVN 311 701



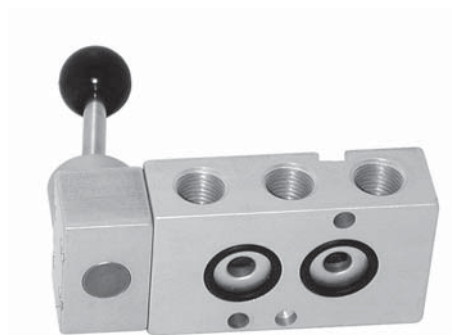
HVRN 320 701



HVN 511 701



HVRN 520 701



Lever actuated spool valves with 1/4" Namur interface. 4 versions are offered:

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

- HVN 511 701 5/2-way with spring return
- HVRN 520 701 5/2-way indexed

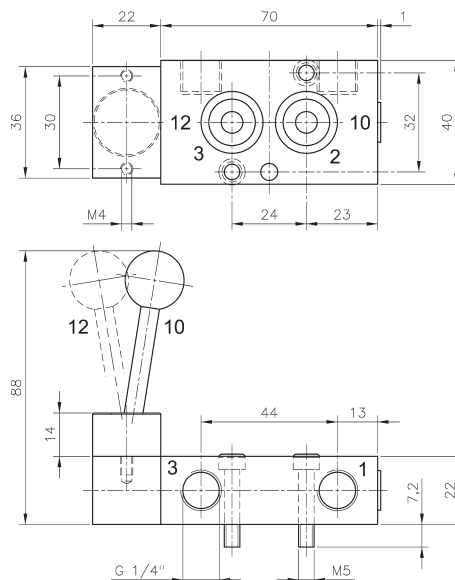
3/2-way valves are normally closed and offer exhaust air recirculation („purge“).

The lever is sealed by using a metal ball.

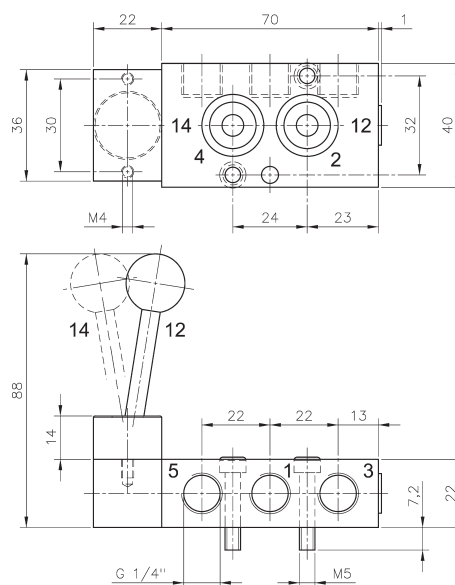
Exhaust can be throttled.

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

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

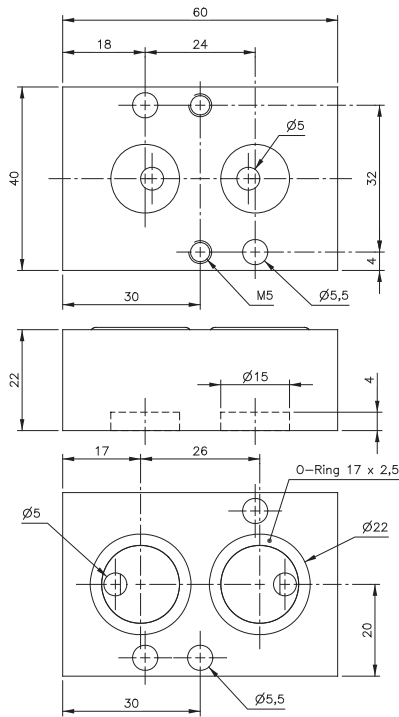
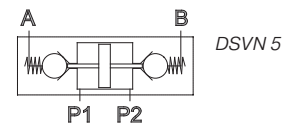


HVN 311 701/HVRN 320 701

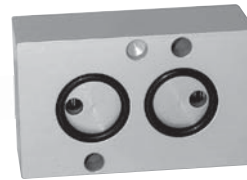


HVN 511 701/HVRN 520 701

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



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.

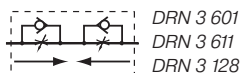
Inner parts are made from brass and POM, seals are made from NBR.

Temperature range: -10° C to +70° C.

If the valve is required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.8.4.10.

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

DRN 3 601/DRN 3 611/DRN 3 128

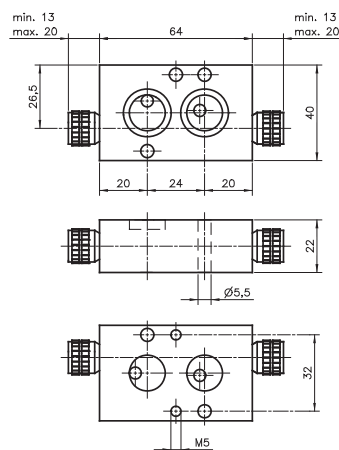


Block form flow regulator as intermediate plate, interface according to Namur standard, for 3/2-way valves with exhaust air recirculation.

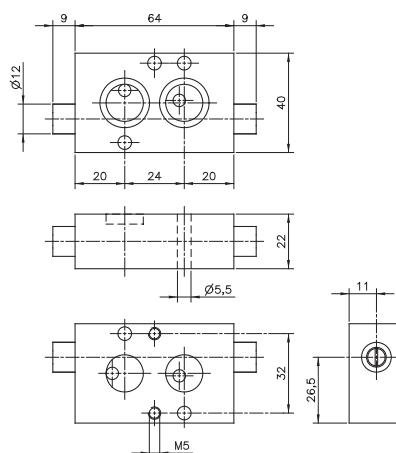
To regulate the forward stroke of a single acting pneumatic actuator and to regulate the exhaust air going into the spring return unit. DRN 3 601 and DRN 3 128 to be operated manually, DRN 3 611 with a screw-driver.

If flow regulator is required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.8.4.10.

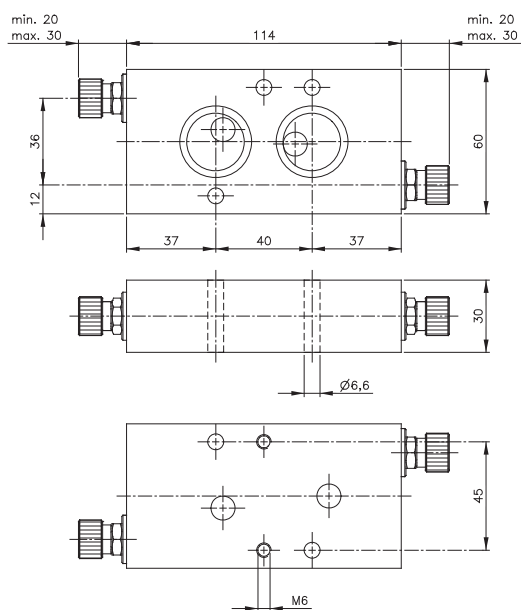
Delivery includes 1 pin, 2 screws, 2 O-rings.



DRN 3 601

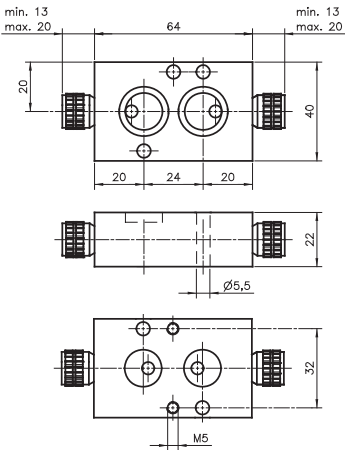
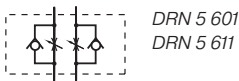


DRN 3 611

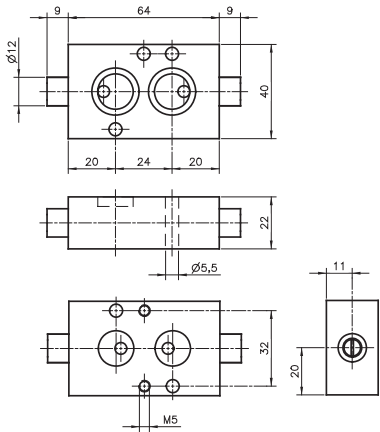


DRN 3 128

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

Block form flow regulator as intermediate plate, interface according to 1/4" Namur standard, for 5-way valves only.

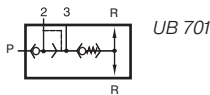
To regulate the forward- and backward-stroke of a double acting pneumatic actuator. DRN 5 601 and DRN 5 501 to be operated manually, DRN 5 611 with a screw-driver.

If flow regulator is required with G 1/4" ports, plate GPN 1/4 can be added. For details please refer to page 2.8.4.10.

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





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

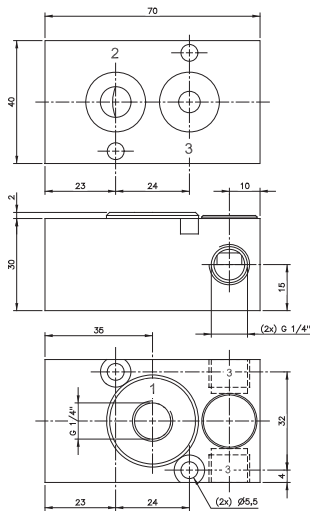
Valve is designed for spring return pneumatic actuators with 1/4" Namur-Interface to be controlled by a remote piloted 3/2-way valve.

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

Body:	aluminum
Diaphragm:	NBR
Other inner parts:	brass

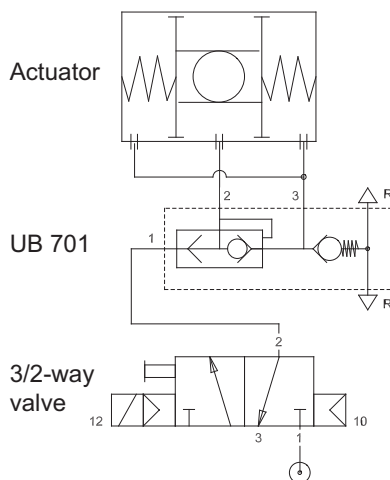
One of the two exhaust ports 3 to be closed by a plug.

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

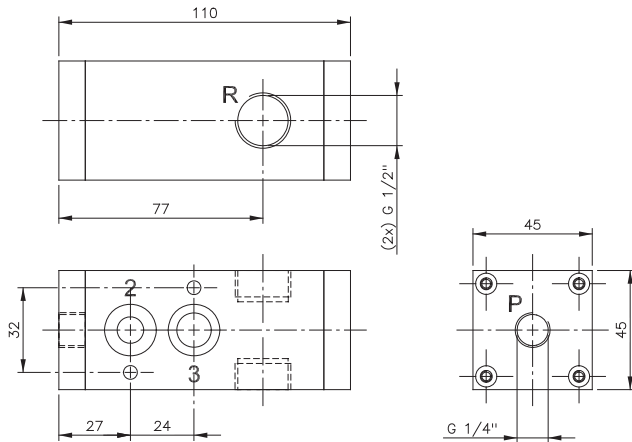
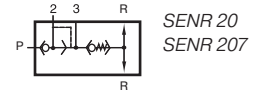


UB 701

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



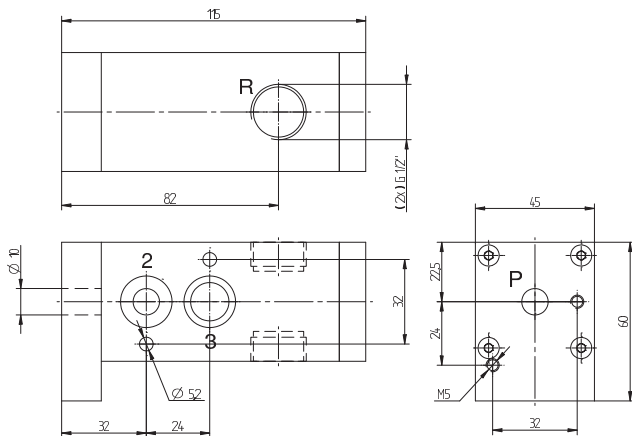
The valve is designed for fast closing of spring-return actuators with 1/4" Namur-interface.

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).

The block assures that only processed 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.

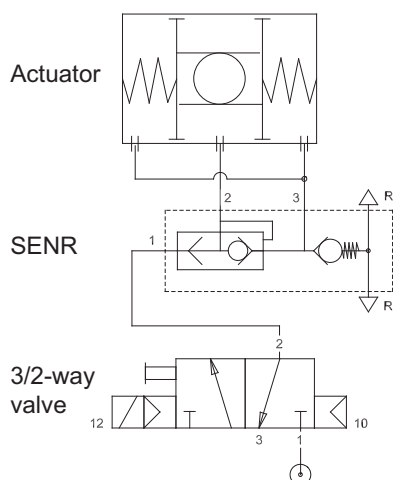
Two exhaust-ports R allow that the product can always be assembled so the silencer faces downwards.

Low-temperature version available on request.



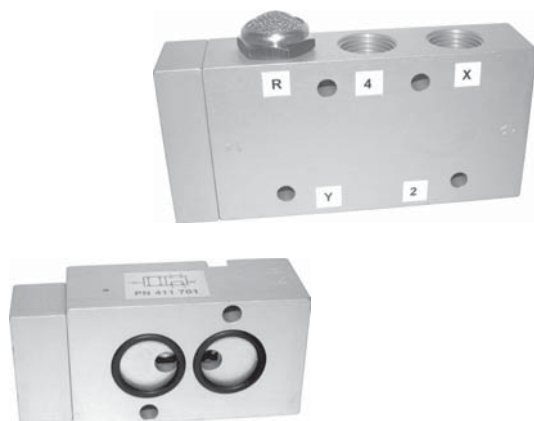
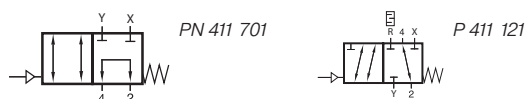
SENR 207

Function:



Type	Namur	Port P	Port R	Air flow P tp 2	Air flow exhaust	Pressure-range	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

PN 411 701/P 411 121



The **PN 411 701** is made for direct assemblage to an actuator with 1/4" Namurinterface. It offers a 1/4" Namurinterface towards the pilot-valve (use as sandwich plate) as well as ports G 1/4" for piped application.

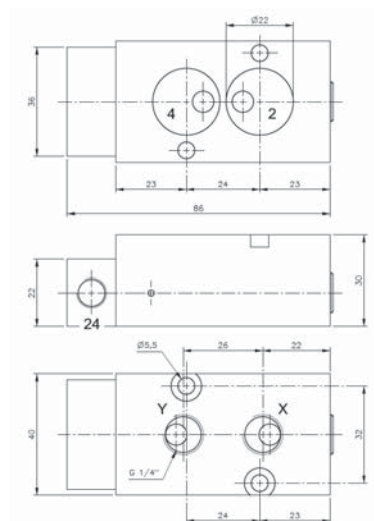
The **P 411 121** is an in-line-version for high-flow-application, ported G 1/2".

Function:

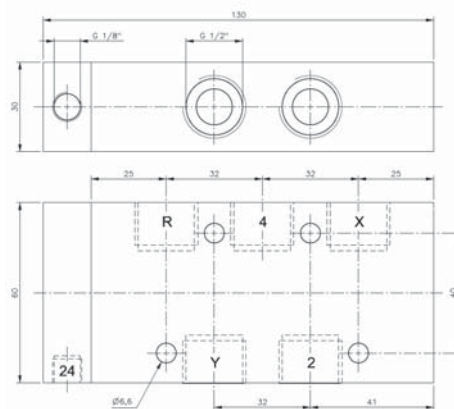
As long as a pneumatic signal is applied, the valve forwards the signals applied to 2 and 4 through to X and Y. When no pneumatic signal is applied the ports 2 and 4 are shortcut.

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.



PN 411 701

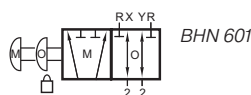


P 411 121

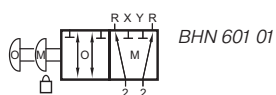
Type	Port size	Air flow	Operating press.	Actuating press.	Weight
PN 411 701	G 1/4"	1250 l/min	1,5 - 10 bar	3 - 10 bar	0,20 kg
P 411 121	G 1/2"	3000 l/min	1 - 10 bar	3 - 10 bar	0,63 kg

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

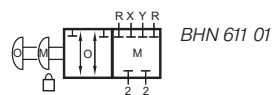
2.8.4.6
page 177



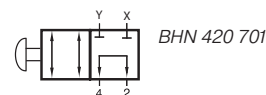
BHN 601



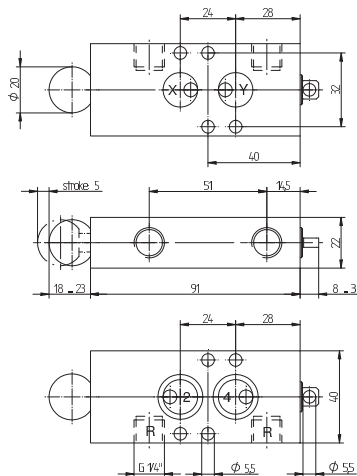
BHN 601 01



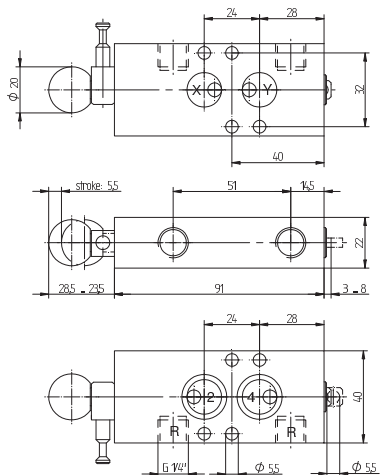
BHN 611 01



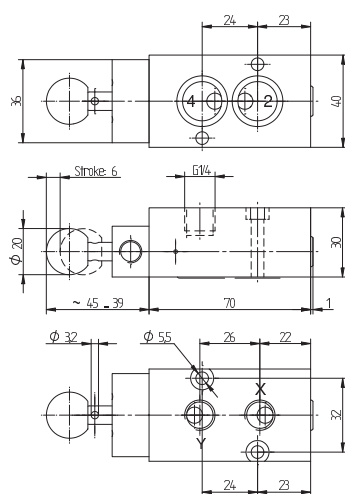
BHN 420 701



BHN 601



BHN 601 01/ BHN 611 01



BHN 420 701



Intermediate valve for assemblage onto the actuator with 1/4" Namurinterface. 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.

