Products from NEM ...

... for mobile hydraulic applications

Mechanical and Electrical Cartridge Valves

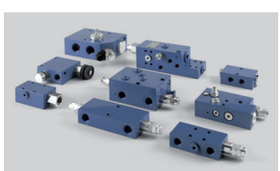
Pressure control valves
Counterbalance valves
Directional control valves
Flow control valves

p_{max} 350 bar
Q_{max} 300 L/min
Cavity up to SAE 20

Parts-in-Body Valves

Load holding / Motion control valves
Boom lowering control valves
PO check valves
Pressure control valves
Flow control valves

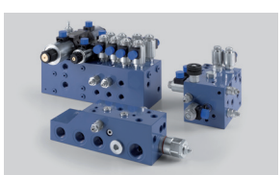
p_{max} 420 bar
Q_{max} 500 L/min
Ports up to $1^{1}/_{4}$SAE6000



Hydraulic Integrated Circuits

Weight lifting
Earth moving
Agricultural vehicles
Industrial vehicles

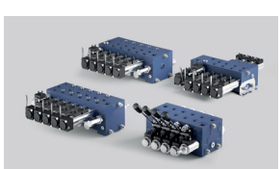
p_{max} 350 bar
Q_{max} 200 L/min



Directional Control Valves

Flow sensing (patented)
Load sensing
Load independent

p_{max} 350 bar
Q_{max} 70 L/min
Ports BSP 3/8“



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General catalogue, Vol. 1 Cartridge Valves

General catalogue, Vol.1

Cartridge Valves

Edition 10.2018

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Company profile

NEM, founded in 1995, is a valve manufacturer specialising in the development of hydraulic solutions for mobile, agricultural and industrial applications.

Our goal is to be a reliable partner, providing for our customers a state of the art service, delivered by highly qualified technical staff, to achieve customized solutions.

At NEM we are aware that the future of the hydraulic industry is in system engineering. We are therefore developing and manufacturing top quality products, which can be fully integrated into many different applications. NEM components ensure the highest level of performance and safety in any application; this, together with our focus on innovation, has gained us the trust and appreciation of leading machine manufacturers worldwide.

NEM firmly believes that its internal synergy ensures that all customers receive the most efficient and effective service. This is why, each and every day, we explore advances in industry related knowledge, discuss solutions, and bring into play all our expertise to ensure we are utilizing the most advanced technologies.

In order to provide our customers with the highest possible quality, NEM employs some of the most skilled professionals within the industry, who work state of the art equipment and processes. This garantuees perfect functionality of components and systems produced at our facilities.

NEM´s philosophy has always been quality driven, with the customer first in mind. At NEM we understand that human capital is the most important resource and main reason for our joint success. Our company believes in people, in their talents and their personal expertise.

We source raw material and parts, develop and design components and systems, machine them using processes such as turning, grinding, lapping, drilling, honing, heat treatment, assemble and test and finally deliver to our customer´s specifications.

It´s our responsibility to take care of our customers as well as ensure total quality.

NEM´s capabilities cover a wide spectrum of control technologies by combining mechanics, electrics and electronics to supply perfect hydraulic operating components and systems.

Hundreds of customers in many industries trust us and have taken advantage of our expertise. Our applications can be found all over the globe, under the heaviest working conditions.

It goes without saying that in NEM people go the extra mile in order to satisfy our customers and the customer of our customers.

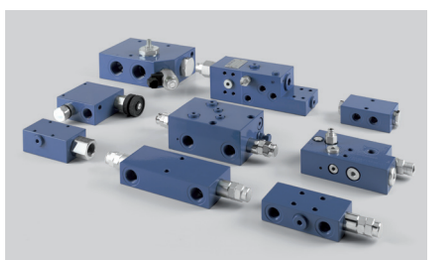
You are kindly invited to meet the people at NEM who listen and who deliver for the benefit of our customers.

Mechanical and Electrical Cartridge Valves

Pressure control valves	p_{max}	350 bar
Counterbalance valves	Q_{max}	300 L/min
Directional control valves	Cavity	up to SAE 20
Flow control valves		

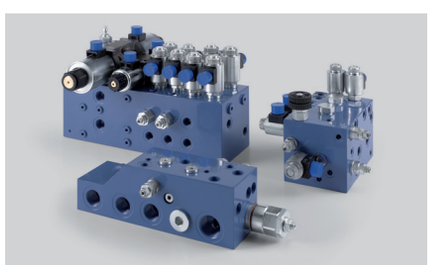
Parts-in-Body Valves

Load holding / Motion control valves	p_{max}	420 bar
Boom lowering control valves	Q_{max}	500 L/min
PO check valves	Ports	up to $1^{1}/_{4}$ SAE6000
Pressure control valves		
Flow control valves		



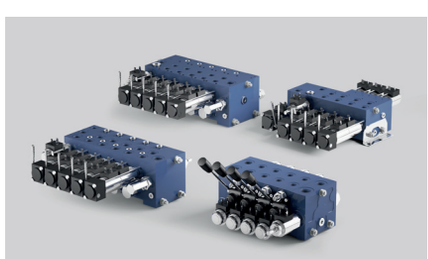
Hydraulic Integrated Circuits

Weight lifting	p_{max}	350 bar
Earth moving	Q_{max}	200 L/min
Agricultural vehicles		
Industrial vehicles		



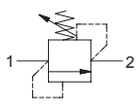
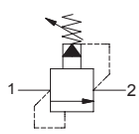
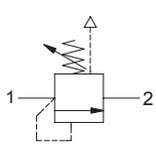
Directional Control Valves

Flow sensing (patented)	p_{max}	350 bar
Load sensing	Q_{max}	70 L/min
Load independent	Ports	BSP 3/8“

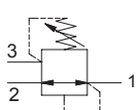
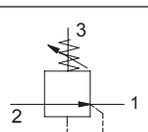
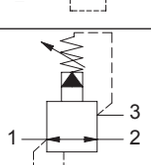


PRESSURE CONTROL VALVES

PRESSURE RELIEF VALVES

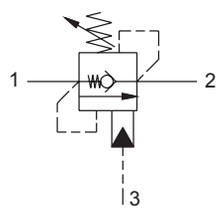
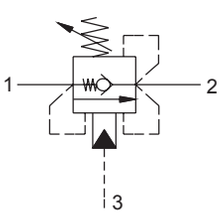
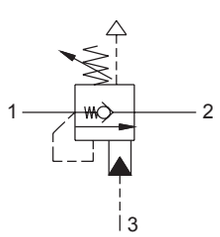
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0021.0	1,5	450	M16x1,5	S000020	26
	0022.0	20	350	SAE 08	C220000	27
	0022.3	30	350	SAE 08	C222000	28
	0023.3	40	410	SAE 10	C232000	29
	0023.4-HD	40	410	SAE 10	C232000	30
	0024.0	90	250	SAE 12	C240000	31
	0033.0	100	350	SAE 10	C230000	32
	0023.5-HD	40	410	SAE 10	C232000	33

PRESSURE REDUCING VALVES

	0121.2	2	350	SAE 06	C310000	34
	0123.2	30	350	SAE 10	C330000	36
	0122.1	10	350	SAE 08	C320000	35
	0133.2	60	350	SAE 10	C330000	37

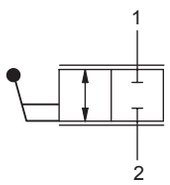
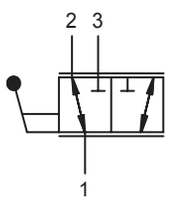
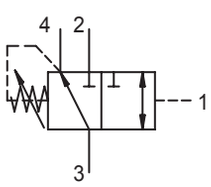
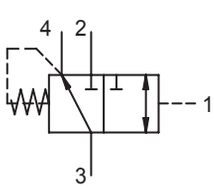
COUNTERBALANCE VALVES

COUNTERBALANCE VALVES

NOT COMPENSATED		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0612.0	40	350	SAE 08	C321000	44
	0613.0	70	350	SAE 10	C331000	47
	0614.0	100	410	SAE 12	C341000	50
	0644.0	100	410	M27x1.5	M340000	53
RELIEF COMPENSATED						
	0612.2	40	350	SAE 08	C321000	45
	0613.2	70	350	SAE 10	C331000	48
	0614.2	100	410	SAE 12	C341000	51
	0644.2	100	410	M27x1.5	M340000	54
FULLY COMPENSATED						
	0612.1	40	350	SAE 08	C321000	46
	0613.1	70	350	SAE 10	C331000	49
	0614.1	100	410	SAE 12	C341000	52
	0644.1	100	410	M27x1.5	M340000	55

DIRECTIONAL CONTROL VALVES

SPOOL DIRECTIONAL VALVES

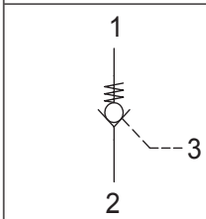
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0493.1	30	350	SAE 10	C230000	61
	0493.2	30	350	SAE 10	C330000	62
 ADJUSTABLE	0483.41	50	350	SAE 10	C430000	63
 FIXED	0483.41...3	50	350	SAE 10	C430000	64

CHECK VALVES

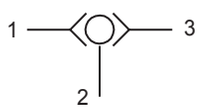
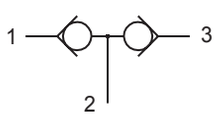
	0702.1	40	350	SAE 08	C220000	65
	0703.1	80	350	SAE 10	C230000	66
	0704.1	130	350	SAE 12	C240000	67
	0705.1	150	350	SAE 16	C250000	68

DIRECTIONAL CONTROL VALVES

PILOT OPERATED CHECK VALVES

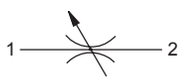
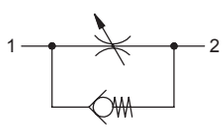
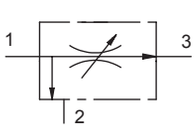
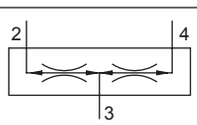
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0722.2	30	350	SAE 08	C321000	69
	0723.2	60	350	SAE 10	C331000	70
	0723.1	50	350	M22x1,5	N330000	71

SELECTOR VALVES

	0742.1	10	350	G 1/8”	S000004	72
	0742.2	2	350	G 1/8”	S000005	73

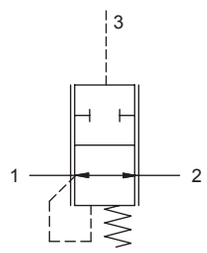
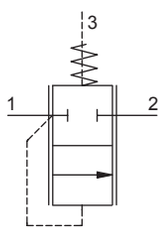
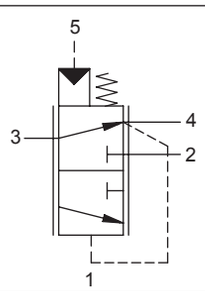
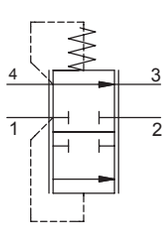
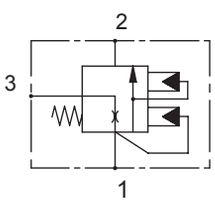
FLOW CONTROL VALVES

FLOW CONTROL VALVES

2 WAYS FLOW CONTROL VALVES		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0302.0	30	350	SAE 08	C220000	81
	0303.0	60	350	SAE 10	C230000	82
	0372.0	30	350	SAE 08	C220000	83
	0373.0	60	350	SAE 10	C230000	84
3 WAYS FLOW CONTROL VALVES						
	0323.0	50	30	SAE 10	C330000	85
	0324.0	90	50	SAE 12	C340000	86
FLOW DIVIDER AND CONBINER VALVES						
 ***Flow divider and conbiner valve**	0823.0	40	350	SAE 10	C430000	87
	0825.0	150	250	SAE 16	C450000	88

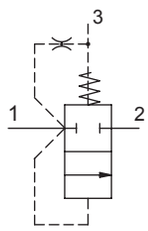
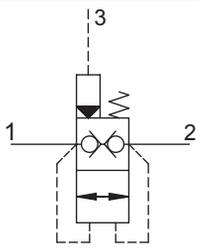
FLOW CONTROL VALVES

LOGIC ELEMENTS

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0214.0	100	350	SAE 12	C341000	89
	0203.0	70	350	SAE 10	C331000	90
	0204.0	150	350	SAE 12	C341000	91
	0205.0	200	350	SAE 16	C351000	92
	0253.0	50	350	SAE 10	C533000	93
	0243.0	50	350	SAE 10	C430000	94
	0205.2	150	350	SAE 16	C351000	95

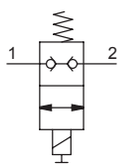
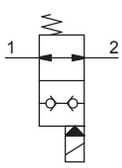
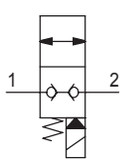
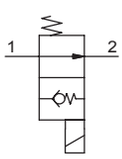
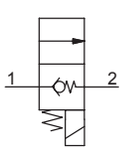
FLOW CONTROL VALVES

LOGIC ELEMENTS

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0205.1	200	350	SAE 16	C351000	96
	0235.0	200	350	SAE 16	C351000	97

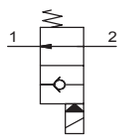
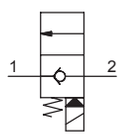
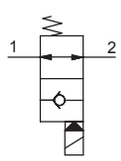
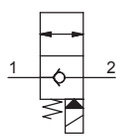
ON/OFF DIRECTIONAL VALVES

2 WAY POPPET TYPE DIRECTIONAL VALVES

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0502.1	20	250	SAE 08	C220000	101
	0503.1	30	350	SAE 10	C230000	102
	0512.0	40	350	SAE 08	C220000	103
	0513.0	60	350	SAE 10	C230000	104
	0514.0	150	350	SAE 12	C240000	105
	0512.1	40	350	SAE 08	C220000	106
	0513.1	60	350	SAE 10	C230000	107
	0514.1	150	350	SAE 12	C240000	108
	0532.0	2	350	SAE 08	C220000	109
	Check valve cracking pressure (1→2) > 350 bar					
	0532.1	2	350	SAE 08	C220000	110
	Check valve cracking pressure (1→2) > 350 bar					

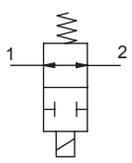
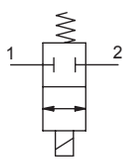
ON/OFF DIRECTIONAL VALVES

2 WAY POPPET TYPE DIRECTIONAL VALVES

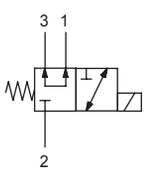
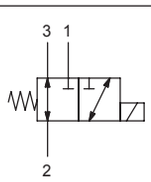
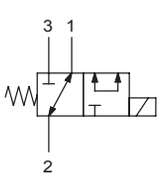
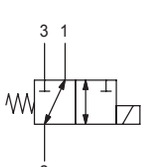
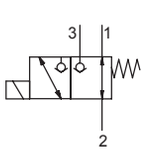
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0552.5	30	300	SAE 08	C220000	111
	0552.0	40	350	SAE 08	C220000	112
	0553.0	60	350	SAE 10	C230000	113
	0554.0	150	350	SAE 12	C240000	114
	0552.6	30	300	SAE 08	C220000	115
	0552.1	40	350	SAE 08	C220000	116
	0553.1	60	350	SAE 10	C230000	117
	0554.1	150	350	SAE 12	C240000	118
	0562.5	30	300	SAE 08	C220000	119
	0562.0	40	350	SAE 08	C220000	120
	0563.0	60	350	SAE 10	C230000	121
	0564.0	150	350	SAE 12	C240000	122
	0565.0	200	250	SAE 16	C250000	123
	0566.0	300	350	SAE 20	C260001	124
	0562.6	30	300	SAE 08	C220000	125
	0562.1	40	350	SAE 08	C220000	126
	0563.1	60	350	SAE 10	C230000	127
	0564.1	150	350	SAE 12	C240000	128
	0565.1	200	350	SAE 16	C250000	129
	0566.1	300	350	SAE 20	C260001	130

ON/OFF DIRECTIONAL VALVES

2 WAY SPOOL TYPE DIRECTIONAL VALVES

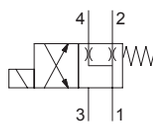
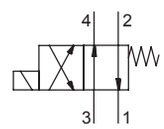
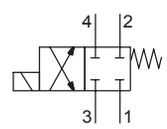
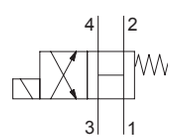
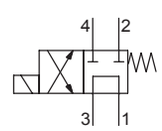
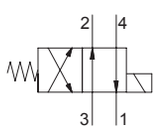
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0432.0	15	210	SAE 08	C220000	131
	0432.1	15	210	SAE 08	C220000	132

3 WAY DIRECTIONAL VALVES

	0402.1	15	250	SAE 08	C320000	133
	0402.31	5	50	SAE 08	C320000	134
	0402.3	15	250	SAE 08	C320000	135
	0402.4	15	250	SAE 08	C320000	136
	0402.2	13,5	250	SAE 08	C320000	137
	0403.2	20	250	SAE 10	C330000	138
	0404.2	50	350	SAE 12	C340000	139
	0423.2	30	250	SAE 10	C330000	140

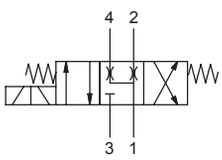
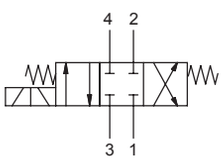
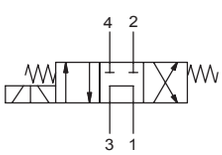
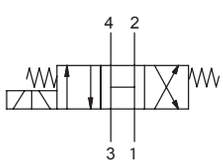
ON/OFF DIRECTIONAL VALVES

4 WAY 2 POSITION DIRECTIONAL VALVES

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0413.1	25	250	SAE 10	C430000	141
	0412.2	10	210	SAE 08	C420000	142
	0413.2	25	250	SAE 10	C430000	143
	0412.3	10	210	SAE 08	C420000	144
	0413.3	25	250	SAE 10	C430000	145
	0413.4	25	250	SAE 10	C430000	146
	0412.5	10	210	SAE 08	C420000	147
	0413.5	25	250	SAE 10	C430000	148
	04A4.2	60	250	SAE 12	C440000	149

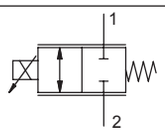
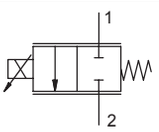
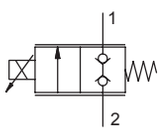
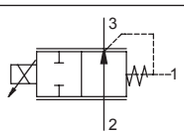
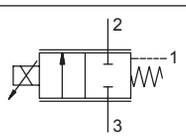
ON/OFF DIRECTIONAL VALVES

4 WAY 3 POSITION DIRECTIONAL VALVES

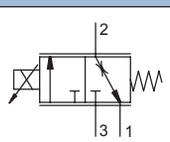
		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0462.1	10	210	SAE 08	C420000	150
	0463.1	25	250	SAE 10	C430000	151
	0462.2	10	210	SAE 08	C420000	152
	0463.2	25	250	SAE 10	C430000	153
	0462.3	10	210	SAE 08	C420000	154
	0463.3	25	250	SAE 10	C430000	155
	0462.4	10	250	SAE 08	C420000	156
	0463.4	25	250	SAE 10	C430000	157

ELECTRO-PROPORTIONAL VALVES

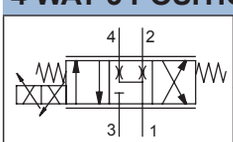
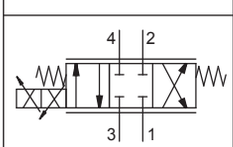
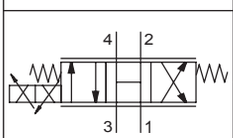
2 WAY ELECTRO-PROPORTIONAL DIRECTIONAL VALVES

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0343.1	30	350	SAE 10	C230000	162
	0344.1	75	350	SAE 12	C240001	163
	0523.1	40	250	SAE 10	C230000	164
	0353.4	30	350	SAE 10	C330000	165
	0353	30	350	SAE 10	C330000	166
	0354	70	350	SAE 12	C340000	167

3 WAY ELECTRO-PROPORTIONAL DIRECTIONAL VALVES

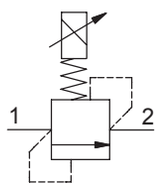
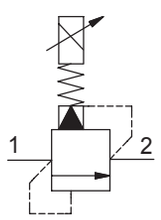
	0353	30	350	SAE 10	C330000	166
	0354	70	350	SAE 12	C340000	167

4 WAY 3 POSITION ELECTRO-PROPORTIONAL DIRECTIONAL VALVES

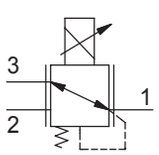
	0473.1	25	250	SAE 10	C430000	168
	0473.2	25	250	SAE 10	C430000	168
	0473.4	25	250	SAE 10	C430000	168

ELECTRO-PROPORTIONAL VALVES

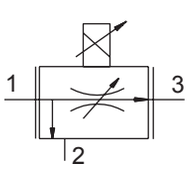
ELECTRO-PROPORTIONAL PRESSURE RELIEF VALVES

		Flow l/min	P_{max} bar	SIZE	CAVITY	PAGE
	0052.0	2	350	SAE 08	C220000	169
	0063.0	60	350	SAE 10	C230000	170

ELECTRO-PROPORTIONAL PRESSURE REDUCING VALVES

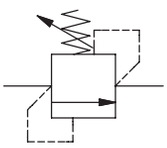
	0172.2	4	210	SAE 08	C320000	171

ELECTRO-PROPORTIONAL FLOW REGULATIORS

	0363.1	50	250	SAE 10	C330000	172
	0364.1	80	250	SAE 12	C340000	173

PRESSURE CONTROL VALVES

INTRODUCTION



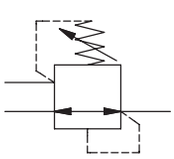
PRESSURE RELIEF VALVES

Pressure relief valves are normally closed hydraulic valves. They will open when a certain pressure is reached in order to dump the necessary flow to keep the hydraulic ducts pressurized.
Their primary function is to protect circuits and/or components (pumps, motors, actuators and pipes) from overloads and pressure peaks.
Pressure relief valves can be classified into two categories: direct acting and pilot operated valves.

Direct Acting Pressure Relief Valves are characterized by the presence of conical or differential poppets on which acts directly the pressure to be regulated.
These valves are simple, reliable and tough (the spring acts directly on the poppet). Their external dimensions result bigger than the pilot operated ones for flows over 50 lt/min.
Direct Acting Pressure Relief Valves find their application in circuits having less than 50 lt/min flows. They are particularly indicated for all those applications in which a good hydraulic sealing level is demanded (eg: hydraulic motors or actuators).

Pilot Operated Pressure Relief Valves are characterized by the presence of a logic element controller by a pilot stage.
These are valves able to control big flows combining reduced dimensions. A certain leakage, due to the coupling of the logic element, must be taken into account.
Pilot Operated Pressure Relief Valves are generally installed on pumps or hydraulic lines to control the maximum pressure.

Pressure Relief Valves must be considered also under the point of view of their reaction to the back-pressure.
Generally these valves equilibrate the differential ratio on the basis of their setting (pin-pout).
When a pressure relief valve is mounted before a pressurized line we must consider the effects of the back-pressure on its setting. In these cases the installation of compensated valves is advisable.
These valves, thanks to their internal design, will not be affected by the back-pressure on the return line, guaranteeing a control of the maximum feeding pressure considering only their setting (Pin).



PRESSURE REDUCING VALVES

Pressure reducing valves are 3 ways normally open hydraulic valves able to feed a secondary circuit with a lower pressure than the main one.

The reduced pressure acts on a cylindric spool kept in open position by a spring.
When the pressure of the secondary circuit overcomes the force of the spring the spool will move, assuring so that the pressure in the secondary line will not increase above its setting.

The third way, typical of pressure reducing valves, is connected to the tank in the direct acted type, and sometimes in the pilot operated ones as well.
This connection is necessary to unload the exceeding flow in case the pressure of the secondary circuit would increase above its setting.

There are two different types of design for these valves as well: direct acted and pilot operated.

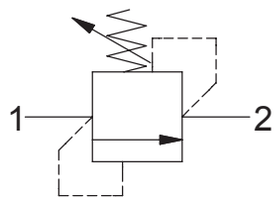
Direct acted pressure reducing valves are characterized by the presence of a cylindric spool on which the pressure to be regulated acts directly.
Thanks to their simple design they are very tough and reliable, particularly indicated for feeding the pilot circuits that do not imply a continous oil flow.
Their main application is on feeding units for earth moving servo-controls.

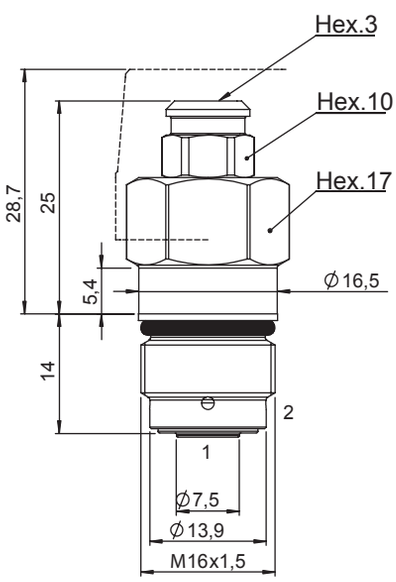
Pilot operated pressure reducing valves are characterized by the presence of a logic element controller by a pilot stage.
Thanks to the logic element it is possible to guarantee a reduced pressure even when big amounts of flow are present.
Depending on the type of spool it is possible to design the cartridge both in the basic way and in the way that combines the pressure reducing to the pressure relieving process.

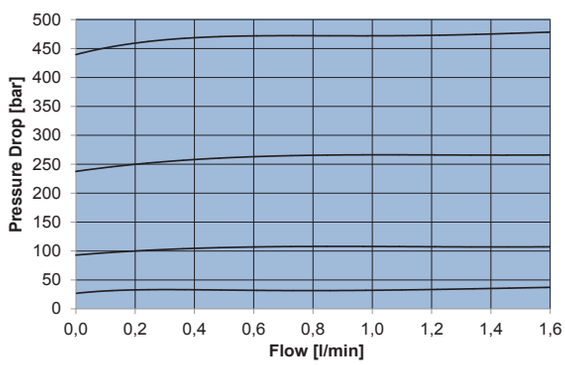
It is very important to consider that the setting pressure of the pressure reducing valves increases when some backpressure is present in the drain line.
To avoid this we advise to connect the drain line directly to the tank just in case some pressure losses due to filters and heat exchangers would be present.

DIRECT ACTING RELIEF VALVE

- Flow . . . . . **1,5 l/min**
- Max working pressure. . . . . **450 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Weight . . . . . **0,05 Kg**
- Tamper proof cap. **cod.9021015101**
- Cavity . . . . . **S000020** page **232**







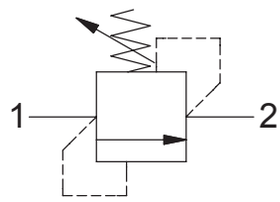
Ordering code

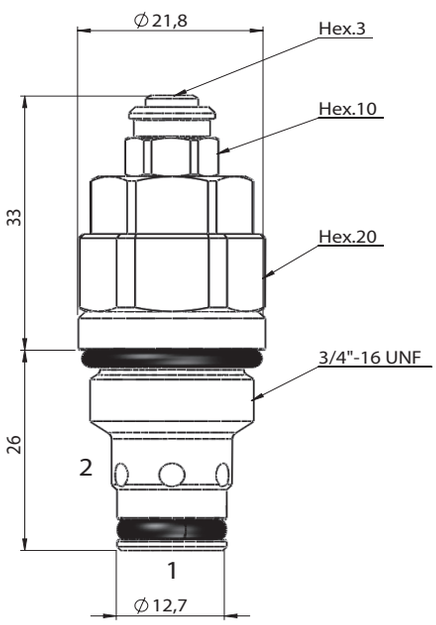
0 0 2 1 0 ☐ 0 0 E 0

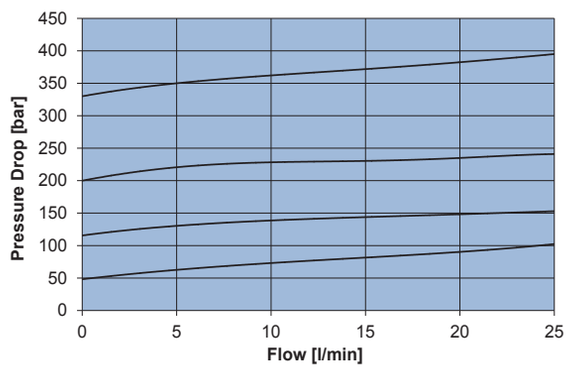
SPRINGS	0	1	2	3
Setting range min.-max. [bar]	5 - 30	30 - 100	100 - 250	250 - 450
Pressure Increase [bar/turn]	10	56	136	250
Standard setting 20 cc/min [bar]	20	50	100	250

DIRECT ACTING RELIEF VALVE

- Flow . . . . . **20 l/min**
- Max working pressure. . . . . **420 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Weight . . . . . **0,085 Kg**
- Tamper proof cap. **cod.9021015101**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**







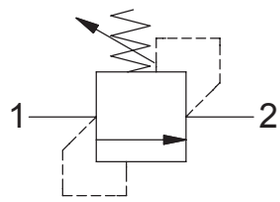
Ordering code

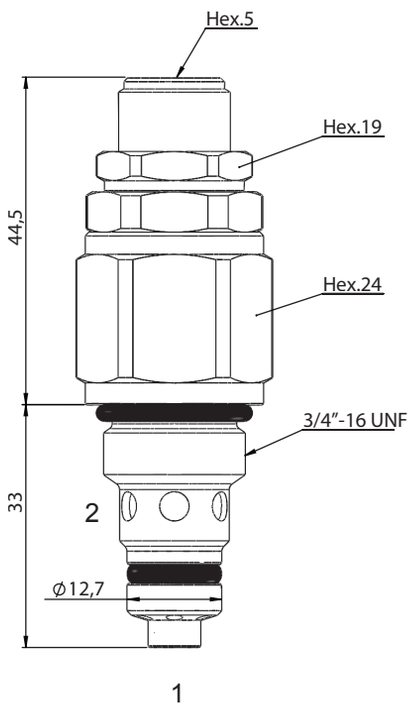
0 0 2 2 0 ☐ 1 0 0 0

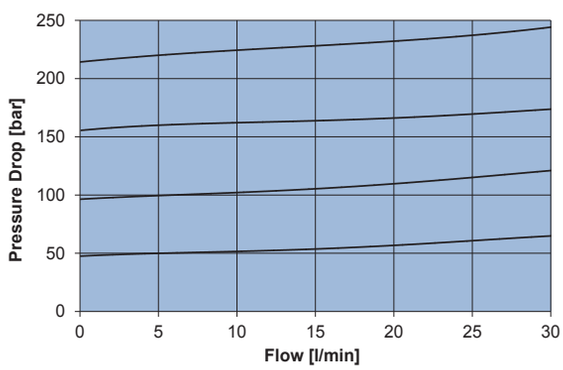
SPRINGS	1	2	3
Setting range min.-max. [bar]	5 - 160	40 - 220	50 - 350
Pressure Increase [bar/turn]	36	34	63
Standard setting 4 l/min [bar]	50	100	250

DIRECT ACTING RELIEF VALVE

- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Weight. . . . . **0,145 Kg**
- Cavity . . . . . **C222000** page **209**







Note

This carttridge must be installed in to the SAE 08/2 long cavity,according the specifications of C222000.

This type of valve is characterized by a dumped plunger that enable stable relief characteristics.

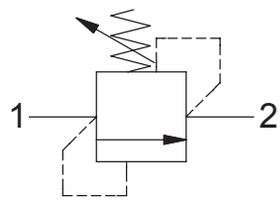
Ordering code

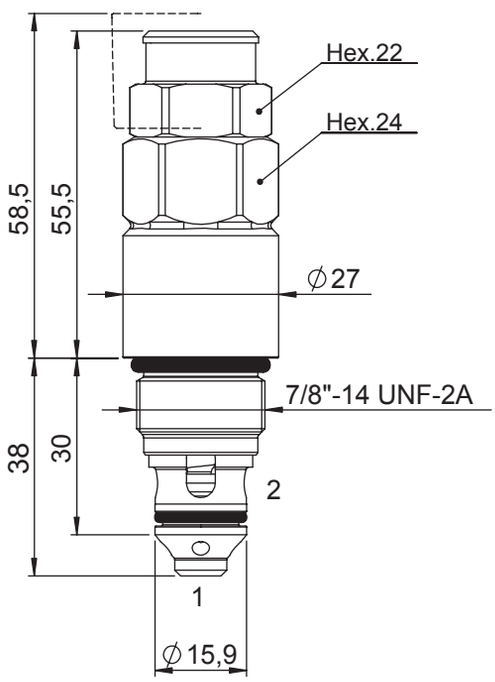
0 0 2 2 3 ☐ 0 0 0 0

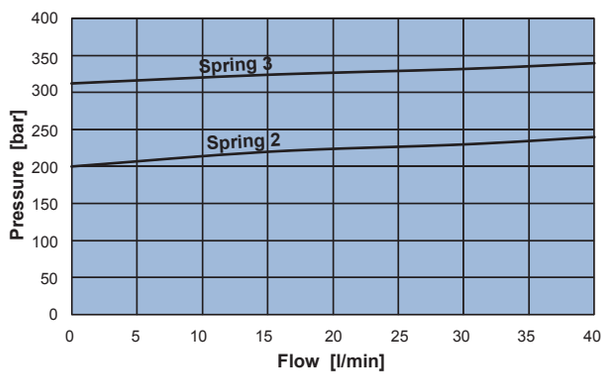
SPRINGS	0	1	2	3
Setting range [bar]	15-50	50-120	120-200	200-350
Pressure Increase [bar/turn]	8	20	33	59
Standard setting 4 l/min [bar]	25	100	150	250

DIRECT ACTING RELIEF VALVE

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **410 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **60 Nm**
- Weight. . . . . **0,23 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**
- Cavity . . . . . **C232000** page **212**







Note
This carttridge must be installed in to the SAE 10/2 long cavity,according the specifications of C232000.

