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System 13

The name „System 13“ stands for a modular system of solenoid coils, armature systems, solenoid operators and solenoid valves. The diameter of the armatures of all valve components is approximately 13 mm. This value is the major characteristic of this type. The components‘ efficiency has been increased to the optimum in years of simulation, construction and practical testing.

APPLICATION OF SYSTEM 13

The solenoid operators and solenoid valves of system 13 can be used for operating 2/2- or 3/2 way valves, especially in pneumatics and process technology. Available switching functions are *normally closed* and *normally open*.

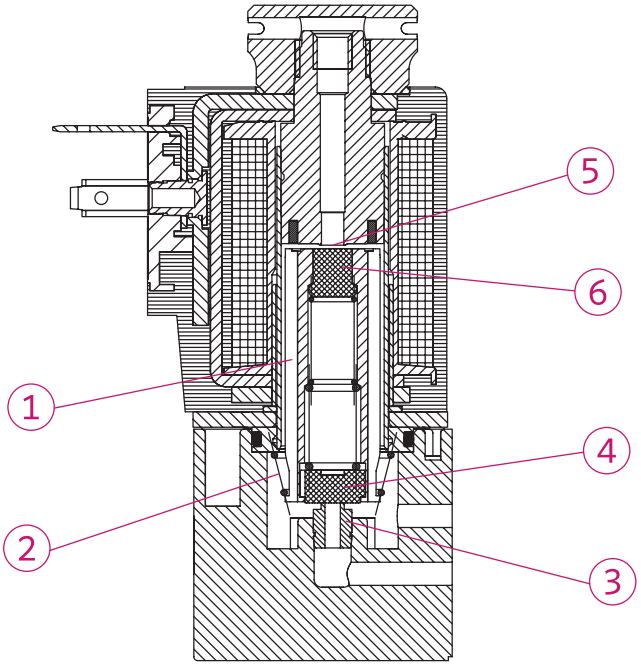
For 3/2 way valves of this series, typical maximum values for operating pressure and nominal width are 40 bar/5 mm. The solenoid operators and solenoid valves are designed for the use with compressed air or other neutral gases.

2/2 way solenoid operators and solenoid valves can also be used for controlling non-aggressive liquids.

FUNCTION

While the solenoid operator/solenoid valve (standard version, 3/2 way, normally closed) is de-energized, the armature[1] is pushed down on the lower valve seat[3] by the reset spring[2]. The lower valve seat is closed by a sealing element[4]. In this switch position the upper valve seat[5] in the magnetic core is open. When the valve is energized, the magnetic force exceeds the force of the reset spring and moves the armature[1] into the opposite extreme position. In this case the upper valve seat[5] is closed by the sealing element6, whereas the lower valve seat3 is open.

Solenoid operators and solenoid valves have identi-cal functionality. However, if solenoid operators are or-dered neither the lower valve seat nor the valve body is shipped.



Those components have to be provided by the customer.

2/2 way valves do not have an upper valve seat[5]. Besides that, the function of the magnet is identical.

Note

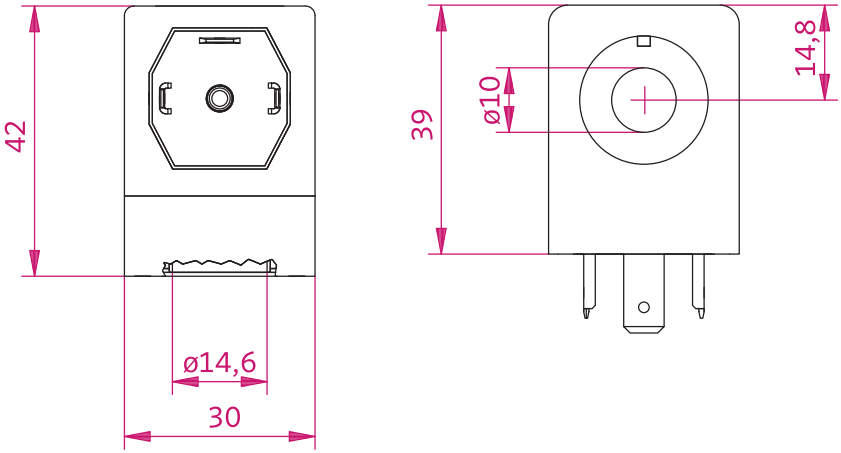
We reserve the right to make product changes without notice. For use other than general industrial pneumatics, please consult factory.