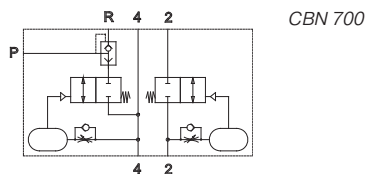
BHN 420 701 compressed air in the actuator is free to float between the two chambers.

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 2.8.4.10.

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



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

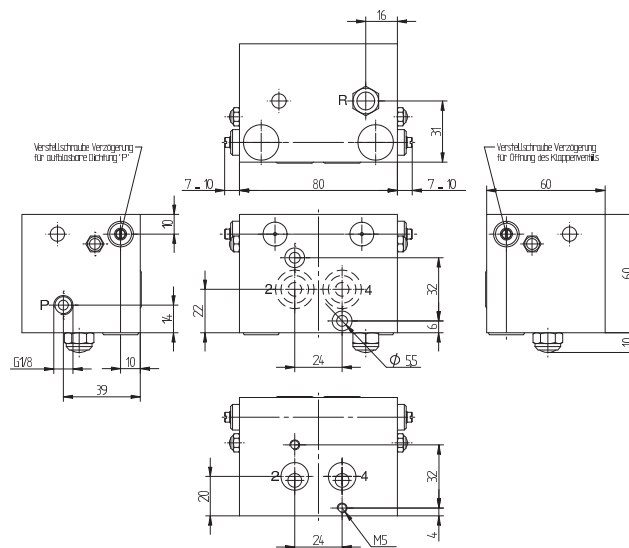
The control-block receives it's signals to open and close from a standard 5/2-way Namur valve. The block is to be put between the actuator and the Namur-valve (flange-version). The closing-signal is fed through to the actuator, the seal is inflated with time-delay.

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.

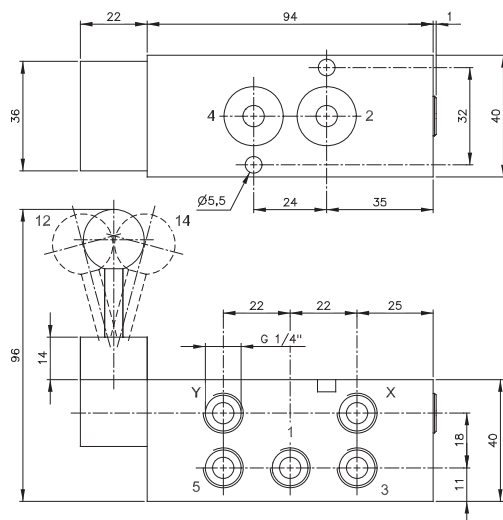
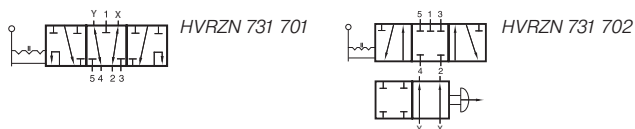
At 6 bar time-delay can be adjusted between 0 and 2 seconds.

Also available for explosion hazardous environment
zone 22 (cat. III D)

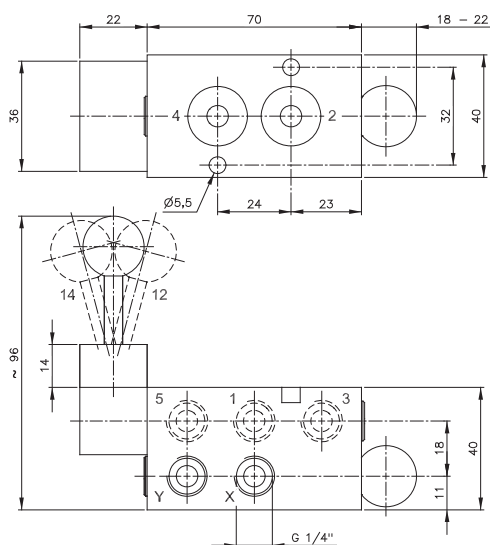


CBN 700

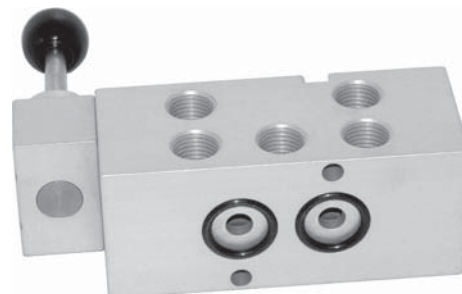
Type	Namur	Port size P	Air flow act.	Air flow seal	Weight
CBN 700	1/4"	G 1/8"	900 l/min	400 l/min	0,80 kg



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:

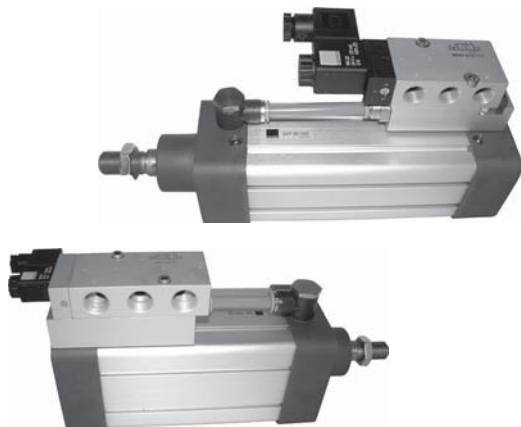
Offers in manual mode a centre closed 5/3-way-valve. Version 701 is in manual mode a 5/2-way-valve.

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.

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

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



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.

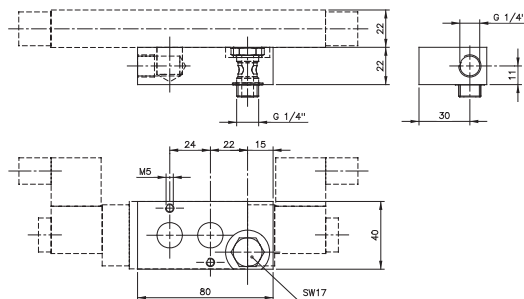
ZVP 121 to be assembled onto a cylinder with G 1/2" ports (diameter 100, 125 mm according to ISO 6431/ISO 15552). Designed for an orifice-size 12 mm in combination with e.g. MNH 510 121.

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

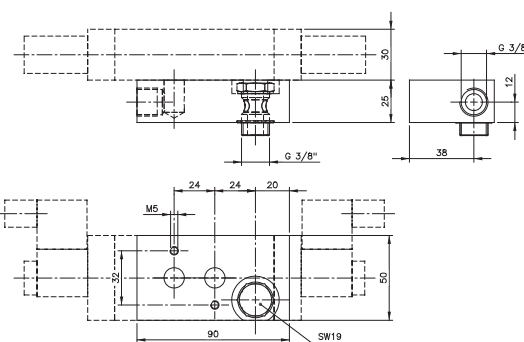
Plate can be equipped with different kinds of Namur-valves.

Delivery contains the plate and the banjo for one port.

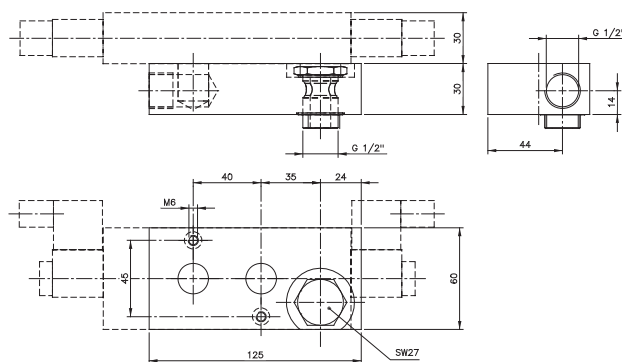
Straight male fittings and rotating elbow fittings to make the other connection can be supplied on request.



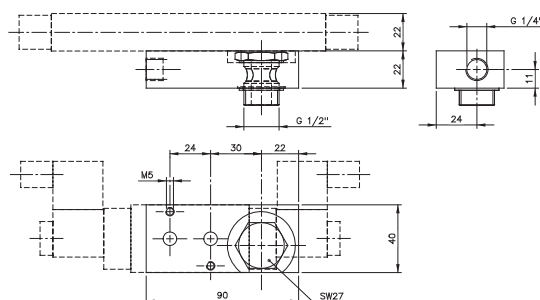
ZVP 701



ZVP 101

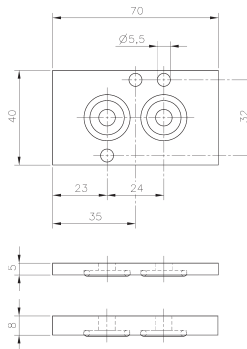


ZVP 121

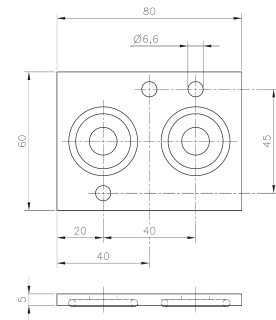


ZVP 121-701

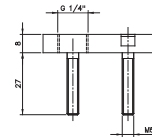
Type	Port A	Port B	Namur	Orifice	Weight
ZVP 701	Banjo G 1/4"	G 1/4"	1/4"	7 mm	0,35 kg
ZVP 101	Banjo G 3/8"	G 3/8"	1/4"	10 mm	0,40 kg
ZVP 121	Banjo G 1/2"	G 1/2"	1/2"	12 mm	0,45 kg
ZVP 121-701	Banjo G 1/2"	G 1/4"	1/4"	7 mm	0,35 kg



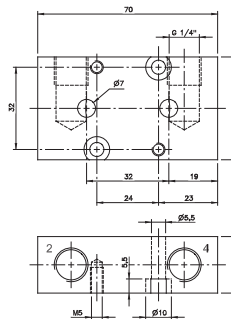
ZPN 5/ZPN 8



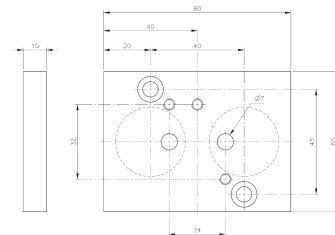
ZPN 6-5



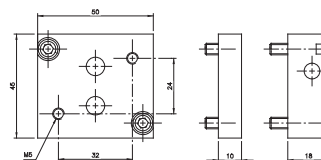
GPN 1/4



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:

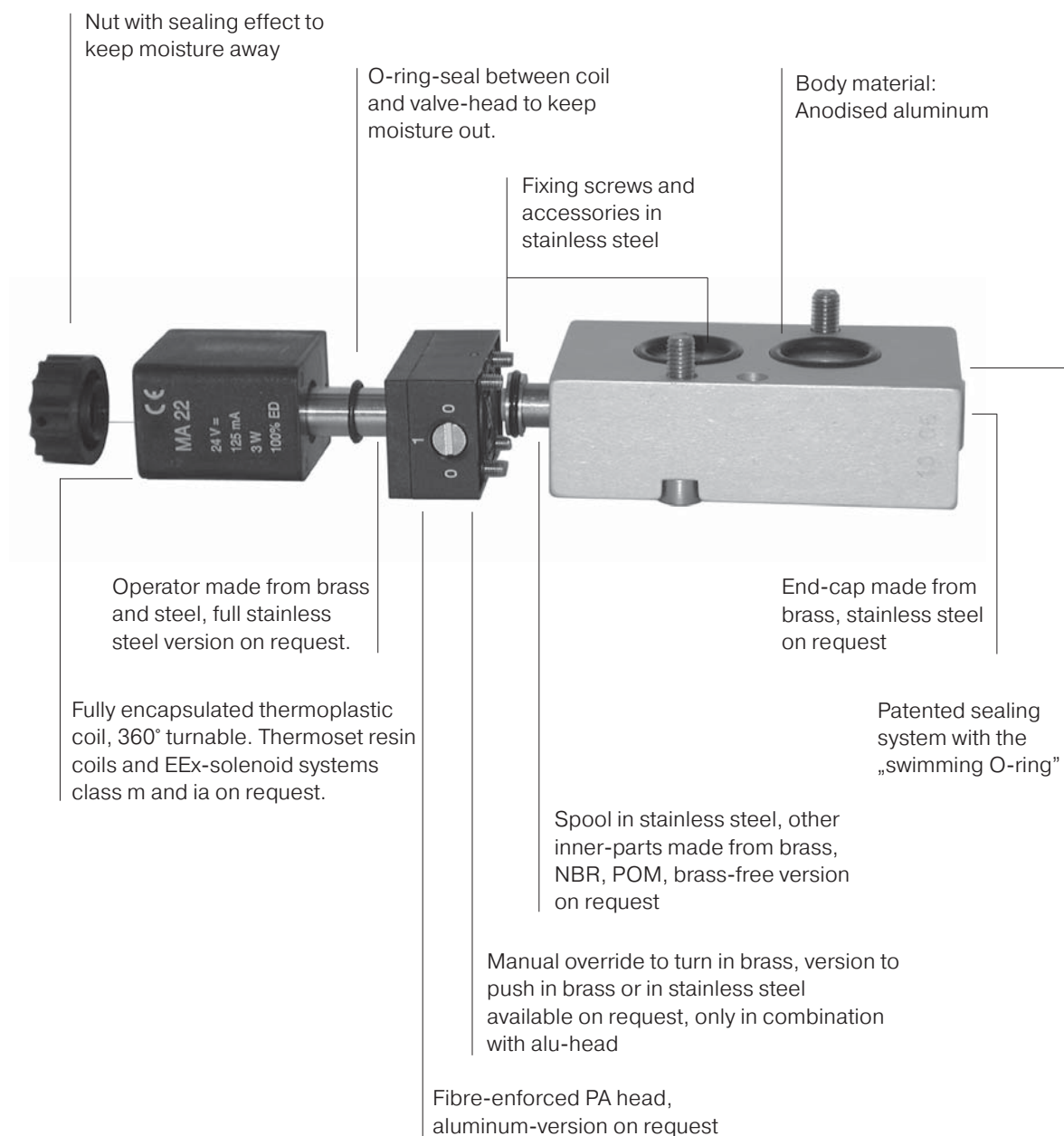
Adapter plate to be assembled onto an actuator with 1/2" interface. A 1/4" Namur-valve can be assembled to the plate. Saves money whenever the actuator does not have to be operated fast.

ZPN 701-90:

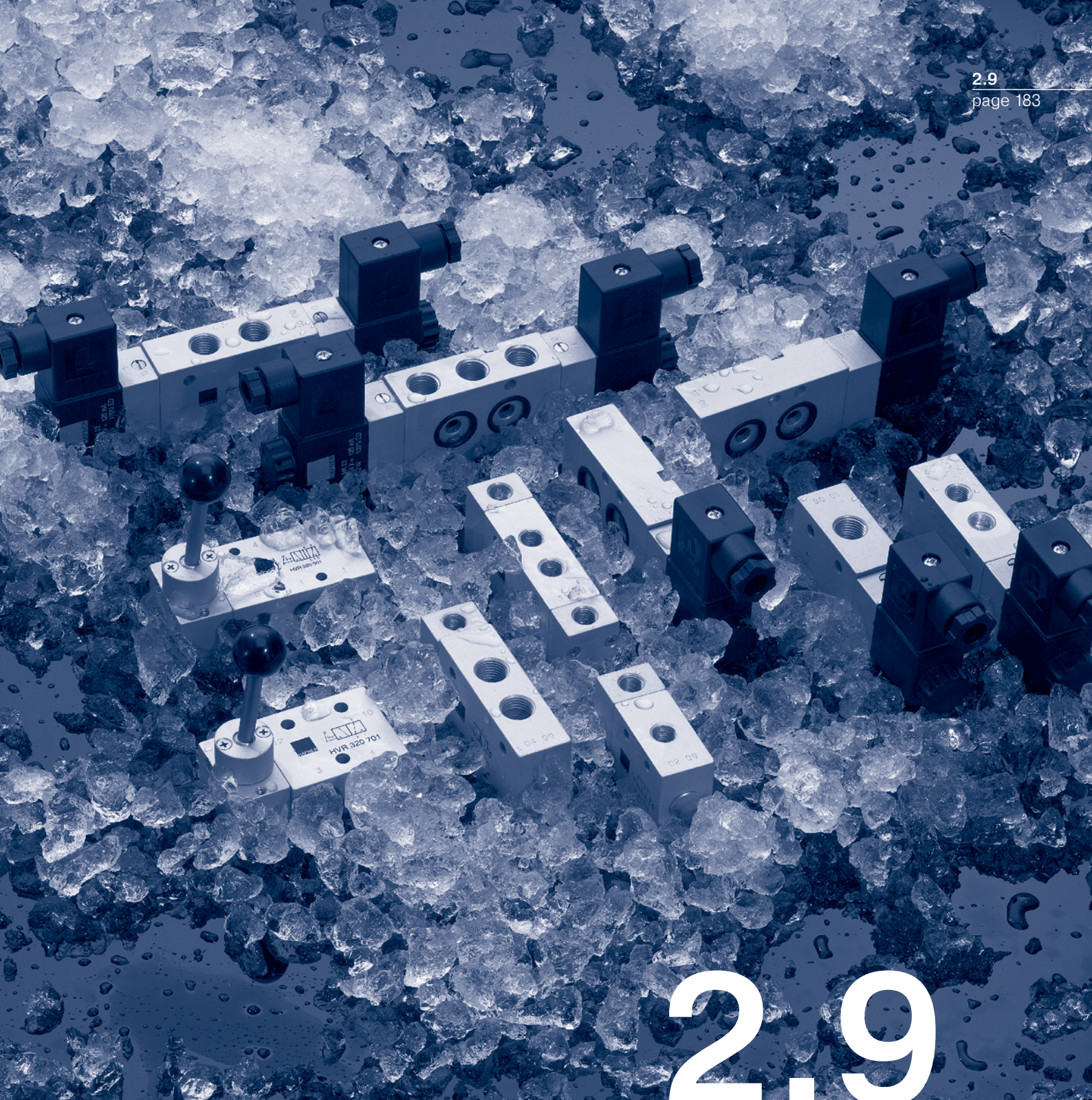
Plate to rotate a Namur-valve on the actuator by 90°. Orifice 7 mm assures full flow!