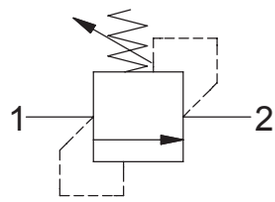
Ordering code

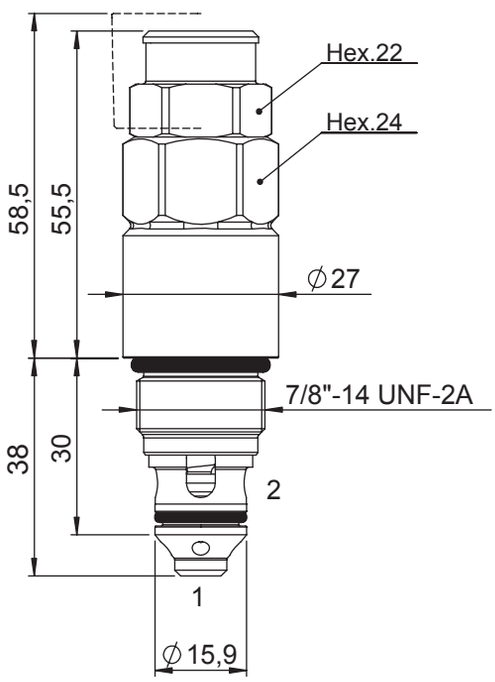
0 0 2 3 3 ☐ 0 0 0 0

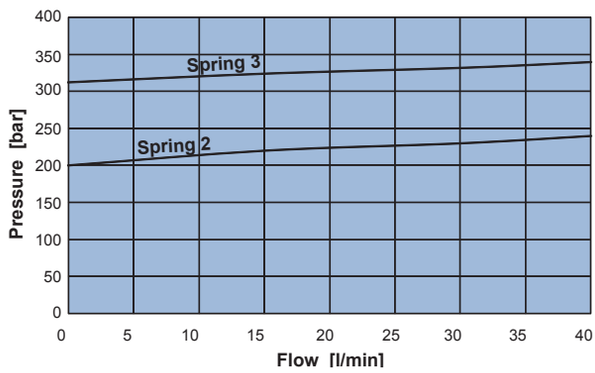
SPRINGS	1	2	3
Setting range min.-max. [bar]	40 - 140	120 - 250	220 - 410
Pressure Increase [bar/by turn]	23	31	53
Standard setting 4 l/min [bar]	50	150	250

DIRECT ACTING RELIEF VALVE WITH HARDENED SEALING BODY

- Flow . . . . . **40 l/min**
- Max working pressure. . . . . **410 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **60 Nm**
- Weight . . . . . **0,23 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**
- Cavity . . . . . **C232000** page **212**







Note

Hardened body cartridge, suggested for heavy duty applications (HD) and for lifting equipment.

For lifting equipments, cleanliness class ISO 4406 17/14 (NAS 1653 class 8) or better is recommended.

This carttridge must be installed into the SAE 10/2 long cavity,according the specifications of C232000.

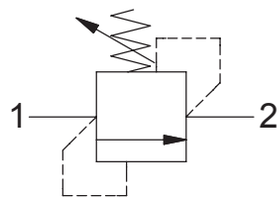
Ordering code

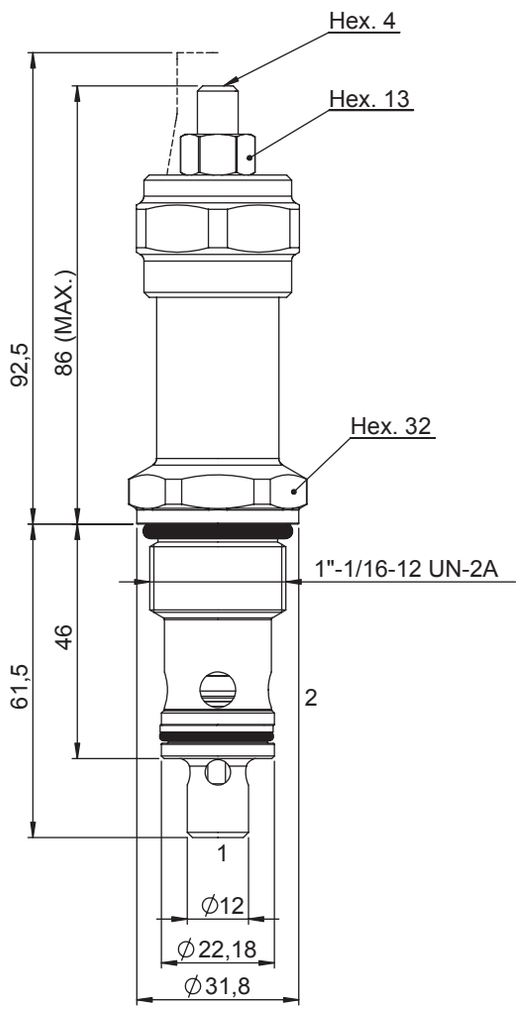
0 0 2 3 4 ☐ 0 0 0 0

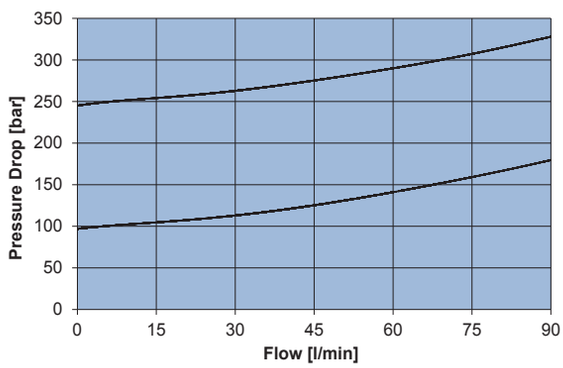
SPRINGS	1	2	3
Setting range min.-max. [bar]	40 - 140	120 - 250	220 - 410
Pressure Increase [bar/by turn]	23	31	53
Standard setting 4 l/min [bar]	50	150	250

DIRECT ACTING RELIEF VALVE

- Flow . . . . . **90 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **90 Nm**
- Weight. . . . . **0,35 Kg**
- Tamper proof cap. . . . . **cod. 9021020250**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**







Note
Axial hole of the C240000 cavity: minimum Ø19mm.

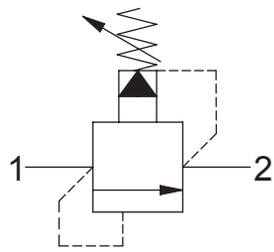
Ordering code

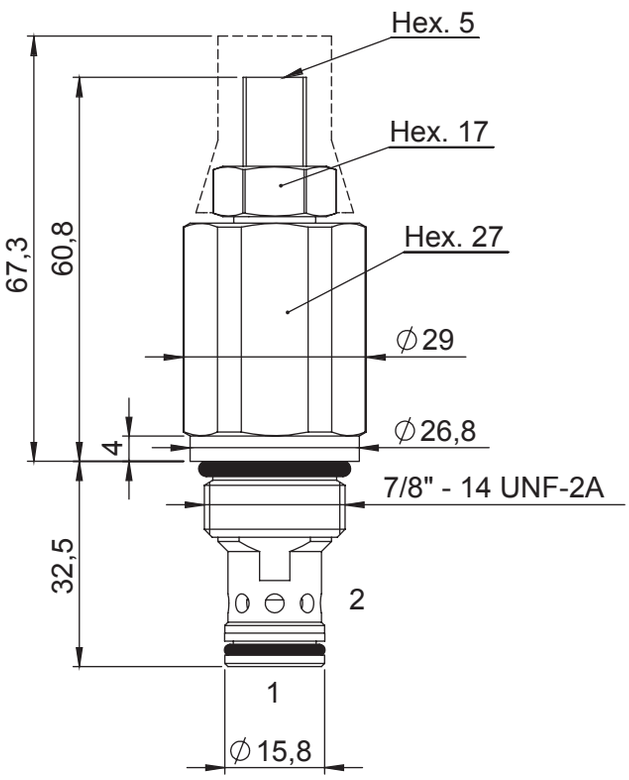
0 0 2 4 0 ☐ 0 0 0 0

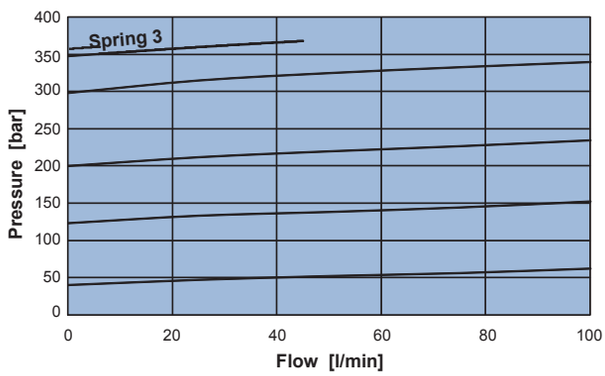
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 250	200 - 350
Pressure Increase [bar/by turn]	22	56
Standard setting 4 l/min [bar]	100	300

PILOT OPERATED RELIEF VALVE

- Flow . . . . . **100 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **60 Nm**
- Weight . . . . . **0,25 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**







Ordering code

0 0 3 3 0 ☐ 0 ☐ 0 0

SPRINGS	3
Setting range min.-max. [bar]	20 - 350
Pressure Increase [bar/by turn]	136
Standard setting 4 l/min [bar]	100

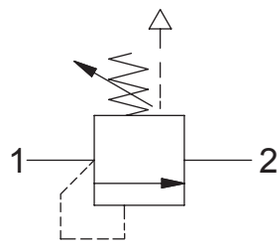
0 — **Hex socket screw**

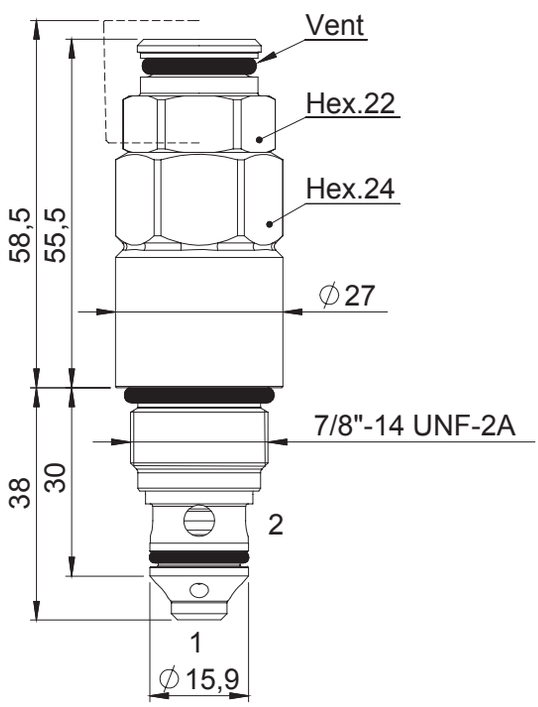
2 — **Handknob**

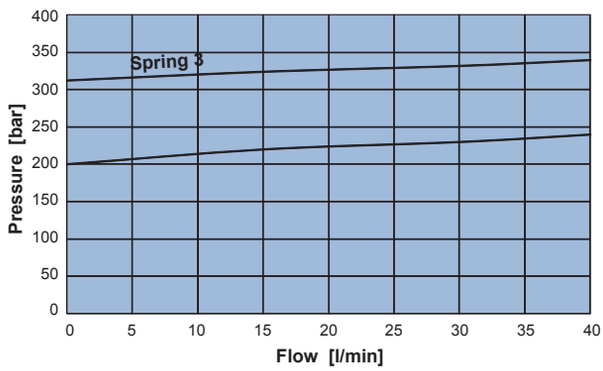
Adjustments

DIRECT ACTING COMPENSATED RELIEF VALVE WITH HARDENED SEALING BODY

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **410 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **60 Nm**
- Weight. . . . . **0,23 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**
- Cavity . . . . . **C232000** page **212**







Note:
Hardened body cartridge, suggested for heavy duty applications (HD) and for lifting equipment.

For lifting equipments, cleanliness class ISO 4406 17/14 (NAS 1653 class 8) or better is recommended.

This carttridge must be installed into the SAE 10/2 long cavity,according the specifications of C232000.

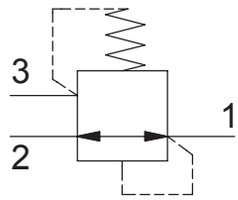
Ordering code

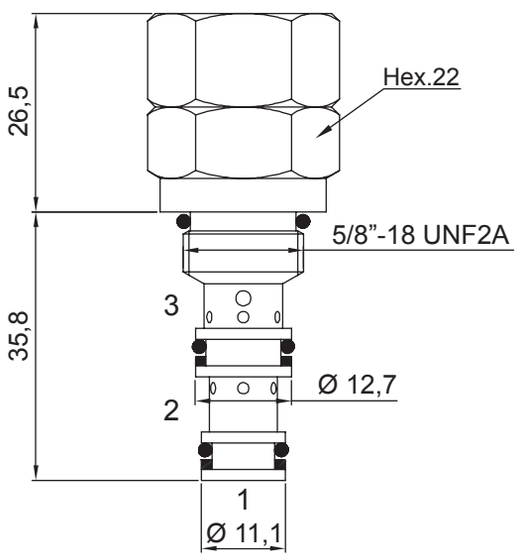
0 0 2 3 5 ☐ 0 0 0 0

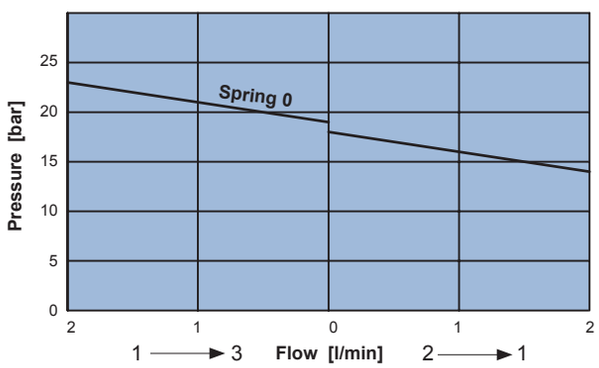
SPRINGS	2	3
Setting range min.-max. [bar]	120 - 250	220 - 410
Pressure Increase [bar/by turn]	31	53
Standard setting 4 l/min [bar]	150	250

FIX SETTING DIRECT ACTING PRESSURE REDUCING VALVE

- Flow . . . . . **2 l/min**
- Max working pressure in 2 . . . . . **350 bar**
- Max working pressure in 1 . . . . . **18 bar**
- Max working pressure in 3 . . . . . **1 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **15 Nm**
- Weight . . . . . **0,10 Kg**
- Cavity . . . . . **C310000** page **217**







Note:
- In case of different setting from standard, contact NEM customer service.

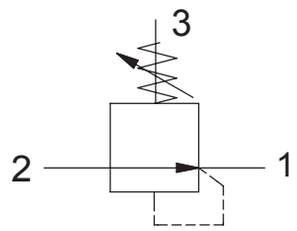
Ordering code

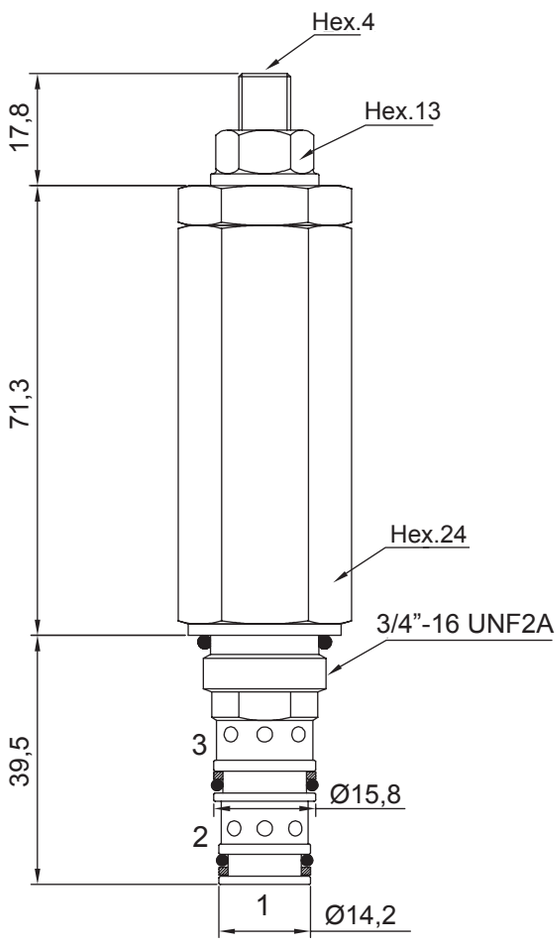
0 1 2 1 2 ☐ 0 3 0 0

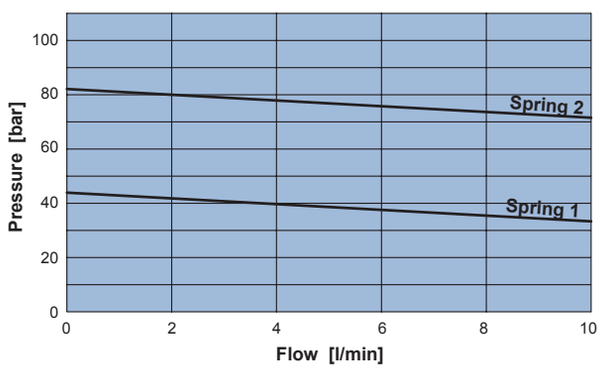
SPRINGS	0
Standard setting [bar]	18

DIRECT ACTING PRESSURE REDUCING VALVE

- Flow . . . . . **10 l/min**
- Max working pressure in 2 . . . . . **350 bar**
- Max working pressure in 1 . . . . . **100 bar**
- Max working pressure in 3 . . . . . **1 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . .**40 Nm**
- Weight . . . . . **0,25 Kg**
- Cavity. . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**







Note:
Unidirectional pressure reducing cartridge (without embedded relief function).

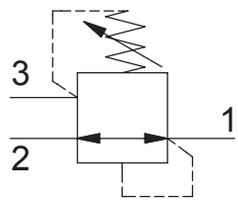
Ordering code

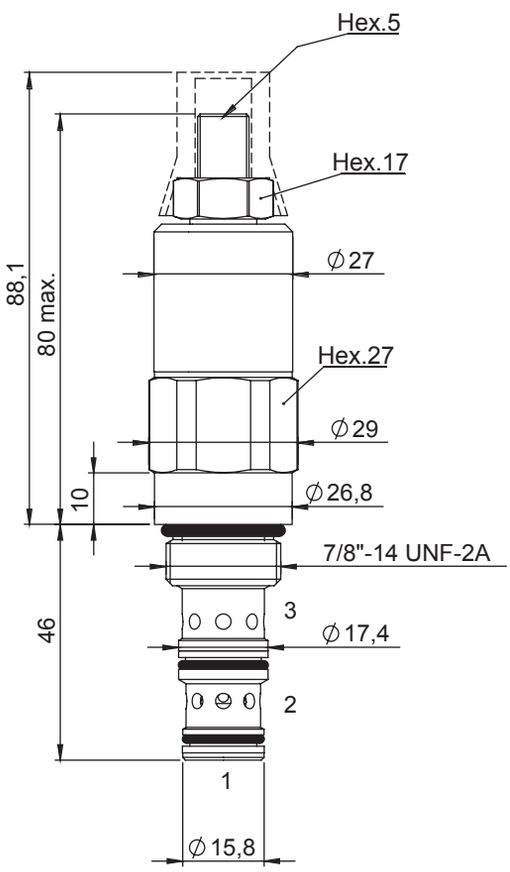
0 1 2 2 1 ☐ 0 0 0 0

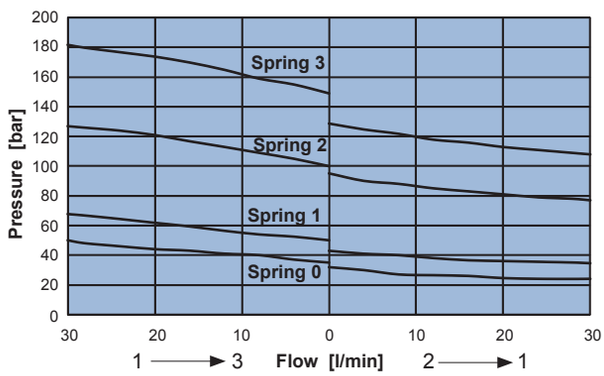
SPRINGS	1	2
Setting range [bar]	5 - 50	20 - 100
Pressure Increase [bar/turn]	7	17
Standard setting [bar]	25	50

DIRECT ACTING PRESSURE REDUCING VALVE

- Flow . . . . . **30 l/min**
- Max working pressure in 2 . . . . . **350 bar**
- Max working pressure in 1 . . . . . **150 bar**
- Max working pressure in 3 . . . . . **1 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **.50 Nm**
- Weight . . . . . **0,31 Kg**
- Leakage with 350 bar in 2: . . . . . **70 cc/min**
- Tamper proof cap. . . . . **cod. 4029250280**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**







Ordering code

0 1 2 3 2 ☐ 0 ☐ ☐ 0

SPRINGS	0	1	2	3
Setting range [bar]	5 - 30	15 - 55	20 - 103	30 - 150
Pressure Increase [bar/turn]	5	8	20	30
Standard setting [bar]	25	50	100	140

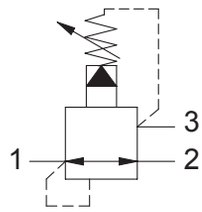
Adjustments

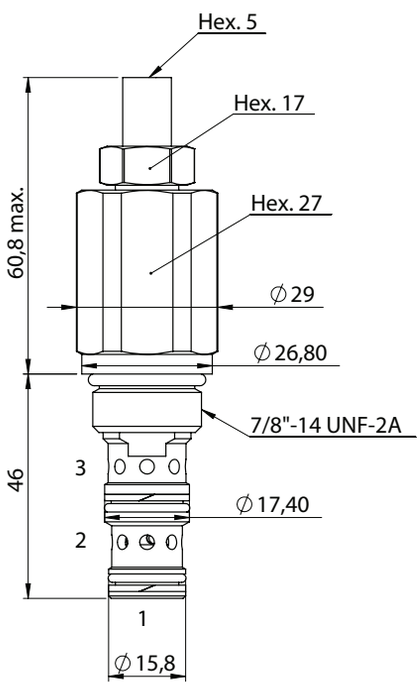
0	2
Hex socket screw	Handknob

0	1
Without filter	With filter

PILOT OPERATED PRESSURE REDUCING VALVE

- Flow. . . . . .**60 l/min**
- Max working pressure in 2 . . . . . **350 bar**
- Max working pressure in 1 . . . . . **350 bar**
- Max working pressure in 3 . . . . . **1 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**60 Nm**
- Weight. . . . . **0,25 Kg**
- Tamper proof cap. . . . . .**cod. 4029250280**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**

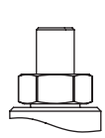
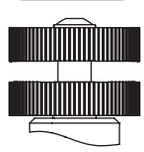




Ordering code

0 1 3 3 2 ☐ 0 ☐ 0 0

SPRINGS	3
Setting range min.-max. [bar]	20 - 350
Pressure Increase [bar/by turn]	136
Standard setting 4 l/min [bar]	100

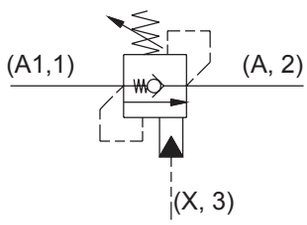
0	2
	
Hex socket screw	Handknob

Adjustments

COUNTERBALANCE VALVES

INTRODUCTION

Counterbalance valves are hydraulic valves designed specifically to hold and control negative or gravitational loads. They are meant to serve all those applications that involve the control of suspended loads, such as mechanical joints, lifting applications, extensible movable bridge, winches, etc…
Counterbalance valves main functionalities are lowering velocity control and stationary load holding.
Counterbalance valves hydraulic symbol is similar to an integrated micro-circuit, in which 3 characteristic components can be identified:



- A uni-directional valve, which allow a free feeding to the hydraulic actuator and lock load in the required position.
- A pressure relief valve, which, thanks to its specific configuration, holds the loads acting on hydraulic actuators (for instance, cylinders or motors) and limits max pressurization, allowing also stress control, where needed.
- A pilot piston, which opens the pressure relief valve, thanks to connection to hydraulic energy source.

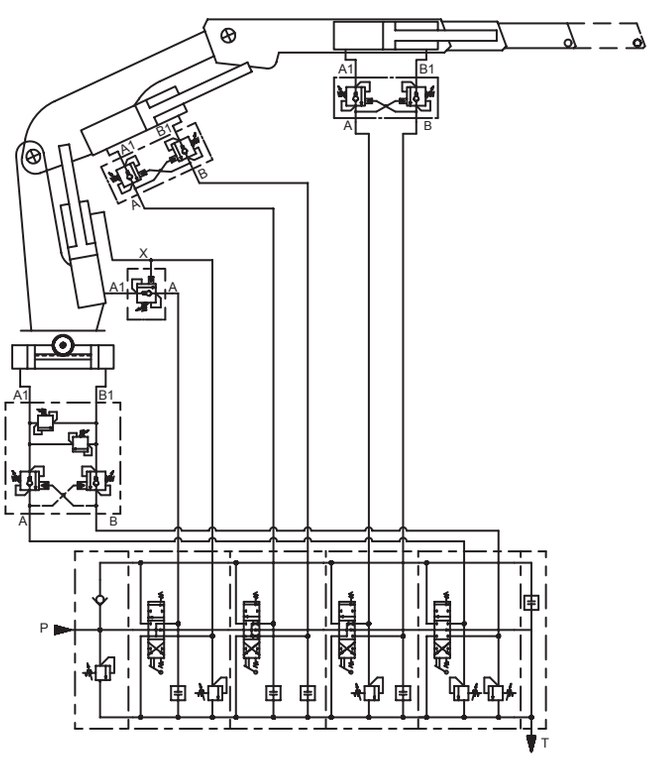


Fig.2 Example of counterbalance valve application

Generally, counterbalance valves are installed directly on cylinders or hydraulic actuators (ex. Port A1-1).

That guarantees load control and holding even in case of rupture or external leakage of the hoses connecting valve and setting device (directional control valve). Picture nr. 2 shows an example of truck crane hydraulic scheme, which is a typical application for counterbalance valves.

WORKING PRINCIPLE

Thanks to the uni-directional valves, oil flow regulated by the directional control valve comes inside the cylinder facing minimum resistance.
When directional spools are in neutral position, sealing devices are in rest position, locking connection between hydraulic actuator and directional control valve. Thanks to mechanical sealing obtained through grinded sealing point, it's possible to avoid leakage through the spools of uni-directional valve. Counterbalance valves, in fact, are able to close with very small leakage (<10 drops/min). Since there are no dents nor saturation effects (possible even in case of clean oil), a perfect sealing will take place in a few minutes.
Pump Connection to pilot line (X-3)– consequence of directional spool change-over– determines the progressive opening of the counterbalance valves, up to the balance satisfying the flows continuity equation. That guarantees the absence of cavitations and also the control of dragged loads lowering velocity.

SETTING

Counterbalance valves setting corresponds to the opening pressure of pressure relief section. This pressure determines the max load which counterbalance valve is able to hold.
Usually the setting pressure value must be at least 1.3 times the max load induced pressure to hold. That tolerance allows induced loads safe holding.

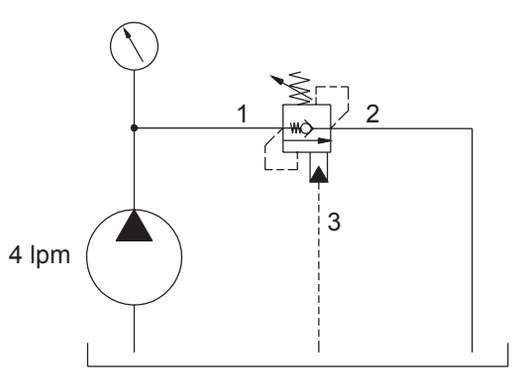


Fig.3

Standard setting pressure (Pt) of counterbalance valves corresponds to pressure on port (1), while the valve is crossed by a 4l/min flow (picture 3).

es. Pt: 350 bar @ 4 l/min

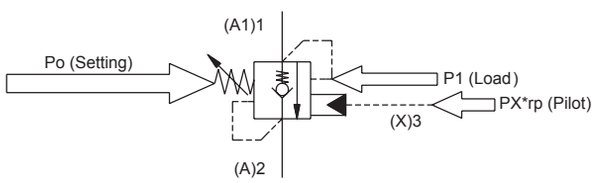
In particular cases, and generally upon customers' request, the pressure can be set considering the initial opening value, corresponding almost to 20 ml/min. flow.

es. Pt: 350 bar @ 20 ml/min

PILOT RATIO

As mentioned before, counterbalance valves are characterized by a pilot area on which pressure coming from the actuator's feeding line acts. Such pressure, together with the pressure due to the load, moves pilot piston, progressively contrasting the force generated by the setting spring.
Hence the combined action of the two pressures is connected to the ratio between the pushing areas on which they act. This ratio is known as "Pilot Ratio" (pr), and it is the basic parameter for any counterbalance valve.
Pilot Ratio (pr) is defined as the geometrical ratio between the area on which the load acts (port 1) and the pilot area (port 3). Thanks to this parameter, it is possible to calculate the values of pilot pressures first opening (Px):

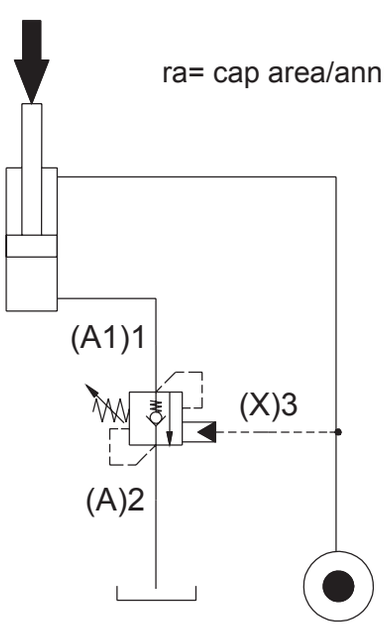
Px = (Pt – P1) / rp

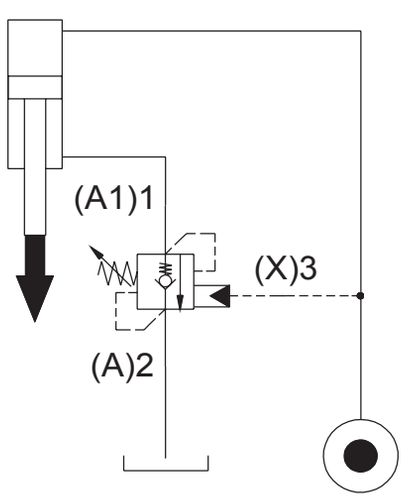


According the Pilot Ratio, counterbalance valves can be divided in 2 types:
High Pilot Ratio (>6:1): suitable for those applications where the loads are constant (for instance, hydraulic motors) and very stable, where low pilot pressures are demanded in favour of speed and energy savings.
Low Pilot Ratio (<5:1): suitable for those applications where loads can vary (for instance, trucks cranes) and for those mechanical structures are not stable, where more control and more stability are needed, an higher pilot pressure is required.
When counterbalance valves are installed on hydraulic actuators, to determine the correct value of pilot pressure it is necessary to introduce in the calculation the ratio between the areas of the actuator itself.

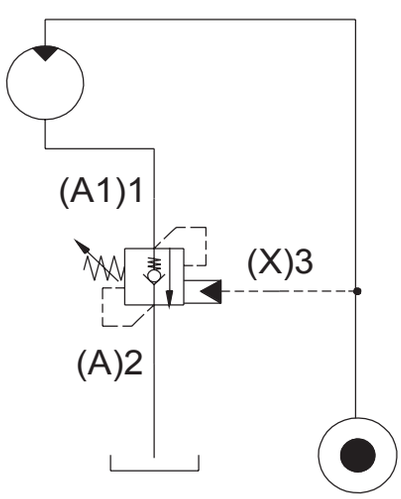
Px = (Pt – P1) / (rp+ra)
ra: ratio between the areas of the hydraulic actuator

ra= cap area/annular area



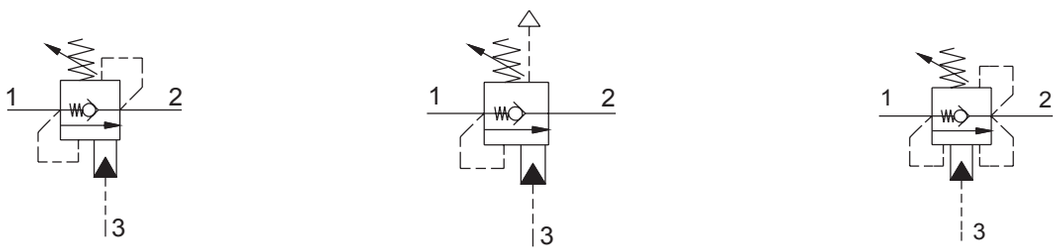


ra = 1



COMPENSATION

Because of coupling counterbalance valves with directional control valves, considering the type of spool to use is needed. When the counterbalance valves are in charge of the pressure relief function, it's essential to make a distinction between "closed-centre" spool applications and "open-centre" spool application.
Generally, when "closed-centre" spools are installed, it's necessary to use compensated counterbalance valves: since these valves are insensitive to back-pressure on return line (A-2), their pressure setting won't change.