SOLENOID COIL

Width:	30 mm
Connection type:	form A – EN 175301-803-A
Moulding material:	thermoset resin

General Data

Voltage tolerance	± 10 %
Ambient temperature	- 20 °C to + 50 °C
Relative duty cycle	100 %
Insulation class of insulating materials according to DIN VDE 0580	F
Degree of protection with connector according to EN 60529	IP 65
Protective class	I
Imprint	*nass magnet* (customer imprint possible)



Technical Data Standard Versions

Part No.	Voltage	Frequency [Hz]	Rated Power [W]	[VA]	Power Level	$\Delta\vartheta_{32}$ [K]
113-030-0042	24 V DC	–	2,0		1	20
113-030-0045	48 V DC	–	2,1		1	20
113-030-0032	48 V DC	–	1,6		1	40
113-030-0032	220 V AC	50		6,4	1	40
113-030-0032	230 V AC	50		6,6	1	40
113-030-0032	240 V AC	60		5,7	1	40
113-030-0278	12 V DC	–	6,0		2	60
113-030-0026	24 V DC	–	6,1		2	45
113-030-0029	24 V AC	50		10,8	2	60
113-030-0029	24 V AC	60		9,6	2	60
113-030-0036	110 V AC	50		11,1	2	60
113-030-0036	120 V AC	60		11,7	2	60
113-030-0033	220 V AC	50		10,8	2	60
113-030-0044	12 V AC	50		19,3	3	100
113-030-0044	12 V AC	60		17,1	3	90
113-030-0027	24 V DC	–	11,0		3	70
113-030-0039	24 V AC	50		17,9	3	90
113-030-0039	24 V AC	60		15,6	3	85
113-030-0037	110 V AC	50		17,6	3	90
113-030-0037	120 V AC	60		18,3	3	90
113-030-0034	220 V AC	50		18,1	3	90
113-030-0034	240 V AC	60		18,9	3	95
113-030-0033	240 V AC	60		11,4	3	60
113-030-0047	12 V DC	–	15,0		4	95
113-030-0028	24 V DC	–	15,0		4	95
113-030-0040	24 V AC	50		21,8	4	105
113-030-0040	24 V AC	60		19,4	4	105
113-030-0043	48 V AC	50		26,2	4	105
113-030-0043	48 V AC	60		23,2	4	105
113-030-0052	48 V AC	50		19,0	4	100
113-030-0052	48 V AC	60		16,6	4	90
113-030-0038	110 V AC	50		24,8	4	105
113-030-0049	110 V AC	50		21,7	4	105
113-030-0049	110 V AC	60		19,2	4	105
113-030-0038	120 V AC	60		26,1	4	105
113-030-0041	195 V DC	–	16,6		4	105
113-030-0035	220 V AC	50		22,0	4	105
113-030-0050	230 V AC	50		21,4	4	105
113-030-0050	230 V AC	60		19,0	4	105
113-030-0031	240 V AC	50		17,9	4	90
113-030-0035	240 V AC	60		23,2	4	105

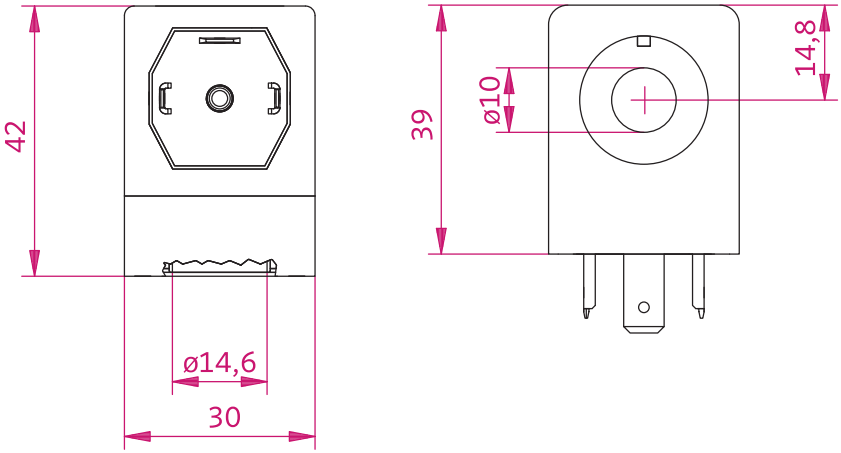
$\Delta\vartheta_{32}$ [K]: steady-state over-temperature according to VDE 0580

SOLENOID COIL

Width:	30 mm
Connection type:	form A – EN 175301-803-A
Moulding material:	thermoplastic

General Data

Voltage tolerance	± 10 %
Ambient temperature	- 20 °C to + 50 °C
Relative duty cycle	100 %
Insulation class of insulating materials according to DIN VDE 0580	F
Degree of protection with connector according to EN 60529	IP 65
Protective class	I
Imprint	*nass magnet* (customer imprint possible)