Type	Use and Content
ZPN 5A	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" Namurvalve
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" Namurvalve
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" Namurvalve
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" Namurvalve
FPNW 22-1/4	Plate to convert a Namurvalve 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 Namurvalve by 90° on the actuator
GPN 1/4	Plate to convert a 1/4" Namur interface into G 1/4" threaded ports

Besides maximum flow of 1.250 NI/min at compact design there are 11 more competitive advantages of the Hafner Namurvalves series 701.



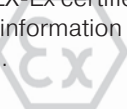
Wide range of Namur accessories.



2.9

„Hafner on the Rocks“ Low Temperature Valves

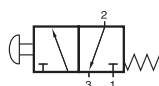
Selected models are available for
explosion hazardous environment.
They are ATEX-Ex certified.
For detailed information refer to
chapter 2.12.



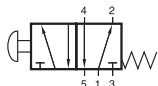
Temperature range: - 50° C to + 50° C

Please notice:
Below -40°C minimum operating
pressure generally increases to 3 bar.

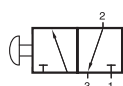
BH 311 701 TT/BH 320 701 TT
BH 511 701 TT/BH 520 701 TT



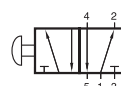
BH.311 701 TT



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.

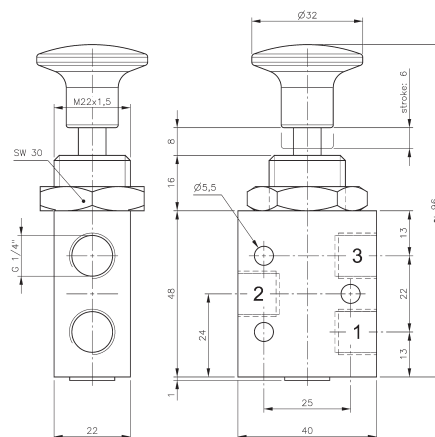
Exhaust can be throttled.

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

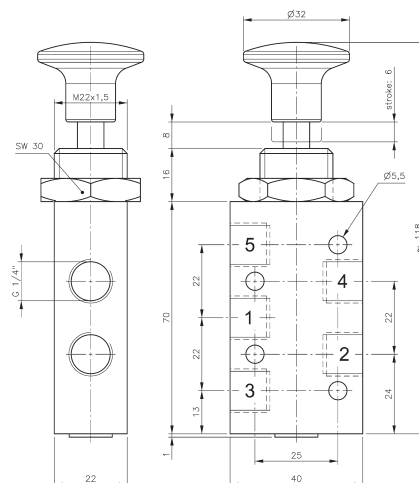
Available on request: BG 311 701 TT

Mechanically actuated 3/2-way valve, body as well as technical specifications similar to BH 311 701.

Modified stem actuator.



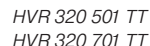
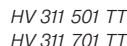
BH 311 701 TT/BH 320 701 TT



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	0,18 kg
BH 320 701 TT	3/2-way indexed	G 1/4"	1250 l/min	1 - 10 bar	18 N	0,18 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

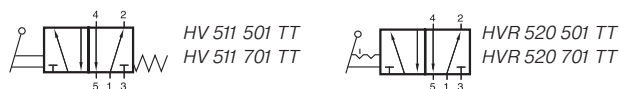
2.9.2.1
page 185



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.

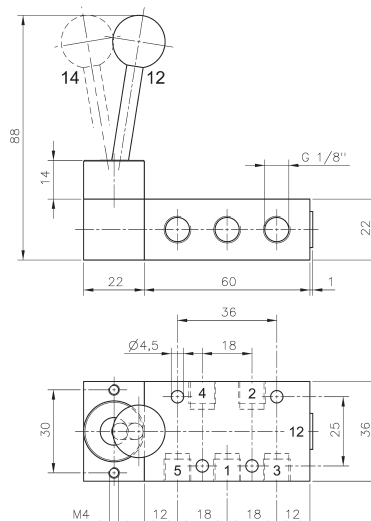
Please notice:

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!

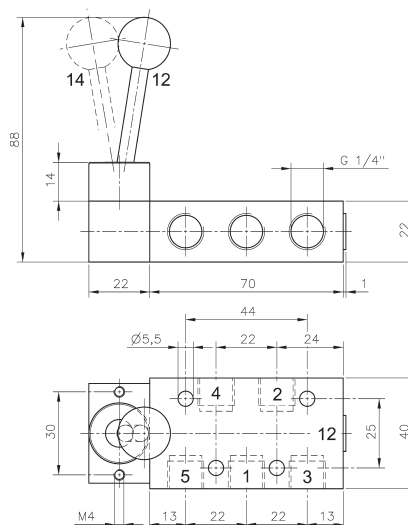
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

Exhaust can be throttled.



HV 511 501 TT/HVR 520 501 TT

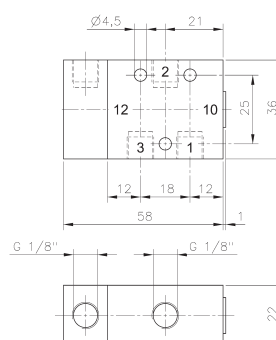
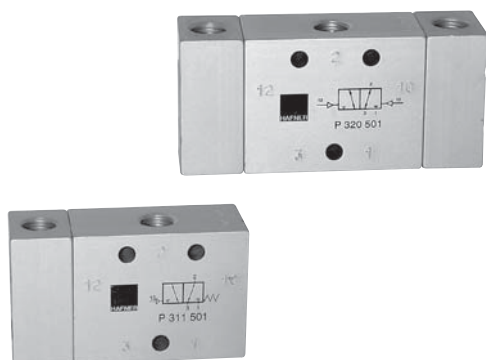
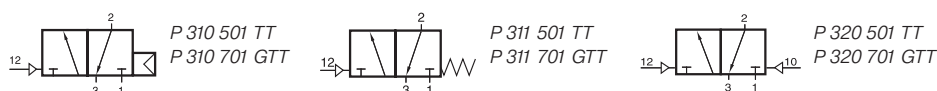


HV 511 701 TT/HVR 520 701 TT

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

2.9.2.3
page 187

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 2.6.1.5.

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.

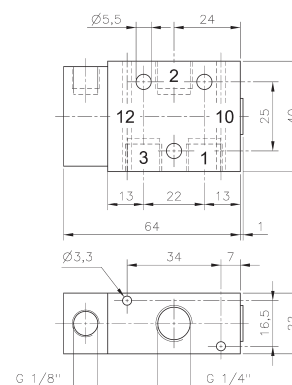
Please notice:

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!

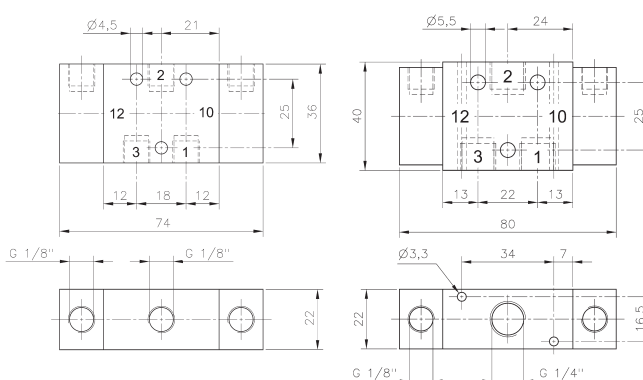
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min, actuation pressure minimum 3 bar.

Use unlubricated air only.

Exhaust can be throttled.



P 310 701 GTT/P 311 701 GTT



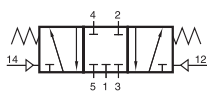
P 320 501 TT

P 320 701 GTT

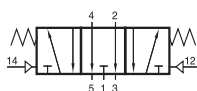
Type	Function	Port size	Air flow	Operating pressure	Actuating pressure	Weight
P 310 501 TT	n.c. air return	G 1/8"	650 l/min	2 - 10 bar	the same	0,13 kg
P 310 701 GTT	n.c. air return	G 1/4"	1250 l/min	2 - 10 bar	the same	0,14 kg
P 311 501 TT	n.c. mech. spring	G 1/8"	650 l/min	2 - 10 bar	3 - 10 bar	0,13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



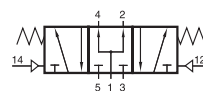
P 53_ 501 GTT/P 53_ 701 GTT



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 2.6.2.2, manifold for valves type 701 G are displayed on page 2.6.2.3.

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.

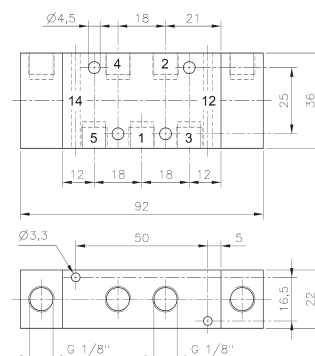
Please notice:

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!

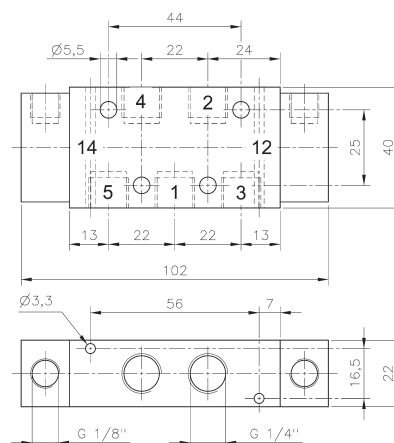
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

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.



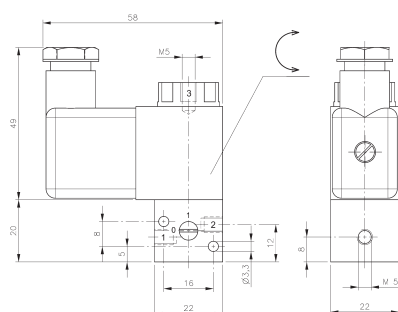
P 53_ 501 GTT



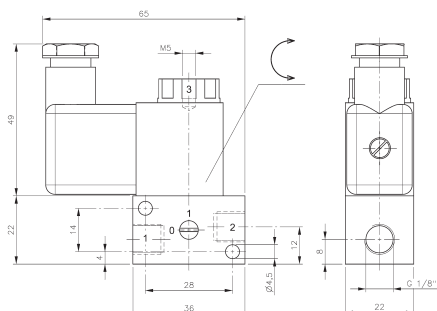
P 53_ 701 GTT

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

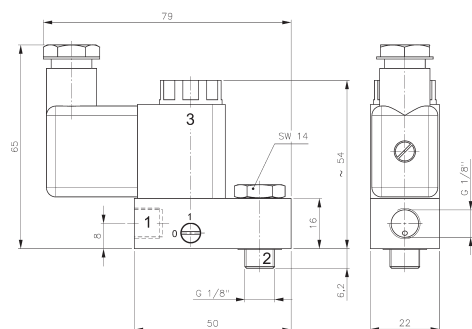
2.9.4.1.1
page 191



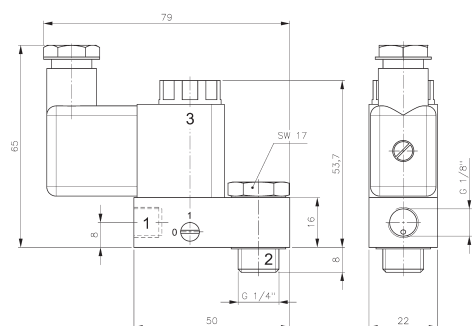
MH 311 012 TT



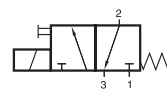
MH 311 015 TT



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.

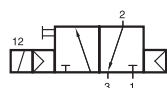
Available with solenoid operators:

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

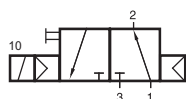
Valves are equipped with manual override to turn.

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

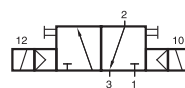
M(O)H 310 501 TT/M(O)H 310 701 GTT MH 320 501 TT/MH 320 701 GTT



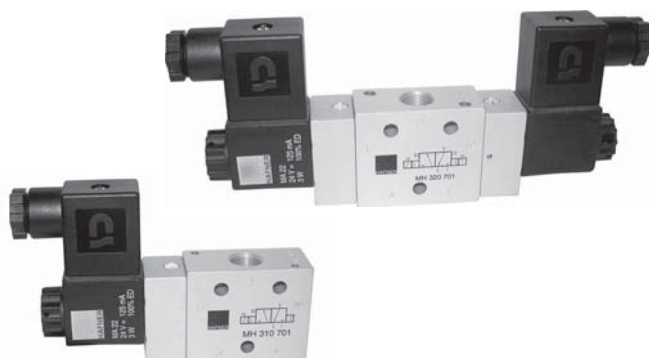
MH 310 501 TT
MH 310 701 GTT



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 2.6.1.5.

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:

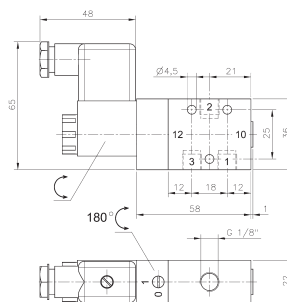
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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

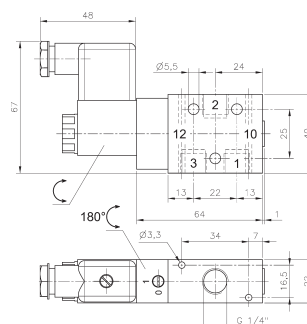
Use unlubricated air only.

Valves are also available with external pilot feed.

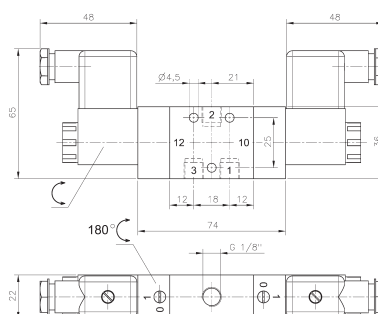
NPT ported valves are available on request.



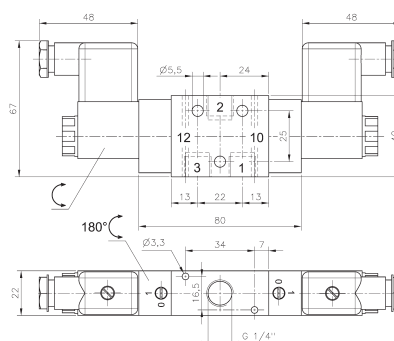
MH 310 501 TT/MOH 310 501 TT



MH 310 701 GTT/MOH 310 701 GTT

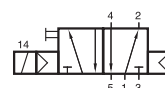


MH 320 501 TT

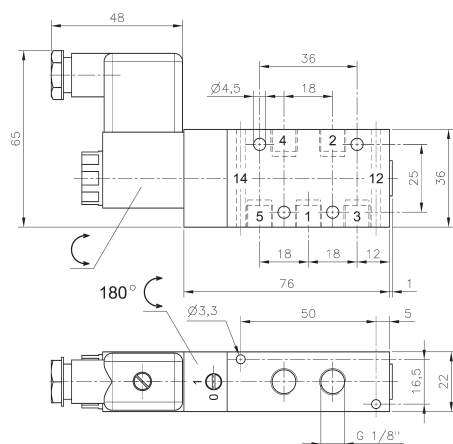


MH 320 701 GTT

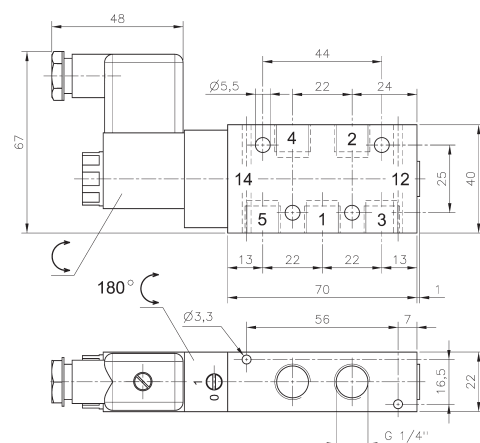
Type	Function	Port size	Air flow	Operating press.	Power cons.	Weight
MH 310 501 TT	n.c.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MH 310 701 GTT	n.c.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,23 kg
MOH 310 501 TT	n.o.	G 1/8"	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,21 kg
MOH 310 701 GTT	n.o.	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 2.6.2.2, manifold for valves type 701 G are displayed on page 2.6.2.3.