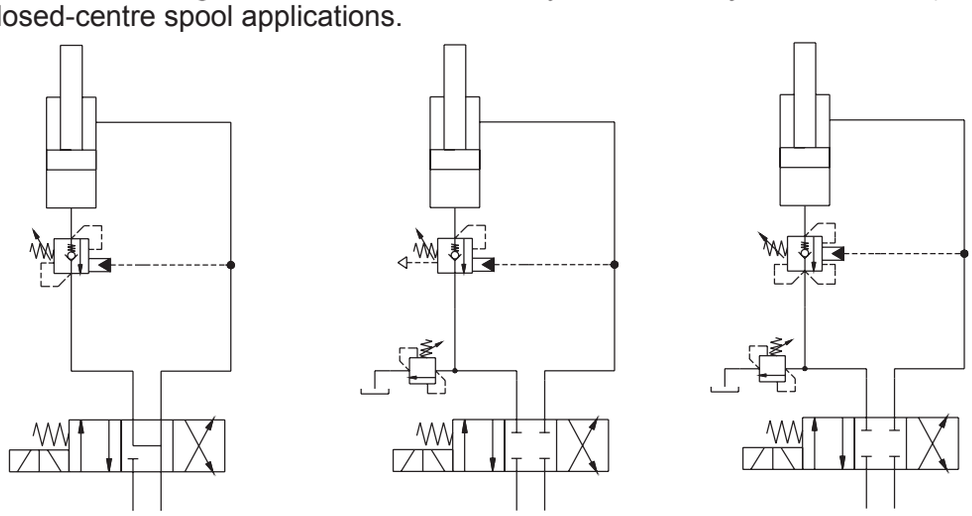


Two examples of compensated valves application are regenerative circuits and circuits in which draining of eventual pressure peaks must be relieved in series by the anti-shock valves installed inside the directional control valve.
In case of "open-centre" directional spool application, not-compensated valves are compulsory, in which the spring is connected to the return line (A-2).

In **Not-Compensated (N)** type valves, back-pressure affects both pressure setting and pilot pressure
In these valves, the return line is directly connected to the spring. Valves in which adjustable spring is connected to return line are not compensated ones.
Main use: open-centre spool application.

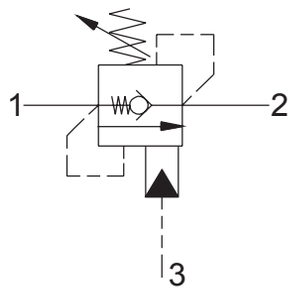
In **Fully-Compensated (C)** type valves, back-pressure does not affect neither pressure setting nor pilot pressure. Belong to this type the valves in which the adjustable spring is separated from return line (A-2) and is connected to a draining line or is air-vented.
In these valves, back-pressure (A-2) is balanced, so it won't find any area to carry out its force, so that both setting and pilot pressures are independent from pressure on return line (A).
Main use: closed-centre spool applications, regenerative circuits.

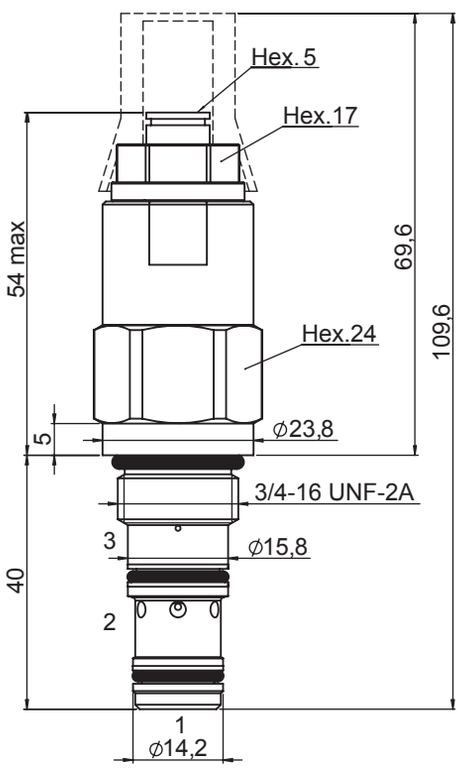
In **Relief-Compensated (S)** valves, only pressure setting is independent from back-pressure, while pilot pressure is affected by back-pressures, which sometimes can be helpful in stabilizing the circuit.
To this kind of valves belong all the valves in which only the area subject to the load (A1-1) is balanced.
Main use: closed-centre spool applications.

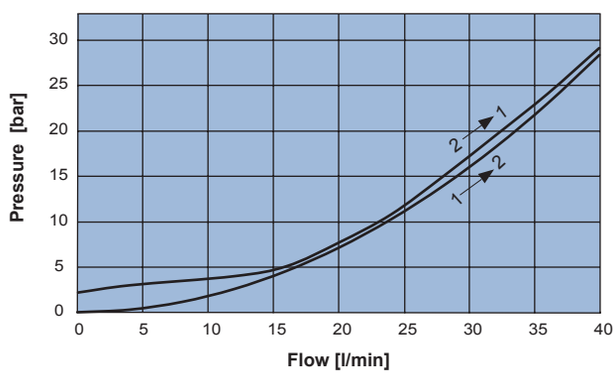


NOT COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not compensated**
- Cartridge tightening torque. . . . . **40-45 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,2 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-prearranged
- Cavity . . . . . **C321000** page **219**
- Body single cavity. . . . . **172212** page **188**
- Body double cavity . . . . . **176212** page **189**







Note
-Setting: 1,3 times the maximum load induced pressure.
-The back pressure (2) may affect the relief function (for circuits with back pressure use 0612.1 or 0612.2).

Ordering code

0 6 1 2 0 □ □ □ 0 0

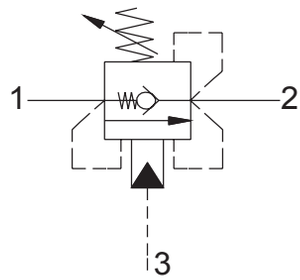
PILOT RATIO	
5	**5:1**

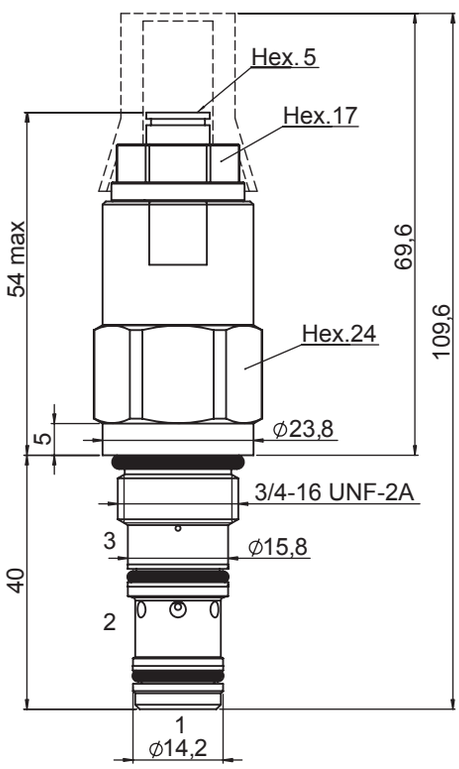
SPRINGS	**2**	**3**
Setting range [bar]	120 - 210	170 - 350
Pressure Increase [bar/turn]	35	60
Standard setting 4 l/min [bar]	210	350

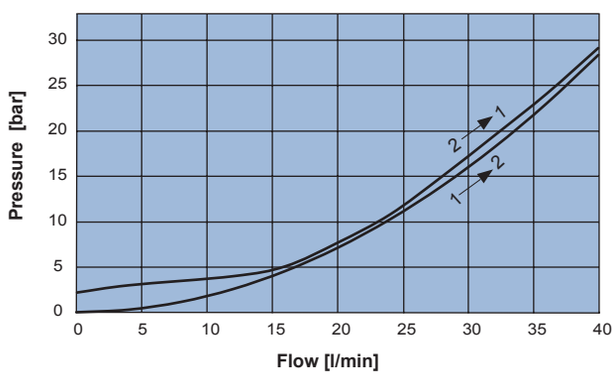
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief compensated**
- Cartridge tightening torque. . . . . **40-45 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,2 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-prearranged
- Cavity. . . . . **C321000** page **219**
- Body single cavity. . . . . **172212** page **188**
- Body double cavity . . . . . **176212** page **189**







Note
-Setting: 1,3 times the maximum load induced pressure.

Ordering code

0 6 1 2 2 □ □ □ 0 0

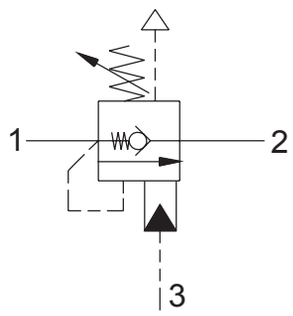
PILOT RATIO	
5	**5:1**

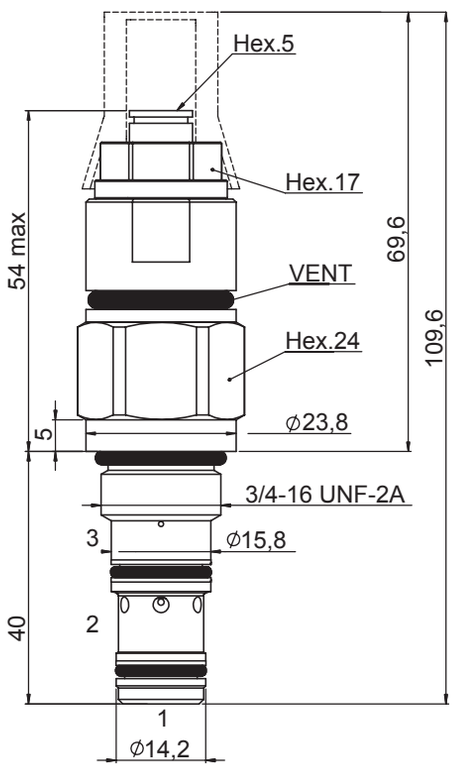
SPRINGS	2	3
Setting range [bar]	120 - 210	170 - 350
Pressure Increase [bar/turn]	35	60
Standard setting 4 l/min [bar]	210	350

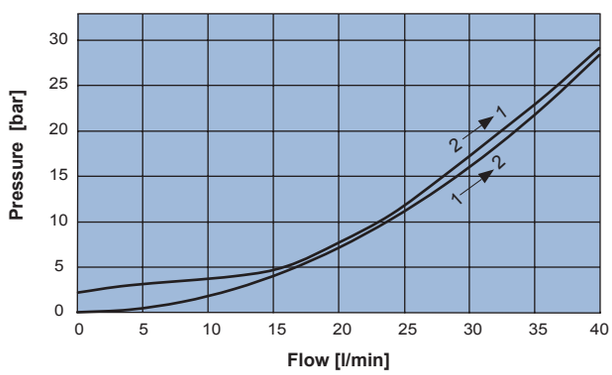
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . .**Fully compensated**
- Cartridge tightening torque. . . . . **40-45 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,2 Kg**
- Tamper proof cap. . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-prearranged
- Cavity . . . . . **C321000** page **219**
- Body single cavity. . . . . **172212** page **188**
- Body double cavity . . . . . **176212** page **189**







Note
-Setting: 1,3 times the maximum load induced pressure.

-To be used only with A/B closed center spools.

Ordering code

0 6 1 2 1 □ □ □ 0 0

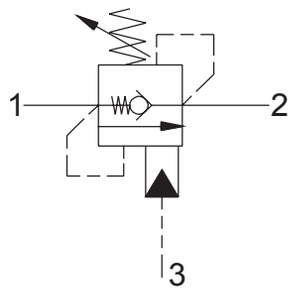
PILOT RATIO	
5	**5:1**

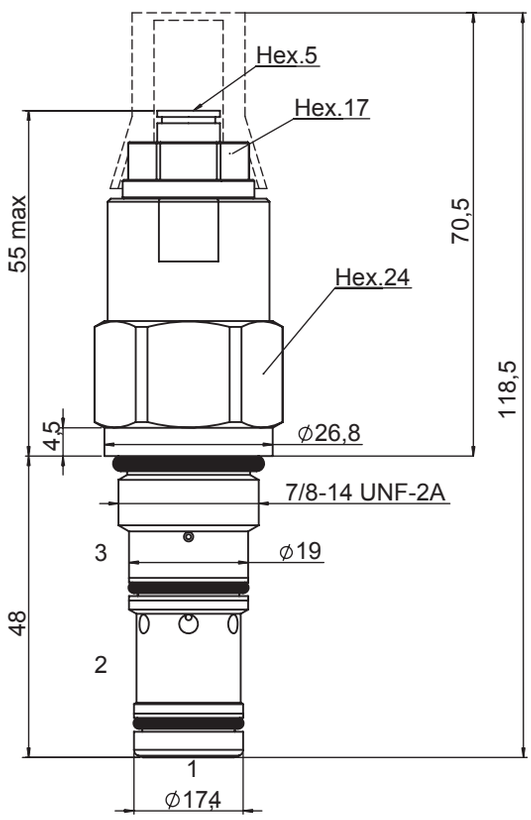
SPRINGS	2	3
Setting range [bar]	120 - 210	170 - 350
Pressure Increase [bar/turn]	35	60
Standard setting 4 l/min [bar]	210	350

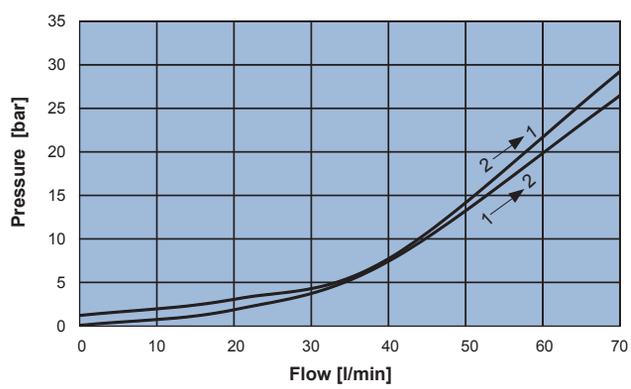
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

NOT COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not compensated**
- Cartridge tightening torque. . . . . **50-55 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,3 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-predisposed
- Cavity . . . . . **C331000** page **221**
- Body single cavity. . . . . **172312** page **193**
- Body double cavity . . . . . **176312** page **194**







Note
-Setting: 1,3 times the maximum load induced pressure.

-The back pressure (2) may affect the relief function (for circuits with back pressure use 0613.1 or 0613.2).

Ordering code

0 6 1 3 0 □ □ □ 0 0

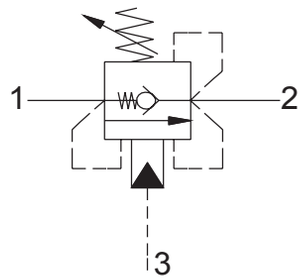
PILOT RATIO	
3	**3,5:1**
8	**8:1**

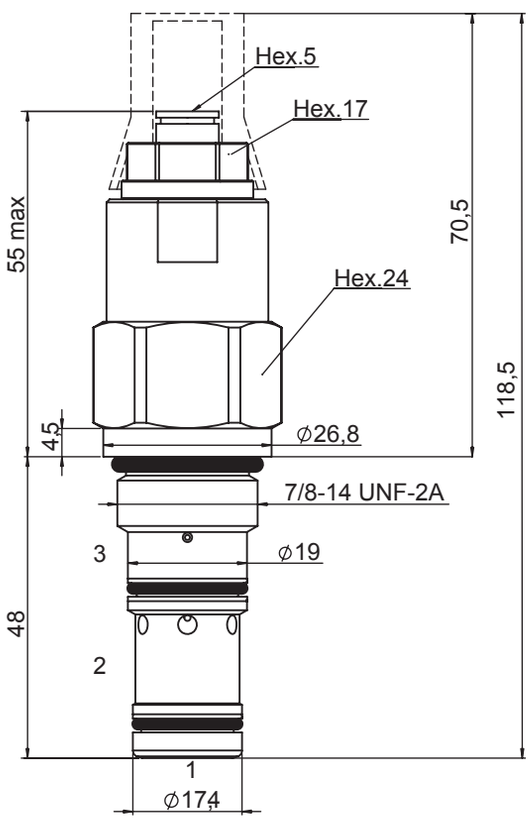
SPRINGS	2	3
Setting range [bar]	80 - 210	180 - 350
Pressure Increase [bar/turn]	37	47
Standard setting 4 l/min [bar]	210	350

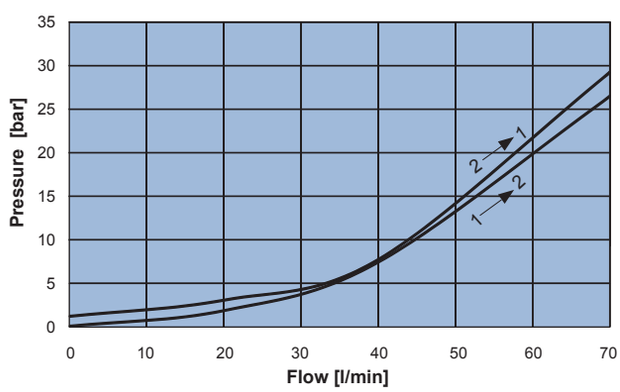
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief compensated**
- Cartridge tightening torque. . . . . **50-55 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,3 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-prearranged
- Cavity . . . . . **C331000** page **221**
- Body single cavity. . . . . **172312** page **193**
- Body double cavity . . . . . **176312** page **194**







Note:
-Setting: 1,3 times the maximum load induced pressure.

Ordering code

0 6 1 3 2 □ □ □ 0 0

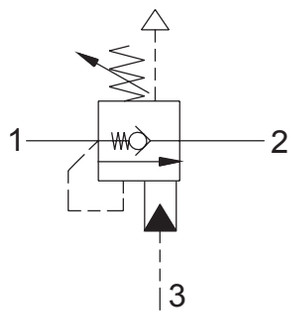
PILOT RATIO	
3	**3,5:1**

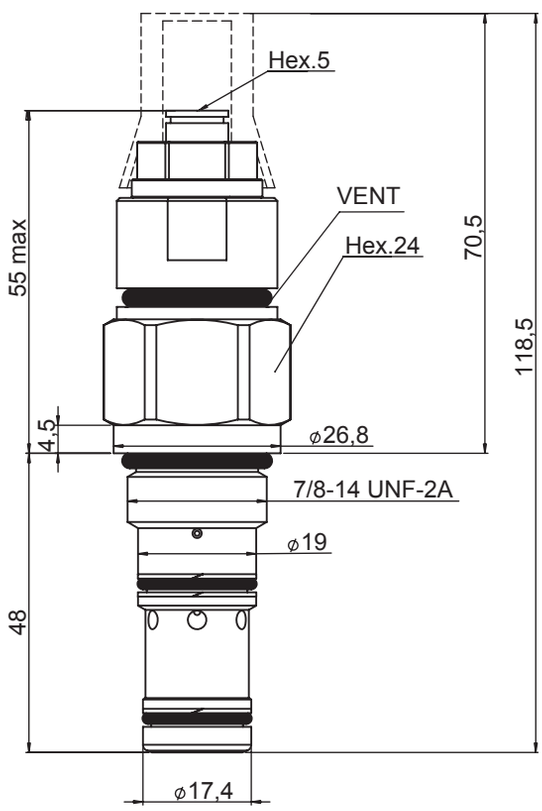
SPRINGS	2	3
Setting range [bar]	80 - 210	180 - 350
Pressure Increase [bar/turn]	37	47
Standard setting 4 l/min [bar]	210	350

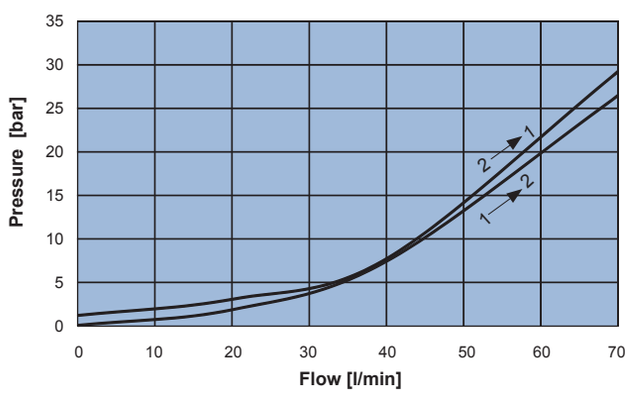
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully compensated**
- Cartridge tightening torque. . . . . **50-55 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,3 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
  To be ordered separately only for version 0-predisposed
- Cavity . . . . . **C331000** page **221**
- Body single cavity. . . . . **172312** page **193**
- Body double cavity . . . . . **176312** page **194**







Note:
-Setting: 1,3 times the maximum load induced pressure.

-To be used only with A/B closed center spools.

Ordering code

0 6 1 3 1 □ □ □ 0 0

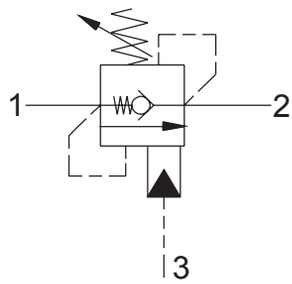
PILOT RATIO	
3	**3,5:1**

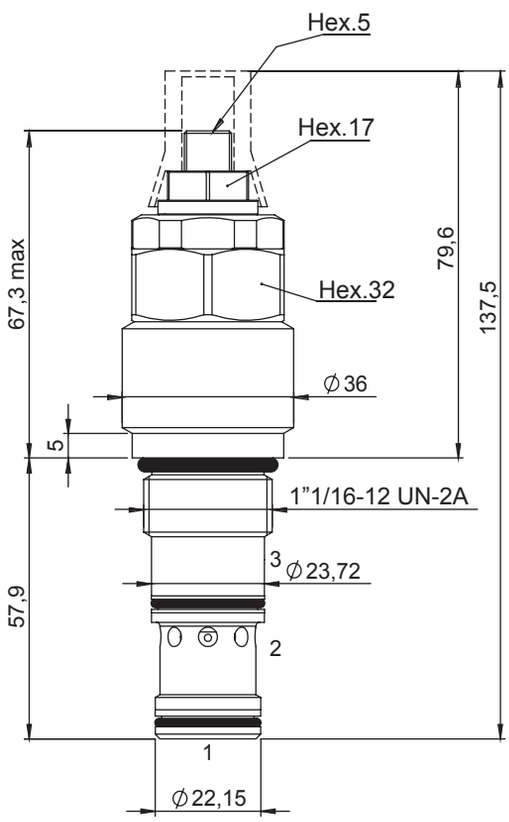
SPRINGS	**2**	**3**
Setting range [bar]	80 - 210	180 - 350
Pressure Increase [bar/turn]	37	47
Standard setting 4 l/min [bar]	210	350

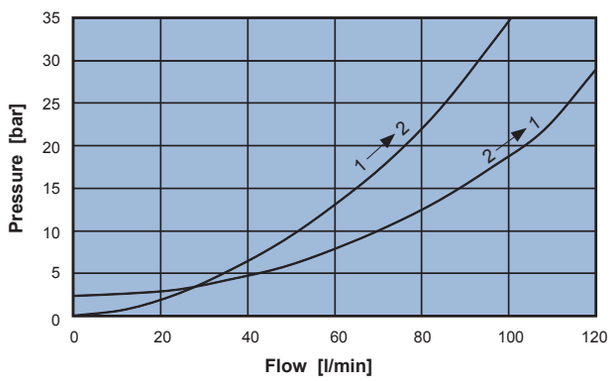
TAMPER PROOF OPTION	
PRE-ARRANGED	0
NOT PRE-ARRANGED	2

NOT COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not compensated**
- Cartridge tightening torque. . . . . **60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . **cod. 4029250280**
- Cavity. . . . . **C341000** page **223**
- Body single cavity. . . . . **172412** page **199**
- Body double cavity . . . . . **176412** page **200**







Note:
-Setting: 1,3 times the maximum load induced pressure.

-The back pressure (2) may affect the relief function (for circuits with back pressure use 0614.2 or 0.614.1).

Ordering code

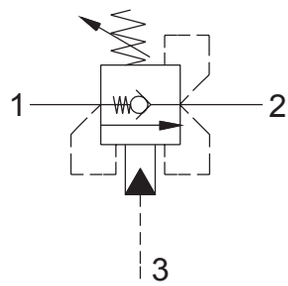
0 6 1 4 0 □ □ 0 0 0

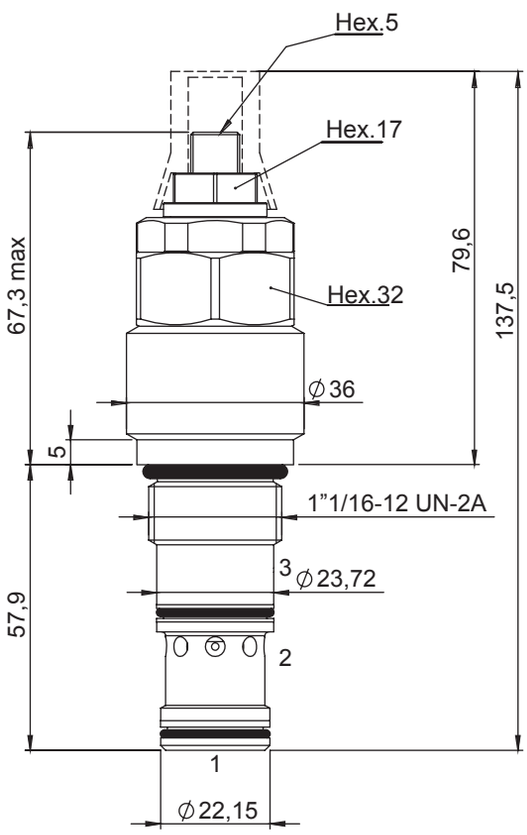
PILOT RATIO	
5	**5:1**

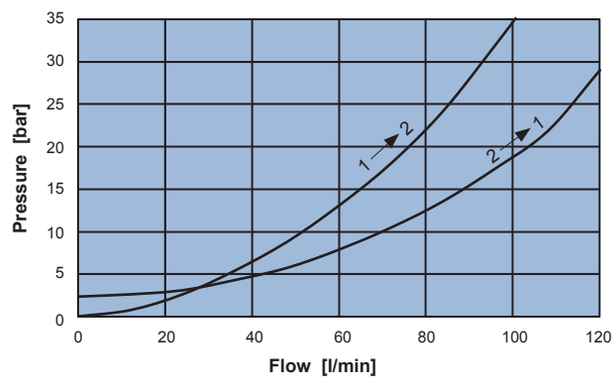
SPRINGS	4
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Relief compensated**
- Cartridge tightening torque. . . . . **60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . **cod. 4029250280**
- Cavity. . . . . **C341000** page **223**
- Body single cavity. . . . . **172412** page **199**
- Body double cavity . . . . . **176412** page **200**







Note:
-Setting: 1,3 times the maximum load induced pressure.

Ordering code

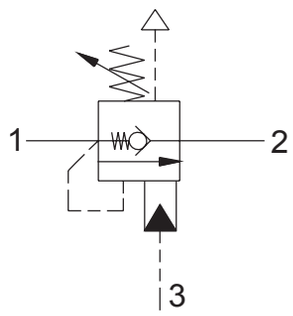
0 6 1 4 2 □ □ 0 0 0

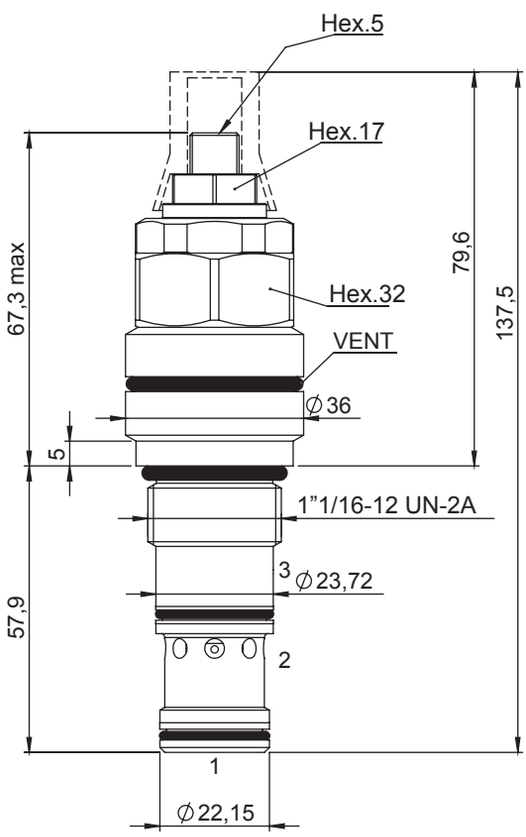
PILOT RATIO	
5	**5:1**

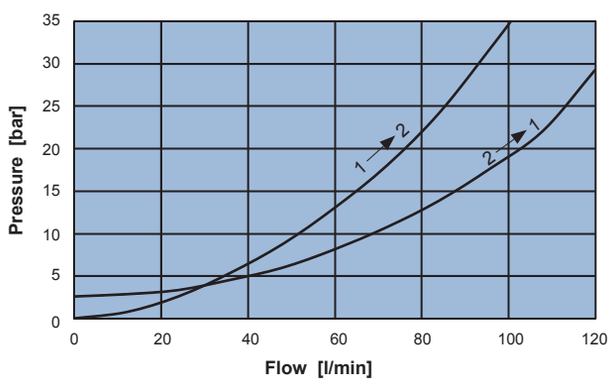
SPRINGS	**4**
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully compensated**
- Cartridge tightening torque. . . . . **60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . **cod. 4029250280**
- Cavity. . . . . **C341000** page **223**
- Body single cavity. . . . . **172412** page **199**
- Body double cavity . . . . . **176412** page **200**







Note:
-Setting: 1,3 times the maximum load induced pressure.

-To be used only with A/B closed center spools.

Ordering code

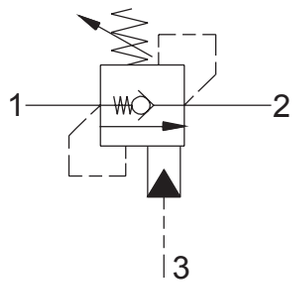
0 6 1 4 1 ☐ ☐ 0 0 0

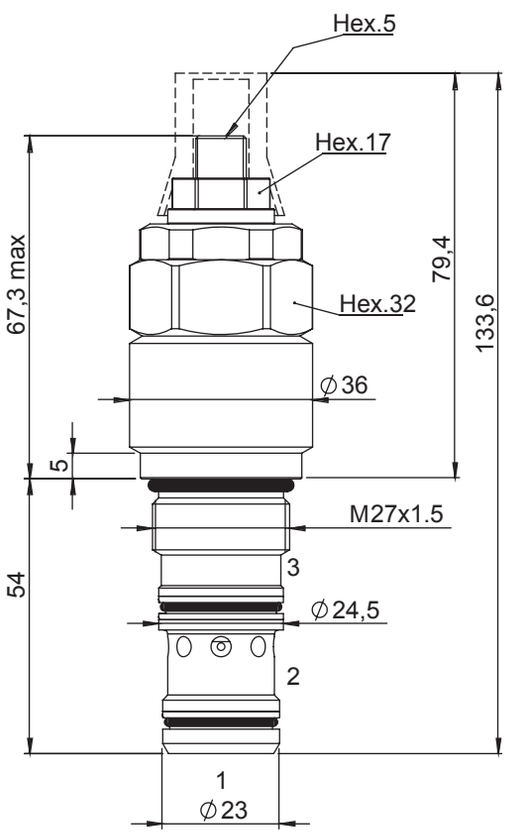
PILOT RATIO	
5	**5:1**

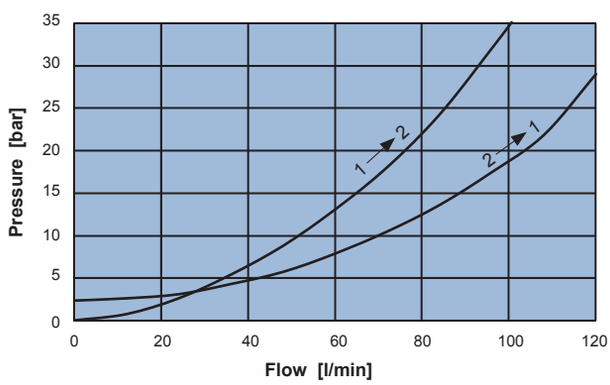
SPRINGS	**4**
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

NOT COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not compensated**
- Cartridge tightening torque. . . . . .**60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
- Cavity . . . . . **M340000** page **234**







Note:
-Setting: 1,3 times the maximum load induced pressure.

-The back pressure (2) may affect the relief function (for circuits with back pressure use 0.6441 o 0.6442).

Ordering code

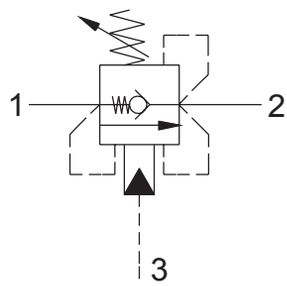
0 6 4 4 0 □ □ 0 0 0

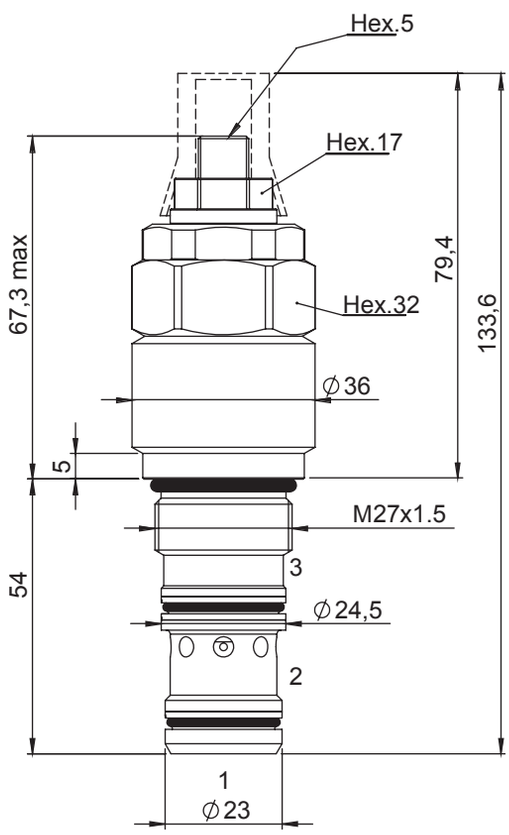
PILOT RATIO	
5	**5:1**

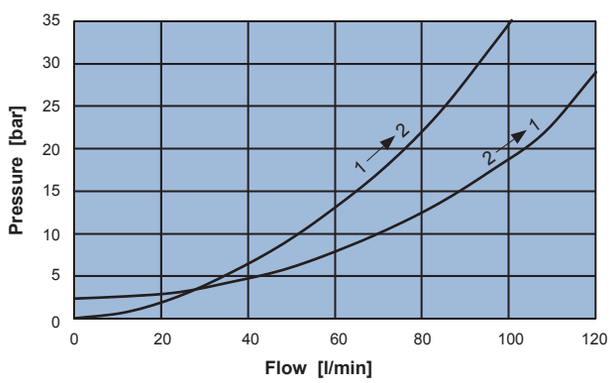
SPRINGS	**4**
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Relief compensated**
- Cartridge tightening torque. . . . . .**60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
- Cavity . . . . . **M340000** page **234**







Note:
-Setting: 1,3 times the maximum load induced pressure.