Technical Data Standard Versions

Part No.	Voltage	Frequency [Hz]	Rated Power [W]	[VA]	Power Level	$\Delta\vartheta_{32}$ [K]
113-030-0199	24 V DC	–	6,1		2	50
113-030-0200	24 V DC	–	11,0		3	80
113-030-0205	110 V AC	50		17,6	3	100
113-030-0205	120 V AC	60		18,3	3	100
113-030-0204	220 V AC	50		18,1	3	100
113-030-0204	220 V AC	60		15,9	3	95
113-030-0203	240 V AC	50		17,6	3	100
113-030-0203	240 V AC	60		15,9	3	95
113-030-0201	24 V DC	–	15,0		4	105
113-030-0206	24 V AC	50		19,3	4*	105
113-030-0206	24 V AC	60		16,0	4*	105

$\Delta\vartheta_{32}$ [K]: steady-state over-temperature according to VDE 0580

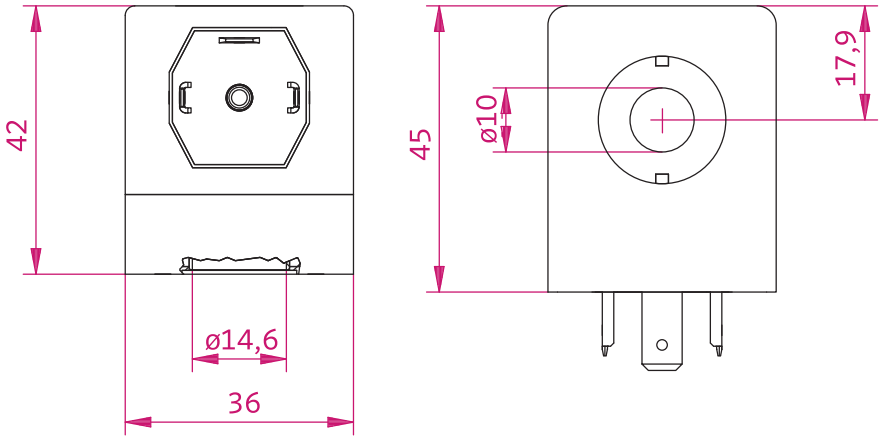
* When using AC type models with a power rating of 4 the maximum ambient temperature must not exceed + 40 °C.

SOLENOID COIL

Width:	36 mm
Connection type:	form A – EN 175301-803-A
Moulding material:	thermoset resin

General Data

Voltage tolerance	± 10 %
Ambient temperature	- 20 °C to + 50 °C
Relative duty cycle	100 %
Insulation class of insulating materials according to DIN VDE 0580	F
Degree of protection with connector according to EN 60529	IP 65
Protective class	I
Imprint	*nass magnet* (customer imprint possible)



Technical Data Standard Versions

Part No.	Voltage	Frequency [Hz]	Rated Power [W]	[VA]	Power Level	$\Delta\vartheta_{32}$ [K]
113-030-0123	24 V DC	–	4,1		2	30
113-030-0144	24 V AC	50		8,8	2	40
113-030-0144	24 V AC	60		7,6	2	40
113-030-0128	220 V AC	50		9,0	2	45
113-030-0128	240 V AC	60		9,2	2	45
113-030-0142	230 V AC	50		8,8	2	40
113-030-0142	230 V AC	60		7,6	2	40
113-030-0121	220 V AC	50		14,0	3	60
113-030-0124	24 V DC	–	7,9		3	50
113-030-0135	24 V AC	50		14,0	3	60
113-030-0135	24 V AC	60		12,0	3	60
113-030-0279	110 V AC	50		13,9	3	60
113-030-0279	110 V AC	60		12,2	3	60
113-030-0125	24 V DC	–	11,9		4	70
113-030-0129	24 V AC	50		21,0	4	90
113-030-0129	24 V AC	60		18,0	4	85
113-030-0126	110 V AC	50		21,5	4	90
113-030-0141	230 V AC	50		22,0	4	90
113-030-0141	230 V AC	60		19,0	4	85
113-030-0120	12 V DC	–	17,5		5	105
113-030-0127	24 V AC	50		25,0	5	105
113-030-0132	24 V DC	–	18,5		5	105
113-030-0120	36 V AC	50		25,0	5	105
113-030-0137	110 V AC	50		27,5	5	105
113-030-0140	110 V AC	60		26,5	5	105
113-030-0137	120 V AC	60		28,0	5	105
113-030-0133	220 V AC	50		25,5	5	105
113-030-0122	220 V AC	50		22,0	5	105
113-030-0138	230 V AC	50		25,5	5	105
113-030-0133	240 V AC	60		25,0	5	105
113-030-0138	240 V AC	60		27,0	5	105