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.

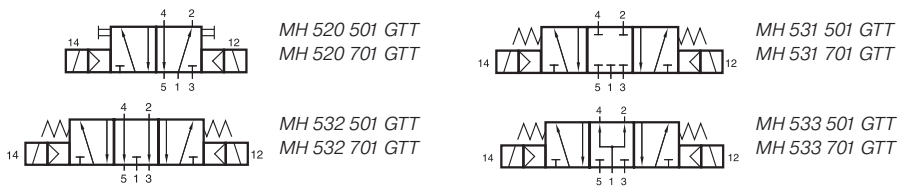
Use unlubricated air only.

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



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 2.6.2.2, manifold for valves type 701 G are displayed on page 2.6.2.3

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!

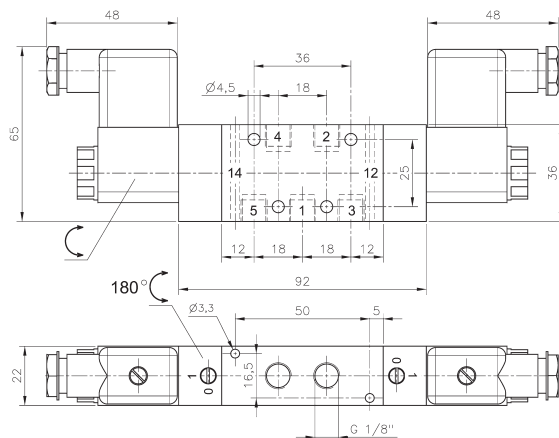
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

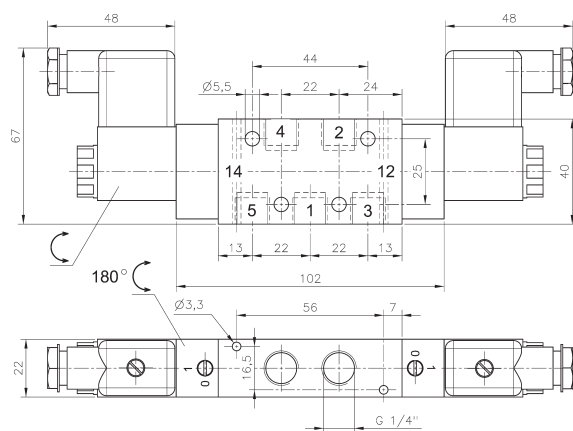
For type 531: pressure at port 1 has to be $\geq$ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

Valves are also available with external pilot feed.

NPT ported valves are available on request.



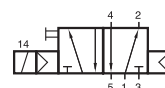
MH 520 501 GTT/MH 53_ 501 GTT



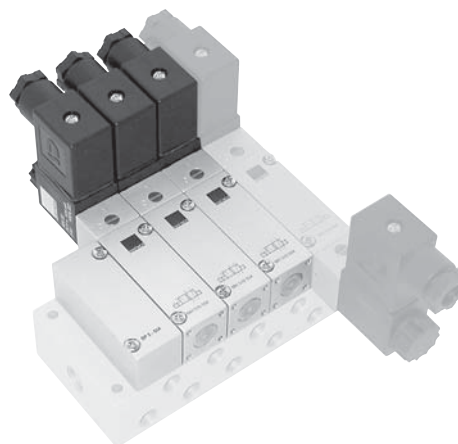
MH 520 701 GTT/MH 53 701 GTT

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	

2.9.4.3.1
page 195



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



The technical drawing shows two views of the B7000-6000 series connector:

- Top View:** Shows a rectangular connector with a total width of 46 mm. The mounting hole pattern has a pitch of 16 mm between centers. There are four mounting holes arranged in a 2x2 grid. The distance from the left edge to the first column of holes is 22 mm, and from the right edge to the last column is 16 mm. A central slot is 12 mm wide. A dimension of 7 mm indicates the offset from the top edge to the centerline.
- Side View:** Shows the profile of the connector with a total height of 58 mm. The main body is 48 mm wide, and the rear section is 76 mm wide. The rear section contains a circular feature with a diameter of $\varnothing 3,3$. The bottom flange has a thickness of 16,5 mm. A horizontal slot at the bottom has a width of $\varnothing 5$.

Both views include a 180° rotation symbol indicating the orientation of the connector's internal components.

Technical drawing of the 1000mm x 1000mm x 100mm plate, showing two views: a top view and a side view. The top view shows a rectangular plate with a width of 1000mm and a length of 1000mm. The side view shows the plate's thickness of 100mm. The drawing includes dimensions for the plate's overall size and the positions of the mounting holes. The top view shows a 1000mm x 1000mm plate with a 100mm thick section. The side view shows the plate's thickness of 100mm. The drawing includes dimensions for the plate's overall size and the positions of the mounting holes. The top view shows a 1000mm x 1000mm plate with a 100mm thick section. The side view shows the plate's thickness of 100mm. The drawing includes dimensions for the plate's overall size and the positions of the mounting holes.

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 2.6.2.7 and 2.6.2.8.

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!

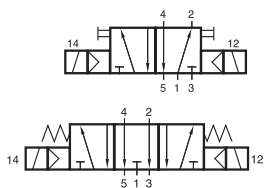
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.

Use unlubricated air only.

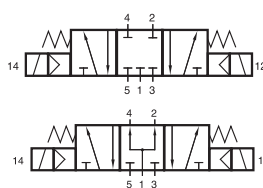
Mounting screens and seals are included.

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

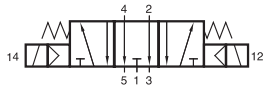
MH 520 304 TT/MH 520 504 TT/MH 520 704 TT
MH 53_ 304 TT/MH 53_ 504 TT/MH 53_ 704 TT



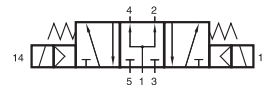
MH 520 304 TT
MH 520 504 TT
MH 520 704 TT



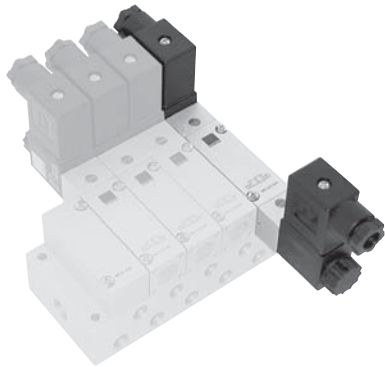
MH 531 304 TT
MH 531 504 TT
MH 531 704 TT



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 2.6.2.7 and 2.6.2.8.

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:

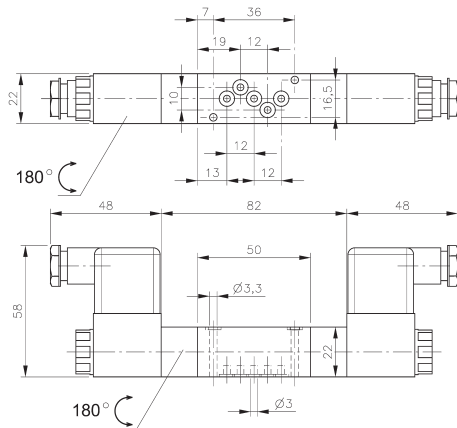
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!

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

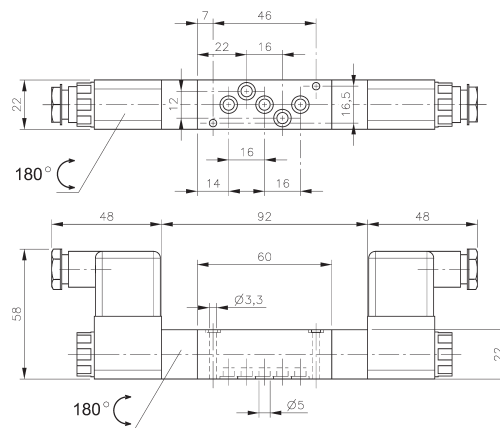
Use unlubricated air only.

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

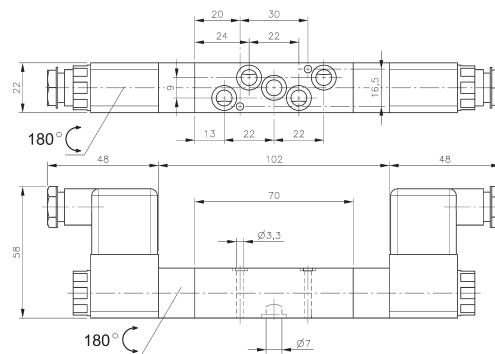
Mounting screens and seals are included.



MH 520 304 TT/MH 53_ 304 TT

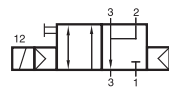


MH 520 504 TT/MH 53_ 504 TT

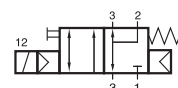


MH 520 704 TT/MH 53_ 704 TT

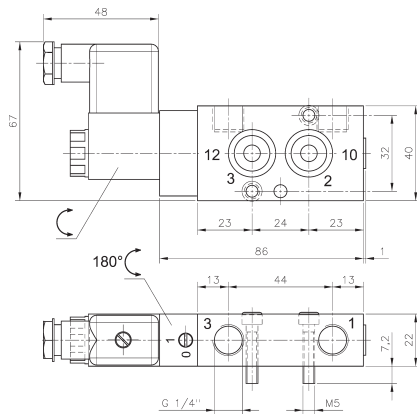
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MH 520 304 TT	Ø 3 mm	220 l/min	2 - 10 bar	3 W = / 5 VA ~	0,30 kg
MH 520 504 TT	Ø 5 mm	650 l/min	2 - 10 bar	3 W = / 5 VA ~	0,32 kg
MH 520 704 TT	Ø 7 mm	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,34 kg
MH 53_ 304 TT	Ø 3 mm	220 l/min	3 - 10 bar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

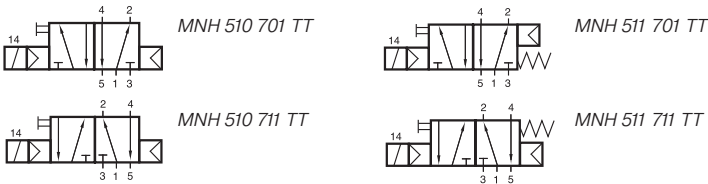
NPT ported valves are available on request.

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



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.

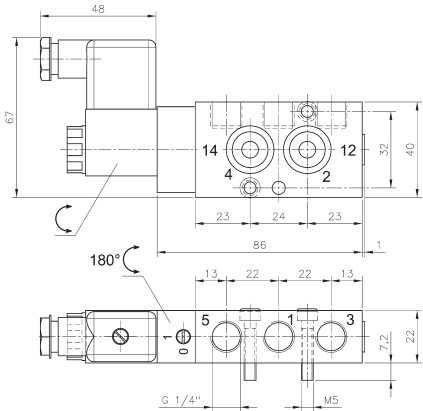
Available with actuators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

The valves are generally equipped with manual override to turn.

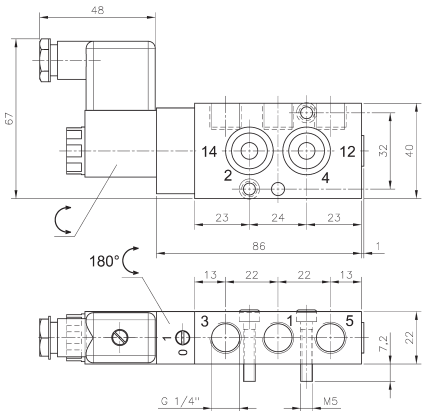
Please notice:
When operated below 0° C the pressure condensation point has to be at least 15° C below the temperature of environment and media. Air has to be dried!
Below - 40° C the leakage-rate of the valve can increase to 10 cm³ /min.
Use unlubricated air only.

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

NPT ported valves are available on request.

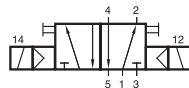


MNH 510 701 TT/MNH 511 701 TT

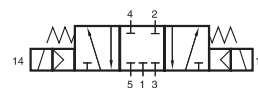


MNH 510 711 TT/MNH 511 711 TT
ports 2 and 4 are swapped!

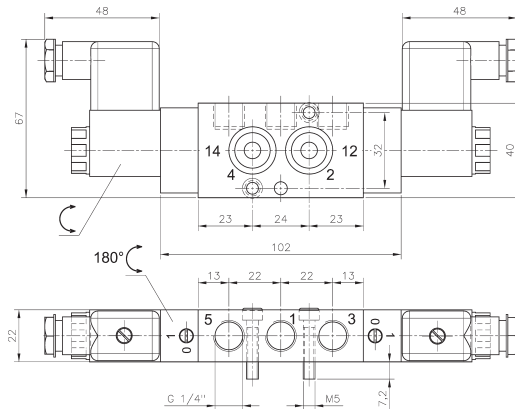
Type	Port size	Air flow	Operating press.	Power consumption	Weight
MNH 510 701 TT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg 
MNH 510 711 TT	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,28 kg 
MNH 511 701 TT	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,28 kg
MNH 511 711 TT	G 1/4"	1250 l/min	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.

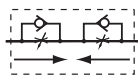
For type 531: pressure at port 1 has to be ≥ pressure at 2 and 4. If pressure supply is lost, 2 or 4 can exhaust and actuator might move.

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

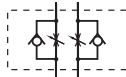
NPT ported valves are available on request.

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



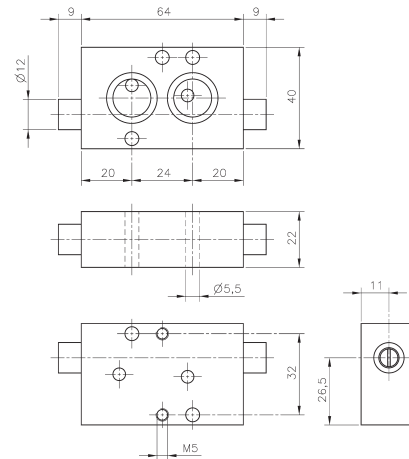
Block form flow regulator as intermediate plate, interface according to 1/4" Namur standard for low temperature environment - 50° C to + 50° C.

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.

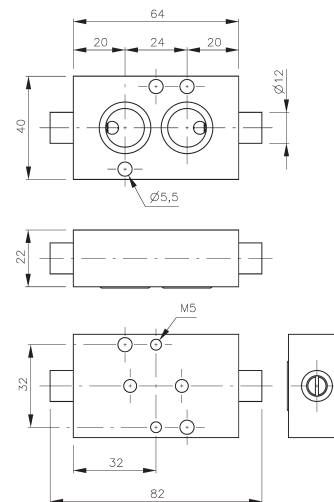
Type DRN 5 611 TT:
for 5/2 and 5/3 way valves only. To regulate the forward- and backward stroke of a double acting pneumatic actuator. To be operated with a screw-driver.

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.