Ordering code

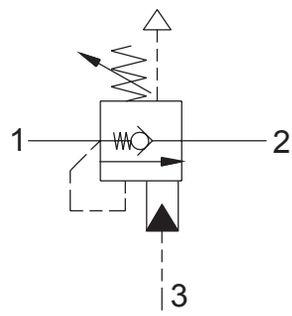
0 6 4 4 2 □ □ 0 0 0

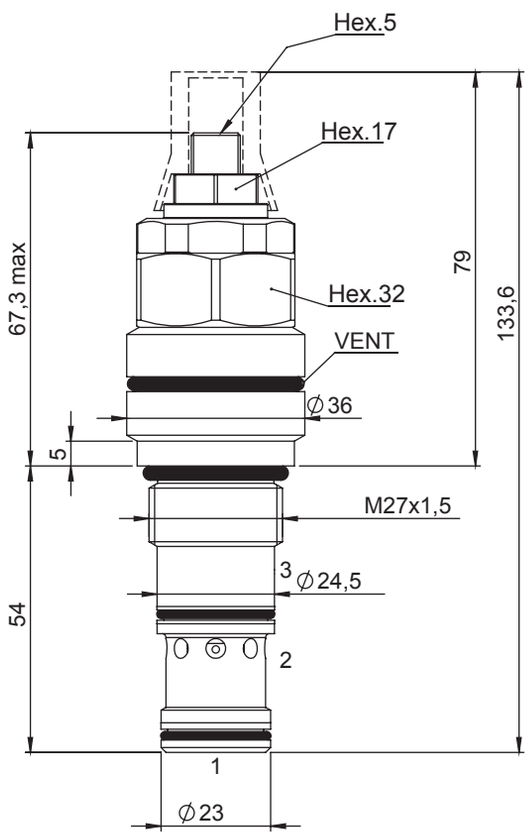
PILOT RATIO	
5	**5:1**

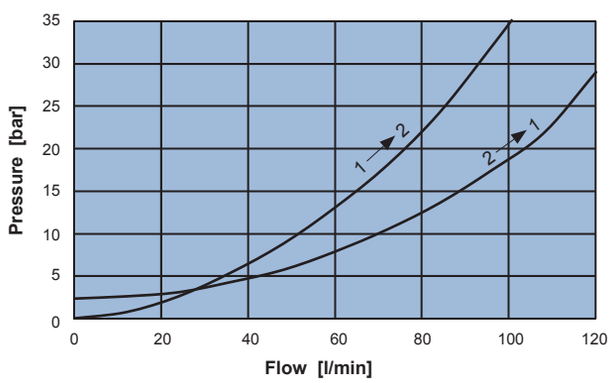
SPRINGS	**4**
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully compensated**
- Cartridge tightening torque. . . . . .**60 Nm**
- Seal lock nut tightening torque. . . . . **15-20 Nm**
- Weight. . . . . **0,7 Kg**
- Tamper proof cap . . . . . .**cod. 4029250280**
- Cavity . . . . . **M340000** page **234**







Note:
-Setting: 1,3 times the maximum load induced pressure.

-To be used only with A/B closed center spools.

Ordering code

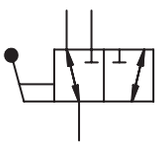
0 6 4 4 1 □ □ 0 0 0

PILOT RATIO	
5	**5:1**

SPRINGS	**4**
Setting range [bar]	230 - 410
Pressure Increase [bar/turn]	34
Standard setting 4 l/min [bar]	350

DIRECTIONAL CONTROL VALVES

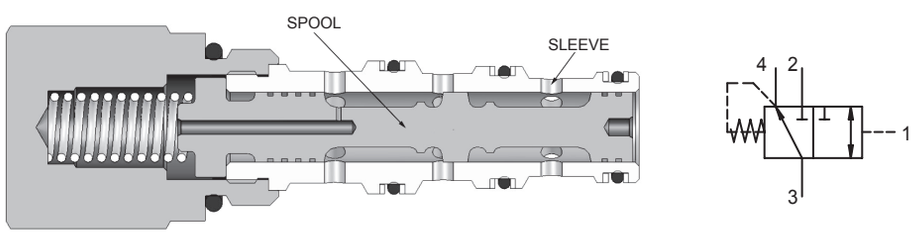
INTRODUCTION



SPOOL TYPE DIRECTIONAL VALVE

Spool type cartridge directional valves are valves which allow to direct or to drive in-coming oil flow through different hydraulic circuit lines. Depending on their actuator type they can be commutated by an external pilot pressure or by a manual override.

The construction is based on matching a drilled cylindrical sleeve with a mobile spool. The spool commutation allows the opening and/or closing of the radial holes made on the cylindrical sleeve.

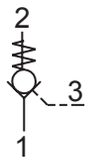


Example of uni-directional valve- spool type

These kind of valves are characterized by a radial clearance between the mobile spool and the cylindrical sleeve that determines an internal leakage of a few cc/min. This is why it's use is not advised for gravitational loads holding without the installation of specific valves like: check valves or counterbalance valves.

UNI-DIRECTIONAL VALVES

Unidirectional valves are 2-way valves which allow oil flow only in single direction, with low pressure drops. Flow in the opposite direction is prevented by sealing devices like conical poppets or balls, kept in a closed position by a spring.
The function which prevents oil from crossing the valve in the opposite direction is characterized by an optimal hydraulic sealing (<0,25 cc/min), and by the fact that pressure inside the cartridge acts together with the spring, keeping the sealing device in a closed position.
The passage through uni-directional valve is called "free flow", and it's subject to closing spring strength, whose setting brings about initial opening pressure.



PILOT OPERATED CHECK VALVES

Pilot operated check valves, also known as lock valves, are uni-directional valves in which the opening of the a normally-closed passage can take place thanks to the pilot pressure.
The sealing device's opening through pilot pressure is of an on/off type (from fully closed to fully opened), so that check valves are used to lock hydraulic cylinders.
It's use is not advised at all for the applications intended to lower gravitational loads, on which modulation and/or control of lowering speed is required. This type of applications requires counterbalance valves.

The ratio between the sealing device's area and pilot area determines the valve pilot ratio (rp), which is the essential parameter for calculating the opening pilot pressure. Normally, given a generic load induced pressure (Pp), the pilot pressure (Ppil) required for opening the valve is calculated dividing the load induced pressure (Pp) by pilot ratio (rp):

$$Ppil = Pp / rp$$

When check valves are used on hydraulic actuators (i.e. Cylinders), due to area ratio (ra) of the actuator itself, the effects of inner pressure must also be considered.

$$Ppil = Pp / (rp – ra)$$

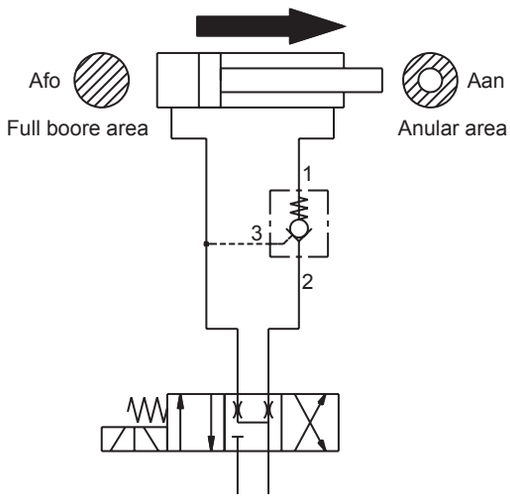
On the hydraulic cylinders, the areas ratio "Ra" is calculated with reference to the type of movements.

Cylinders out (Extension)	Cylinders in
ra = Afo / Aan (>1)	ra = Aan / Afo (<1)

It's very important to remember that, in case of double acting cylinders, pilot ratio must be always higher than areas ratio:

$$\mathbf{rp > ra}$$

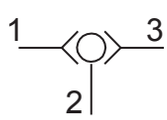
If this rule is not respected, then it is not possible to pilot the check valve during the cylinder extension.



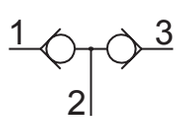
SELECTOR VALVES

Selector valves are designed for pilot circuits or for circuits intended to transfer load sensing (LS) signals inside integrated circuits or directional control valves.
According to their hydraulic schematic, there are 2 types of selector valves:

Bidirectional Selector Valves: These valves compare 2 pressure signals, and allow a bi-directional flow of the highest.

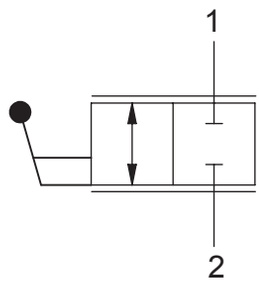


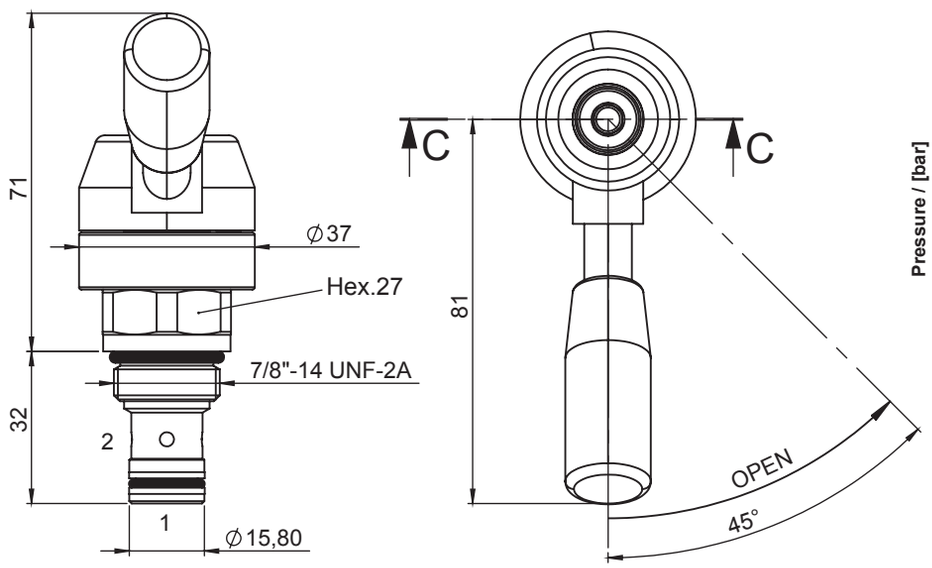
Uni-Directional Selector Valves: These valves compare 2 pressure signals, and allow a uni-directional flow of the highest.

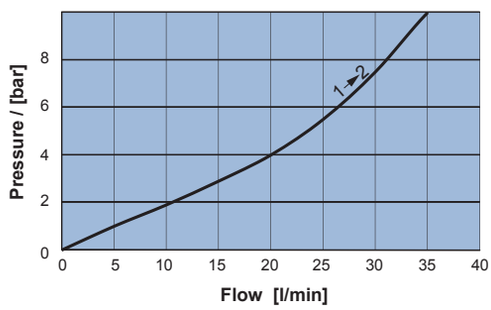


2 WAY 2 POSITION ROTARY SPOOL DIRECTIONAL VALVE

- Max Flow. . . . . .**30 l/min**
- Max Pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight . . . . . .**0,25 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**





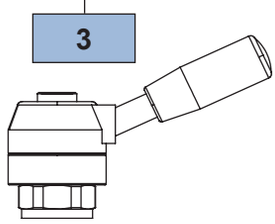


Notes:
- Valve regulation angle is 45° starting lever position can be set through CH6 nut.

Ordering code

0 4 9 3 1 0 0 ☐ 0 0

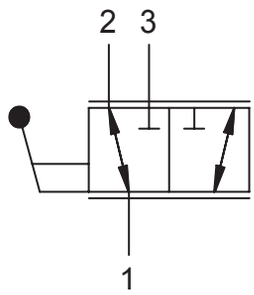
3

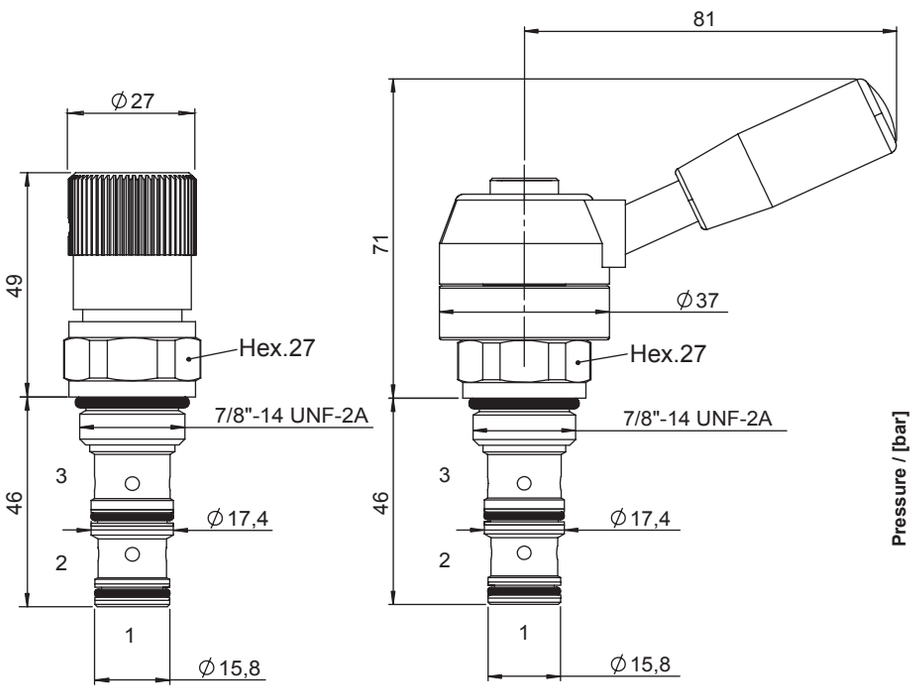


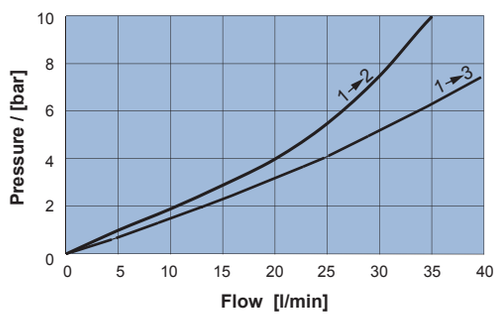
Hand lever frictioned

3 WAY 2 POSITION ROTARY SPOOL DIRECTIONAL VALVE

- Max Flow. . . . . .**30 l/min**
- Max Pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight . . . . . .**0,2 Kg**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**



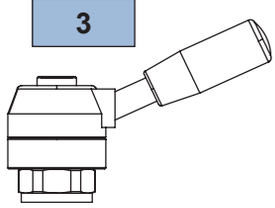
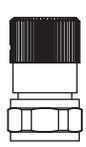




Notes:
- Valve regulation angle is 45° starting lever position can be set through CH6 nut.

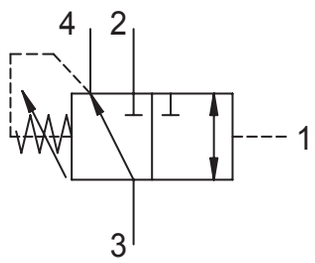
Ordering code

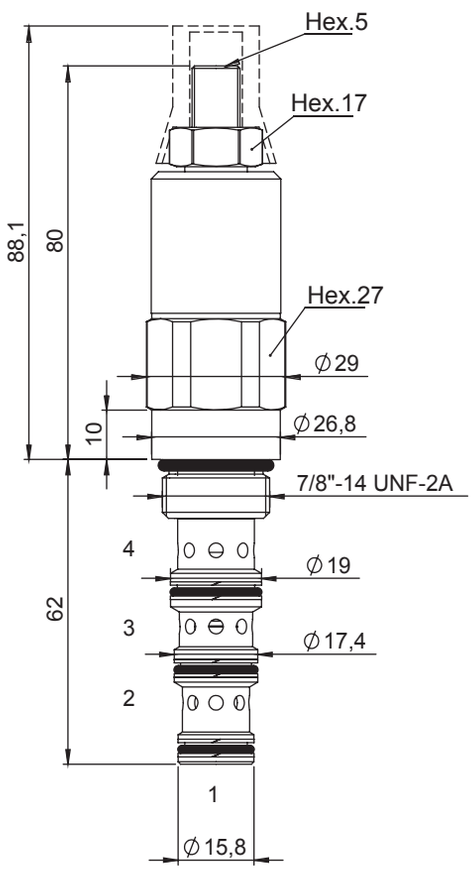
0 4 9 3 2 0 0 ☐ 0 0

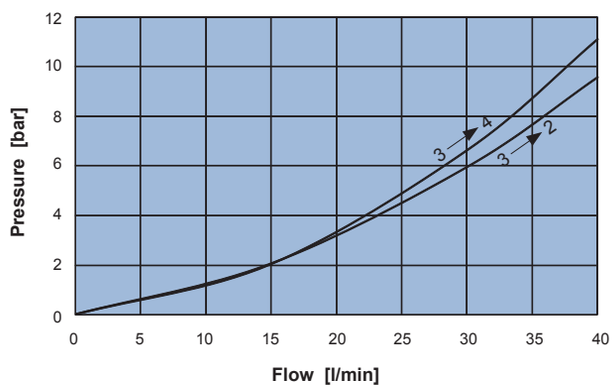
3	7
	
Hand lever frictioned	**Handknob**

ADJUSTABLE SETTING DIRECTIONAL VALVE

- Max Flow. . . . . .**50 l/min**
- Max Pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight . . . . . .**0,35 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**



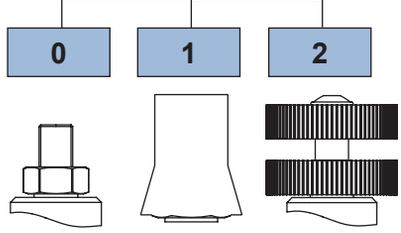




Ordering code

0 4 8 3 4 1 ☐ ☐ 0 0

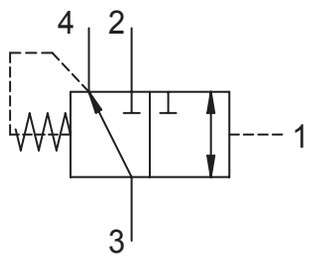
SPRINGS	1	2	3
Setting	2 - 10 bar	5 - 20 bar	10 - 60 bar
Standard setting	5	8	20
Bar/turn	1,9	3	10,3

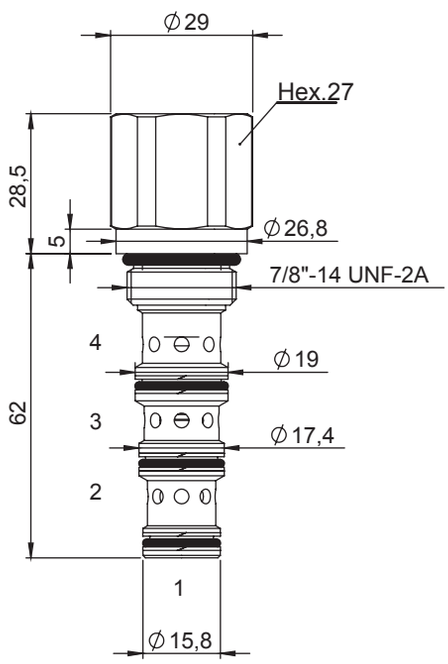


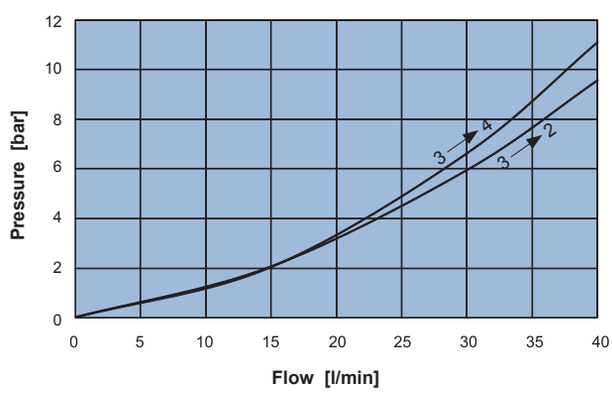
Adjustments

FIXED SETTING DIRECTIONAL VALVE

- Max Flow. . . . . .**50 l/min**
- Max Pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight . . . . . .**0,2 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**







Ordering code

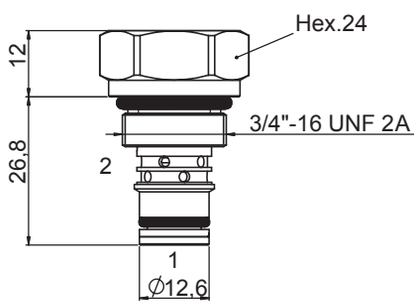
0 4 8 3 4 1 □ □ 0 0

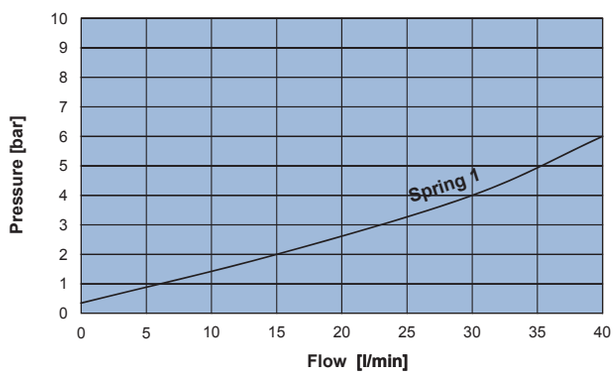
SPRINGS	1
Setting [bar]	6

3
Fix setting Adjustments

CHECK VALVE

- Max Flow. . . . . .**40 l/min**
- Max Pressure. . . . . .**350 bar**
- Leakage. . . . . .**0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Weight . . . . . .**0,1 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**





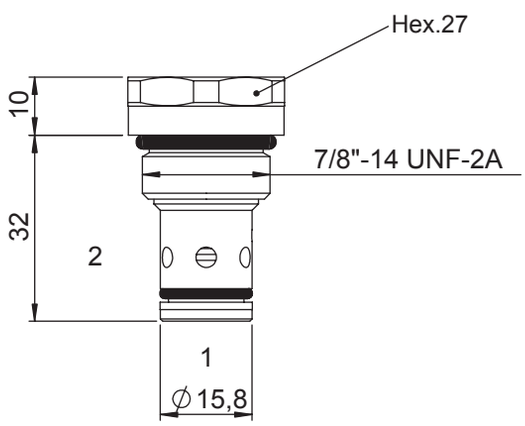
Ordering code

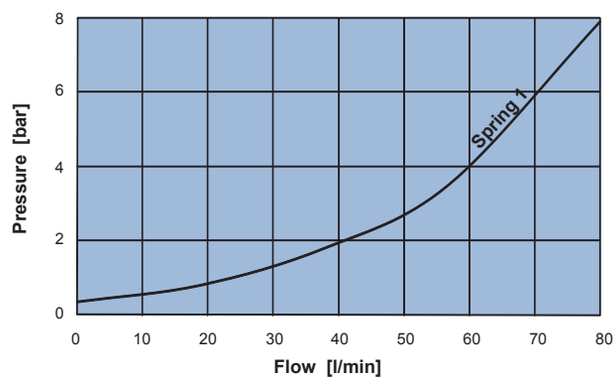
0 7 0 2 1 0 ☐ 0 0 0

SPRINGS	1	2	3
Cracking pressure [bar]	0,35	2,5	5

CHECK VALVE

- Max Flow. . . . . .**80 l/min**
- Max Pressure. . . . . .**350 bar**
- Leakage. . . . . .**0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight . . . . . .**0,1 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**





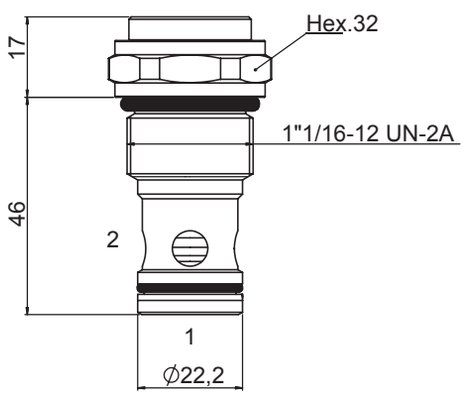
Ordering code

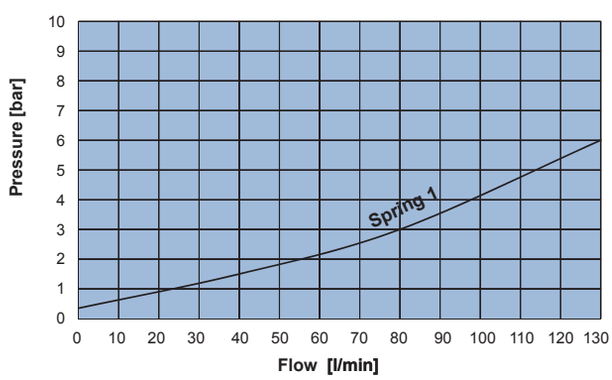
0 7 0 3 1 0 ☐ 0 0 0

SPRINGS	1	2	3
Cracking pressure [bar]	0,35	2,5	5

CHECK VALVE

- Max Flow. . . . . .**130 l/min**
- Max Pressure. . . . . .**350 bar**
- Leakage. . . . . .**0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**60 Nm**
- Weight . . . . . .**0,2 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**





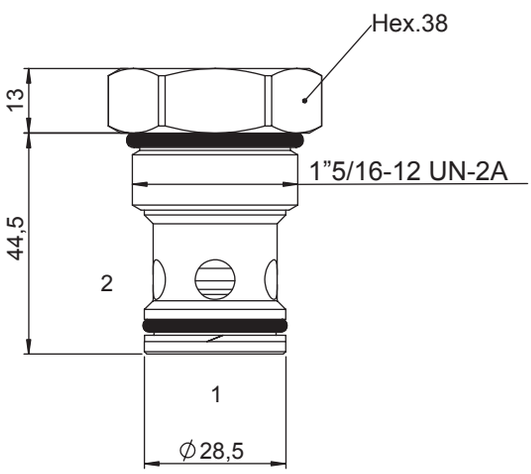
Ordering code

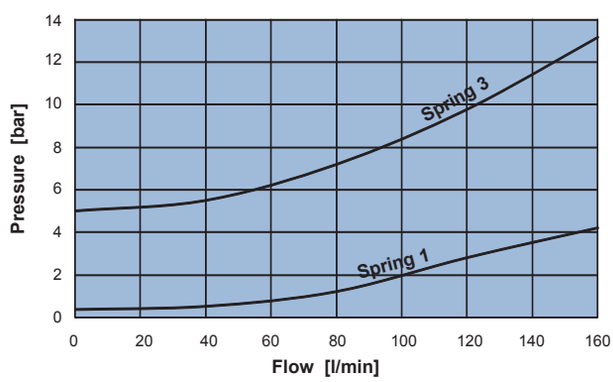
0 7 0 4 1 0 ☐ 0 0 0

SPRINGS	1	2	3
Cracking pressure [bar]	0,35	2,5	5

CHECK VALVE

- Max Flow. . . . . .**150 l/min**
- Max Pressure. . . . . .**350 bar**
- Leakage. . . . . .**0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**75 Nm**
- Weight . . . . . .**0,3 Kg**
- Cavity . . . . . **C250000** page **215**
- Body. . . . . **171502** page **201**





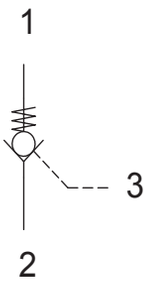
Ordering code

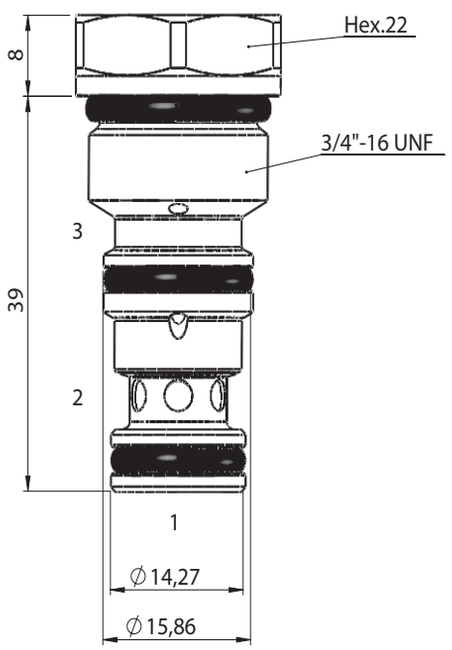
0 7 0 5 1 0 ☐ 0 0 0

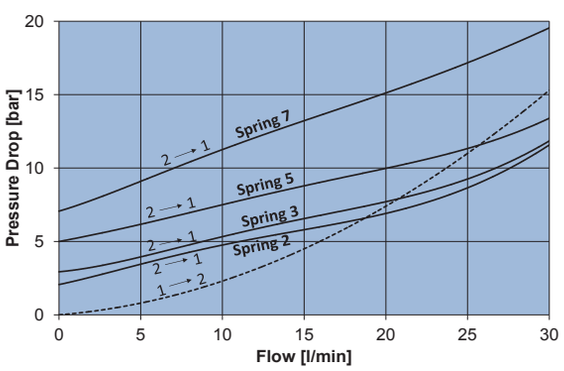
SPRINGS	1	2	3
Cracking pressure [bar]	0,35	2,5	5

PILOT OPERATED CHECK VALVE

- Max Flow . . . . . **30 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Leakage. . . . . **0,1 cc/min @ 350 bar**
- Cartridge tightening torque . . . . . **40 Nm**
- Weight . . . . . **0,075 Kg**
- Cavity . . . . . **C321000** page **219**
- Body single cavity. . . . . **172212** page **188**
- Body double cavity . . . . . **176212** page **189**







Ordering code

0 7 2 2 2 ☐ ☐ ☐ 0 1

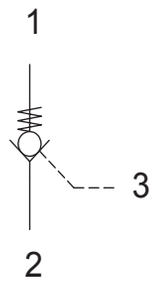
SEALS	
1	Without seals
2	With seals

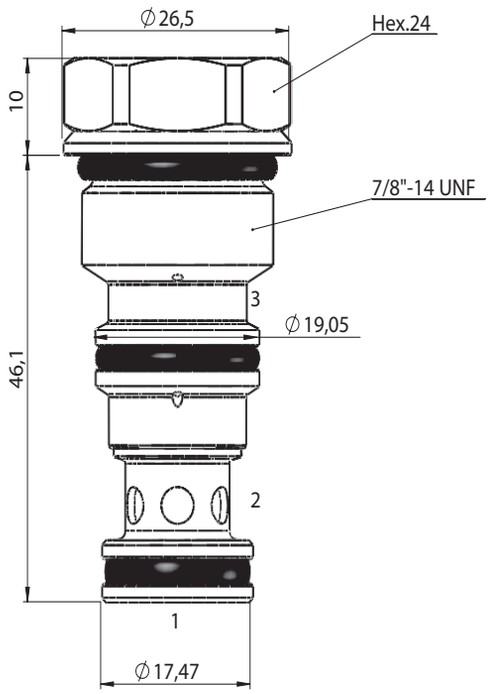
SPRINGS	2	3	5	7
Cracking pressure [bar]	2	3	5	7

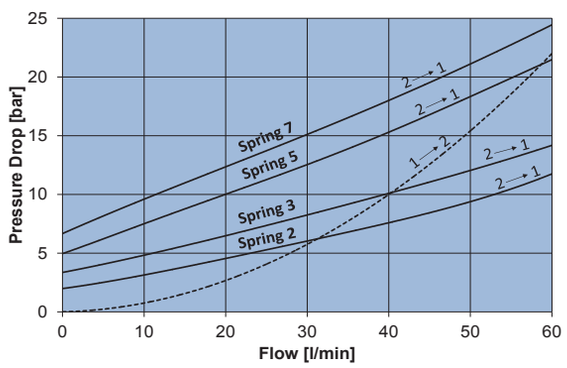
PILOT RATIO	
1	3:1

PILOT OPERATED CHECK VALVE

- Max Flow . . . . . **60 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Leakage . . . . . **0,1 cc/min @ 350 bar**
- Cartridge tightening torque . . . . . **50 Nm**
- Weight . . . . . **0,11 Kg**
- Cavity. . . . . **C331000** page **221**
- Body single cavity. . . . . **172312** page **193**
- Body double cavity . . . . . **176312** page **194**







Ordering code

0 7 2 3 2 ☐ ☐ ☐ 0 1

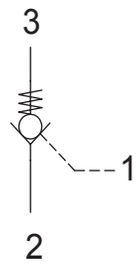
SEALS	
1	Without seals
2	With seals

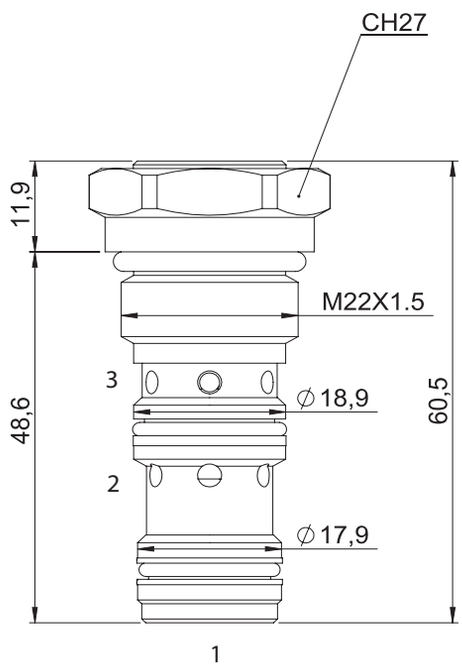
SPRINGS	**2**	**3**	**5**	**7**
Cracking pressure [bar]	2	3	5	7

PILOT RATIO	
1	**3:1**

PILOT OPERATED CHECK VALVE

- Max Flow . . . . . **50 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Weight . . . . . **0,13 Kg**
- Cavity . . . . . **N330000** page **233**





Ordering code

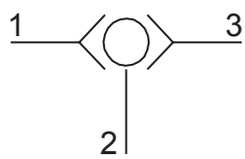
0 7 2 3 1 2 ☐ ☐ N 0

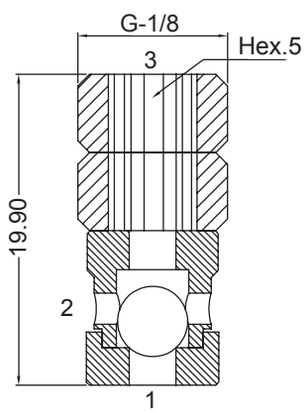
SPRINGS	4
Cracking pressure [bar]	10

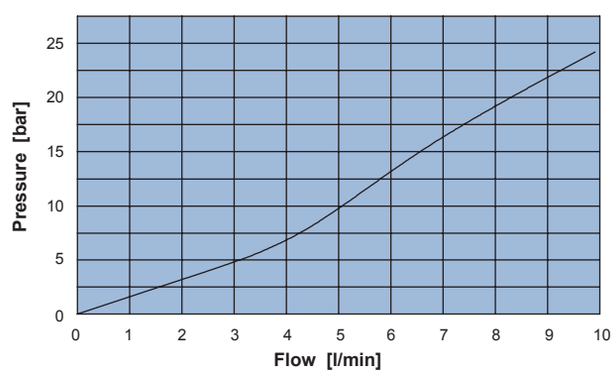
PILOT RATIO	
1	3,4:1

INSERT SHUTTLE VALVE

- Max Flow. . . . . .**10 l/min**
- Max Pressure. . . . . .**350 bar**
- Cartridge tightening torque. . . . . **12-15 Nm**
- Weight . . . . . .**0,010 Kg**
- Cavity . . . . . **S000004** page **230**





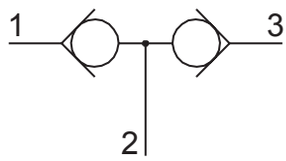


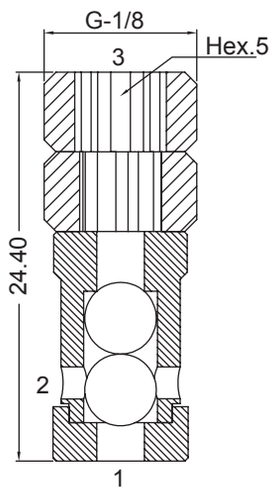
Ordering code

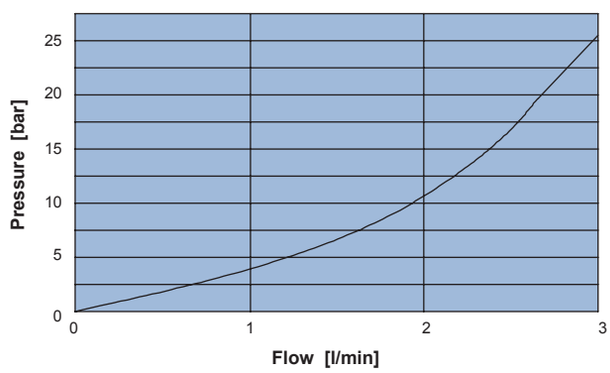
0 7 4 2 1 0 0 0 0 0

UNIDIRECTIONAL INSERT SHUTTLE VALVE

- Max Flow. . . . . .**2 l/min**
- Max Pressure. . . . . .**350 bar**
- Cartridge tightening torque. . . . . **12-15 Nm**
- Weight . . . . . .**0,010 Kg**
- Cavity . . . . . **S000005** page **231**







Ordering code

0 7 4 2 2 0 0 0 0

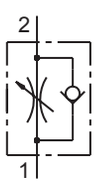
FLOW CONTROL VALVES

FLOW CONTROL VALVES

INTRODUCTION

BIDIRECTIONAL FLOW RESTRICTORS

Thanks to this type of valves, it's possible to regulate flow passage inside an hydraulic circuit. The flow restriction brings about a non-compensated load loss which depends on the loads themselves.
These valves allow to obtain compensated flow regulators, when coupled with pressure compensators.