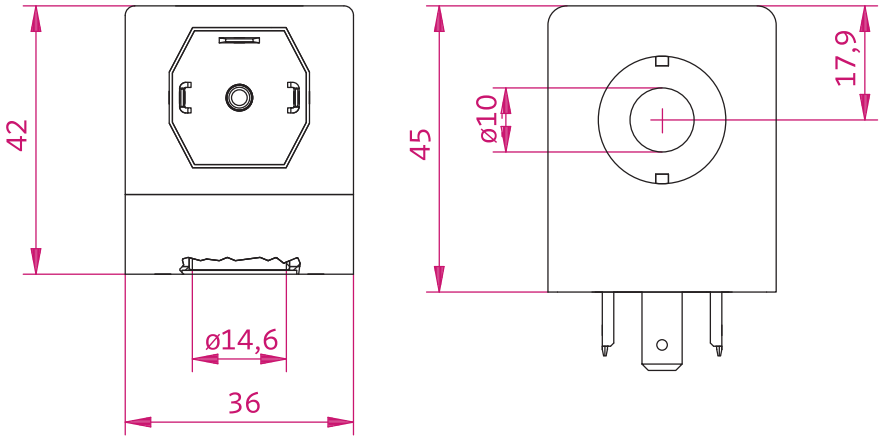
$\Delta\vartheta_{32}$ [K]: steady-state over-temperature according to VDE 0580

SOLENOID COIL

Width:	36 mm
Connection type:	form A – EN 175301-803-A
Moulding material:	thermoplastic

General Data

Voltage tolerance	± 10 %
Ambient temperature	- 20 °C to + 50 °C
Relative duty cycle	100 %
Insulation class of insulating materials according to DIN VDE 0580	F
Degree of protection with connector according to EN 60529	IP 65
Protective class	I
Imprint	*nass magnet* (customer imprint possible)



Technical Data Standard Versions

Part No.	Voltage	Frequency [Hz]	Rated Power [W]	[VA]	Power Level	$\Delta\vartheta_{32}$ [K]
113-030-0188	24 V DC	–	7,9		3	60
113-030-0189	24 V DC	–	11,9		4	80
113-030-0100	230 V AC	50		21,8	4	105
113-030-0190	24 V DC	–	18,5		5*	105

$\Delta\vartheta_{32}$ [K]: steady-state over-temperature according to VDE 0580

* When using AC type models with a power rating of 5 the maximum ambient temperature must not exceed + 40 °C. In this power level, AC versions are not possible.

Width: 30 mm
Connection type: form A
Moulding material: thermoset resin and thermoplastic

Width: 36 mm
Connection type: form A
Moulding material: thermoset resin and thermoplastic

Note: The proportions of the solenoid coils displayed in the images on this page do not represent the actual proportions.

SPECIAL REMARKS

The technical data are valid for the indicated standard voltages. Other voltages are available on request.

Perfect function of these solenoid coils with the pertinent components included in this catalogue is assured with the winding having reached its operating temperature (max. ambient temperature and max. voltage tolerance). The steady-state over-temperature is reached in case of valve body of plastic and encapsulation made of Thermoplastic. All devices are designed in compliance with DIN VDE 0580. Arrangement of the devices in modular design is possible, however, it may ensue a higher temperature increased by up to 20 K and may limit the function.

A general lifetime of the products cannot be specified, as it is decisively influenced by ambient conditions, the single application and combination with other components. The function can only be fulfilled in case of exclusive use of *nass magnet* products.

Should there be deviating or additional operating conditions compared to the above-mentioned conditions, special testing is necessary in order to verify the usability of the *nass magnet* products. – ***nass magnet* will be glad to give you the required advice.**

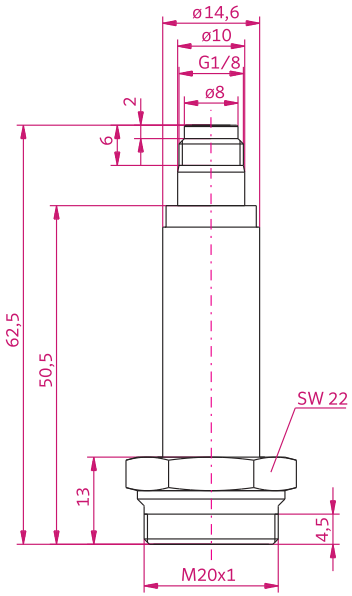
ARMATURE ASSEMBLY GW (THREAD)