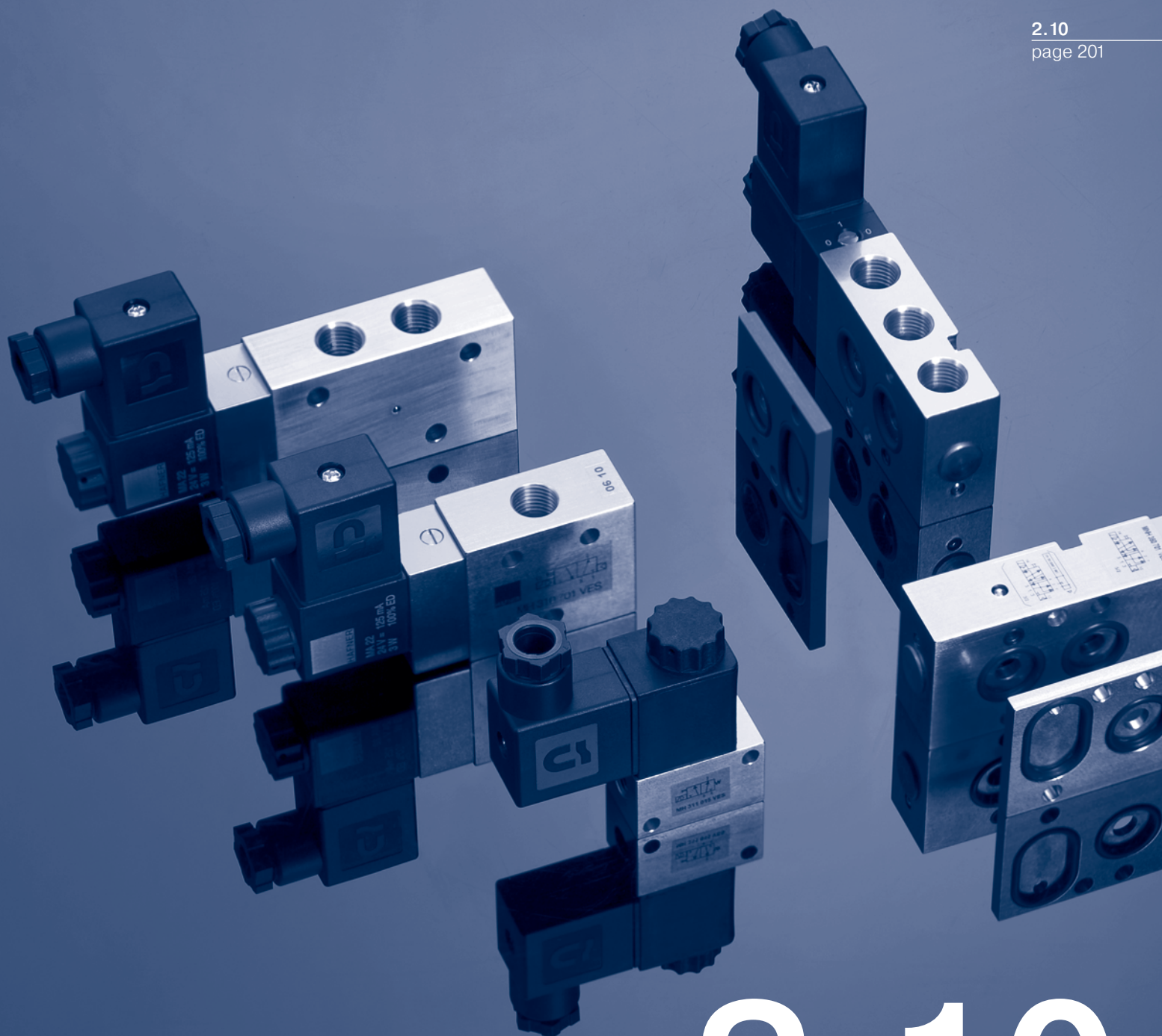


DRN 3 611



DRN 5 611

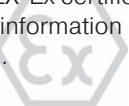
Type	Function	Port size	Max. air flow	Operating pressure	Weight
DRN 3 611 TT	3-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg
DRN 5 611 TT	5-way	Ø 5 mm	650 l/min	0,5 - 10 bar	0,18 kg



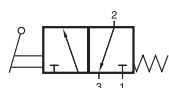
2.10

„Heavy Metal“ Stainless Steel Valves

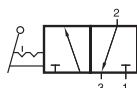
Selected models are available for explosion hazardous environment. They are ATEX-Ex certified. For detailed information refer to chapter 2.12.



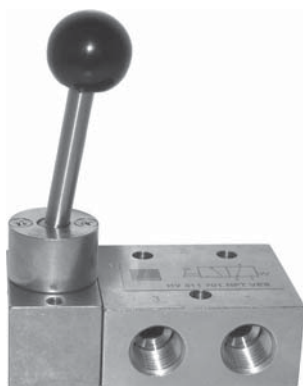
Selected models are available for low temperature application. Temperature-range: - 50° C to + 50° C. For detailed information refer to chapter 2.9.



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

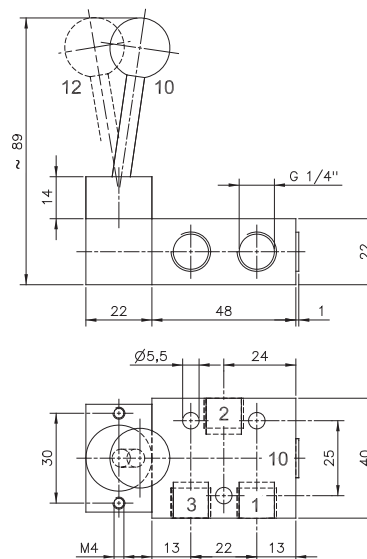
The lever is sealed by using a metal ball.

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.

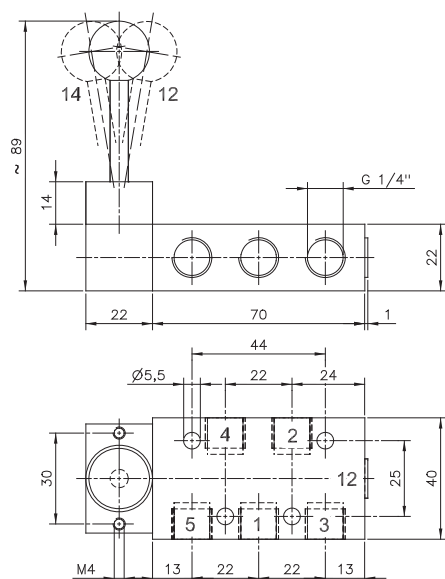
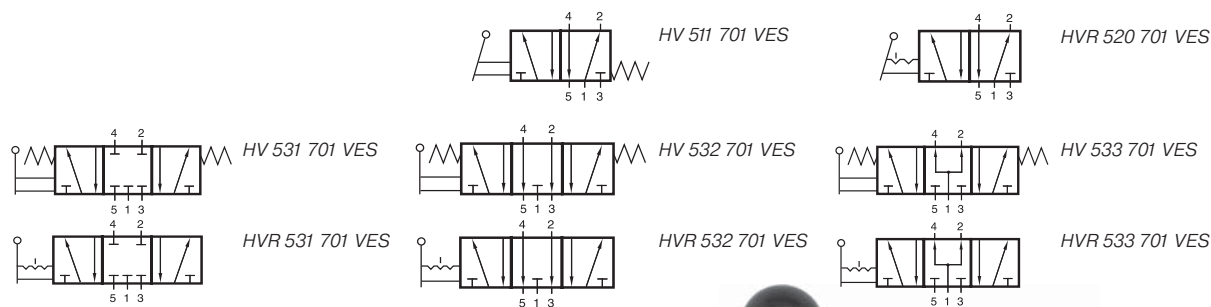


HV 311 701 VES/HVR 320 701 VES

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

2.10.1.2
page 203



**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.

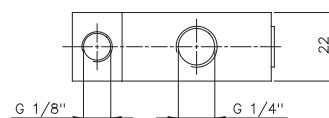
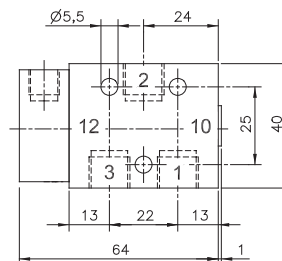
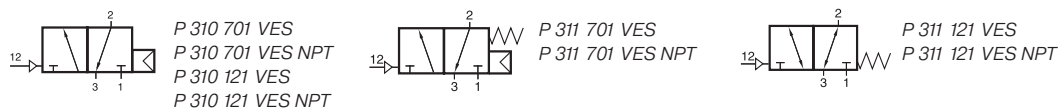
NPT ported valves are available on request.

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 311 701 VES
P 310 701 VES NPT/ P 311 701 VES NPT**

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.

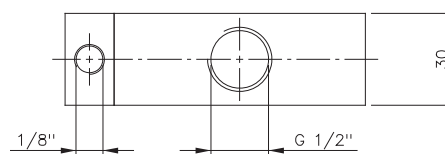
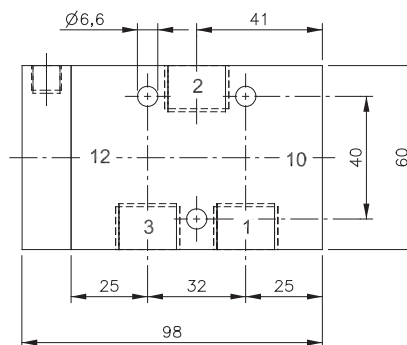
Type P 311 701 VES single pilot valve with combined spring return.

Type P 311 121 VES single pilot valve with mechanic spring return.

Double pilot valves are available on request.

Exhaust can be throttled.

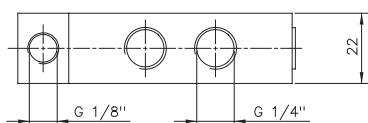
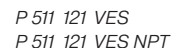
For 1/4"-size: Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions (e.g. normally open) please contact the manufacturer.



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

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 VES NPT	G 1/4"	1250 l/min	2 - 10 bar	the same	0,35 kg
P 311 701 VES NPT	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 VES NPT	G 1/2"	3000 l/min	2 - 10 bar	the same	1,20 kg
P 311 121 VES NPT	G 1/2"	3000 l/min	2 - 10 bar	3 - 10 bar	1,20 kg

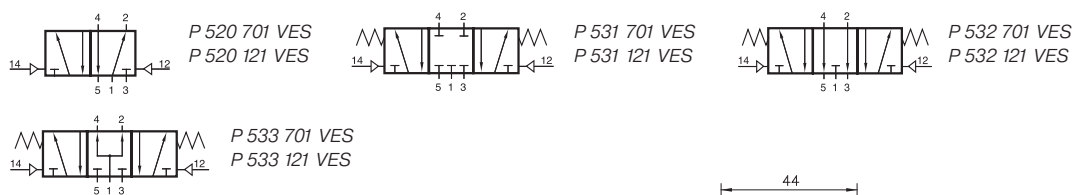
2.10.2.2
page 205

[illegible]

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 VES NPT	1/4" NPT	1250 l/min	2 - 10 bar	the same	0,40 kg	☼☼☼
P 511 701 VES NPT	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 VES NPT	1/2" NPT	3000 l/min	3 - 10 bar	the same	1,50 kg	☼
P 511 121 VES NPT	1/2" NPT	3000 l/min	2 - 10 bar	3 - 10 bar	1,50 kg	

P 520 701 VES/P 531 701 VES/P 532 701 VES P 520 121 VES/P 531 121 VES/P 532 121 VES P 533 701 VES/P 533 121 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.

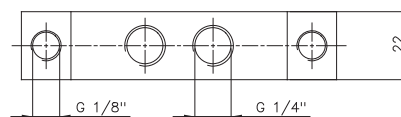
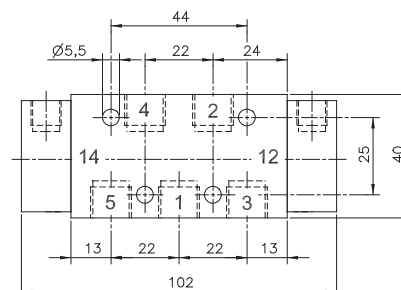
Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurized

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

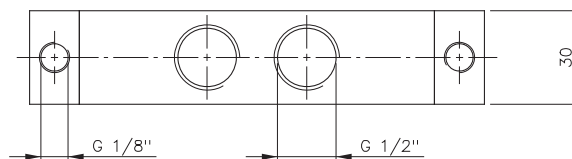
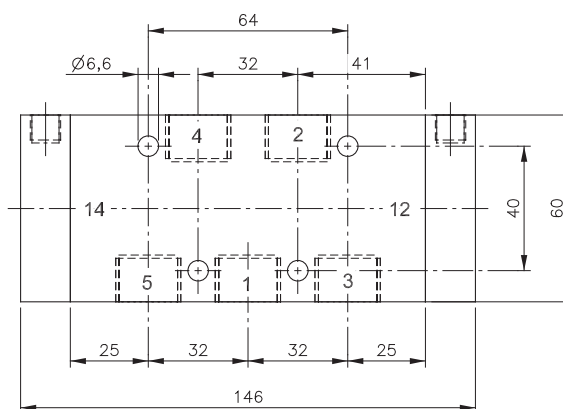
For 1/4"-size: Due to the specific design of the internal parts pressure has to be applied to port 1. For other versions please contact the manufacturer.

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.

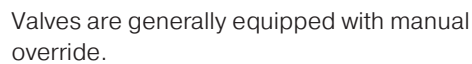


P 520 701 VES / P 53_ 701 VES
P 520 701 VES NPT / P 53_ 701 VES NPT

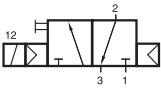


P 520 121 VES / P 53_ 121 VES

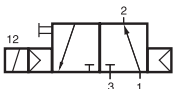
Type	Port size	Function	Air flow	Oper. press.	Act. press.	Weight	
P 520 701 VES	G 1/4"	double pilot	1250 l/min	1,5 - 10 bar	the same	0,50 kg	❄️⊗
P 520 701 VES NPT	1/4" NPT	double pilot	1250 l/min	1,5 - 10 bar	the same	0,50 kg	❄️⊗
P 520 121 VES	G 1/2"	double pilot	3000 l/min	1,5 - 10 bar	the same	1,70 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 VES NPT	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 310 701 VES/MH 310 701 KES MOH 310 701 VES/MOH 310 701 KES



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



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

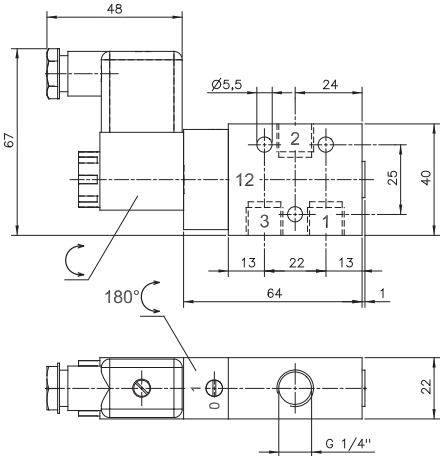


3/2-way solenoid valve normally closed (MH) or normally open (MOH) actuated by permanent signal and equipped with air spring return.

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

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

Valves are equipped with manual override to be turned.

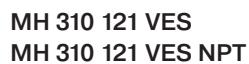
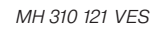


MH 310 701 VES/KES
MOH 310 701 VES/KES
MH 310 701 VES/KES NPT
MOH 310 701 VES/KES NPT

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

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

2.10.3.3
page 209



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 VES NPT	n.c.	G 1/2"	3000 l/min	1 - 10 bar	3 W = / 5 VA ~	1,20 kg	

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



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



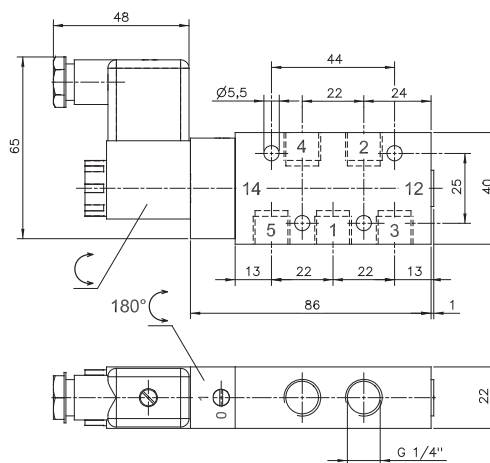
5/2-way solenoid valves actuated by permanent signal and equipped with air spring return.

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

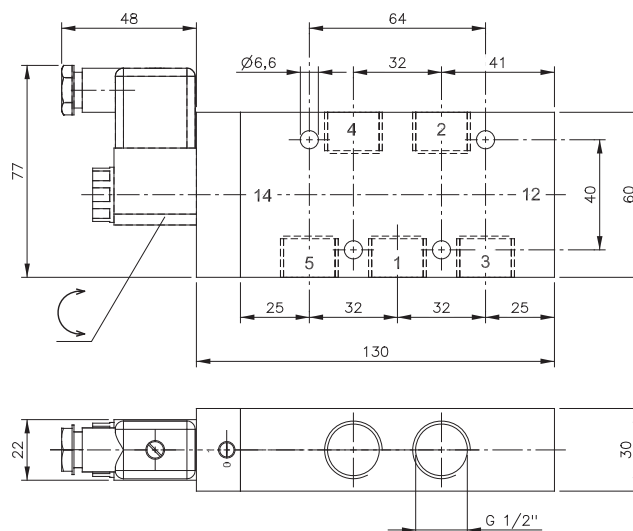
For series 701 the customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.



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



MH 510 121 VES
MH 510 121 VES NPT

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

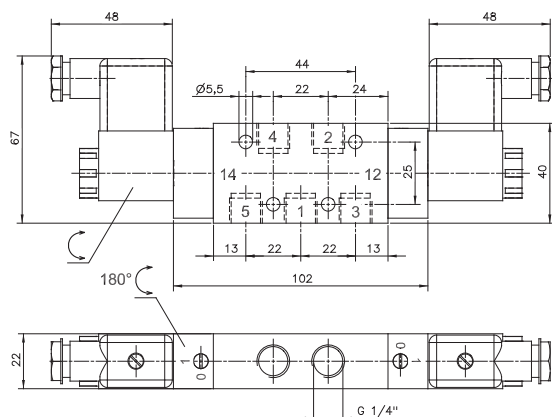
Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight
MH 510 701 VES	single sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,53 kg ❄️⊠
MH 510 701 KES	single sol.	G 1/4"	1250 l/min	2 - 10 bar	3 W = / 5 VA ~	0,46 kg
MH 510 701 VES NPT	single sol.	1/4" NPT	1250 l/min	2 - 10 bar	3 W = / 5 VA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

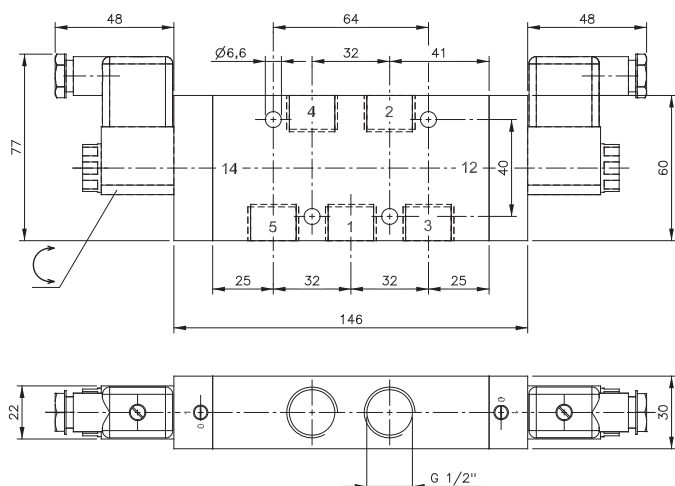
2.10.3.5
page 211



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



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



**MH 520 121 VES
MH 520 121 VES NPT**



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

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

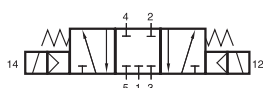
Valves are available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=, 24V=, 12V=.