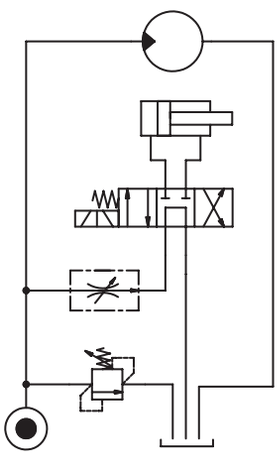


UNIDIRECTIONAL FLOW RESTRICTORS

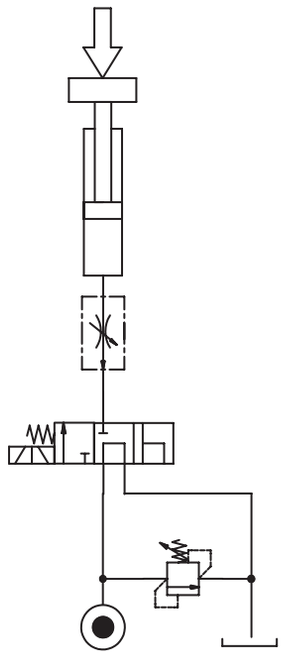
These valves regulate flow passage only in one direction, keeping the flow passage free in the opposite direction. Flow restriction brings about a non-compensated load loss which depends on the loads themselves.
These valves act as compensated flow regulators, when coupled with pressure compensators.

2-WAY COMPENSATED FLOW REGULATORS

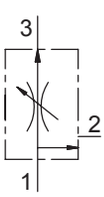
These valves regulate oil flow inside an hydraulic line, independently from the feeding pressure.
They are composed by an adjusting device for flow setting and a pressure compensator connected to it in series which keeps a constant pressure drop across the adjusting device flow area.
2-way compensated flow regulators are usually installed in parallel to the main line:
1) to reduce feeding on secondary circuits, which work at lower pressures compared to the main feeding line pressure;
2) to reduce inertial/dragged maximum speed.
In the first case, it's important to provide draining of oil in excess in comparison with set flow, installing a pressure relief valve.



Derivation connection



Series connection



3-WAY COMPENSATED FLOW REGULATORS

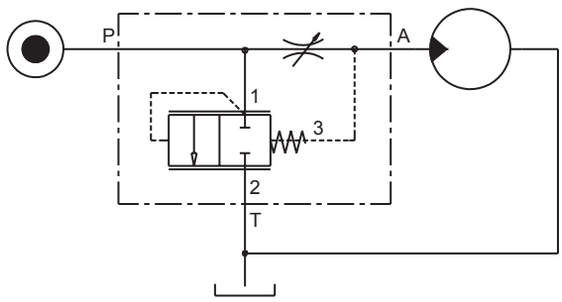
These valves regulate oil flow inside an hydraulic line, draining excess flow through a third line which makes the regulated flow independent from the working pressure.

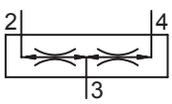
There are different types of 3-way regulators:

Cartridge type: this type is very compact and enable a constant regulated flow, independently from pressure on both lines. The excess flow line can be pressurized even at higher values than the regulated line. Regulated flow has priority over any line connected to the excess port.

Integrated circuit type: these valves are flow regulators designed using cartridges installed in a manifold. Their main characteristic is that they're able to manage higher flows than the cartridge type.
Main components are: (1) flow control device; (2) 2-way normally closed compensator.
For an optimal functionality, pressure on third line (T) must be lower than pressure on regulated line (A).

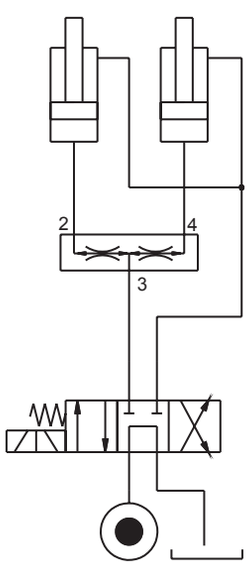
FLOW CONTROL VALVES



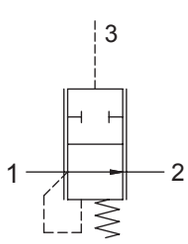


FLOW DIVIDERS/COMBINERS

These valves enable the division of the inlet oil flow(3) in equal parts or with a predetermined ratio on ports (2) e (4), so that flow onto the actuators is pressure compensated.
This function is guaranteed also in the opposite direction, where the flows from the hydraulic actuators are reunified in port (3).

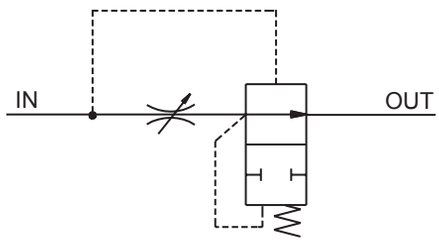


Flow divider/combiner hydraulic scheme

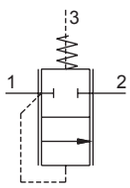


2-WAY N/O PRESSURE COMPENSATORS

2-way N/O pressure compensators are cartridges designed for 3-way cavities, which allow to obtain 2-way compensated flow regulator, since they are series connected to a flow restrictor or to a 2/2 proportional valve.

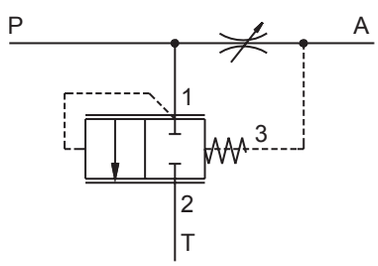


Example of 2 way compensated flow regulator

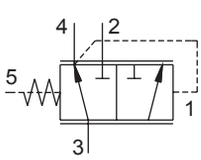


2-WAY N/C PRESSURE COMPENSATORS

2-way N/C pressure compensators are cartridges designed for 3-way cavities, which act as a 3-way compensated flow regulator, since they are connected in parallel to a flow restrictor or to a 2/2 proportional valve.
For an optimal functionality, pressure on port (2-T) must be lower than pressure on regulated line (3-A).

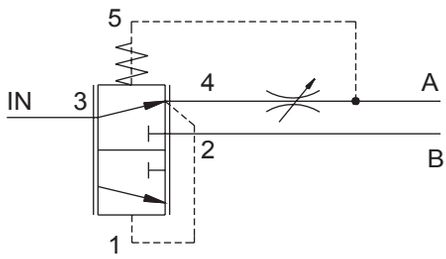


Example of 3 way compensated flow regulator

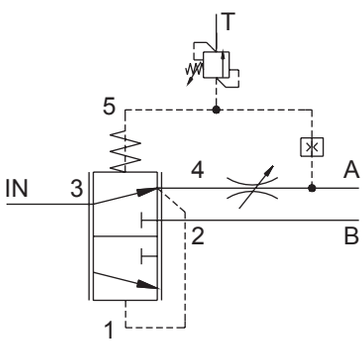


3-WAY POST- REGULATED PRESSURE COMPENSATORS

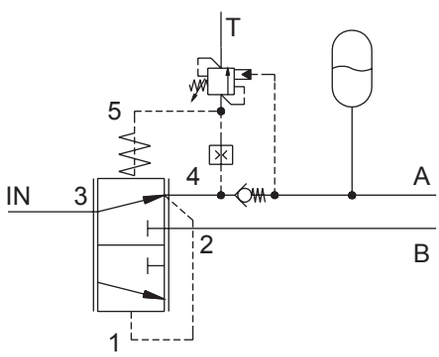
3-way post-regulated pressure compensators are cartridges designed for 4-way cavities.
If connected to a flow restrictor or to 2/2 proportional valve, they act as a 3-way compensated flow regulator, which enables a constant regulated flow independently from the pressure on ports (4) and (2).
As its main characteristic, this type of compensator is able to feel the pressures to be balanced on line (4-A), i.e. it's able to work on regulated line pressure.
So that it's possible to regulate pressure or even to intercept regulated flow, by adding the necessary components.
Feeding circuits for accumulators (braking systems) are interesting applications of these type of compensators.



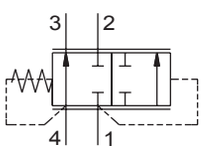
Post-regulated flow regulator



Flow and pressure-limited regulator

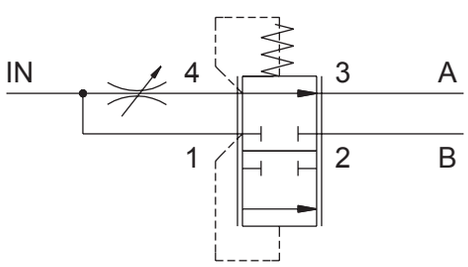


Feeding circuit for accumulators piloted dump valve equipped



4-WAY PRESSURE COMPENSATORS

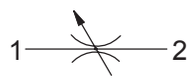
4-way pressure compensators are cartridges designed for 4-way cavities.
Connected to a flow restrictor or to a 2/2 proportional valve, they act as a 3-way compensated flow regulator which is able to keep a constant regulated flow independently from pressure on ports (2) and (3).
As its main characteristic, this type of compensator is able to feel pressures to be balanced on line (4-IN), i.e.
It is able to work on pressure picked up-stream the compensator. Only flow regulations can be done with this type of compensator.

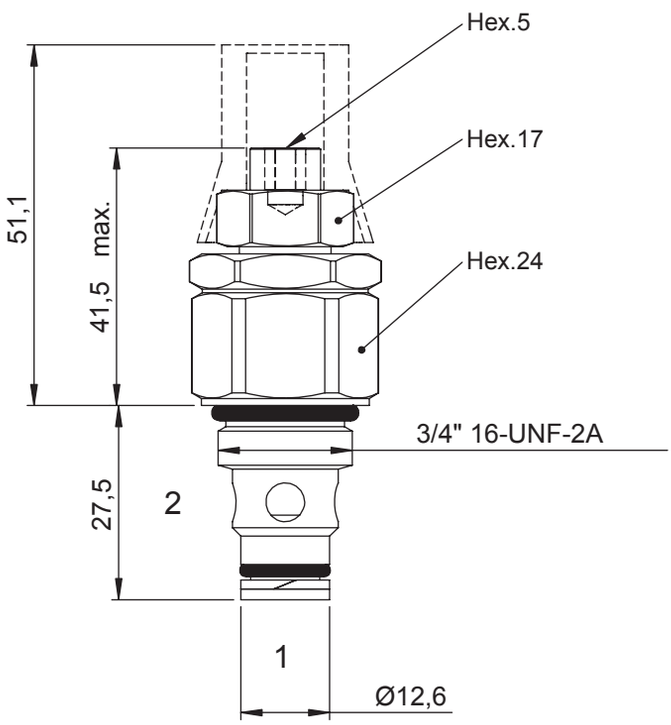


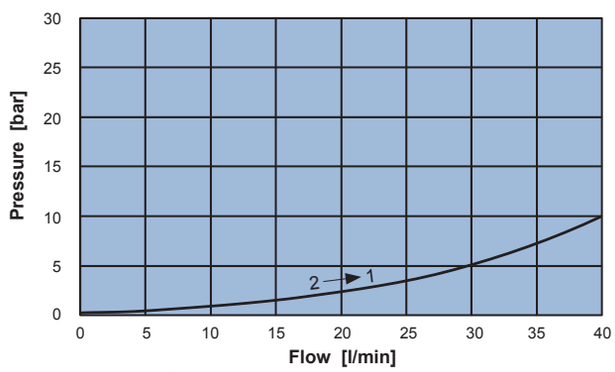
Pre-regulated flow regulator

BIDIRECTIONAL FLOW CONTROL VALVE

- Max Flow. . . . . .**30 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**40 Nm**
- Weight. . . . . **0,15 Kg**
- Tamper proof cap: **cod.4029250280**
- Adjustment range. . . . . **5 turns**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**



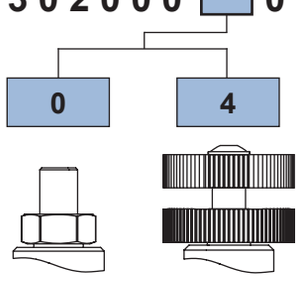




Fully open adjustment pressure drop

Ordering code

0 3 0 2 0 0 0 ☐ 0 1

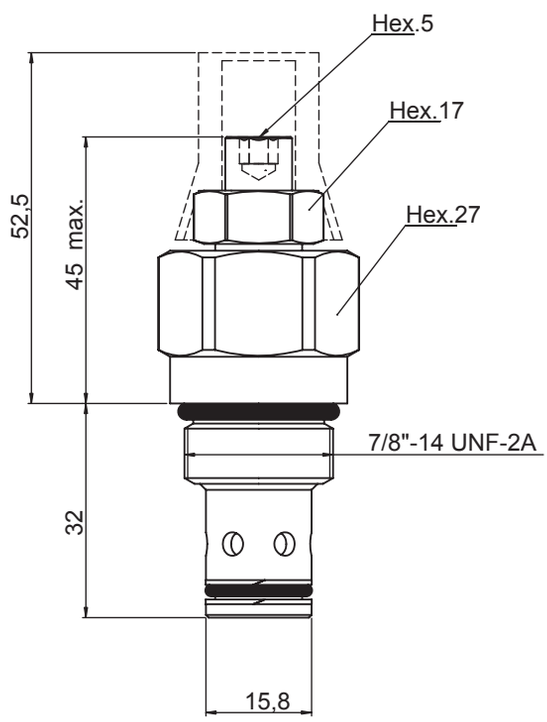


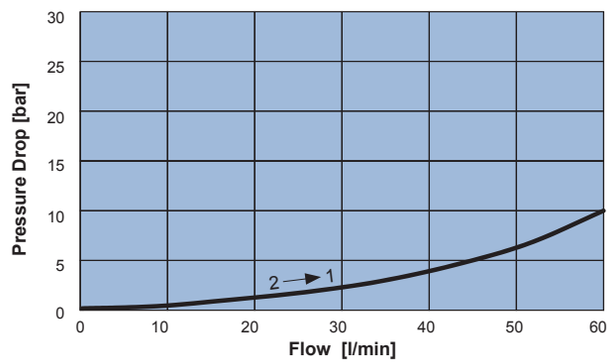
Screw **Handknob**

Adjustments

BIDIRECTIONAL FLOW CONTROL VALVE

- Max Flow. . . . . .**60 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**50 Nm**
- Weight. . . . . .**0,2 Kg**
- Tamper proof cap: **cod.4029250280**
- Adjustment range. . . . . .**5 turns**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**

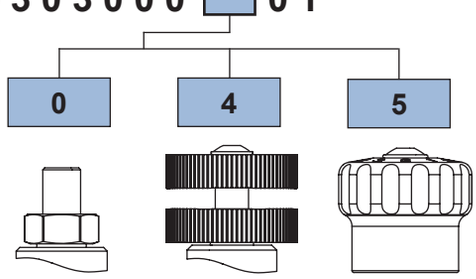




Fully open adjustment

Ordering code

0 3 0 3 0 0 0 [ ] 0 1

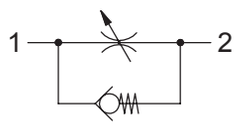


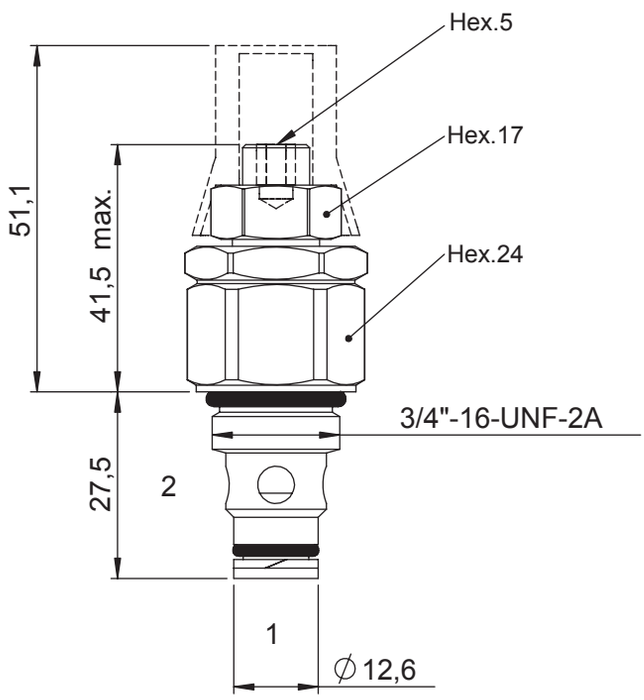
Screw **Handknob** **Handknob frictioned**

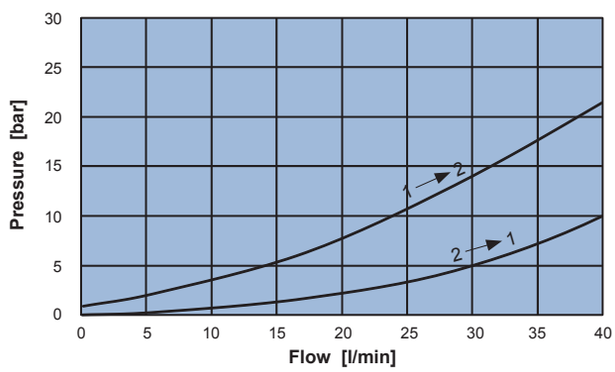
Adjustments

UNIDIRECTIONAL FLOW CONTROL VALVE

- Max Flow. . . . . .**30 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**40 Nm**
- Weight. . . . . **0,15 Kg**
- Tamper proof cap: **cod.4029250280**
- Adjustment range. . . . . **5 turns**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**

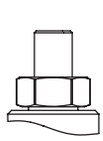
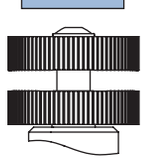






Ordering code

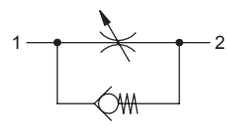
0 3 7 2 0 0 0 ☐ 0 1

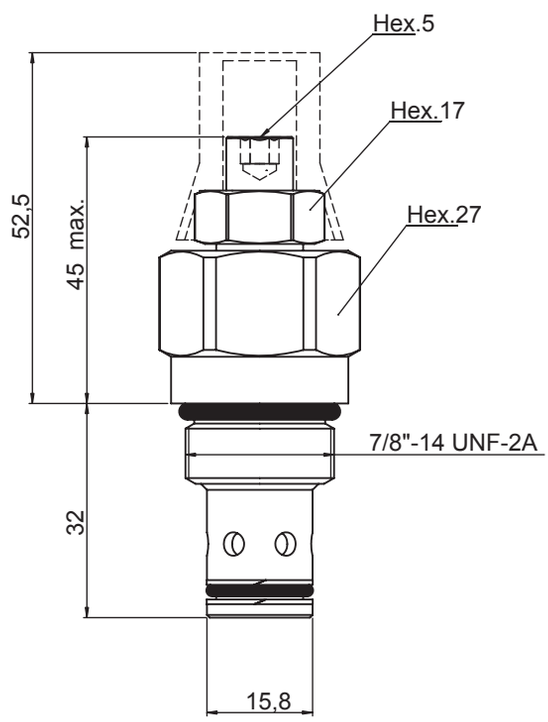
0	4
	
Screw	**Handknob**

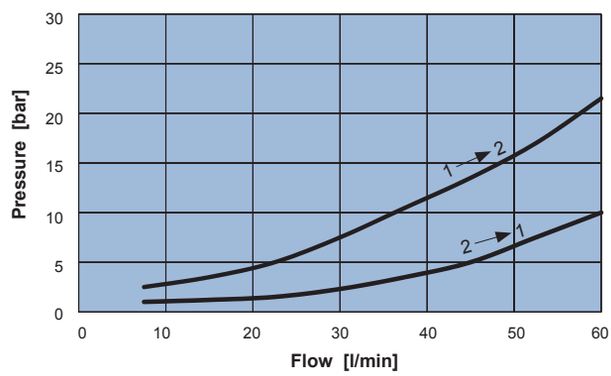
Adjustments

UNIDIRECTIONAL FLOW CONTROL VALVE

- Max Flow. . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Weight. . . . . **0,2 Kg**
- Tamper proof cap: **cod.4029250280**
- Adjustment range. . . . . **5 turns**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**

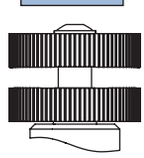
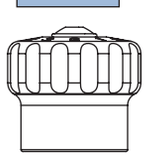






Ordering code

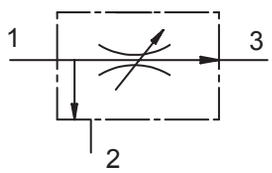
0 3 7 3 0 0 0 ☐ 0 1

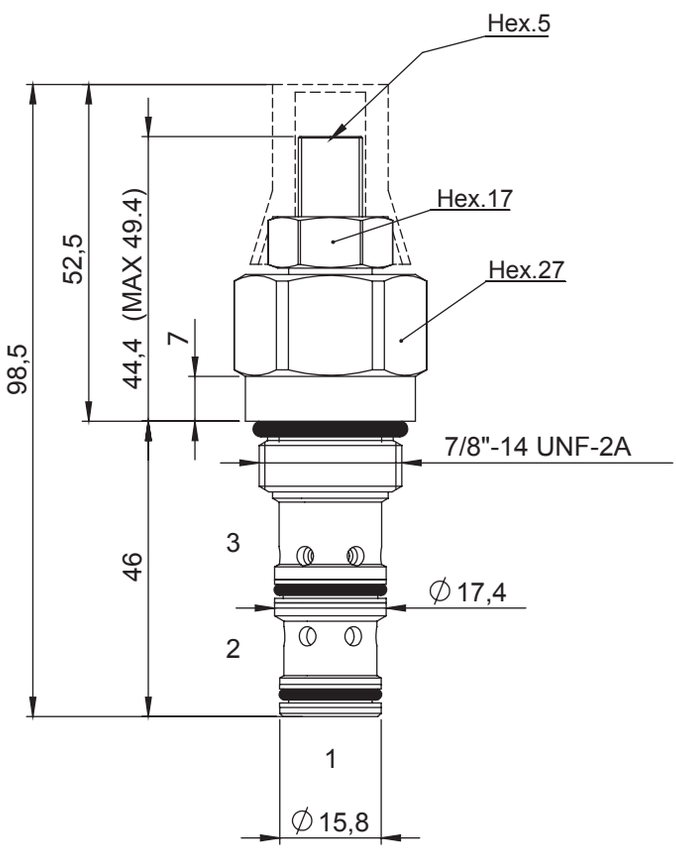
0	4	5
		
Screw	**Handknob**	**Handknob frictioned**

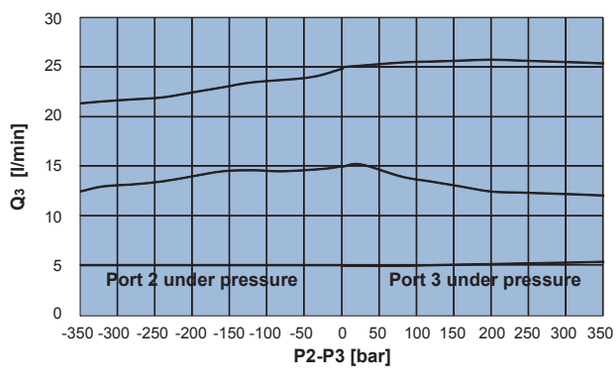
Adjustments

3 WAY COMPENSATED FLOW CONTROL VALVE

- Max Flow in (1). . . . . **50 l/min**
- Max Regulated Flow (3) . .. . **30 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Weight. . . . . **0,31 Kg**
- Tamper proof cap: **cod.4029250280**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**

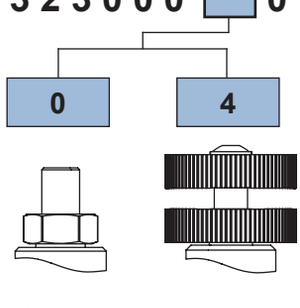






Ordering code

0 3 2 3 0 0 0 ☐ 0 1

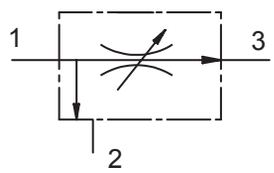


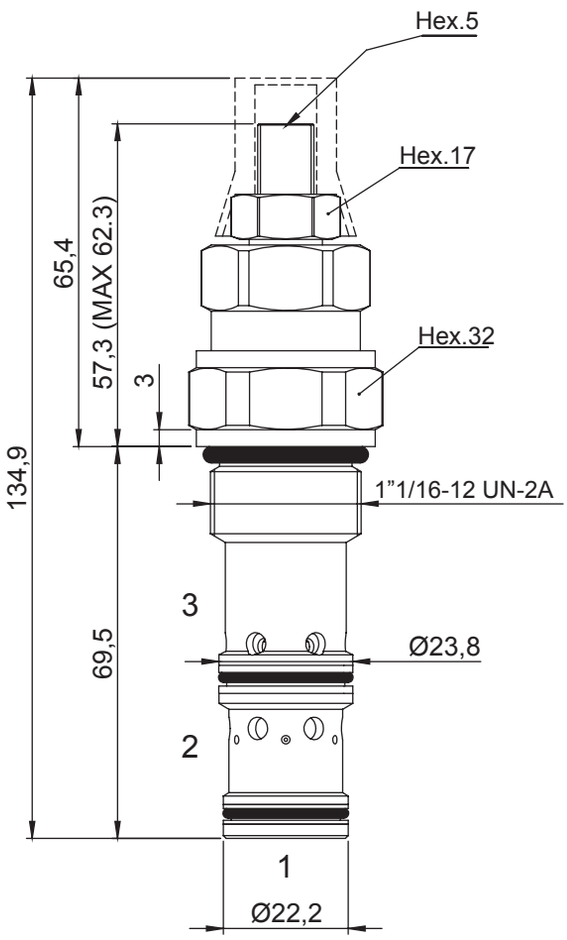
Screw **Handknob**

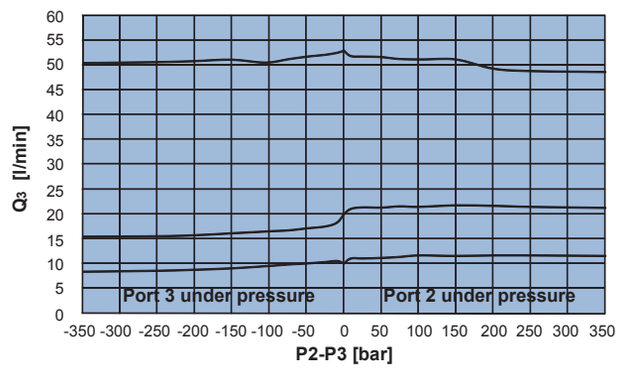
Adjustments

3 WAY COMPENSATED FLOW CONTROL VALVE

- Max Flow in (1). . . . . **90 l/min**
- Max Regulated Flow (3). . . . . **50 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cavity **C340000**
- Cartridge tightening torque. . . . . **60 Nm**
- Weight. . . . . **0,4 Kg**
- Tamper proof cap: **cod.4029250280**
- Cavity . . . . . **C340000** page **222**
- Body. . . . . **171412** page **197**

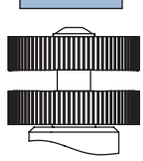






Ordering code

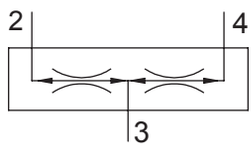
0 3 2 4 0 0 0 [ ] 0 1

0	4
	
Screw	**Handknob**

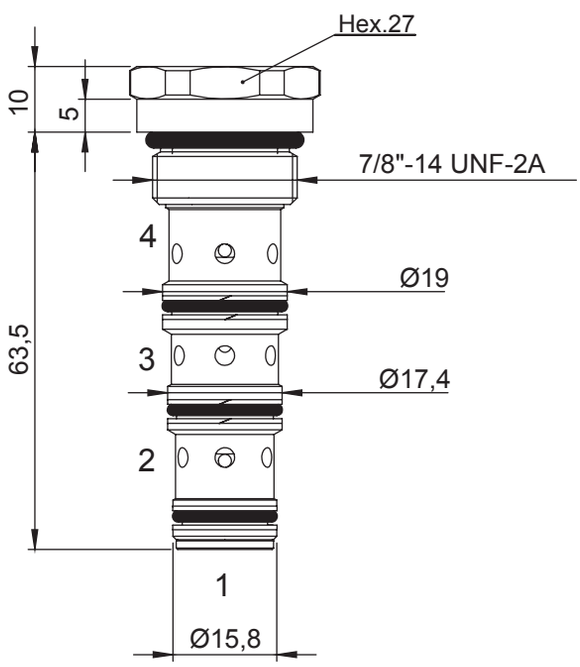
Adjustments

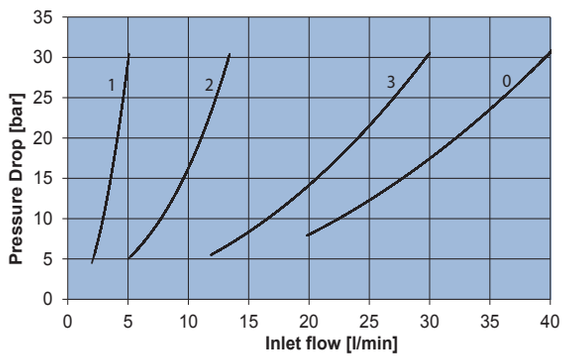
FLOW DIVIDER AND COMBINER VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Division ratio . . . . . **50% ÷ 50%**
- Accurancy. . . . . **< +/-5%**
- Cartridge tightening torque. . . . . .**40 Nm**
- Weight. . . . . **0,15 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**