Switching function:	2/2 and 3/2 way
De-energized state:	NC (normally closed), NO (normally open)
Connection type:	thread M 20 x 1, metal sealing or with O'ring
	shading ring for AC versions
	(without nonferrous metal
	on request)

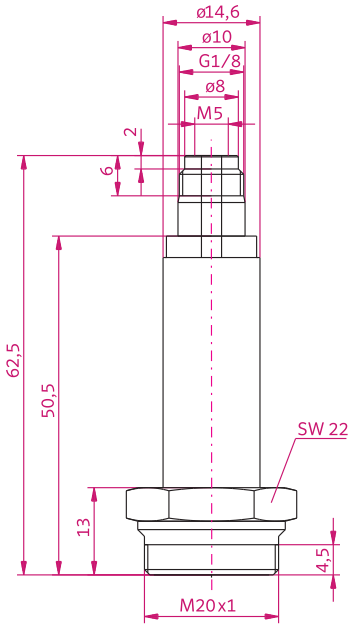
General Data

Ambient temperature	- 10 °C to + 50 °C
Sealing Material	FKM (other sealing materials on request)
Quality of medium according to ISO 8573-1	
when using FKM sealing elements	compressed quality air class 4, 3, 4
Mounting position	any (preferably plunger in vertical direction)

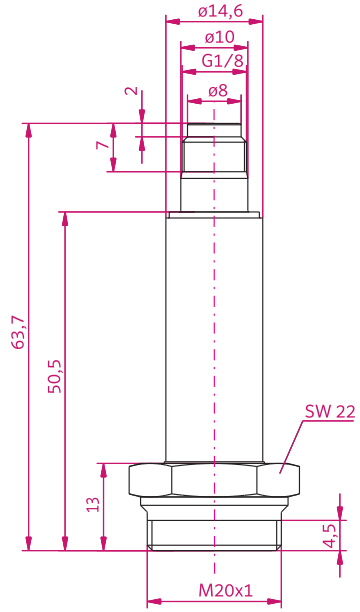
2/2 way NC



3/2 way NC



2/2 way N0



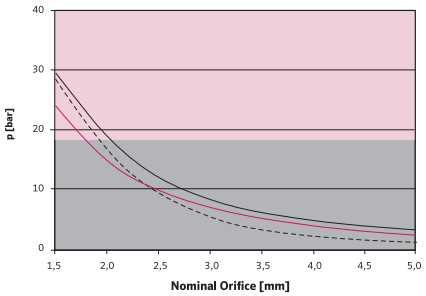
Technical Data Standard Versions

Part No.	Function	Power Level	Nominal Orifice [mm] inlet	exhaust	Pressure [bar]	Thread M 20 x 1 metal sealing	O'ring sealing	Armature Guide brass	stainless steel
113-010-0026	3/2 way NC	1	1,3	1,5	10	x			x
113-010-0022	3/2 way NC	2	2,0	2,5	10	x			x
113-010-0014	2/2 way NC	2, 3, 4	see below		see below		x	x	
113-010-0015	2/2 way NC	2, 3, 4	see below		see below		x		x
113-010-0031	2/2 way NC	2, 3, 4	see below		see below	x			x
113-010-0024	3/2 way NC	3	2,5	3,0	10	x			x
113-010-0056	2/2 way NO	3	see below		see below	x			x
113-010-0057	3/2 way NC	3	2,5	3,0	10		x		x
113-010-0002	3/2 way NC	4	3,0	3,5	10		x		x
113-010-0028	3/2 way NC	4	3,0	3,5	10	x			x
113-010-0046	2/2 way NO	5	see below		see below	x			x

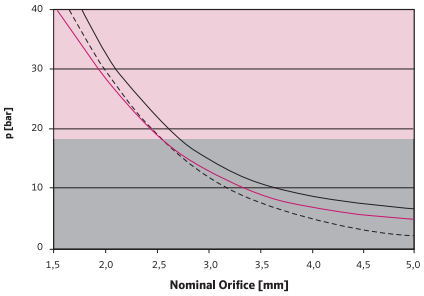
Power Levels for 2/2 Way Versions

AC - 50 Hz AC - 60 Hz DC - 5 % residual ripple max. test pressure: 18 bar · special versions on request