Valves are equipped with manual override to be turned.

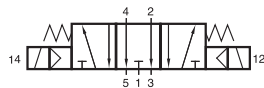
Type	Pilot head	Seals	Other rubber parts
701 VES	1.4404	PUR	FKM
701 KES	PA	PUR	FKM
121 VES	1.4404	FKM	FKM

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

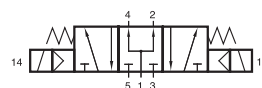
MH 53_ 701 VES/MH 53_ 701 KES MH 53_ 121 VES



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



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



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



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

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

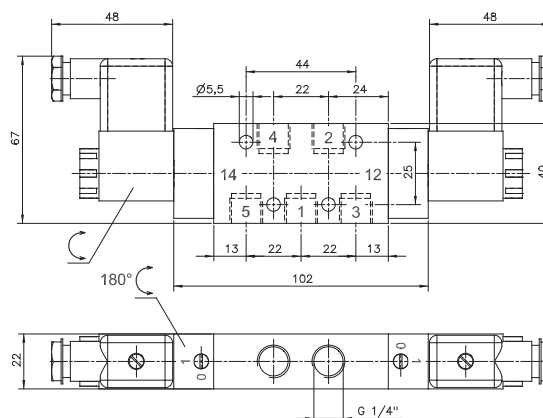
Type 531 centre closed
Type 532 centre exhausted
Type 533 centre pressurized

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

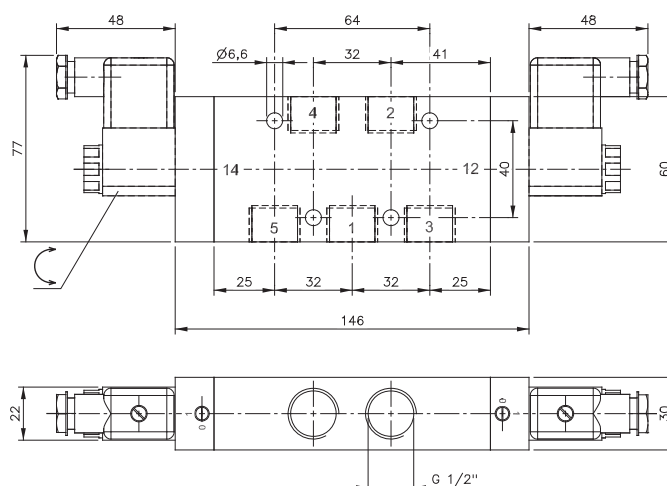
Valves are available with solenoid operators:
230V/50Hz, 110V/50Hz, 24V/50Hz, 48V=,
24V=, 12V=.

Valves are equipped with manual override to be turned.

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



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



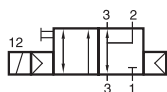
MH 53_ 121 VES
MH 53_ 121 VES NPT

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

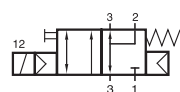
Type	Port size	Air flow	Oper. Press.	Power cons.	Weight
MH 53_ 701 VES	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,74 kg
MH 53_ 701 KES	G 1/4"	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,60 kg
MH 53_ 701 VES NPT	1/4" NPT	1250 l/min	3 - 10 bar	3 W = / 5 VA ~	0,74 kg
MH 53_ 701 KES NPT	1/4" NPT	1250 l/min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

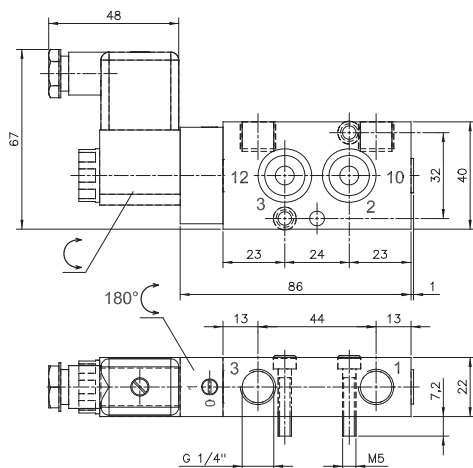
2.10.4.1
page 213



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



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



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



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

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

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

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

Valves are equipped with manual override to be turned.

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

Namur 2 (1/2") on request.

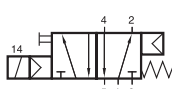
Type	Pilot head	Seals	Other rubber parts
VES	1.4404	PUR	FKM
KES	PA	PUR	FKM

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

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



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



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



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



5/2-way solenoid valve.

Type MH 510 ___ single solenoid actuated by permanent signal and equipped with air spring return.

Type MH 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.

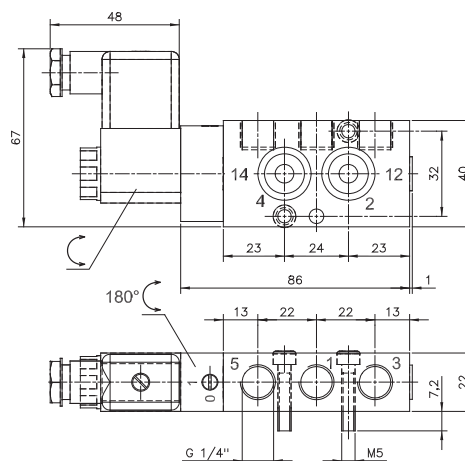
Body parts are made from stainless steel 316L / 1.4404. Customer has the choice between two versions VES and KES, for details refer to the table below.

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

Valves are equipped with manual override to be turned.

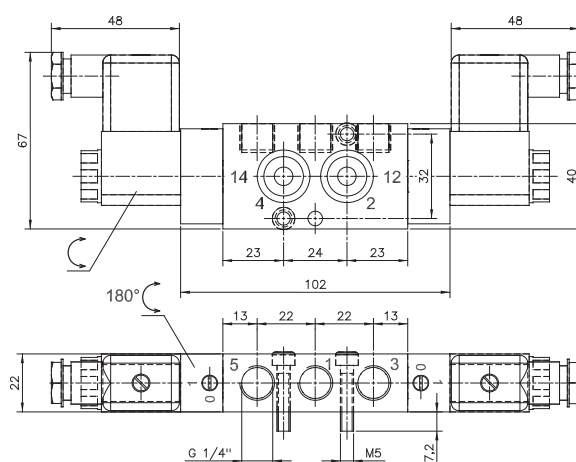
Delivery includes 1 pin, 2 screws, 2 O-rings.

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



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

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



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

Type Pilot head Seals Other rubber parts

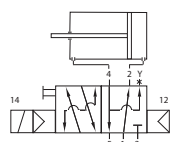
VES 1.4404 PUR FKM

KES PA PUR FKM

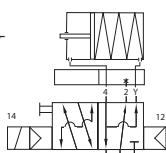
Type	Function	Port size	Air flow	Oper. press.	Power cons.	Weight
MNH 510 701 VES	air-spring	G 1/4"	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~ 0,57 kg	❄️⊗
MNH 510 701 KES	air-spring	G 1/4"	1250 l/min	1,5 - 10 bar	3 W = / 5 VA ~ 0,49 kg	
MNH 511 701 VES	comb. spring	G 1/4"	1250 l/min	2,5 - 10 bar	3 W = / 5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

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

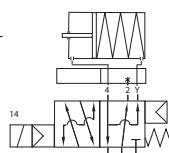
2.10.4.3
page 215



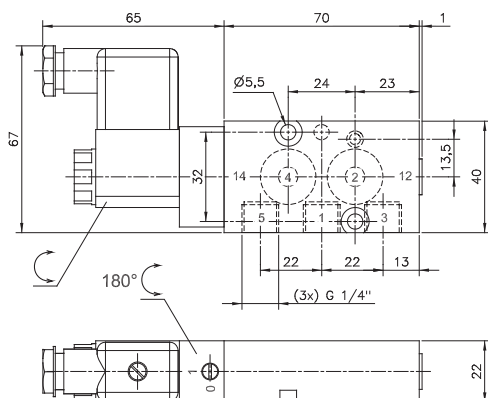
MNH 350 701 VES/KES
MNH 350 701 VES/KES NPT
on double acting act.



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

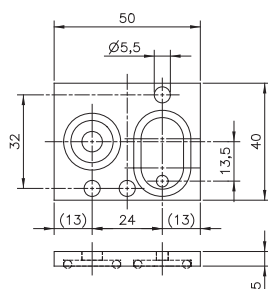


MNH 351 701 VES/KES
MNH 351 701 VES/KES NPT
and Flex-Pack
on single acting act.



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

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



FP 701 K/FP 701 VES



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

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

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

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

Valves are generally equipped with manual override.

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

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

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

Delivery of FP 701 VES includes longer screws and seals.

Type Pilot head Seals Other rubber parts

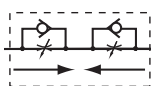
VES 1.4404 PUR FKM

KES PA PUR FKM

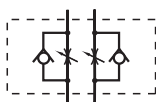
Type	Material	Orifice 4	Orifice 2-3	Weight
FP 701 K	PA	7 mm	4 mm	0,012 kg
FP 701 VES	1.44.04	7 mm	4 mm	0,025 kg

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

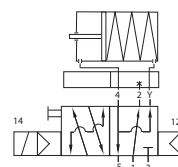
DRN 3 611 VES/DRN 5 611 VES DRF 3 611 VES



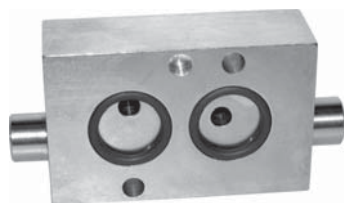
DRN 3 611 VES



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:

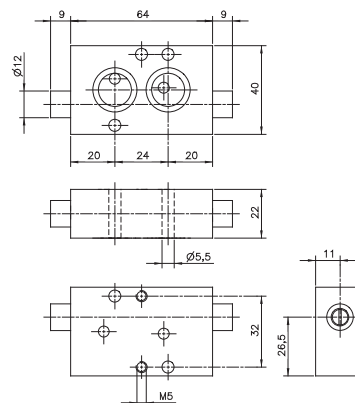
For 5/2 and 5/3 way valves only. To regulate the
forward- and backward-stroke of a double acting
pneumatic actuator.

Type DRF 3 611 VES:

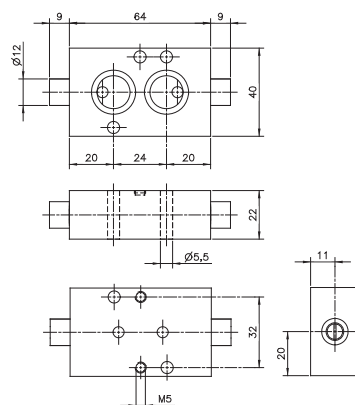
For the Hafner Namur-Flex valve. To regulate the
forward stroke of a single acting actuator and
to regulate the exhaust air going into the spring
return unit.

To be operated with a screw-driver.

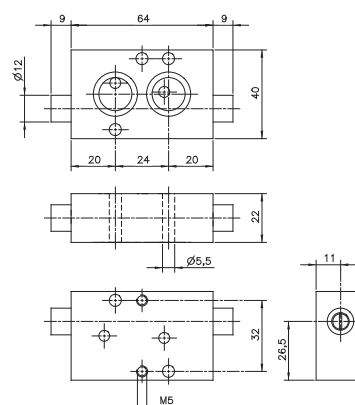
Delivery includes 1 pin, 2 screws, 2 O-Rings.



DRN 3 611 VES

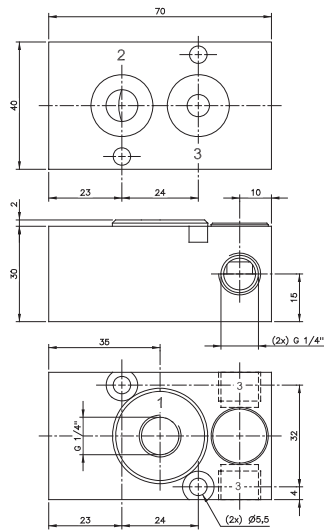
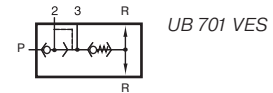


DRN 5 611 VES

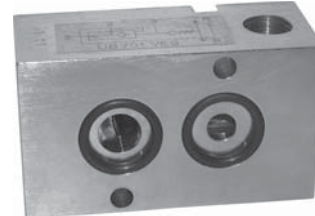


DRF 3 611 VES

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	



UB 701 VES



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

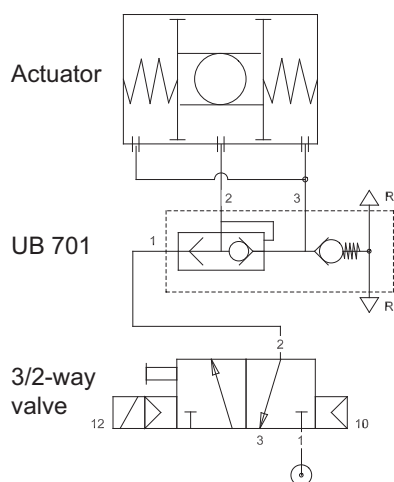
Valve is designed for spring return pneumatic actuators with 1/4" Namur-Interface to be controlled by a remote piloted 3/2-way valve.

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

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

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

Function:



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

Pneumatically actuated valves in Stainless Steel with Namur interface



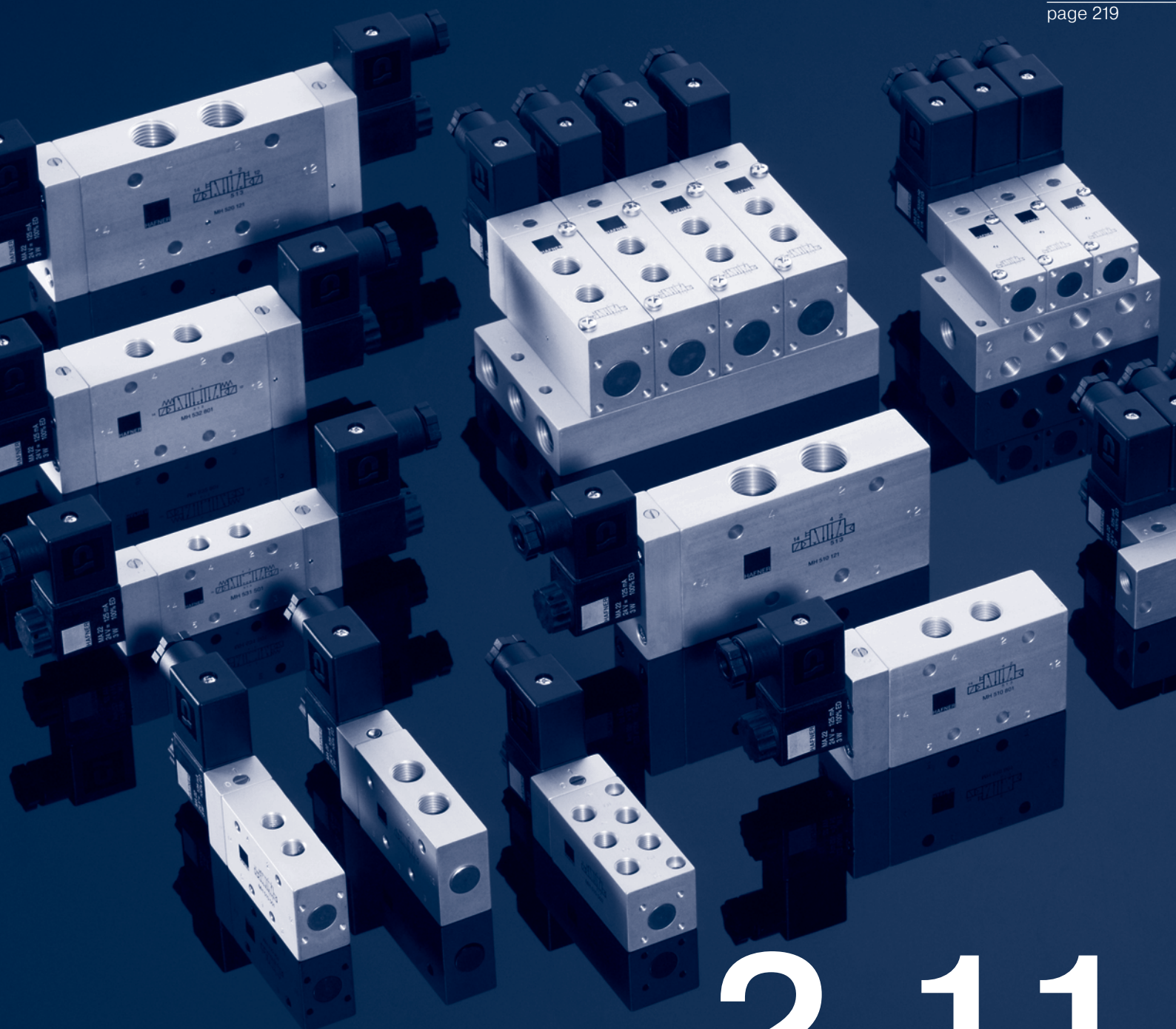
Dimensions can be taken from chapter 2.5.2 as technical drawings are identical to the products in aluminum.