Note:
- PATENDED FLOW DIVIDER AND COMBINER VALVE





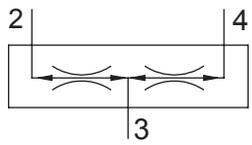
Ordering code

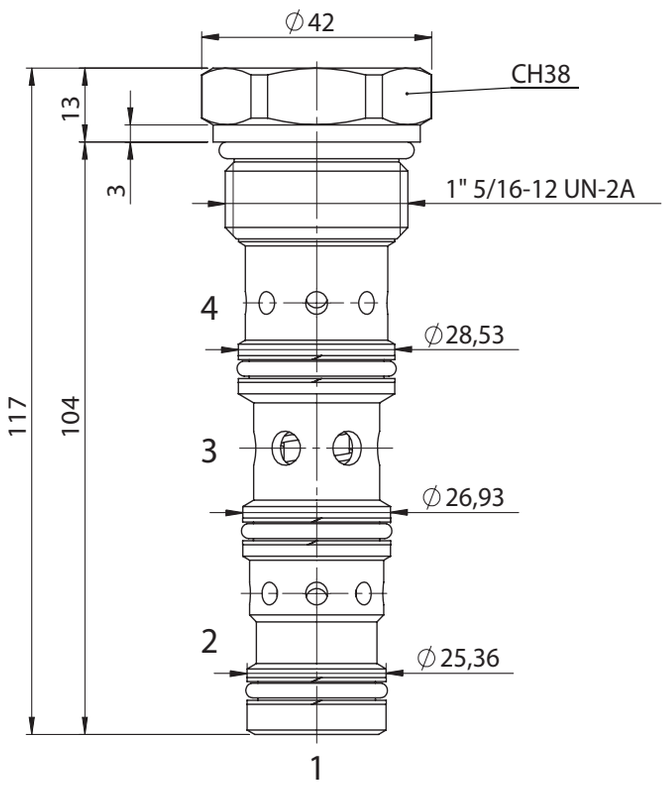
0 8 2 3 0 ☐ 0 0 0 0

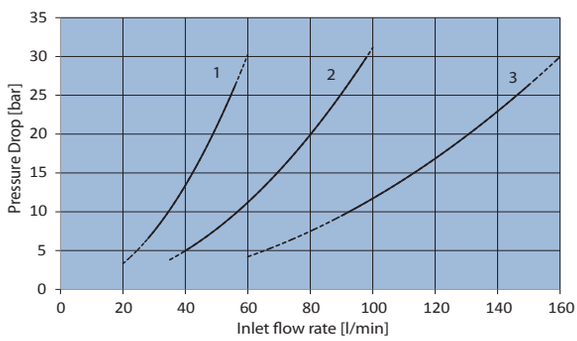
SETTING RANGE	0	1	2	3
Qmin ÷ Qmax l/min	20 ÷ 40	2 ÷ 6	5 ÷ 12	12 ÷ 30

FLOW DIVIDER AND COMBINER VALVE

- Flow. . . . . .**150 l/min**
- Max working pressure. . . . . .**250 bar**
- Seals . . . . . .**NBR and PTFE**
- Division ratio . . . . . **50% ÷ 50%**
- Accurancy. . . . . **< +/-3%**
- Cartridge tightening torque. . . . . .**70 Nm**
- Weight. . . . . **0,40 Kg**
- Cavity . . . . . **C450000** page **228**
- Body. . . . . **171512** page **202**







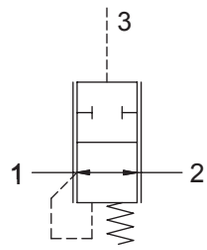
Ordering code

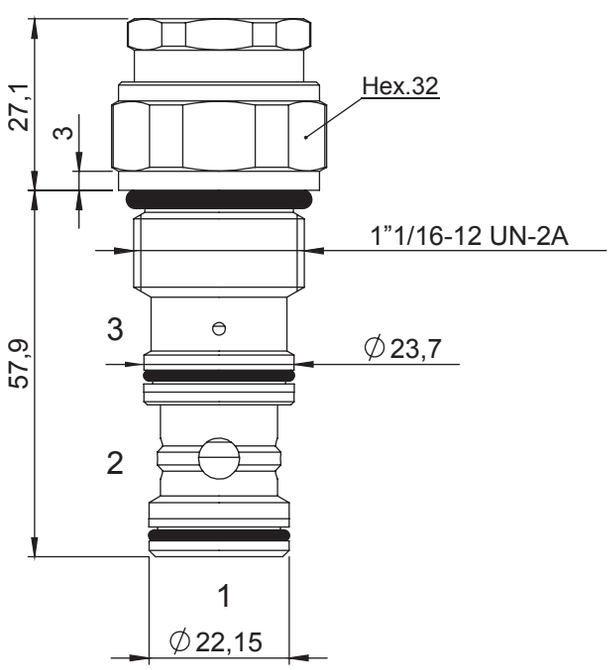
0 8 2 5 0 ☐ 0 0 0 0

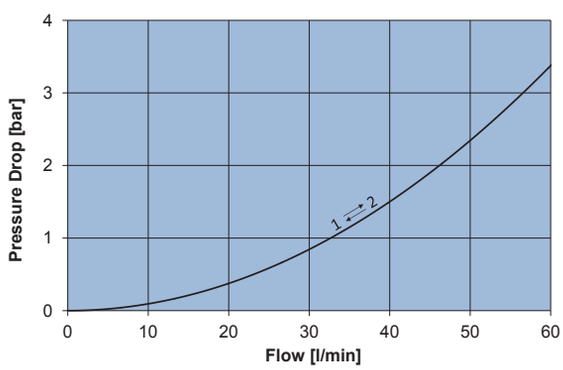
SETTING RANGE	1	2	3
Qmin ÷ Qmax l/min	28 ÷ 55	56 ÷ 95	90 ÷ 150

2 WAY NORMALLY OPEN SPOOL LOGIC ELEMENT

- Max Flow . . . . . .**100 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . **60 Nm**
- Weight. . . . . **0,3 Kg**
- Cavity. . . . . **C341000** page **223**
- Body. . . . . **172412** page **199**







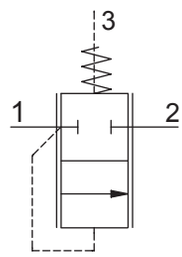
Ordering code

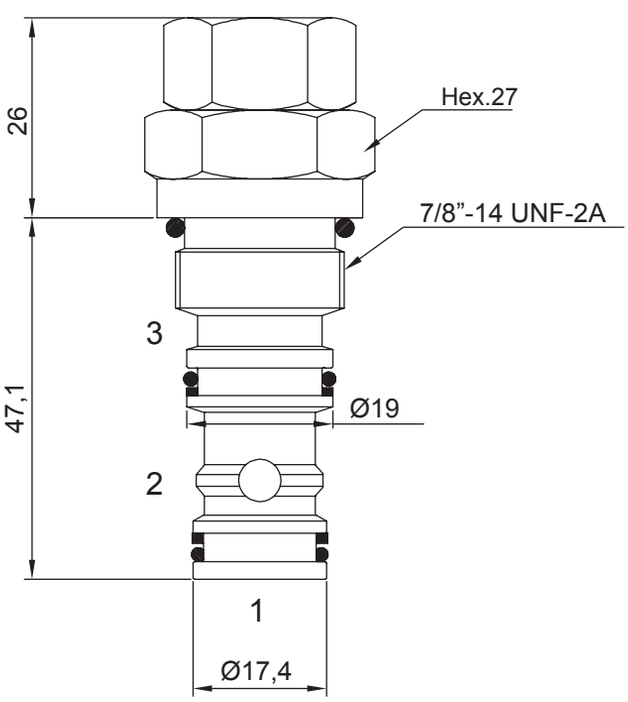
0 2 1 4 0 0 2 ☐ 0 0

SPRINGS	4
Cracking pressure [bar]	5

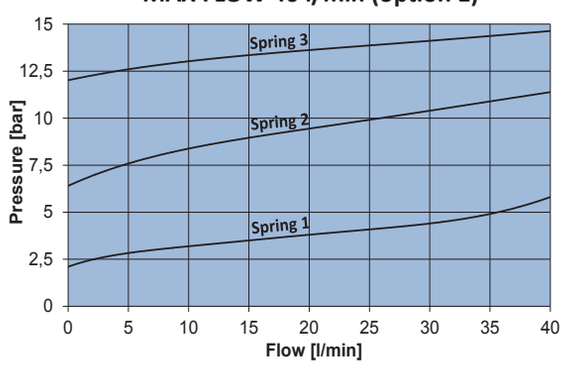
2 WAY NORMALLY CLOSED PRESSURE COMPENSATOR

- Max Flow . . . . . .**70 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cavity **C331000**
- Cartridge tightening torque . . . . . .**50 Nm**
- Weight . . . . . .**0,17 Kg**
- Cavity . . . . . **C331000** page **221**
- Body. . . . . **172312** page **193**

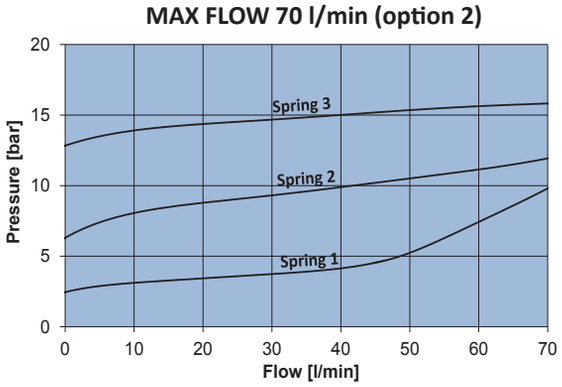




MAX FLOW 40 l/min (option 1)



MAX FLOW 70 l/min (option 2)



Ordering code

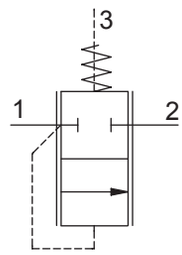
0 2 0 3 0 0 ☐ ☐ 0 0

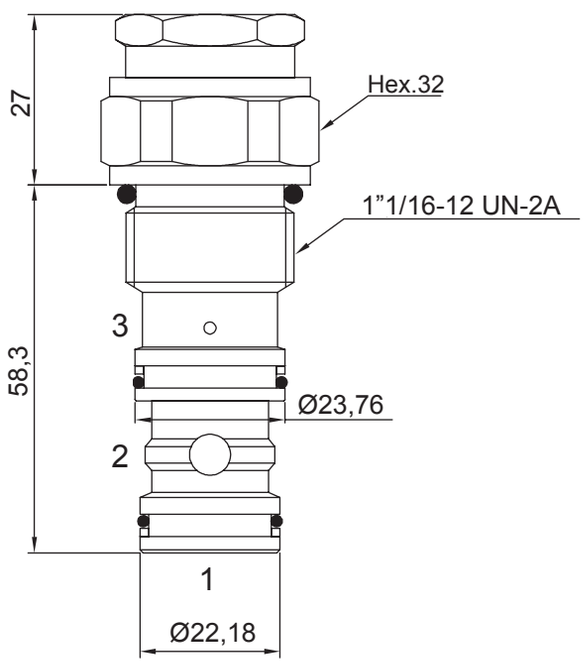
MAX FLOW	1	2
Q [l/min]	40 l/min	70 l/min

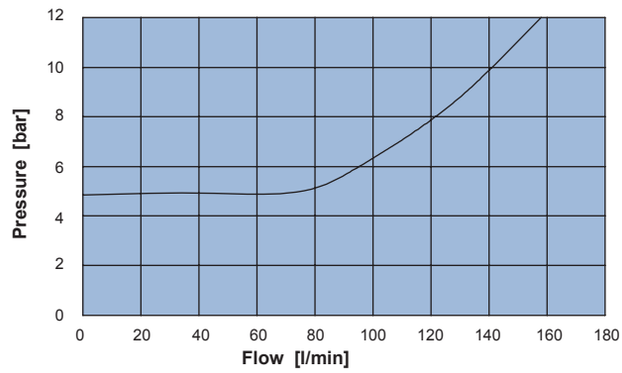
SPRINGS	1	2	3
Cracking pressure [bar]	2,5	7,5	11

2 WAY NORMALLY CLOSED PRESSURE COMPENSATOR

- Max Flow . . . . . **150 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **60 Nm**
- Weight . . . . . **0,26 Kg**
- Cavity. . . . . **C341000** page **223**
- Body. . . . . **172412** page **199**







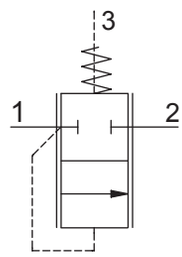
Ordering code

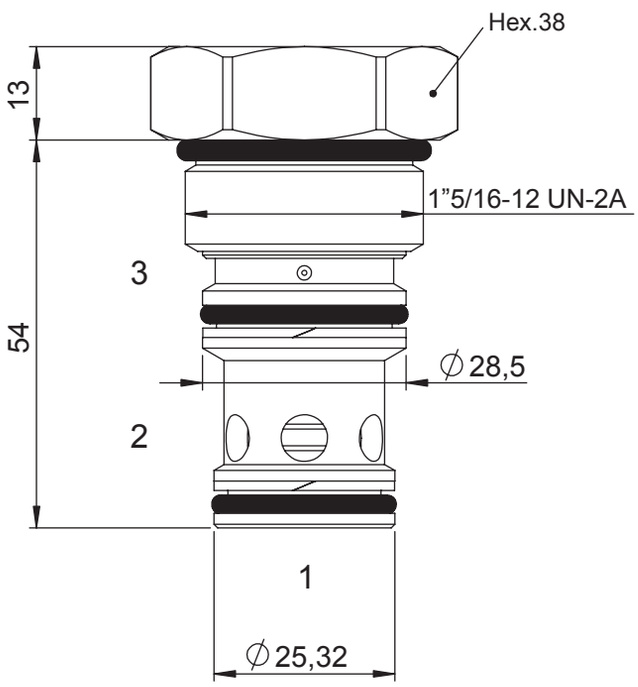
0 2 0 4 0 0 2 ☐ 0 0

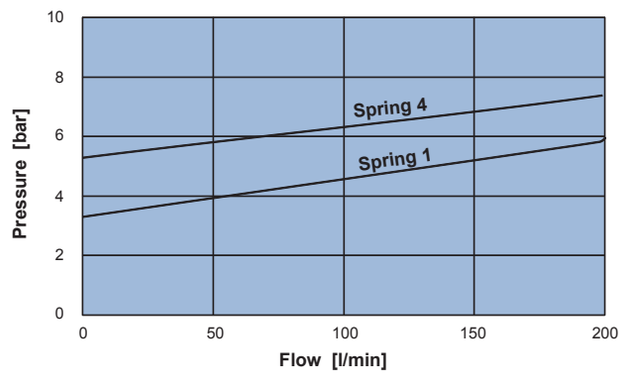
SPRINGS	4
Cracking pressure [bar]	5

2 WAY NORMALLY CLOSED PRESSURE COMPENSATOR

- Max Flow . . . . . .**200 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque . . . . . .**75 Nm**
- Weight . . . . . .**0,3 Kg**
- Cavity. . . . . **C351000** page **224**
- Body. . . . . **172512** page **203**







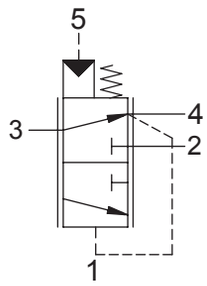
Ordering code

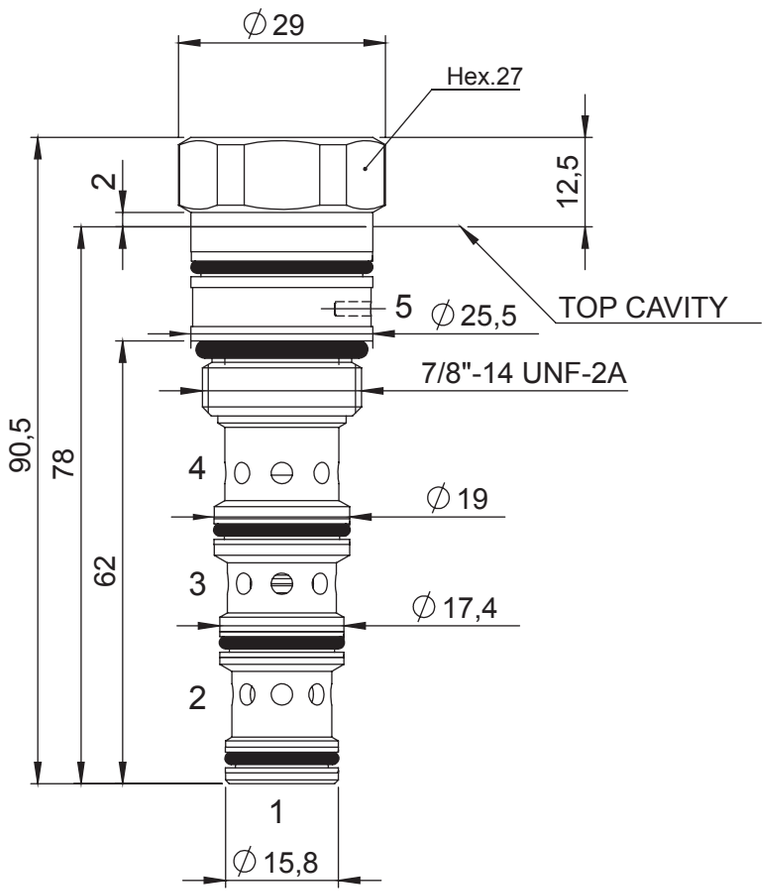
0 2 0 5 0 0 2 ☐ 0 0

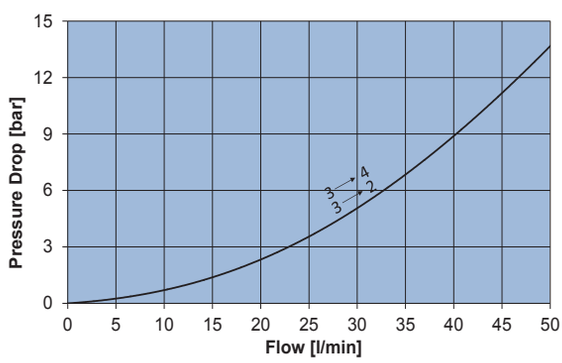
SPRINGS	1	4
Cracking pressure [bar]	2,8	4,8

3 WAY POST COMPENSATED PRESSURE COMPENSATOR

- Max flow from 3 to 2 . . . . . **50 l/min**
- Max flow from 3 to 4 . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Weight . . . . . **0,2 Kg**
- Cavity. . . . . **C533000** page **229**







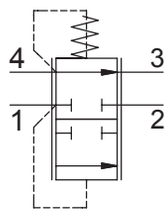
Ordering code

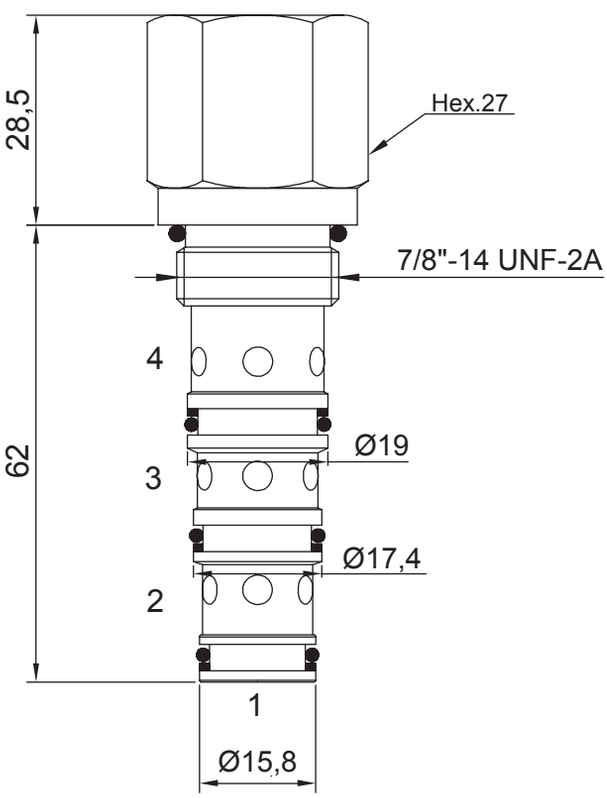
0 2 5 3 0 0 2 ☐ 0 0

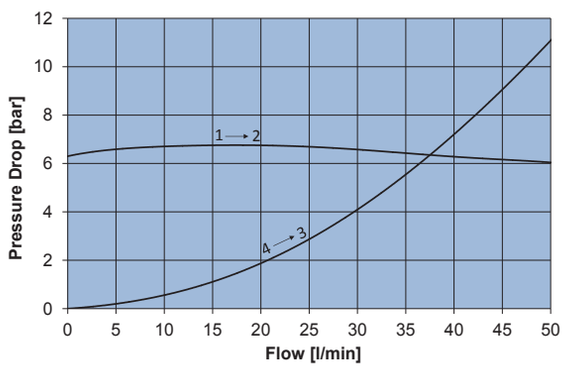
SPRINGS	4
Cracking pressure [bar]	5

4 WAY PRESSURE COMPENSATOR

- Flow . . . . . **50 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Weight . . . . . **0,21 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**







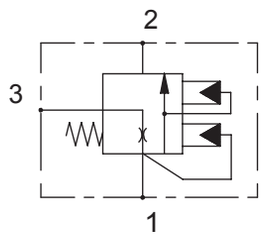
Ordering code

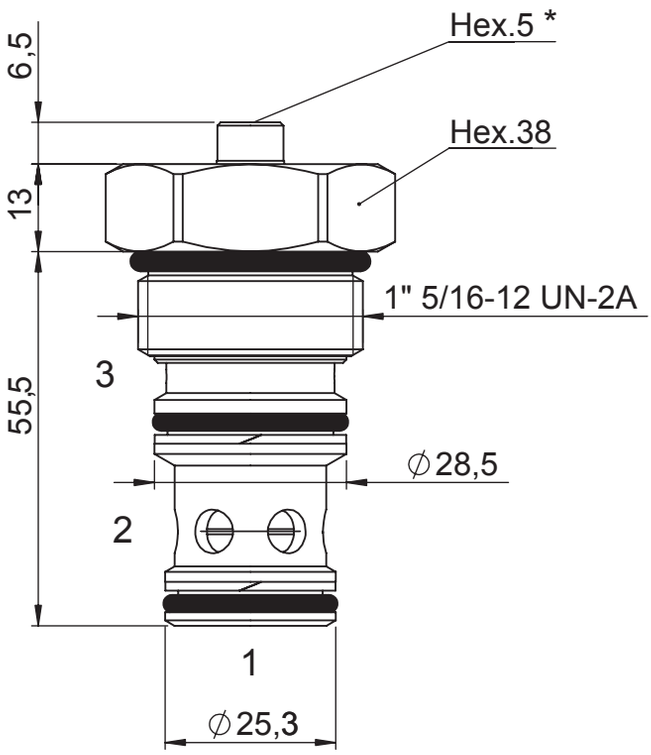
0 2 4 3 0 0 2 ☐ 0 0

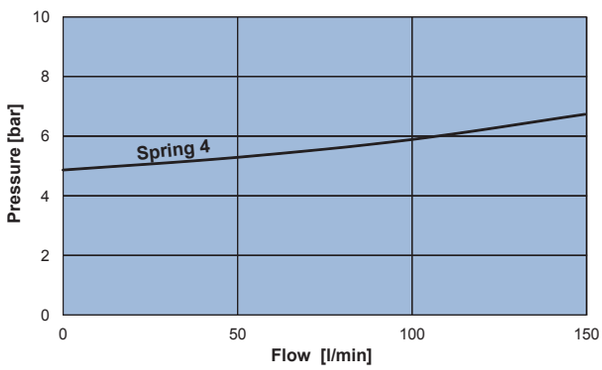
SPRINGS	4
Cracking pressure [bar]	5

2 WAY NORMALLY CLOSED LOGIC ELEMENT KICK-DOWN

- Max Flow . . . . . .**150 l/min**
- Max working pressure . . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque . . . . . .**75 Nm**
- Weight . . . . . .**0,3 Kg**
- Cavity. . . . . **C351000** page **224**
- Body. . . . . .**172512** page **203**







***Note:**
- When starting the system it is recommended to bleed air from the cap-cartridges.

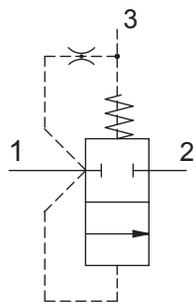
Ordering code

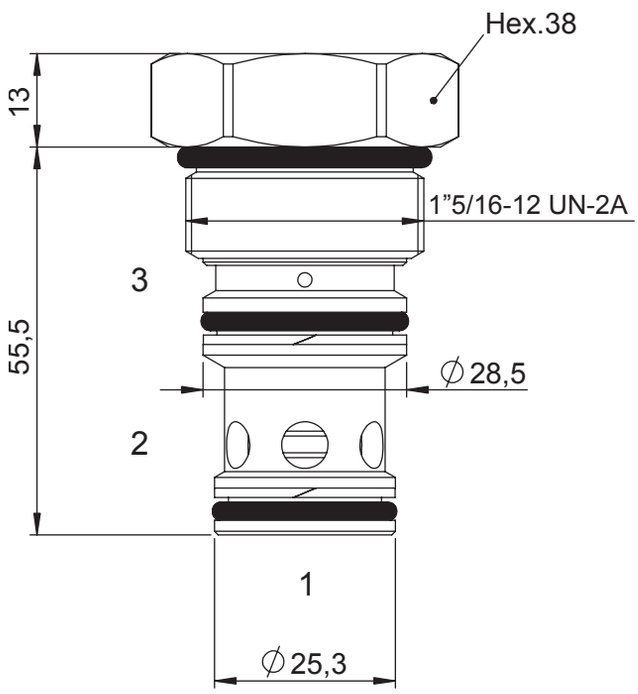
0 2 0 5 2 0 2 ☐ 0 0

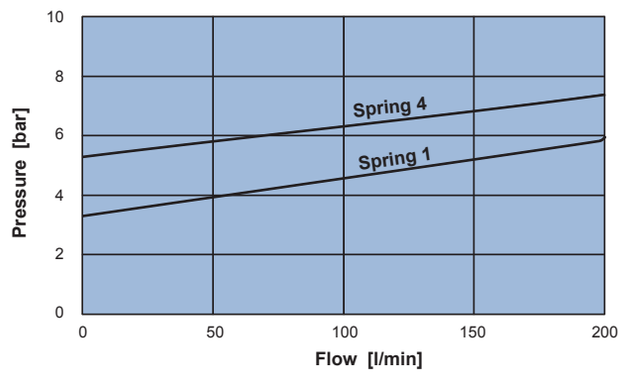
SPRINGS	4
Cracking pressure [bar]	4,8

2 WAY NORMALLY CLOSED LOGIC ELEMENT

- Max Flow . . . . . **200 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **75 Nm**
- Weight . . . . . **0,3 Kg**
- Cavity. . . . . **C351000** page **224**
- Body. . . . . **172512** page **203**







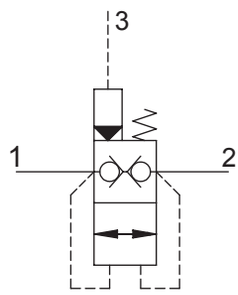
Ordering code

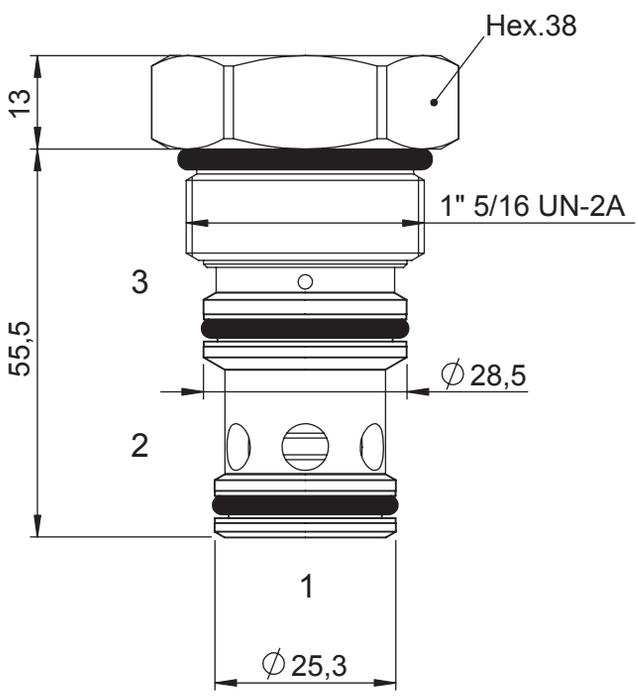
0 2 0 5 1 0 2 ☐ 0 0

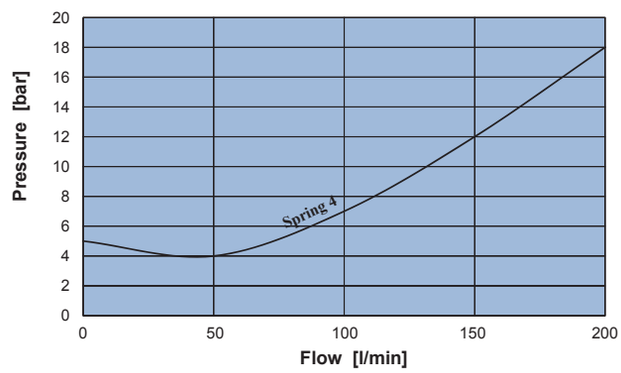
SPRINGS	1	4
Cracking pressure [bar]	2,8	4,8

2 WAY NORMALLY CLOSED POPPET LOGIC ELEMENT

- Flow . . . . . .**200 l/min**
- Max working pressure. . . . . .**350 bar**
- Seals . . . . . .**NBR and PTFE**
- Cavity. **C351000**
- Cartridge tightening torque. . . . . **75 Nm**
- Weight . . . . . .**0,3 Kg**
- Cavity. . . . . **C351000** page **224**
- Body. . . . . .**172512** page **203**







Ordering code

0 2 3 5 0 0 2 ☐ 0 0

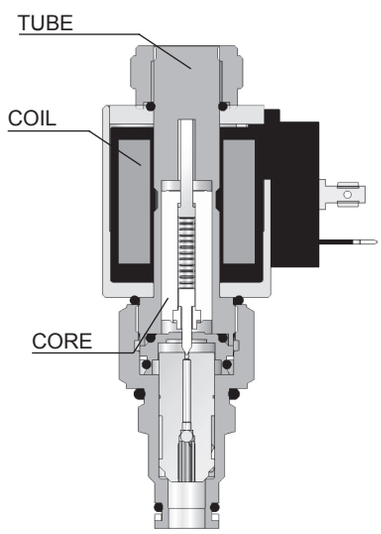
SPRINGS	1	4
Cracking pressure [bar]	2,5	4,8

ON/OFF DIRECTIONAL VALVES

INTRODUCTION

The hydraulic circuits of mobile machinery, are often equipped with automatic devices or remote controls that require the use of electro hydraulic systems to generate hydraulic power from an electric signal.

The components capable of doing this are called electric valves or solenoid valves.
These valves are hydraulic components that by using a specific mechanical devices can obtain linear movements using the force generated by a magnetic field of a coil fed with current.



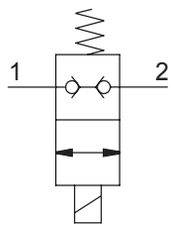
NEM production of solenoid cartridge valves is based on SAE cavity and can cover most of the available circuit: 2 and 3 way 2 positions direct acting lock valves, 2 way 2 position pilot operated lock valves and spool valves 2, 3 and 4 way.

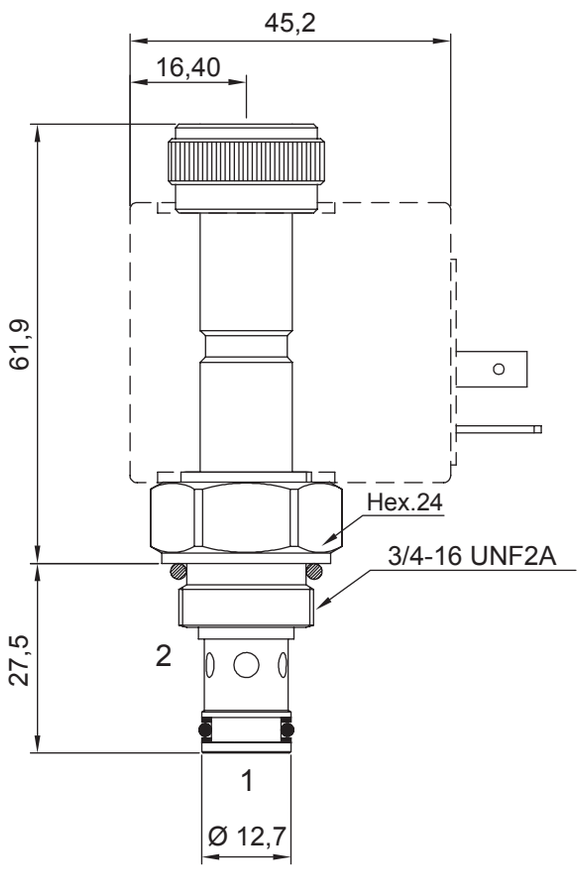
The main characteristics of NEM solenoid cartridge valves is the design and construction of the “Tube”: without any kind of welding, the working principle is based on the tube magnetic saturation, it makes the valve stronger and reliable at high pressures, with an excellent electromagnetic performance.