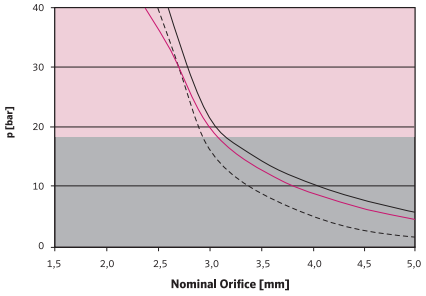
Power Level 2



Power Level 3



Power Level 4



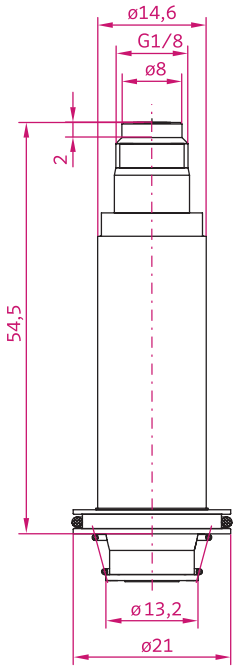
ARMATURE ASSEMBLY FL (FLANGE)

Switching function:	2/2 and 3/2 way
De-energized state:	NC (normally closed)
Connection type:	flange with O'ring shading ring for AC versions (without nonferrous metal on request)

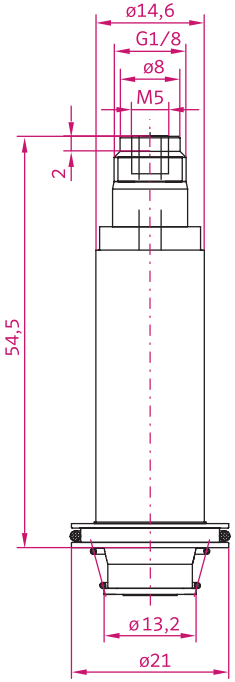
General Data

Ambient temperature	- 10 °C to + 50 °C
Sealing Material	FKM (other sealing materials on request)
Quality of medium according to ISO 8573-1	compressed quality air class 4, 3, 4
Mounting position	any (preferably plunger in vertical direction)

2/2 way NC



3/2 way NC



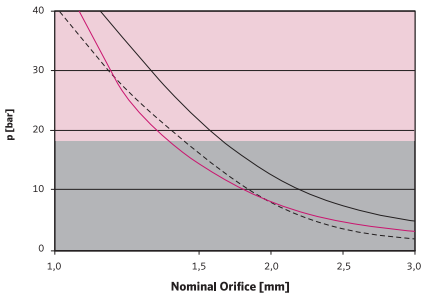
Technical Data Standard Versions

Part No.	Function	Power Level	Nominal Orifice [mm] inlet	exhaust	Pressure [bar]	Armature Guide brass	stainless steel
113-010-0027	3/2 way NC	1	1,3	1,5	10	x	
113-010-0023	3/2 way NC	2	2,0	2,5	10	x	
113-010-0034	3/2 way NC	2	2,0	2,5	10	x	
113-010-0032	2/2 way NC	2, 3, 4	see below		see below	x	
113-010-0025	3/2 way NC	3	2,5	3,0	10	x	
113-010-0029	3/2 way NC	4	3,0	3,5	10	x	
113-010-0035	3/2 way NC	4	3,0	3,5	10	x	

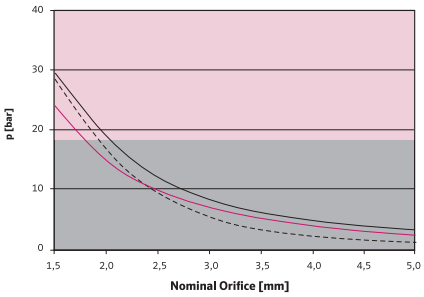
Power Levels for 2/2 Way Versions

AC - 50 Hz AC - 60 Hz DC - 5 % residual ripple max. test pressure: 18 bar · special versions on request