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



2.11

Coils and Connectors

MA 16/MA 16 L



16 mm wide solenoid system for valves type MD and MK, including valve-head.

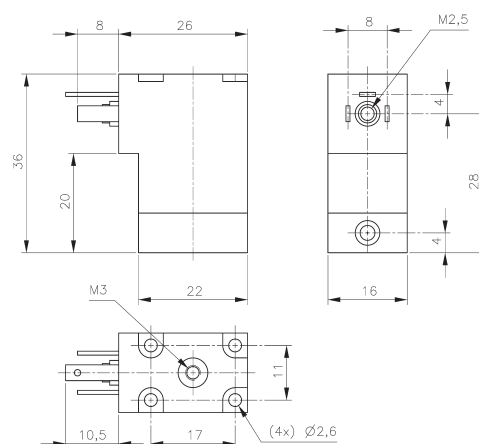
Coil made from 25 % glass filled thermoplastic PA material, epoxy filled. Valve head glass filled thermoplastic PA including a manual override to push.

MA 16

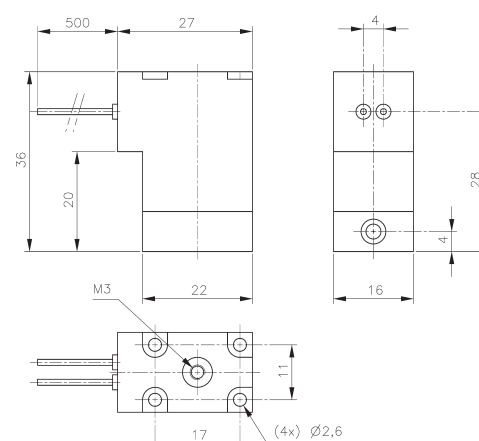
Interface form C (DIN EN 175301-803), with 8 mm contact distance, connectors are displayed on page 2.11.3. Equipped with appropriate connector coil offers IP 65.

MA 16 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!

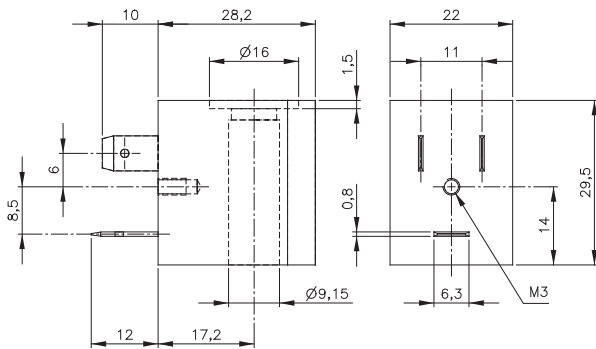


MA 16

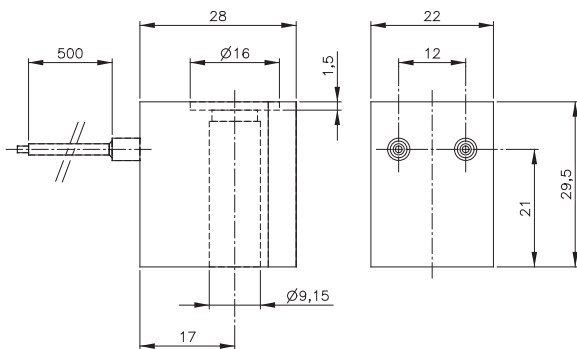


MA 16 L

Type	Voltage	Ampere	Power cons.	Connection
MA 16 6DC	6 V=	300 mA	1,8 W	Form C (DIN EN 175301-803)
MA 16 L 6DC	6 V=	300 mA	1,8 W	Flying leads 500 mm long
MA 16 12DC	12 V=	150 mA	1,8 W	Form C (DIN EN 175301-803)
MA 16 L 12DC	12 V=	150 mA	1,8 W	Flying leads 500 mm long
MA 16 24DC	24 V=	75 mA	1,8 W	Form C (DIN EN 175301-803)
MA 16 L 24DC	24 V=	75 mA	1,8 W	Flying leads 500 mm long
MA 16 24AC	24 V~	125 mA	3 VA	Form C (DIN EN 175301-803)
MA 16 L 24AC	24 V~	125 mA	3 VA	Flying leads 500 mm long
MA 16 110AC	110 V~	27 mA	3 VA	Form C (DIN EN 175301-803)
MA 16 L 110AC	110 V~	27 mA	3 VA	Flying leads 500 mm long
MA 16 230AC	230 V~	13 mA	3 VA	Form C (DIN EN 175301-803)
MA 16 L 230AC	230 V~	13 mA	3 VA	Flying leads 500 mm long



MA 22/MA 22 D/MA 22 U



MA 22 L

AC-coils can be operated at 50 Hz and 60 Hz.
30 mm wide coils with interface ISO 4400
EN 175301-803-A are available on request.



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 2.11.3.
Equipped with appropriate connector, solenoid
offers IP 65. Isolation 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 H.

MA 22 D (Epoxy version)

Housing made from Epoxy, interface industryform B
(DIN/ISO 436 50).
Equipped with connector ST 22 and ST 222 V (please
refer to page 2.11.3) solenoid system offers IP 65.
Equipped with connector ST 22 L 500 and additional
O-rings the system offers IP 67.

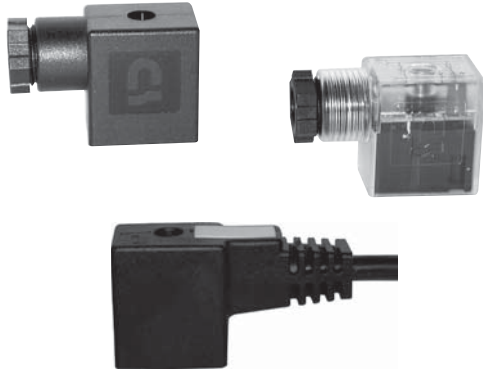
MA 22 U

Same as MA 22 but with UL-certification.



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 24AC	24 V~	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 110AC	110 V~	±10 %	45 mA	5 VA	Industryform B (DIN 436 50)
MA 22 L500 110AC	110 V~	±10 %	45 mA	5 VA	Flying leads 500 mm long
MA 22 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)
MA 22 L500 230AC	230 V~	±10 %	22 mA	5 VA	Flying leads 500 mm long
MA 22 D 24DC	24 V=	±10 %	125 mA	3 W	Industryform B (DIN 436 50)
MA 22 D 24AC	24 V=	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 D 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 24DC	24 V=	±10 %	125 mA	3 W	Industryform B (DIN 436 50)
MA 22 U 24AC	24 V=	±10 %	200 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 110AC	110 V~	±10 %	45 mA	5 VA	Industryform B (DIN 436 50)
MA 22 U 230AC	230 V~	±10 %	22 mA	5 VA	Industryform B (DIN 436 50)

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



Connectors as accessories for Hafner valves.

Type ST 16 and ST 22

using the enclosed flat seal and fastening screw and nut appropriately the system reaches protection class IP 65 in accordance to IEC 60 529.

Type ST 22 L 5000/ST 222 V __ L1500

in combination with MA 22 D, using the enclosed flat seal, adding 2 O-rings at the top of the solenoid system and fastening screw and nut appropriately the system reaches protection class IP 67 in accordance to IEC 60 529.

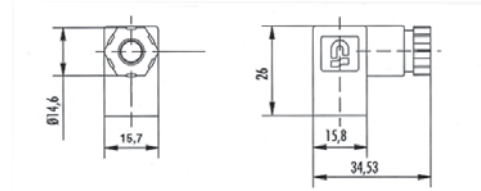
Type ST 30 Ex ia

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.

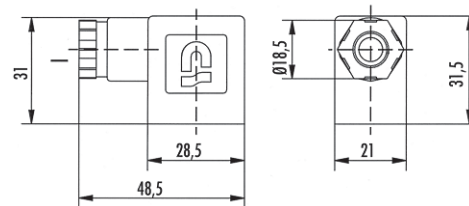
Type ST 30 Ex nA

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.

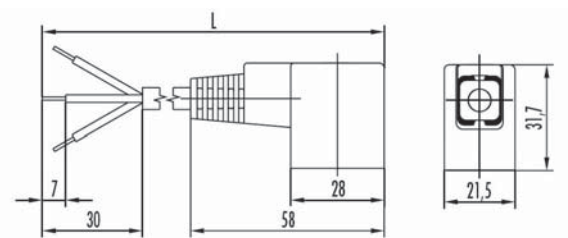
Other connectors are available on request.



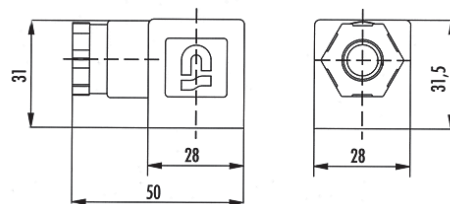
ST 16



ST 22



ST 22 L 5000/ ST 222 V __ L 1500



ST 30 Ex nA/ ST 30 Ex ia

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

A large, light blue stylized 'Ex' is centered within a hexagonal frame. The hexagon is composed of two concentric lines, with the outer line being slightly thicker. The 'Ex' is rendered in a bold, sans-serif font, with the 'E' and 'x' connected. The entire graphic is set against a dark blue background.

Ex

2.12

Products for Explosion hazardous Environment

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:

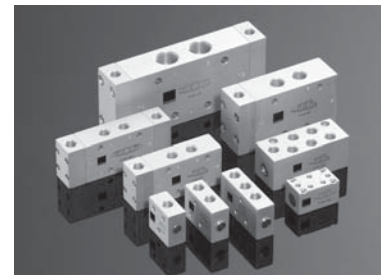
Ⓔ II2G/D c T6 -10° C ≤ Ta ≤ 50° C

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	2.9.3.1	
P 310 701 EX	3/2-way, single sol.	G 1/4" - 1/4" NPT	2.4.1.2	2.9.3.1	2.10.2.1
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		2.10.2.1
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	2.9.3.1	
P 320 701 EX	3/2-way, double sol.	G 1/4" - 1/4" NPT	2.4.1.6	2.9.3.1	
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	2.9.3.2	
P 510 701 EX	5/2-way, single sol.	G 1/4" - 1/4" NPT	2.4.2.2	2.9.3.2	2.10.2.2
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		2.10.2.2
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	2.9.3.2	
P 520 701 EX	5/2-way, double sol.	G 1/4" - 1/4" NPT	2.4.2.6	2.9.3.2	2.10.2.3
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		2.10.2.3
P 531 501 EX	5/3-way, centre closed	G 1/8"	2.4.3.1	2.9.3.3	
P 531 701 EX	5/3-way, centre closed	G 1/4" - 1/4" NPT	2.4.3.1	2.9.3.3	2.10.2.3
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		2.10.2.3
P 532 501 EX	5/3-way, centre exhausted	G 1/8"	2.4.3.1	2.9.3.3	
P 532 701 EX	5/3-way, centre exhausted	G 1/4" - 1/4" NPT	2.4.3.1	2.9.3.3	2.10.2.3
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		2.10.2.3
P 533 501 EX	5/3-way, centre pressurised	G 1/8"	2.4.3.1	2.9.3.3	
P 533 701 EX	5/3-way, centre pressurised	G 1/4" - 1/4" NPT	2.4.3.1	2.9.3.3	2.10.2.3
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		2.10.2.3



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 order information

2.12.2.0
page 225

Overview of available solenoid systems for explosion hazardous environment

Zone	Temp. range	Ignition protection type	Temp. class	Connection	Valve		
					Aluminum	Stainless Steel	Solenoid Steel
1, 2, 21, 22	-10°C ... +50°C	Ex m	T4	3 meter cable (other lengths on request)	2.12.2.1.1	2.12.2.1.2	2.12.2.1.3
1, 2, 21, 22	-10°C ... +50°C	Ex ia	T6	Connector A, ISO 4400	2.12.2.2.1	2.12.2.2.3	2.12.2.2.5
1, 2, 21, 22	-40°C ... +50°C	Ex ia	T6	Connector A, ISO 4400	2.12.2.2.2	2.12.2.2.4	2.12.2.2.5
2, 22	-10°C ... +50°C	Ex nA	T5	Connector B, Industrial	2.12.2.3.1	2.12.2.3.2	2.12.2.3.3
1, 2, 21, 22	-10°C ... +50°C	Ex e mb	T6	Junction box to connect cables with dia. 6 – 13 mm	2.12.2.4.1		2.12.2.4.4
1, 2, 21, 22	-40°C ... +50°C	Ex e mb	T6	Junction box to connect cables with dia. 6 – 13 mm	2.12.2.4.2	2.12.2.4.3	2.12.2.4.4

Types of ignition protection

For solenoids:

- m** = Encapsulation
- ia** = Intrinsically safe
- nA** = Non-incentive component
- e mb** = Encapsulation enhanced, normally with junction box.

For valves:

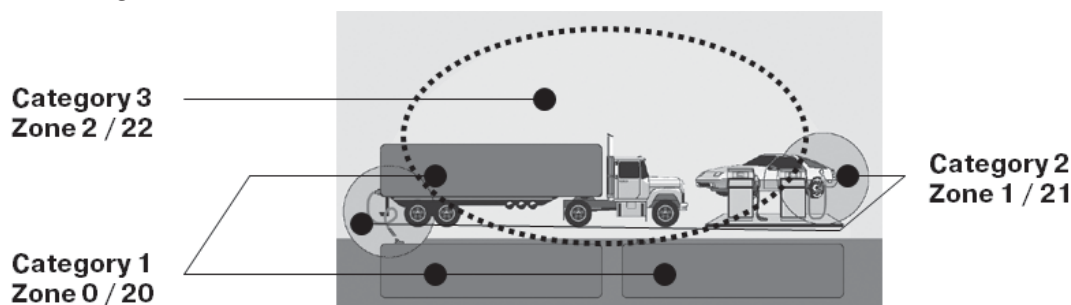
- c** = safety based on construction.

Important for ignition protection type **ia** is that it is only to be used in combination with a certified intrinsically safe electrical circuit.

Temperature class

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

Zones and categories



Zone 1 = category 2 for Gas
 Zone 21 = category 2 for Dust
 Zone 2 = category for Gas
 Zone 22 = category for Dust

Zone 1 includes zone 2, zone 21 includes zone 22.

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
II3G/D c T5 -10° C ≤ Ta ≤ 50° C

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

The following **solenoid valves** are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 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	2.5.1.1.4
MH 311 017 Ex m	3/2-way direct acting	G 1/4"	banjo screw	2.5.1.1.4
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

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

2.12.2.1.1
page 227

Type	Function	Port size	Installation	Further information on valve on page
MH 320 501 Ex m	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.6
MH 320 701 Ex m	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.6
MH 320 801 Ex m	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.6
MH 320 101 Ex m	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.7
MH 320 121 Ex m	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.7
MH 320 501 G Ex m	3/2-way, double sol.	G 1/8"	dual use*	2.5.1.1.8
MH 320 701 G Ex m	3/2-way, double sol.	G 1/4"	dual use*	2.5.1.1.8
MH 320 101 G Ex m	3/2-way, double sol.	G 3/8"	dual use*	2.5.1.1.8
MH 320 121 G Ex m	3/2-way, double sol.	G 1/2"	dual use*	2.5.1.1.8
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
MH 510 504 Ex m	5/2-way, single sol.	5 mm orifice	manifold, all ports in plate	2.5.2.2.4
MH 510 704 Ex m	5/2-way, single sol.	7 mm orifice	manifold, all ports in plate	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, all ports in plate	2.5.2.2.8
MH 520 704 Ex m	5/2-way, double sol.	7 mm orifice	manifold, all ports in plate	2.5.2.2.8
MH 53_ 501 Ex m	5/3-way, different versions	G 1/8"	in-line	2.5.3.1.2
MH 53_ 701 Ex m	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MH 53_ 801 Ex m	5/3-way, different versions	G 1/4"	in-line	2.5.3.1.2
MH 53_ 101 Ex m	5/3-way, different versions	G 3/8"	in-line	2.5.3.1.3
MH 53_ 121 Ex m	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.5.3.1.3
MH 53_ 501 G Ex m	5/3-way, different versions	G 1/8"	dual use*	2.5.3.1.4
MH 53_ 701 G Ex m	5/3-way, different versions	G 1/4" - 1/4" NPT	dual use*	2.5.3.1.4
MH 53_ 101 G Ex m	5/3-way, different versions	G 3/8"	dual use*	2.5.3.1.5
MH 53_ 121 G Ex m	5/3-way, different versions	G 1/2"	dual use*	2.5.3.1.5
MH 53_ 504 Ex m	5/3-way, different versions	5 mm orifice	manifold, all ports in plate	2.5.3.2.4
MH 53_ 704 Ex m	5/3-way, different versions	7 mm orifice	manifold, all ports in plate	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	2.8.1.3
MNH 310 701 Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.1.1
MNH 310 711 Ex m	3/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.1.1
MNH 310 121 Ex m	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.1.2
MNH 510 701 Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.1
MNH 510 711 Ex m	5/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.2.1
MNH 510 121 Ex m	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.2
MNH 520 701 Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.3
MNH 520 121 Ex m	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.3
MNH 53_ 701 Ex m	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.4
MNH 531 121 Ex m	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.4

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

Solenoids are described on page 2.12.2.1.3

Further coils variants on request: CSA / FM certified coils.