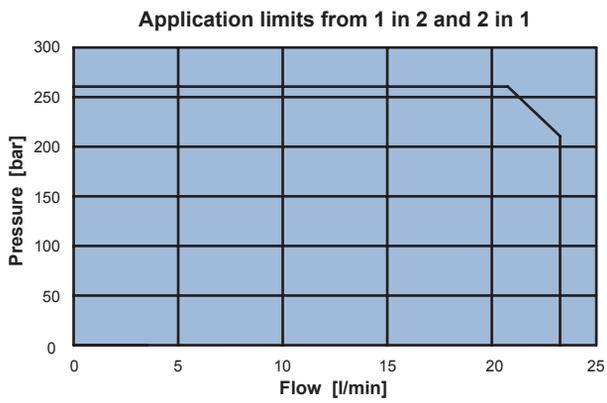
Each NEM solenoid cartridge valve has a dedicated coil (to be ordered as separate item).
The coil has to be selected through the specifications available on the technical sheet, with respect to required voltage and type of connector.

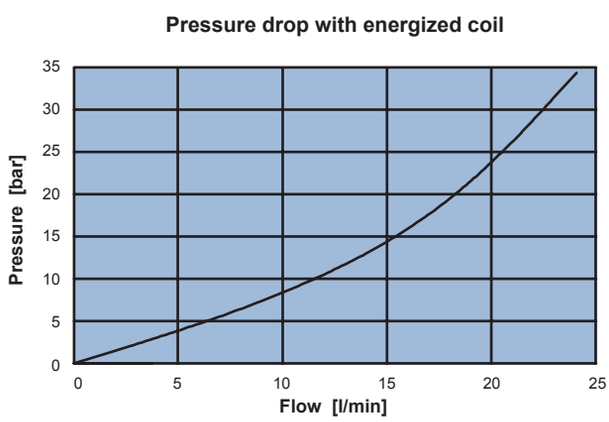
2 WAY 2 POSITION ELECTRIC POPPET VALVE, DIRECT ACTING NC

- Flow . . . . . **20 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil) . . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**









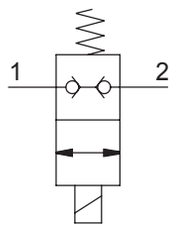
Ordering code

0 5 0 2 1 0 0 ☐ 0 0

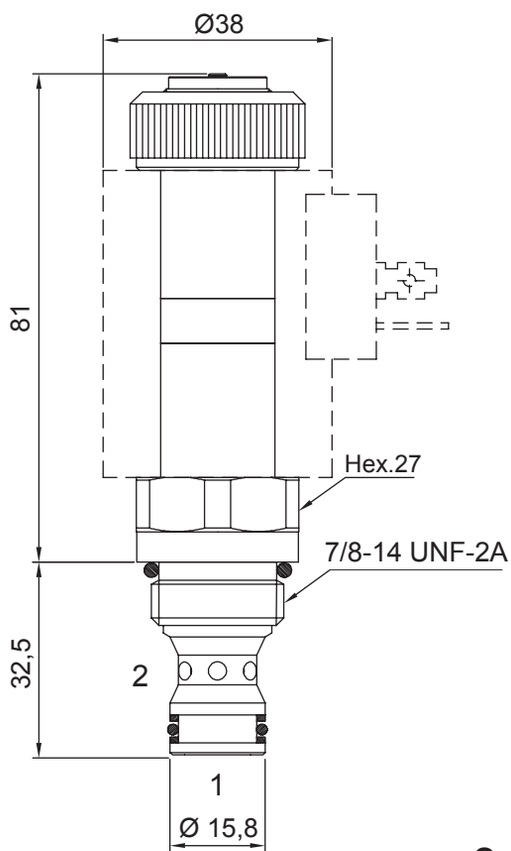
0	4	5
No emergency	Push Button	Push and Twist

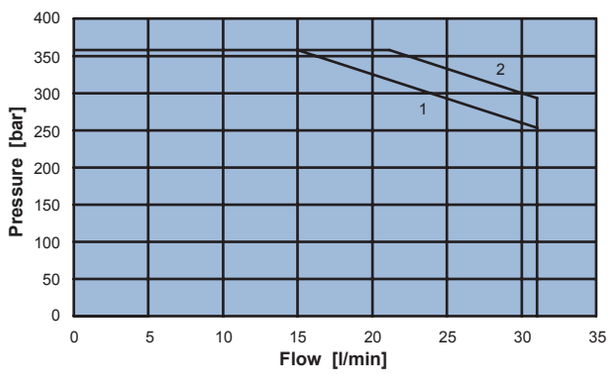
2 WAY 2 POSITION ELECTRIC POPPET VALVE, DIRECT ACTING NC

- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). .. . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09800** page **180**

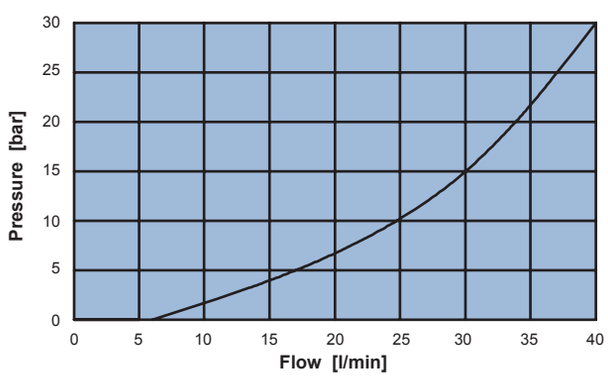


Note: *proportional coil 09800 applied to provide the operating needed power (ED 50%).*
For ED 100% contact NEM customer care service.





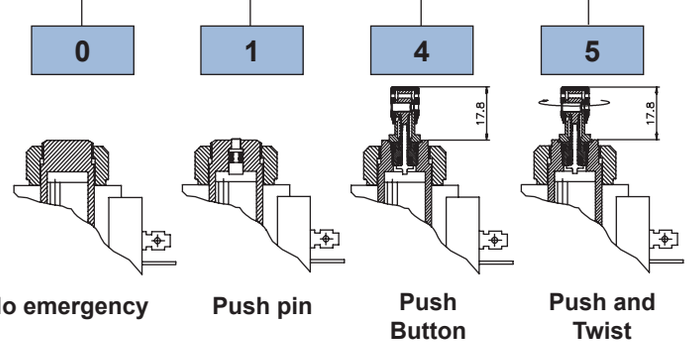
1 = Limits from 2 to 1
2 = Limits from 1 to 2



Pressure drop with energized coil

Ordering code

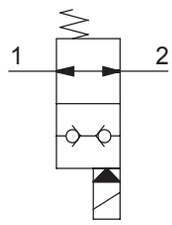
0 5 0 3 1 0 0 ☐ 0 0

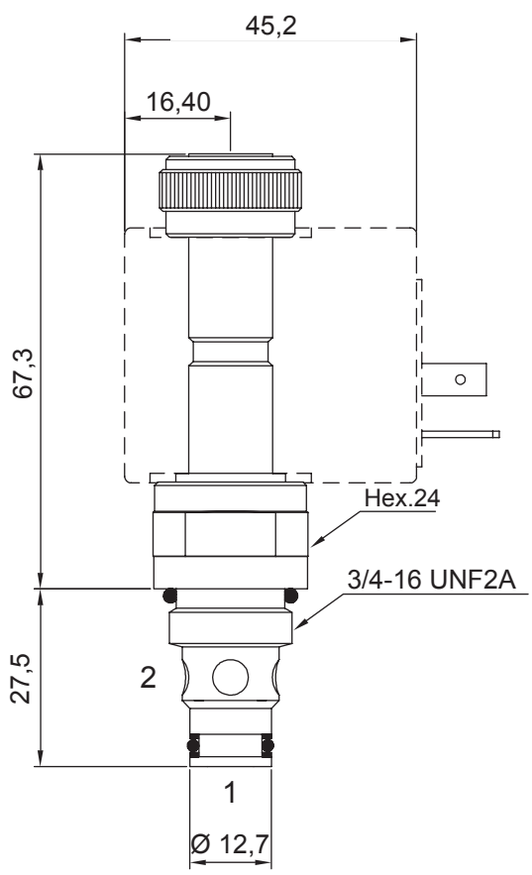


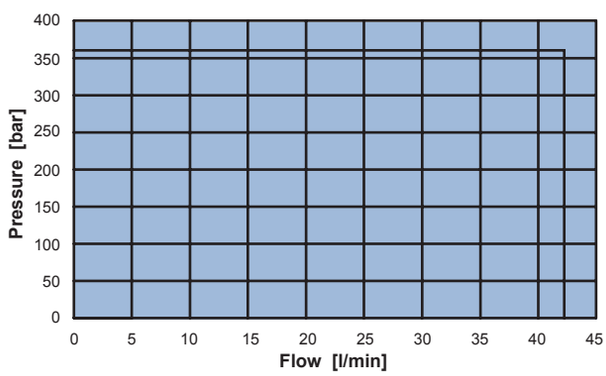
No emergency | **Push pin** | **Push Button** | **Push and Twist**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

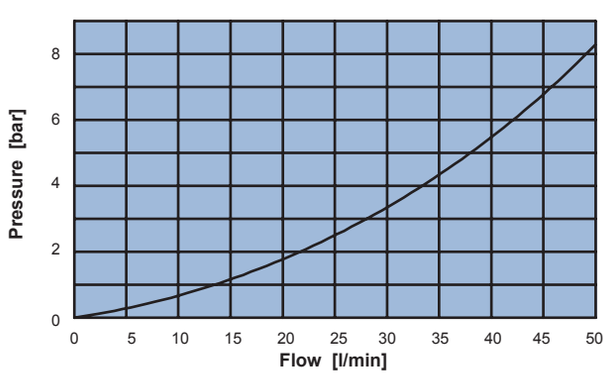
- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil) . . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**







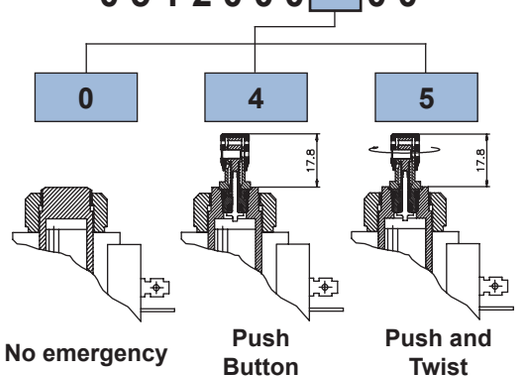
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

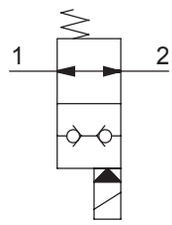
Ordering code

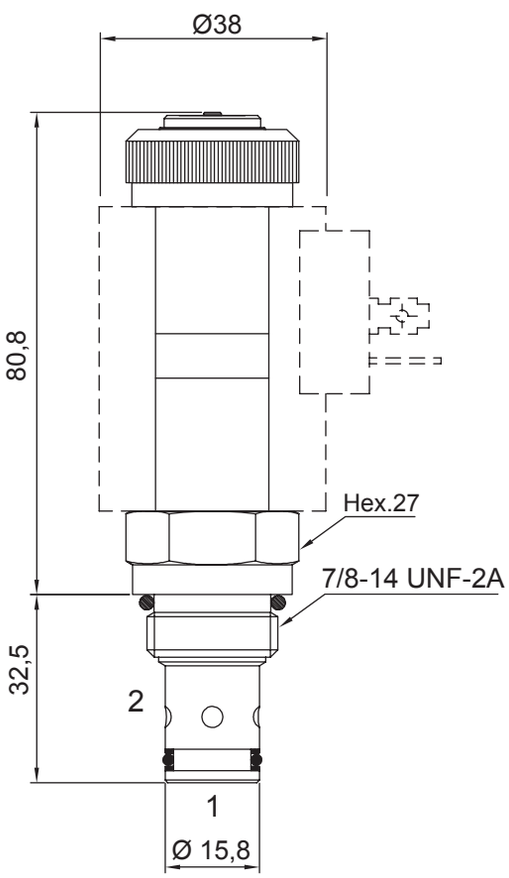
0 5 1 2 0 0 0 ☐ 0 0

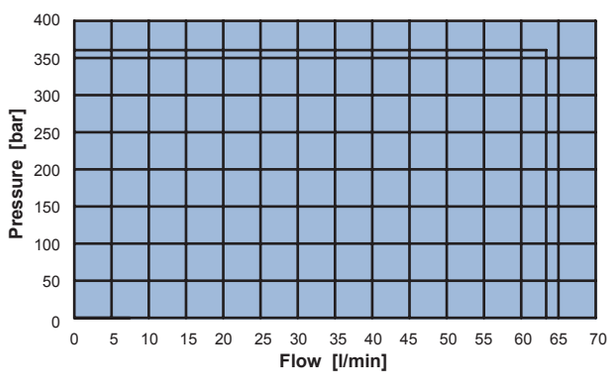


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

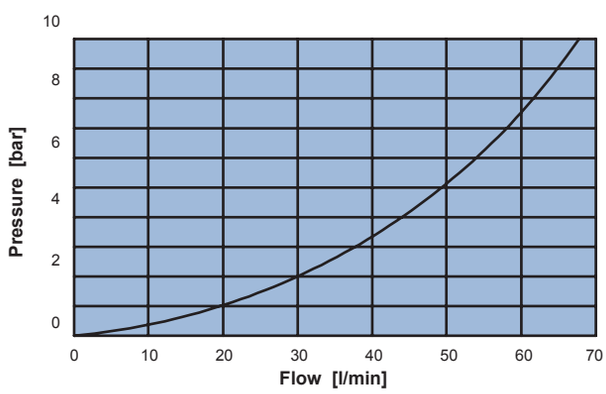
- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil) . . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**







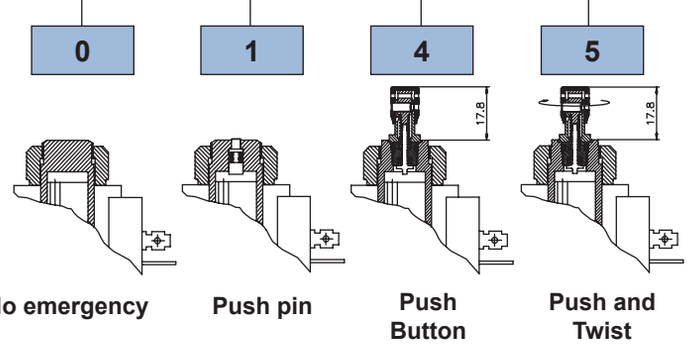
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

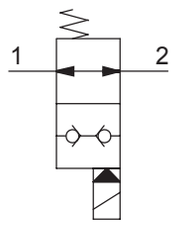
Ordering code

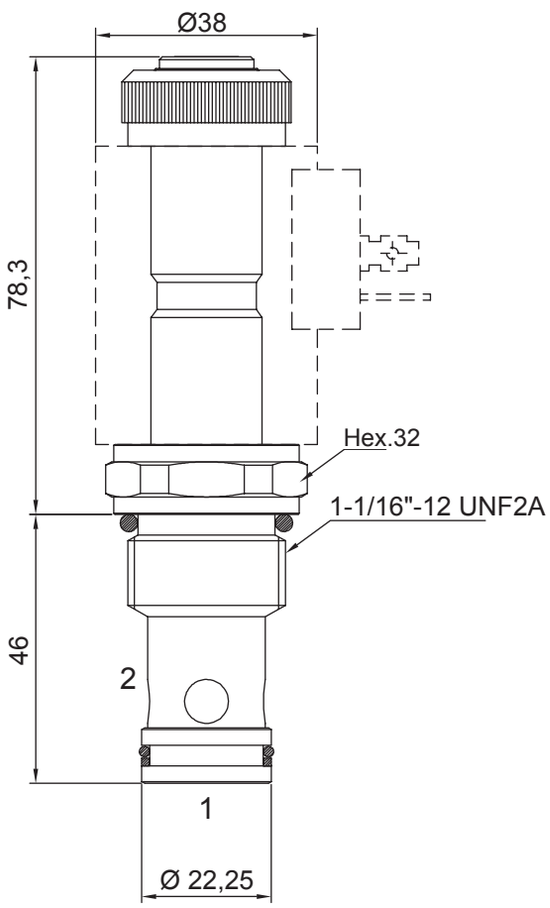
0 5 1 3 0 0 0 ☐ 0 0

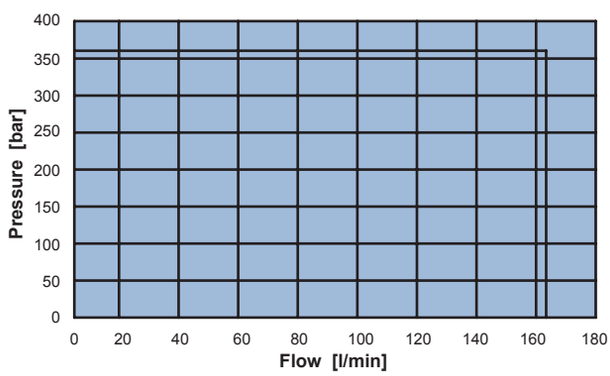


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

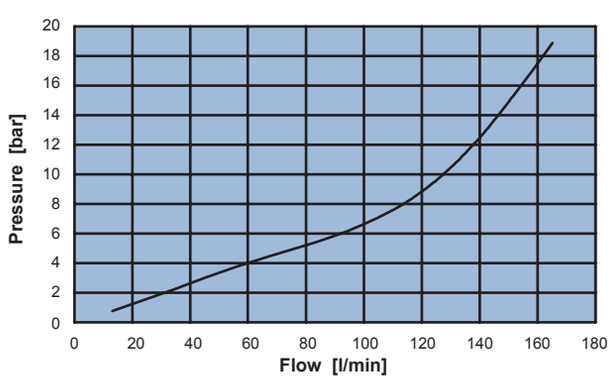
- Flow . . . . . **150 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cavity **C240000**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil) . . . . . **0,58 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**







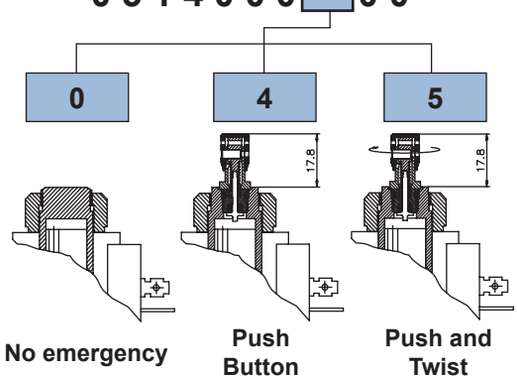
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

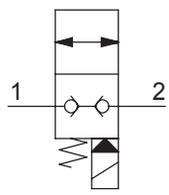
Ordering code

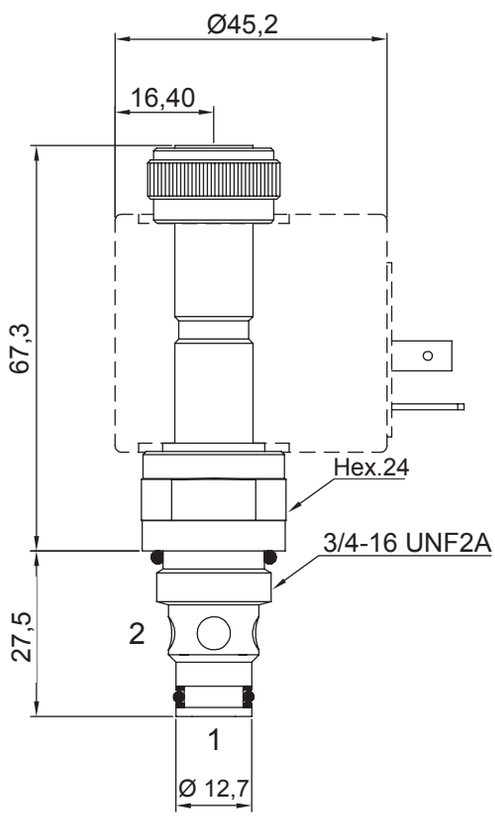
0 5 1 4 0 0 0 ☐ 0 0

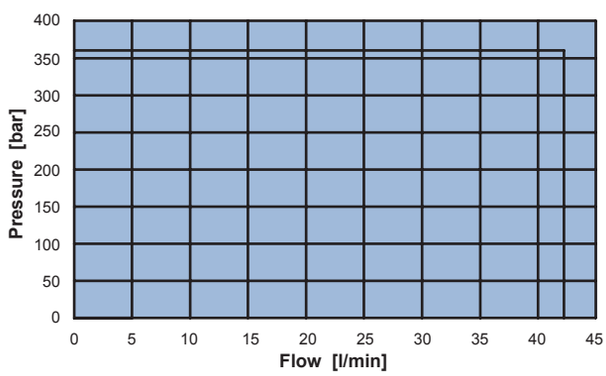


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

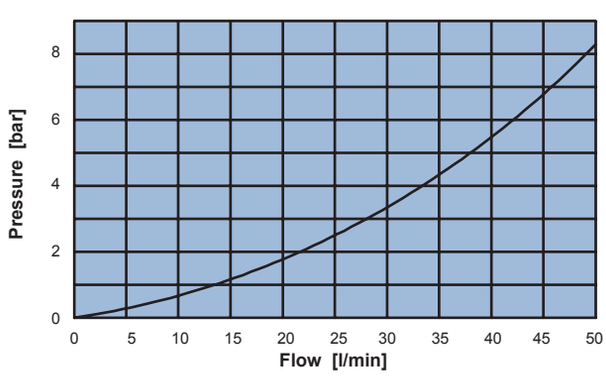
- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Application limits from 2 to 1 and 1 to 2

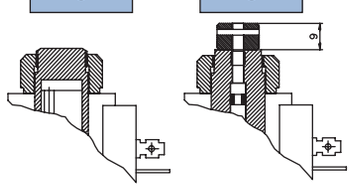


Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 1 2 1 0 0 ☐ 0 0

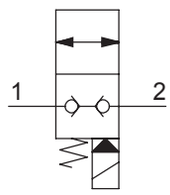
0	6

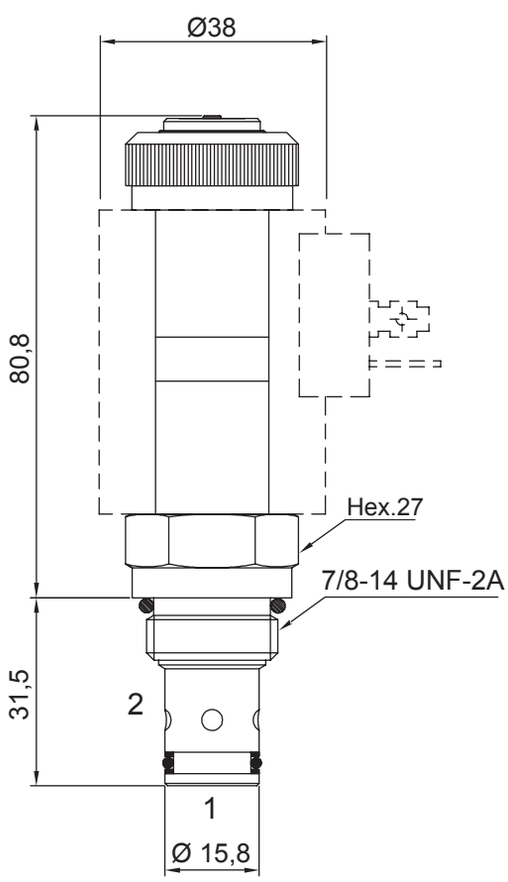


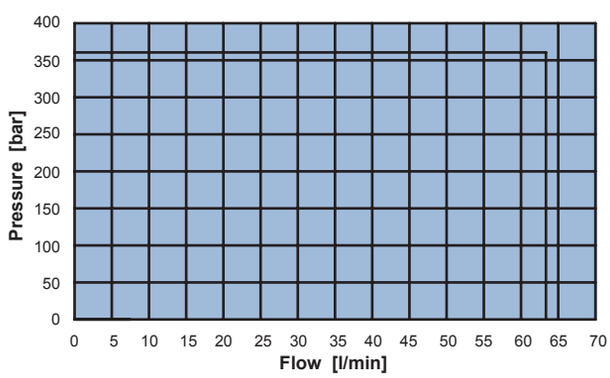
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

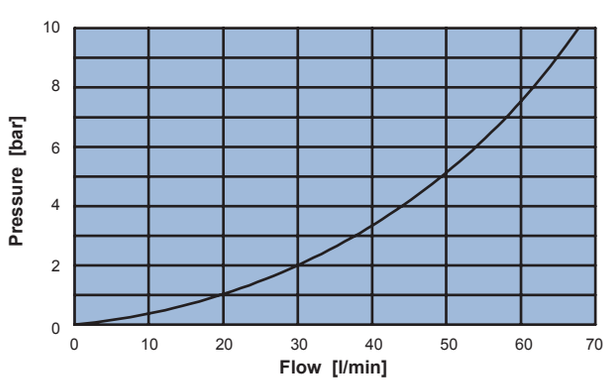
- Flow . . . . . .**60 l/min**
- Max working pressure . . . . . .**350 bar**
- Leakage . . . . . .**0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . .**0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**







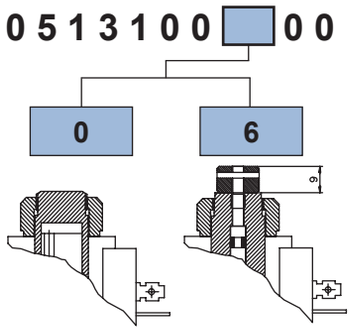
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

Ordering code

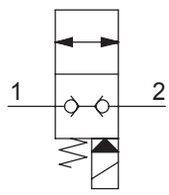
0 5 1 3 1 0 0 ☐ 0 0

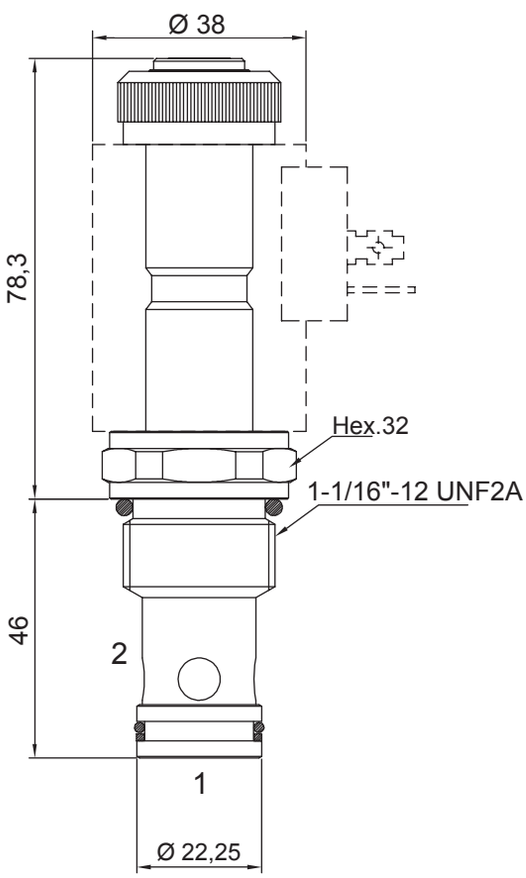


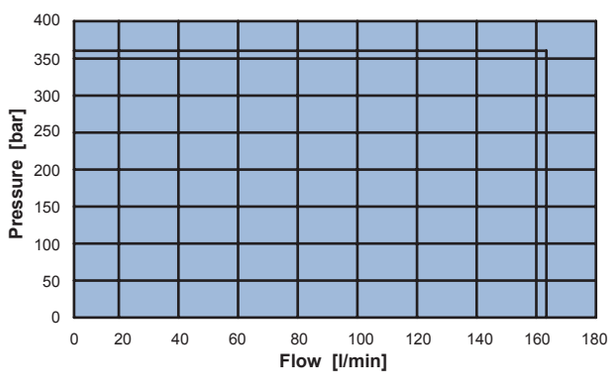
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

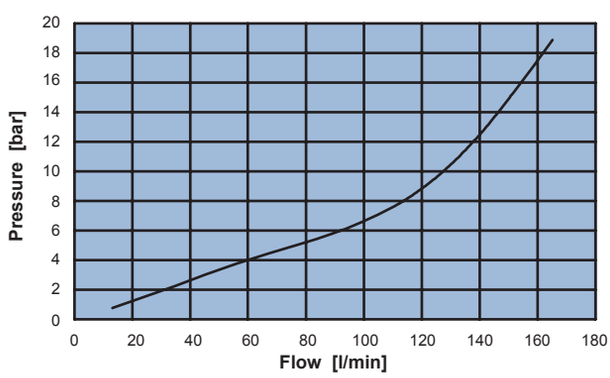
- Flow . . . . . **150 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,58 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**







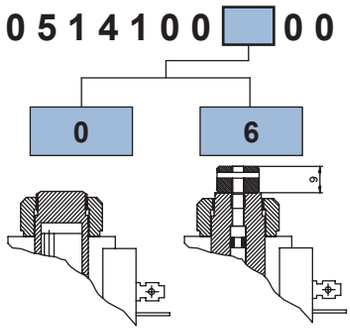
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

Ordering code

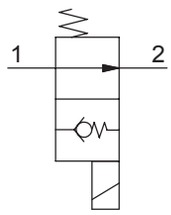
0 5 1 4 1 0 0 ☐ 0 0

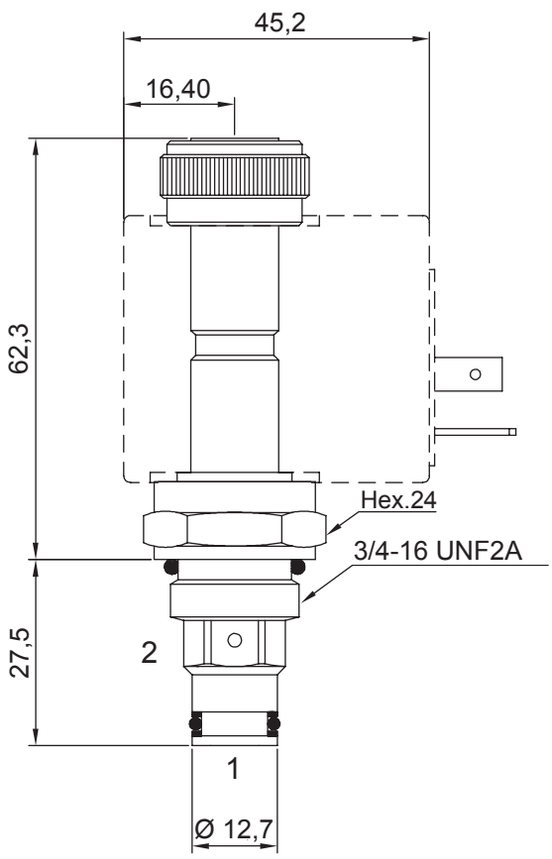


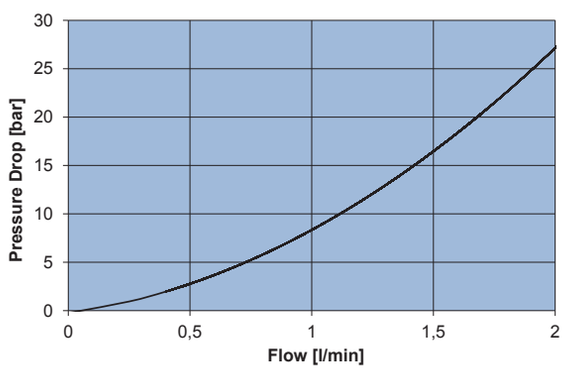
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC VALVE, DIRECT ACTING NO

- Flow . . . . . **2 l/min**
- Max working pressure in 1. . . . . **350 bar**
- Max working pressure in 2. . . . . **20 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**



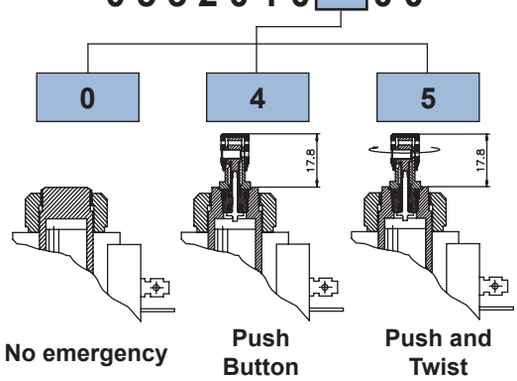




Note:
- Check valve cracking pressure (1→2) > 350 bar.

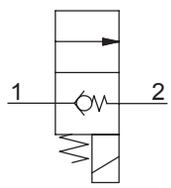
Ordering code

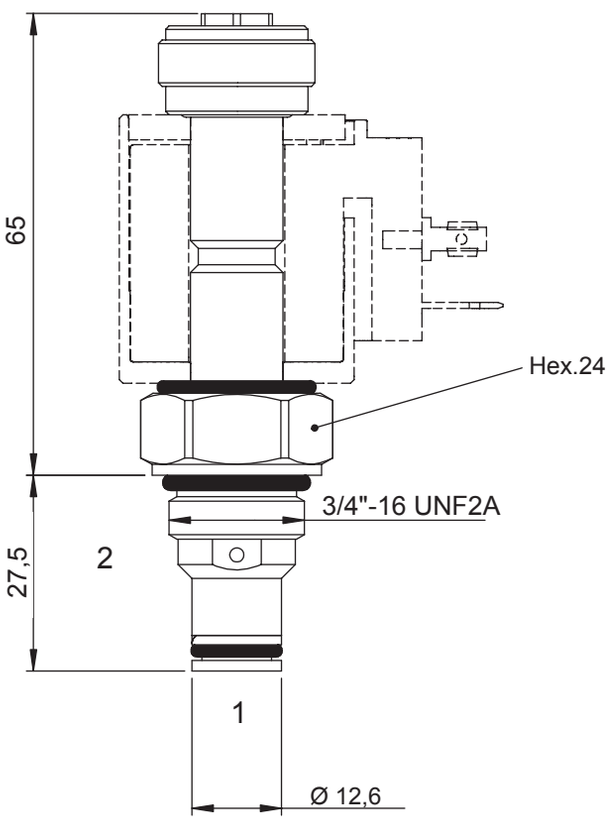
0 5 3 2 0 1 0 ☐ 0 0

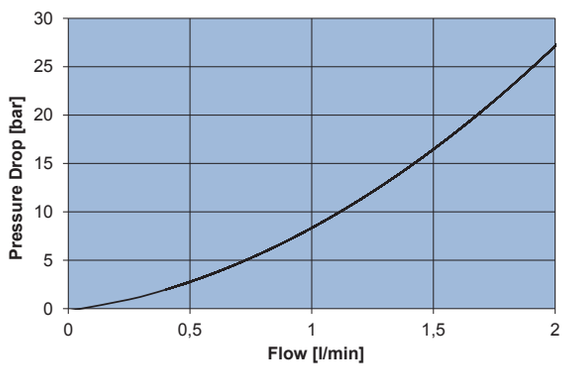


2 WAY 2 POSITION ELECTRIC POPPET VALVE, DIRECT ACTING NC

- Flow. . . . . .**2 l/min**
- Max working pressure in 1 . . . . . .**350 bar**
- Max working pressure in 2 . . . . . **20 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque. . . . . .**30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight . . . . . .**0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**



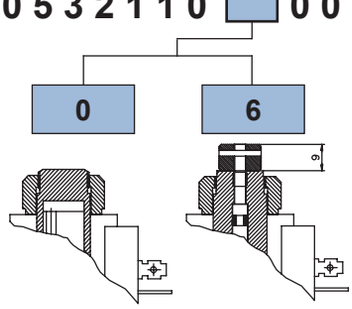




Note:
- Check valve cracking pressure (1→2) > 350 bar.