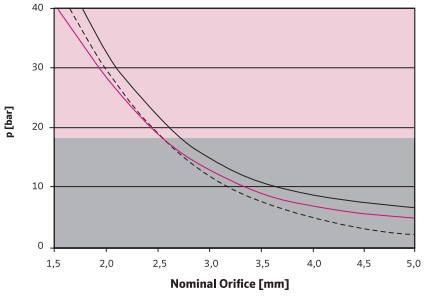
Power Level 1



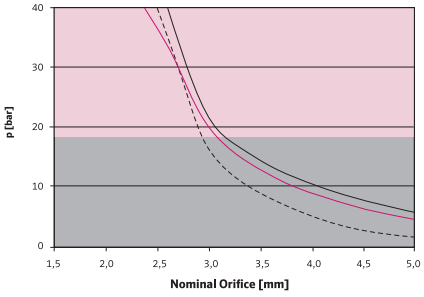
Power Level 2



Power Level 3



Power Level 4

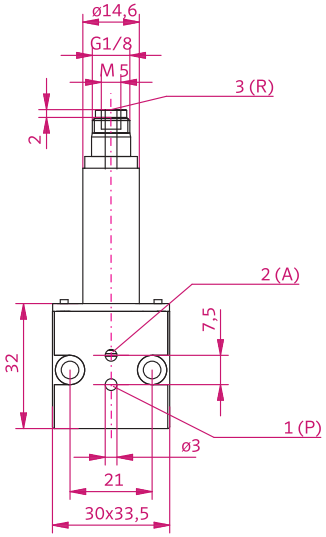


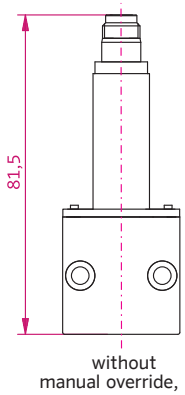
VALVE SYSTEM CNOMO

Switching function:	3/2 way
De-energized state:	NC (normally closed)
Valve box:	Zinc die-casted
Armature Guide:	stainless steel

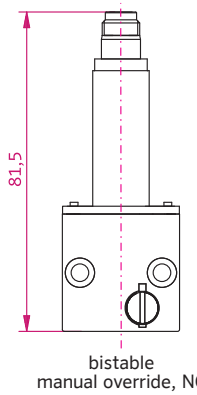
General Data

Ambient temperature	- 10 °C to + 50 °C
Sealing Material	FKM (other sealing materials on request)
Quality of medium according to ISO 8573-1	compressed quality air class 4, 3, 4
Mounting position	any (preferably plunger in vertical direction)

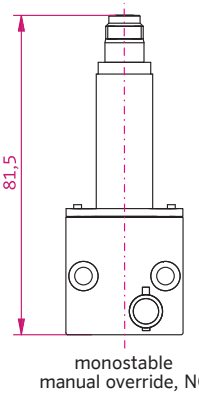




without
manual override, NC

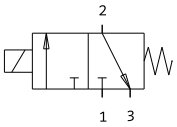


bistable
manual override, NC

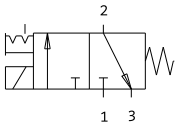


monostable
manual override, NC

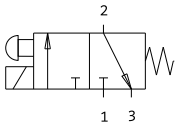
Pneumatic Diagram



without
manual override, NC



bistable
manual override, NC

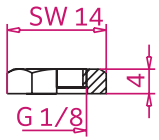


monostable
manual override, NC

Technical Data Standard Versions[1]

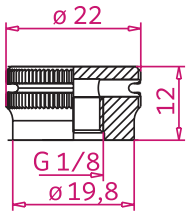
Part No.	Power Level	Nominal Orifice [mm] inlet	exhaust	Flow Rate[2] [l/min] 1–2	2–3	Manual Override bistable	monostable
113-050-0010	1	1,3	1,5	50	75		x
113-050-0016	1	1,3	1,5	50	75	x	
113-050-0018	1	1,3	1,5	50	75		
113-050-0004	2	2,0	2,5	100	175	x	
113-050-0017	2	2,0	2,5	100	175		x
113-050-0003	3	2,5	3,0	135	200		x
113-050-0007	4	3,0	3,5	165	210	x	
113-050-0008	4	3,0	3,5	165	210		
113-050-0011	4	3,0	3,5	165	210		x

1 All of the valve systems listed here are suitable for both AC and DC applications.
2 qv flow rate at an inlet pressure of 6 bar (ΔX = 1 bar) and 0 °C; flow rate detection in compliance with ISO 6358



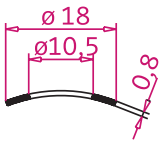
Hexagon nut

Part No.: 113-080-0004
Explanation: tightening torque max. 2 Nm; use with spring washer 113-080-0014



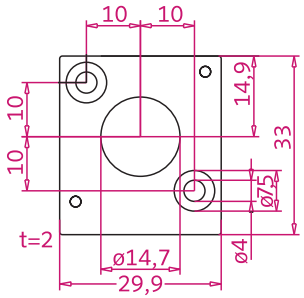
Exhaust protector

Part No.: 113-080-0005
Explanation: tightening torque max. 2 Nm; use with spring washer 113-080-0014