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

HAFNER

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
 II3G/D c T5 -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	2.10.3.1
MH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MOH 310 701 VES Ex m	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MH 310 121 VES Ex m	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.3
MH 320 121 VES Ex m	3/2-way, double sol.	G 1/2"	in-line	2.10.3.3
MH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.4
MH 510 121 VES Ex m	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.4
MH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.5
MH 520 121 VES Ex m	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.5
MH 53_ 701 VES Ex m	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.10.3.6
MH 53_ 121 VES Ex m	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.10.3.6

Valves with interface according to Namur standard

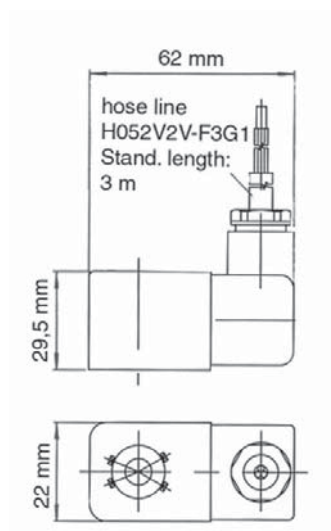
MNH 350 701 VES Ex m	3/2-way & 5/2-way	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.3
MNH 310 701 VES Ex m	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.1
MNH 510 701 VES Ex m	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2
MNH 520 701 VES Ex m	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2

Solenoids are described on page 2.12.2.1.3

Further coils variants on request: CSA / FM certified coils.

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 1 and 21.



MA 22 EEx m II T4



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

System with IEC approval available starting 2014.

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

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

These coils are approved according to EN 50 028 resp. DIN VDE 0170/0171, part 9 by the Physikalisch-Technische-Bundesanstalt (PTB). For additional information see „Specification for Electronic Devices“ DIN VDE 0580.

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 – aluminium



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

 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 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	2.8.1.3
MNH 310 701 Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.1.1
MNH 310 711 Ex ia	3/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.1.1
MNH 310 121 Ex ia	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.1.2
MNH 510 701 Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.1
MNH 510 711 Ex ia	5/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.2.1
MNH 510 121 Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.2
MNH 520 701 Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.3
MNH 520 121 Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.3
MNH 53_ 701 Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.4
MNH 53_ 121 Ex ia	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.4

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

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

2.12.2.2.2
page 231



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	2.9.4.1.1
MH 311 015 TT Ex ia	3/2-way direct acting	G 1/8"	in-line	2.9.4.1.1
MH 310 501 TT Ex ia	3/2-way, single sol.	G 1/8"	in-line	2.9.4.1.2
MOH 310 501 TT Ex ia	3/2-way, n.o. single sol.	G 1/8"	in-line	2.9.4.1.2
MH 310 701 GTT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	dual use*	2.9.4.1.2
MOH 310 701 GTT Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	dual use*	2.9.4.1.2
MH 320 501 TT Ex ia	3/2-way, double sol.	G 1/8"	in-line	2.9.4.1.2
MH 320 701 GTT Ex ia	3/2-way, double sol.	G 1/4"	dual use*	2.9.4.1.2
MH 510 501 GTT Ex ia	5/2-way, single sol.	G 1/8"	dual use*	2.9.4.2.1
MH 510 701 GTT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	dual use*	2.9.4.2.1
MH 520 501 GTT Ex ia	5/2-way, double sol.	G 1/8"	dual use*	2.9.4.2.2
MH 520 701 GTT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	dual use*	2.9.4.2.2
MH 53_ 501 GTT Ex ia	5/3-way, different versions	G 1/8"	dual use*	2.9.4.2.2
MH 53_ 701 GTT Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	dual use*	2.9.4.2.2

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	2.9.5.1
MNH 510 701 TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.1
MNH 510 711 TT Ex ia	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.5.2.1
MNH 520 701 TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.2
MNH 531 701 TT Ex ia	5/3-way, centre closed	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.2

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

Solenoids are described on page 2.12.2.2.5

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	2.10.3.1
MH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MOH 310 701 VES Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MH 310 121 VES Ex ia	3/2-way, single sol.	G 1/2"	in-line	2.10.3.3
MH 320 121 VES Ex ia	3/2-way, double sol.	G 1/2"	in-line	2.10.3.3
MH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.4
MH 510 121 VES Ex ia	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.4
MH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.5
MH 520 121 VES Ex ia	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.5
MH 53_701 VES Ex ia	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.10.3.6
MH 53_121 VES Ex ia	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.10.3.6

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	2.10.4.3
MNH 310 701 VES Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.1
MNH 510 701 VES Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2
MNH 520 701 VES Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2

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

Solenoids are described on page 2.12.2.2.5

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

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

2.12.2.2.4
page 233



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!

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	2.10.3.1
MH 310 701 VES TT Ex ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MOH 310 701 VES TT Ex ia	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.4
MH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.5
MH 53_ 701 VES TT Ex ia	5/3-way, different versions	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 ia	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 ia	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.1
MNH 510 701 VES TT Ex ia	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2
MNH 520 701 VES TT Ex ia	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2

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

Solenoids are described on page 2.12.2.2.4

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 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 with connector
according to EN 60529: IP 65

Moulding material: Epoxy

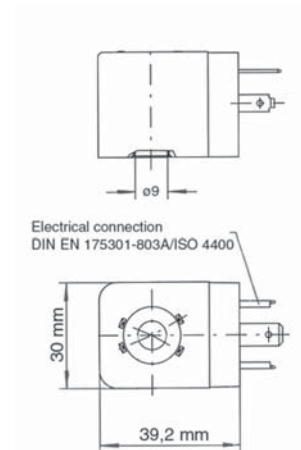
Barrier:

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

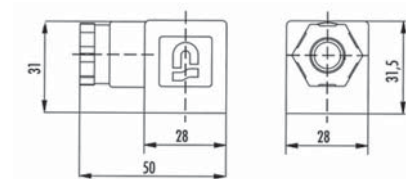
Order Code: MA 30 Ex ia tD II CT6 24 DC

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 2.8.4.11.

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 has to be used.



MA 30 Ex ia tD II CT6 24 DC



ST 30 Ex ia

Delivery includes connector ST 30 Ex ia, flat nitril gasket and fixing screw (zinc-plated steel). Form according to A - ISO 4400, no LED, no varistor, operating voltage 0 – 250 V, max. current 10 A, cable diameter 6 – 8 mm.

The ATEX approval is only valid as long as the associated components are used. These coils are approved according to EN 50 020 resp. DIN VDE 0170/0171, part 5 by the Physikalisch-Technische-Bundesanstalt (PTB). For additional information see „Specification for Electronic Devices“ DIN VDE 0580.

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

2.12.2.3.1
page 235



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  II2G/D c T4 -10° C ≤ Ta ≤ 50° C
II3G/D c T5 -10° C ≤ Ta ≤ 50° C

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	2.5.1.1.4	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	2.5.1.1.4	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	Valves with interface according to Namur standard				
MH 310 701 G Ex nA	3/2-way, single sol.	G 1/4" - NPT	dual use*	2.5.1.1.14	MNH 350 701 Ex nA	3/2-way & 5/2-way	G 1/4" - NPT	1/4" Namur	2.8.1.3
MOH 310 701 G Ex nA	3/2-way, n.o. single sol.	G 1/4" - NPT	dual use*	2.5.1.1.14	MNH 310 701 Ex nA	3/2-way, single sol.	G 1/4" - NPT	1/4" Namur	2.8.1.1.1
MH 310 101 G Ex nA	3/2-way, single sol.	G 3/8"	dual use*	2.5.1.1.14	MNH 310 711 Ex nA	3/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.1.1
MOH 310 101 G Ex nA	3/2-way, n.o. single sol.	G 3/8"	dual use*	2.5.1.1.15	MNH 310 121 Ex nA	3/2-way, single sol.	G 1/2" - NPT	1/2" Namur	2.8.1.1.2
MH 310 121 G Ex nA	3/2-way, single sol.	G 1/2"	dual use*	2.5.1.1.15	MNH 510 701 Ex nA	5/2-way, single sol.	G 1/4" - NPT	1/4" Namur	2.8.1.2.1
MH 320 501 Ex nA	3/2-way, double sol.	G 1/8"	in-line	2.5.1.1.16	MNH 510 711 Ex nA	5/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.2.1
MH 320 701 Ex nA	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16	MNH 510 121 Ex nA	5/2-way, single sol.	G 1/2" - NPT	1/2" Namur	2.8.1.2.2
MH 320 801 Ex nA	3/2-way, double sol.	G 1/4"	in-line	2.5.1.1.16	MNH 520 701 Ex nA	5/2-way, double sol.	G 1/4" - NPT	1/4" Namur	2.8.1.2.3
MH 320 101 Ex nA	3/2-way, double sol.	G 3/8"	in-line	2.5.1.1.17	MNH 520 121 Ex nA	5/2-way, double sol.	G 1/2" - NPT	1/2" Namur	2.8.1.2.3
MH 320 121 Ex nA	3/2-way, double sol.	G 1/2"	in-line	2.5.1.1.17	MNH 53_ 701 Ex nA	5/3-way, different versions	G 1/4" - NPT	1/4" Namur	2.8.1.4
MH 320 501 G Ex nA	3/2-way, double sol.	G 1/8"	dual use*	2.5.1.1.18	MNH 531 121 Ex nA	5/3-way, centre closed	G 1/2" - NPT	1/2" Namur	2.8.1.4
MH 320 701 G Ex nA	3/2-way, double sol.	G 1/4"	dual use*	2.5.1.1.18	* dual use valves can either be used in-line or on a manifold plate.				
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					

Solenoids are described on page 2.12.2.2.5

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  II2G/D c T4 -10° C ≤ Ta ≤ 50° C
 II3G/D c T5 -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	2.10.3.1
MH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MOH 310 701 VES Ex nA	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.2
MH 310 121 VES Ex nA	3/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.3
MH 320 121 VES Ex nA	3/2-way, double sol.	G 1/2"	in-line	2.10.3.3
MH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.4
MH 510 121 VES Ex nA	5/2-way, single sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.4
MH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.10.3.5
MH 520 121 VES Ex nA	5/2-way, double sol.	G 1/2" - 1/2" NPT	in-line	2.10.3.5
MH 53_ 701 VES Ex nA	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.10.3.6
MH 53_ 121 VES Ex nA	5/3-way, different versions	G 1/2" - 1/2" NPT	in-line	2.10.3.6

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	2.10.4.3
MNH 310 701 VES Ex nA	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.1
MNH 510 701 VES Ex nA	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2
MNH 520 701 VES Ex nA	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.10.4.2

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

Solenoids are described on page 2.12.2.3.3

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

2.12.2.3.3
page 237

Technical drawing of a mechanical part, showing a side view and a 3D model. The side view includes dimensions: 10, 28,2, 1,5, 11, 22, 29,5, 14, 6,3, 0,8, 12, 17,2, 8,5, 6, and a hole diameter of $\varnothing 16$. The 3D model shows a part with a central hole of diameter $\varnothing 16$ and a smaller hole of diameter $\varnothing 9,15$. The part is labeled with 'M3' and '1,5'.

AMISCO CE
I-20037(MI)ITALY
0709SD02403AX
Ex nA II3GD T5
24VDC 3W
120mA 100%ED
Ta = -15°C+50°C

22 mm wide ATEX connector 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 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	2.8.1.3
MNH 310 701 Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.1.1
MNH 310 711 Ex e mb	3/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.1.1
MNH 310 121 Ex e mb	3/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.1.2
MNH 510 701 Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.1
MNH 510 711 Ex e mb	5/2-way, single sol.	G 1/4"	1/4" Namur	2.8.1.2.1
MNH 510 121 Ex e mb	5/2-way, single sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.2
MNH 520 701 Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.2.3
MNH 520 121 Ex e mb	5/2-way, double sol.	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.2.3
MNH 53_701 Ex e mb	5/3-way, different versions	G 1/4" - 1/4" NPT	1/4" Namur	2.8.1.4
MNH 531 121 Ex e mb	5/3-way, centre closed	G 1/2" - 1/2" NPT	1/2" Namur	2.8.1.4

Solenoids are described on page 2.12.2.4.4

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

2.12.2.4.2
page 239



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  II2G/D c T6 -40° C ≤ Ta ≤ 50° C

The following solenoid valves are available:

Type	Function	Port size	Installation	Further information on valve on page
MH 310 501 TT Ex e mb	3/2-way, single sol.	G 1/8"	in-line	2.9.4.1.2
MOH 310 501 TT Ex e mb	3/2-way, n.o. single sol.	G 1/8"	in-line	2.9.4.1.2
MH 310 701 GTT Ex e mb	3/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.9.4.1.2
MOH 310 701 GTT Ex e mb	3/2-way, n.o. single sol.	G 1/4" - 1/4" NPT	in-line	2.9.4.1.2
MH 320 501 TT Ex e mb	3/2-way, double sol.	G 1/8"	in-line	2.9.4.1.2
MH 320 701 TT Ex e mb	3/2-way, double sol.	G 1/4"	in-line	2.9.4.1.2
MH 510 501 GTT Ex e mb	5/2-way, single sol.	G 1/8"	in-line	2.9.4.2.1
MH 510 701 GTT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	in-line	2.9.4.2.1
MH 520 501 GTT Ex e mb	5/2-way, double sol.	G 1/8"	in-line	2.9.4.2.2
MH 520 701 GTT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	in-line	2.9.4.2.2
MH 53_ 501 GTT Ex e mb	5/3-way, different versions	G 1/8"	in-line	2.9.4.2.2
MH 53_ 701 GTT Ex e mb	5/3-way, different versions	G 1/4" - 1/4" NPT	in-line	2.9.4.2.2

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	2.9.5.1
MNH 510 701 TT Ex e mb	5/2-way, single sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.1
MNH 510 711 TT Ex e mb	5/2-way, single sol.	G 1/4"	1/4" Namur	2.9.5.2.1
MNH 520 701 TT Ex e mb	5/2-way, double sol.	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.2
MNH 531 701 TT Ex e mb	5/3-way, centre closed	G 1/4" - 1/4" NPT	1/4" Namur	2.9.5.2.2

Solenoids are described on page 2.12.2.4.4

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 T6 -40° C ≤ Ta ≤ 50° C

The following solenoid valves are available:

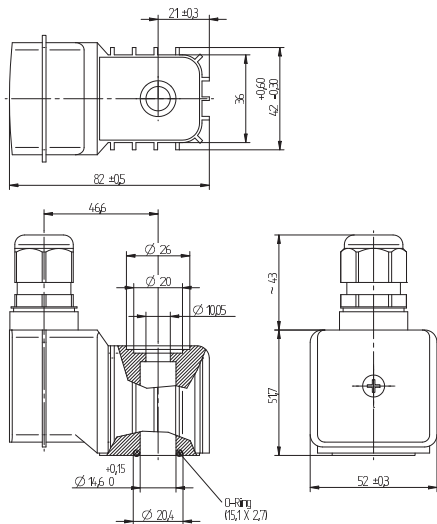
Type	Function	Port size	Installation	Further information on valve on page
MH 310 701 VES TT Ex e mb	3/2-way, single sol.	G 1/4" -1/4" NPT	in-line	2.10.3.2
MOH 310 701 VES TT Ex e mb	3/2-way, n.o. single sol.	G 1/4" -1/4" NPT	in-line	2.10.3.2
MH 510 701 VES TT Ex e mb	5/2-way, single sol.	G 1/4" -1/4" 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 2.12.2.4.4

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.



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

Voltage tolerance: - 10...+ 10%

Relative duty cycle: 100 %

Temperature range: -40°C...+50°C

Insulation class of insulating
Materials according to
DIN VDE 0580: F

Protection according
to EN 60529: IP 67

Moulding material: Thermoplasticpolyester

Cable Diameter: 6 – 13 mm

Please notice:
Same coil for 24VDC and 24VAC.

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)



Hafner-Pneumatik Krämer KG
Stammheimer Straße 10

D-70806 Kornwestheim

Phone +49 - 71 54 - 17 85 890
Fax +49 - 71 54 - 17 85 89 28

info@hafner-pneumatik.de
www.hafner-pneumatik.de

Hafner Pneumatika Kft.
Püski út 3

9228 Halászi – Hungary

Phone +36 - 96 - 57 30 12
Fax +36 - 96 - 21 06 15

ertekesites@hafner-pneumatika.com
www.hafner-pneumatika.com

Hafner UK
Unit 11 Forest Row Business Park,
Station Road
Forest Row, East Sussex. RH18 5DW

Phone +44 (0) 13 42 82 64 88
Fax +44 (0) 13 42 82 64 89

info@hafner-pneumatic.co.uk
www.hafner-pneumatic.co.uk