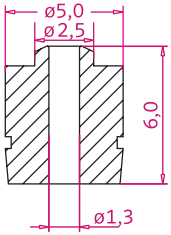
Spring washer

Part No.: 113-080-0014



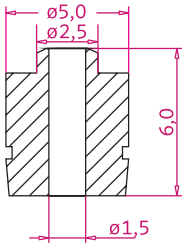
Mounting plate

Part No.: 113-702-0001
Explanation: only for armature assembly FL



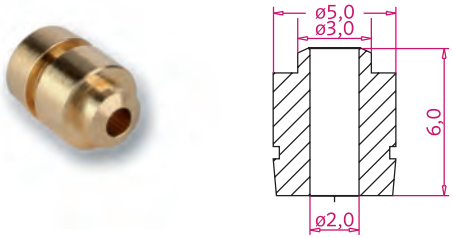
Valve seat · orifice size 1,3

Part No.: 113-034-0004

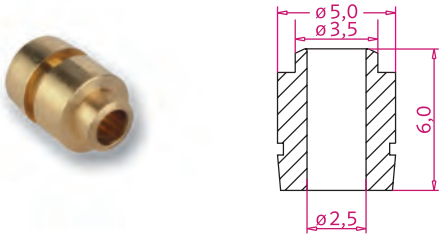


Valve seat · orifice size 1,5

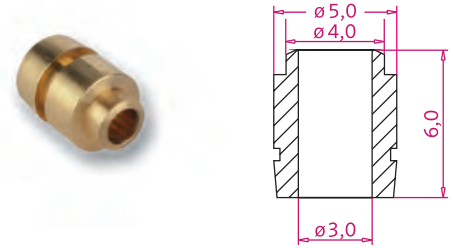
Part No.: 113-034-0001



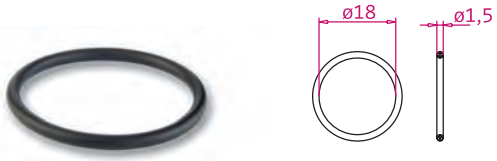
Valve seat · orifice size 2,0
Part No.: 113-034-0002



Valve seat · orifice size 2,5
Part No.: 113-034-0003



Valve seat · orifice size 3,0
Part No.: 113-034-0005

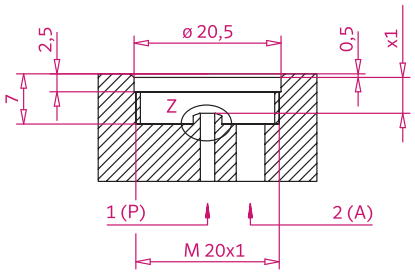


O'ring FKM · 18,0 x 1,5 mm
Part No.: 900-841-0085
Explanation: for armature assemblies with thread; not metallic self-sealing

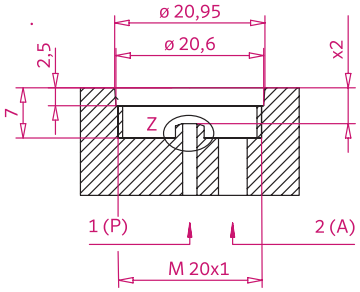
Cheese-head screw · M 4 x 35 mm
Part No.: 900-822-0045
Explanation: with slots and cross slots; only for valve system CNOMO (for one valve system two srews are required); tightening torque max. 1.5 Nm

PNEUMATIC CONNECTION SOLENOID OPERATOR

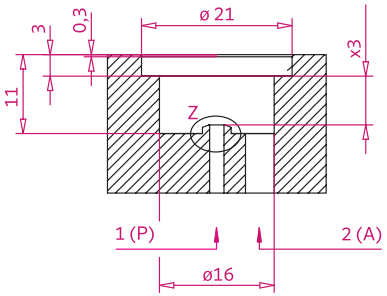
Thread Version with Metallic Seal



Thread Version with O'ring Seal

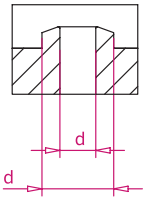


Flange Version with O'ring Seal



d	x1		x2		x3	
	1 2	2 1 3	1 2	2 1 3	1 2	2 1 3
1,3	4,60	4,70	4,60	4,70	6,40	6,50
1,5	4,60	4,80	4,60	4,80	6,40	6,60
2,0	4,70	5,00	4,70	5,00	6,50	6,80
2,5	4,80	5,10	4,80	5,10	6,60	6,90
3,0	4,90	5,10	4,90	5,10	6,70	6,90
3,5	5,00	5,20	5,00	5,20	6,80	7,00
4,0	5,10	-	5,10	-	6,90	-
4,5	5,20	-	5,20	-	7,00	-

Z



Note:

Specifications regarding the characteristic of the customer interface are available at *nass magnet* on request.