Ordering code

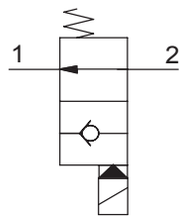
0 5 3 2 1 1 0 ☐ 0 0

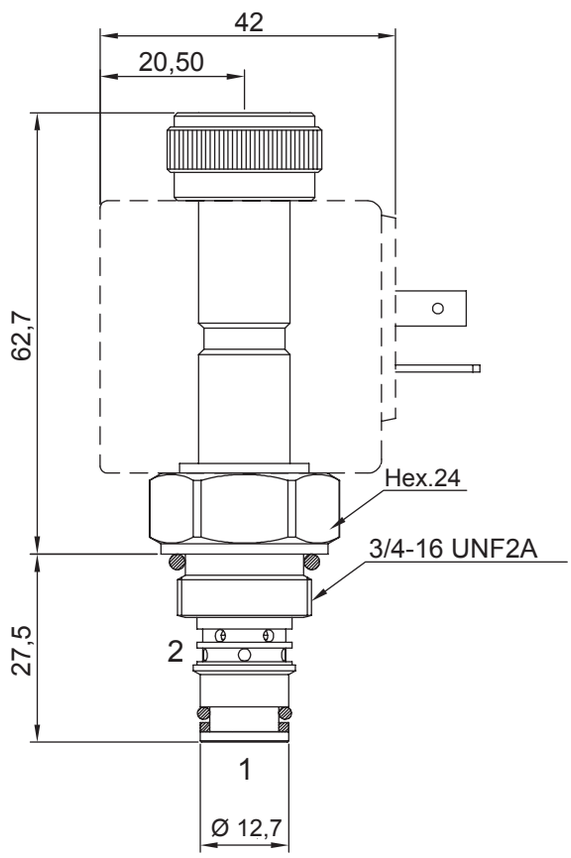


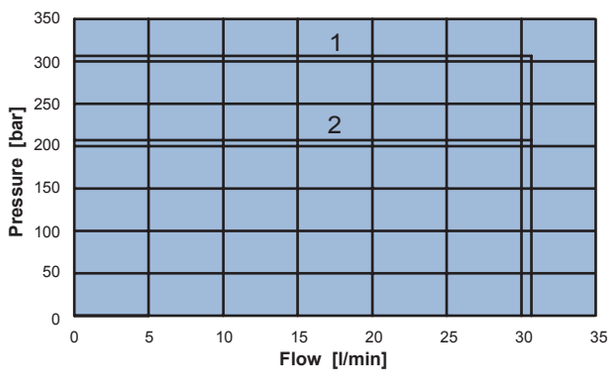
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

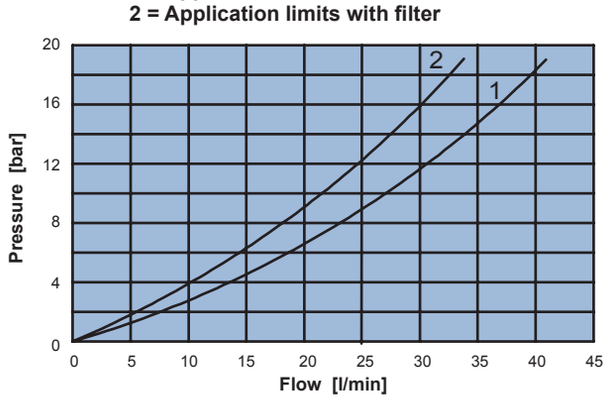
- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **300 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Filter. . . . . **280 micron**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09300** page **178**
  09400 page **179**







1 = Application limits without filter
2 = Application limits with filter

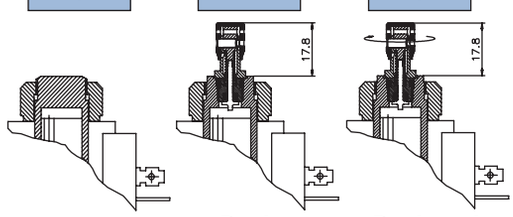


1 = Pressure drop from 2 to 1 without filter
2 = Pressure drop from 2 to 1 with filter

Ordering code

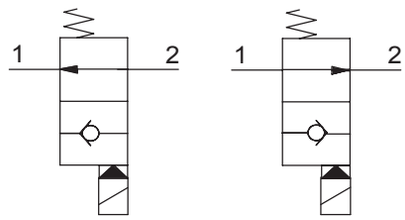
0 5 5 2 5 0 0 ☐ ☐ 0

0	4	5	0	1
No emergency	Push Button	Push and Twist	Without filter	With filter

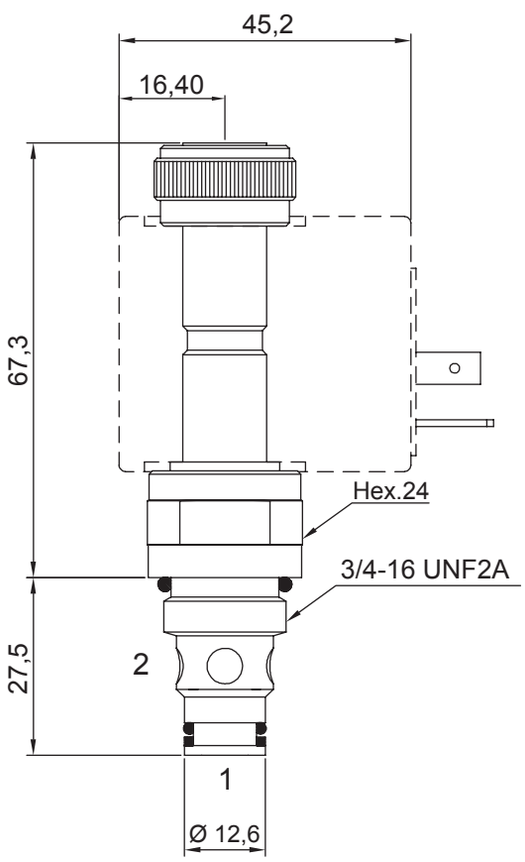


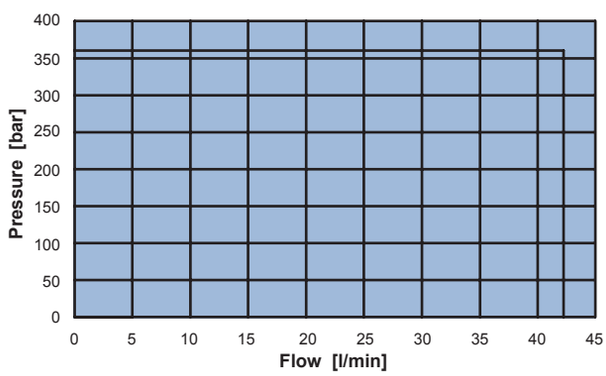
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**

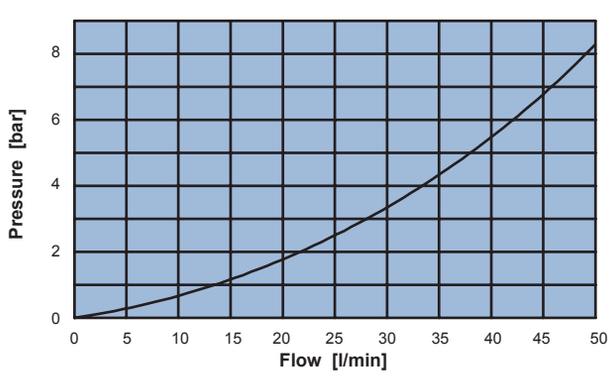


Scheme 0 **Scheme 1**





Application limits from 1 to 2 and 2 to 1

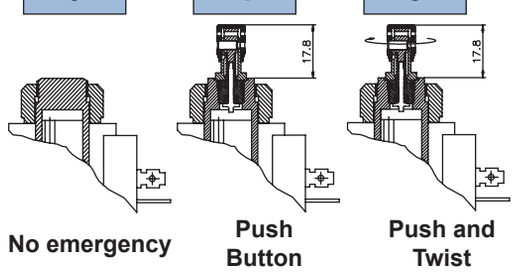


Pressure drop with energized coil

Ordering code

0 5 5 2 0 ☐ 0 ☐ 0 0

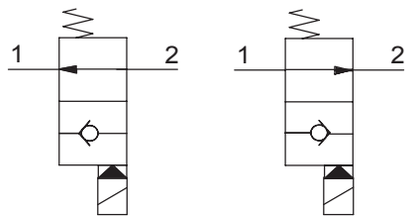
Hydraulic Scheme		Emergency		
0	1	0	4	5



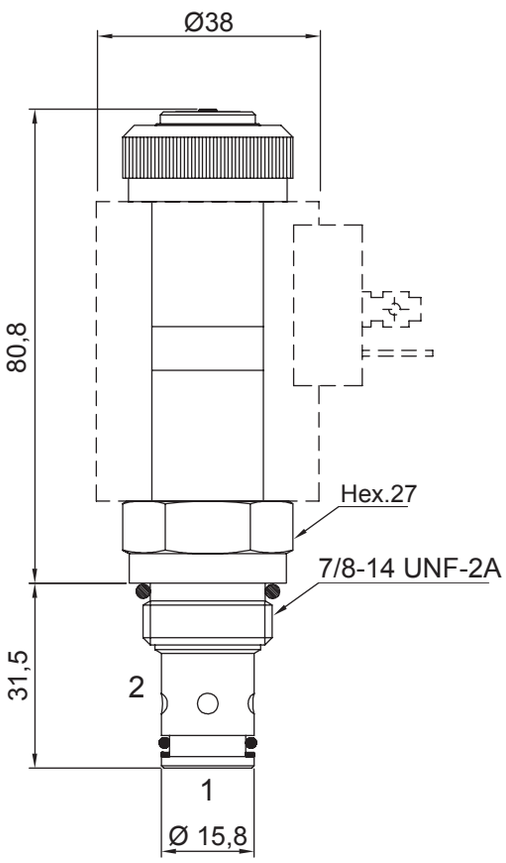
No emergency **Push Button** **Push and Twist**

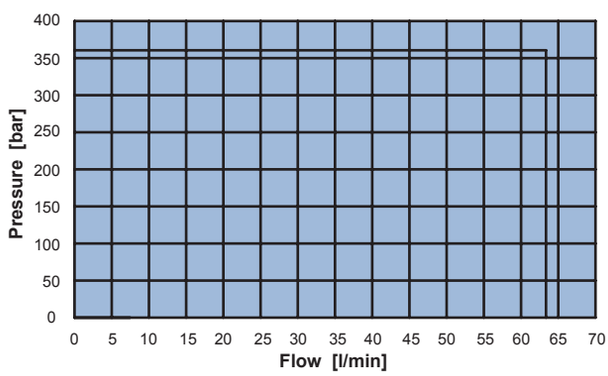
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**

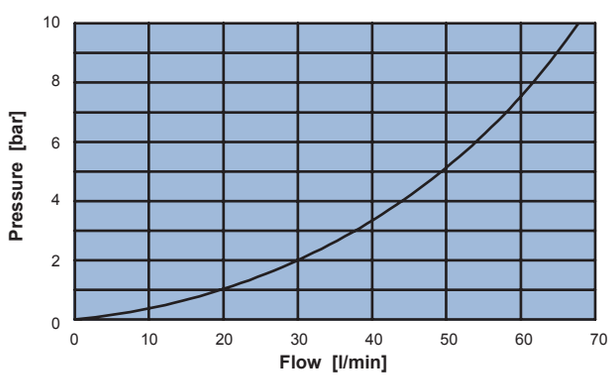


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2



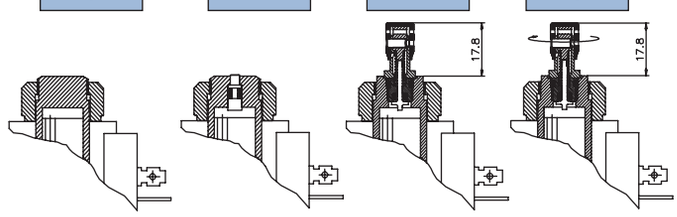
Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 5 3 0 ☐ 0 ☐ 0 0

0	1	0	1	4	5

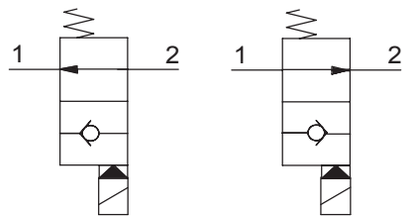
Hydraulic scheme



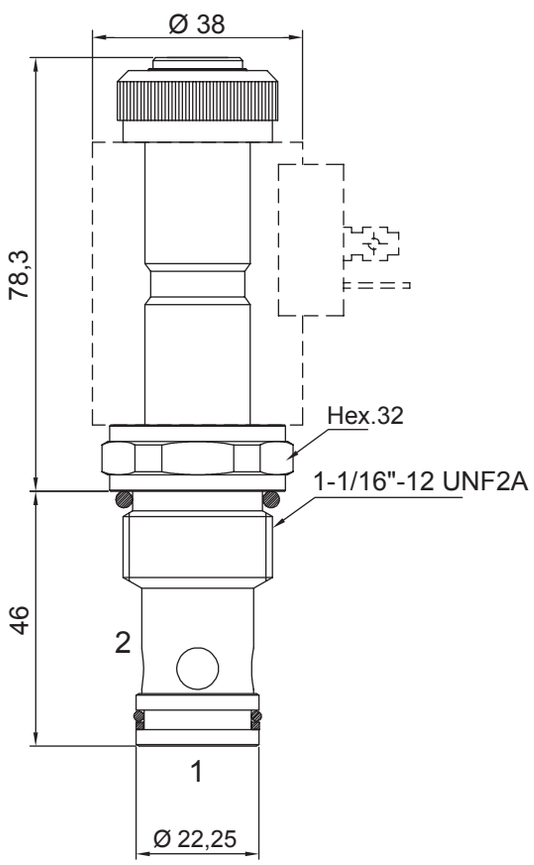
No emergency **Push pin** **Push Button** **Push and Twist**

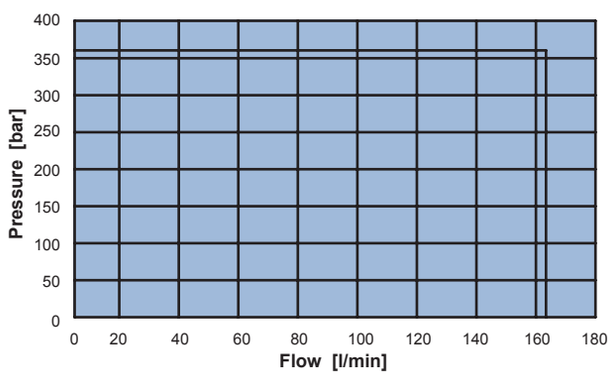
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

- Flow . . . . . **150 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**

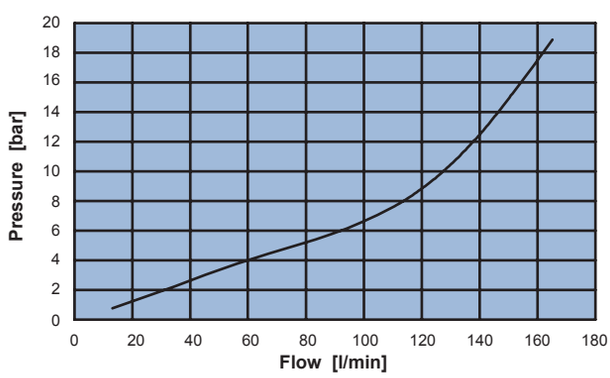


Scheme 0 **Scheme 1**





Application limits from 1 in 2 and 2 in 1



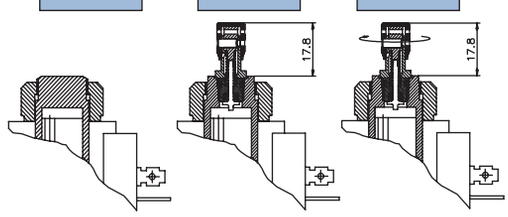
Pressure drop with energized coil

Ordering code

0 5 5 4 0 ☐ 0 ☐ 0 0

0	**1**	**0**	**4**	**5**

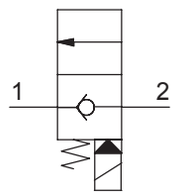
Hydraulic scheme

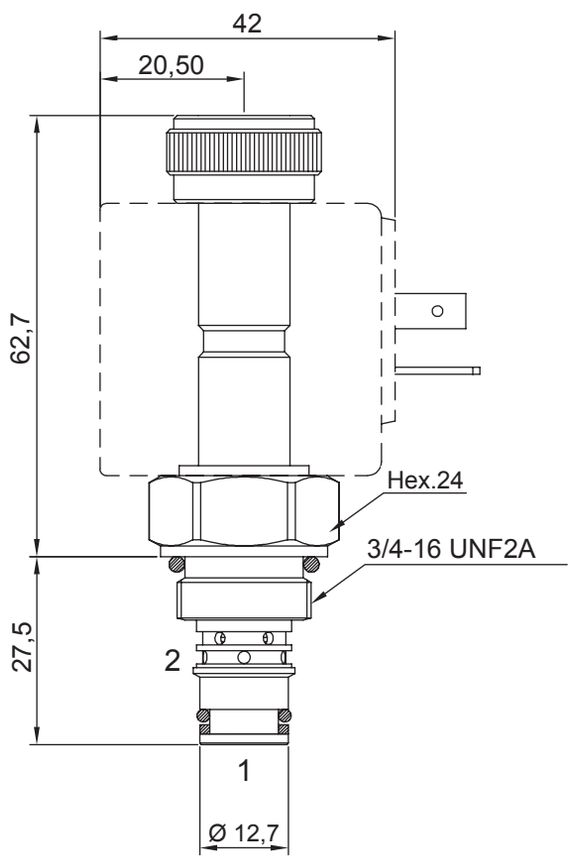


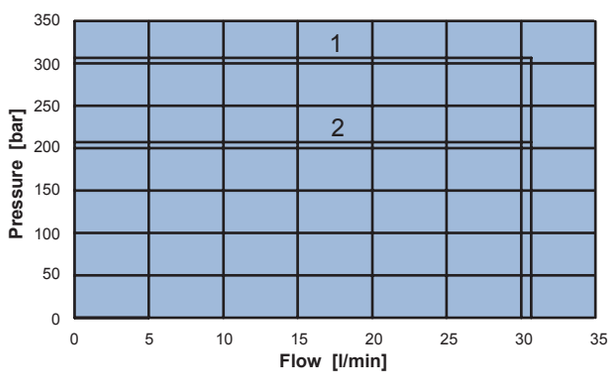
No emergency **Push Button** **Push and Twist**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

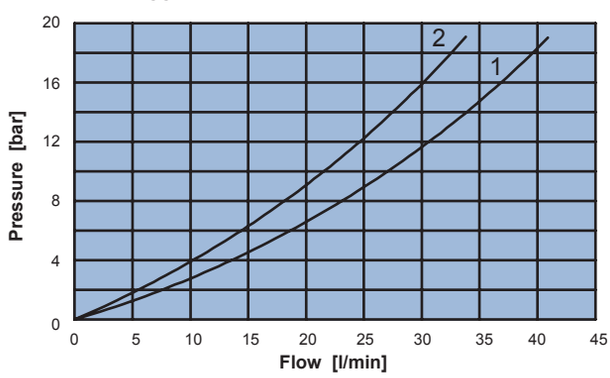
- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **300 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Filter. . . . . **280 micron**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09300** page **178**
  09400 page **179**







1 = Application limits from 2 to 1 without filter
2 = Application limits with filter

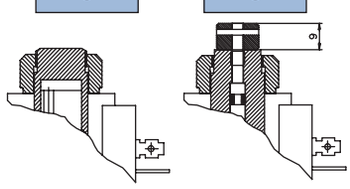


1 = Pressure drop from 2 to 1 without filter
2 = Pressure drop from 2 to 1 with filter

Ordering code

0 5 5 2 6 0 0 ☐ ☐ 0

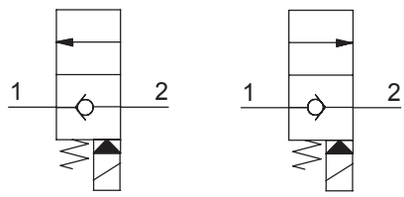
0	6	0	1
		Without filter	With filter



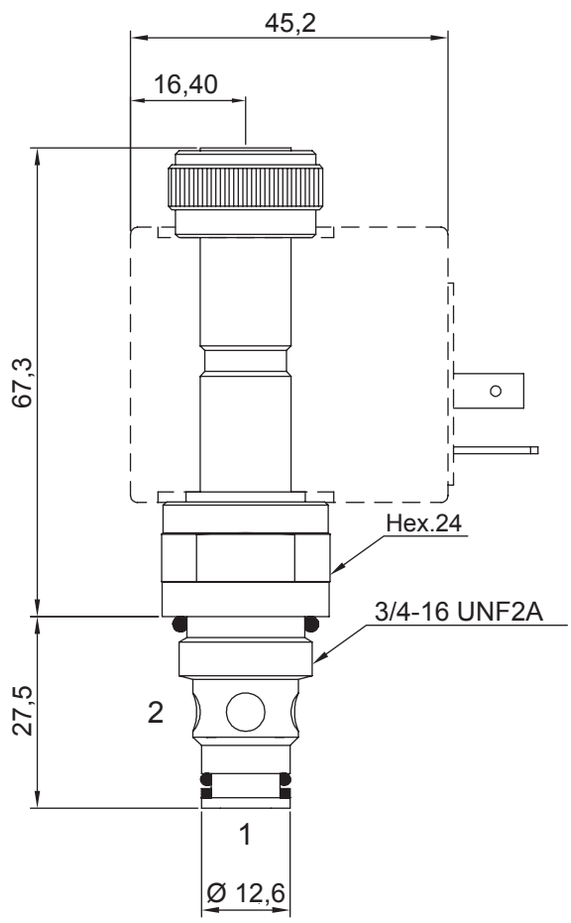
No emergency **Unscrew type**

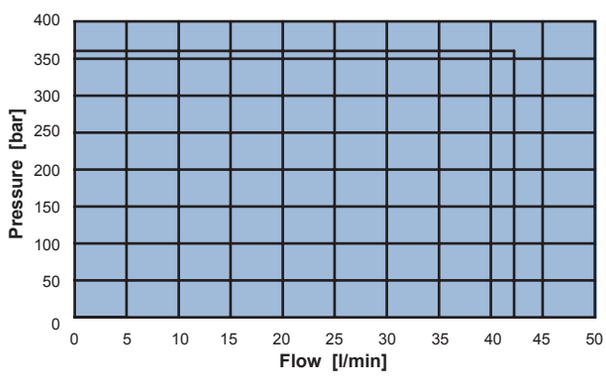
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**

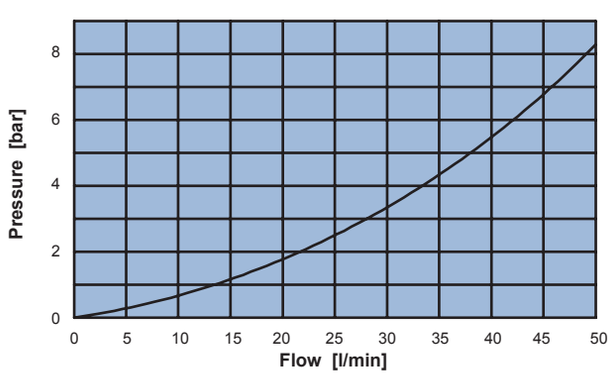


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2



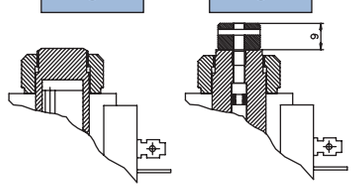
Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 5 2 1 ☐ 0 ☐ 0 0

0	1	0	6

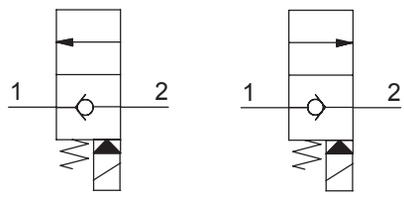
Hydraulic scheme



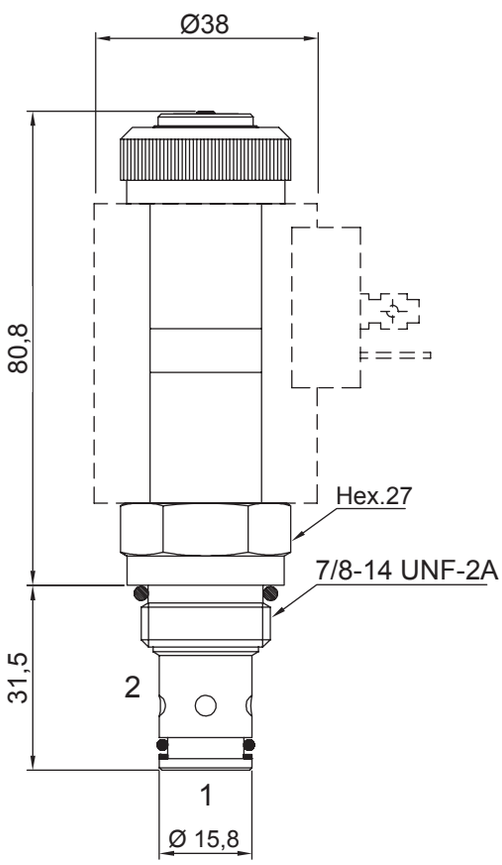
No emergency **Unscrew type**

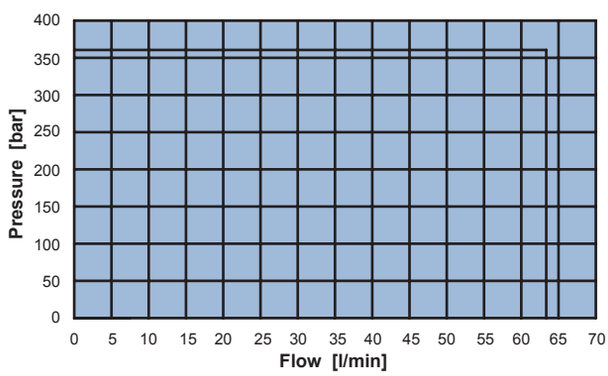
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**

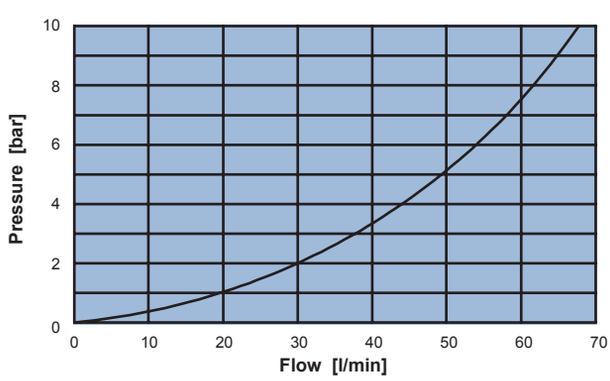


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2



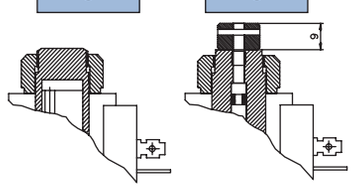
Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 5 3 1 ☐ 0 ☐ 0 0

0	1	0	6

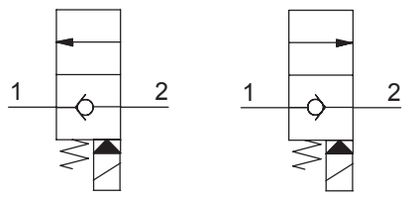
Hydraulic scheme



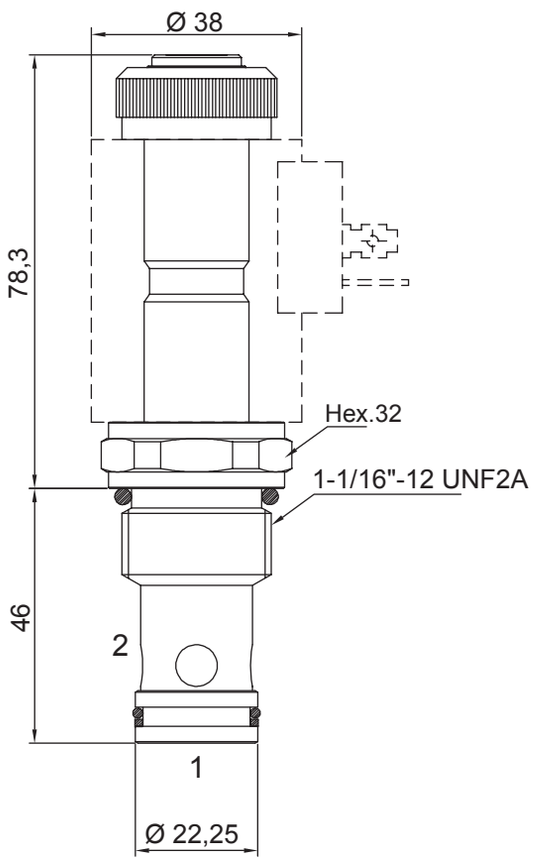
No emergency **Unscrew type**

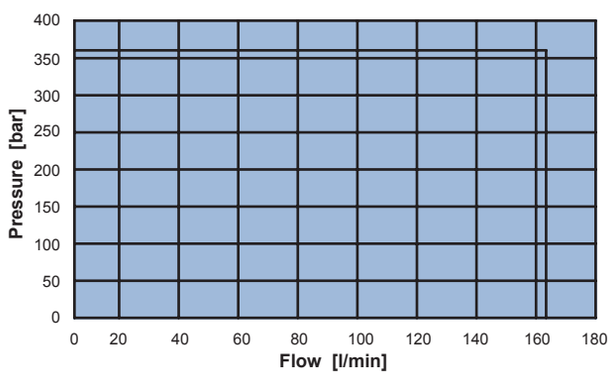
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow . . . . . **150 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,58 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**

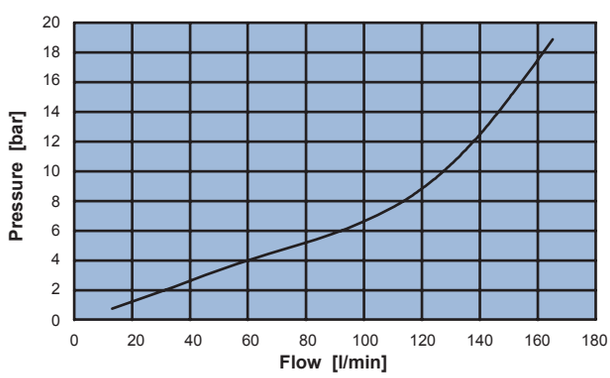


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2



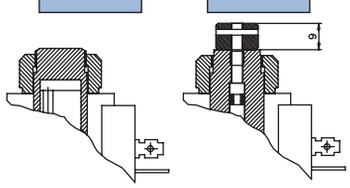
Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 5 4 1 ☐ 0 ☐ 0 0

0	1	0	6

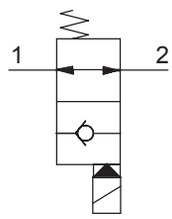
Hydraulic scheme

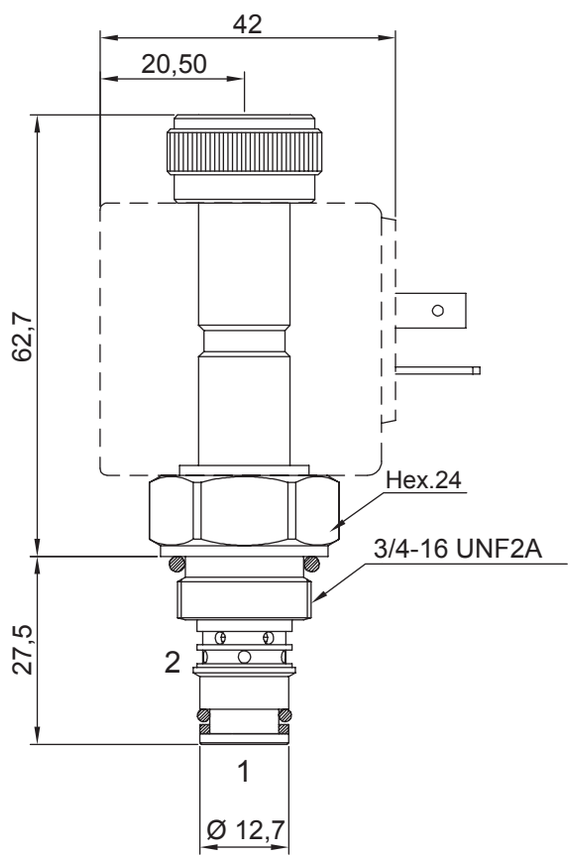


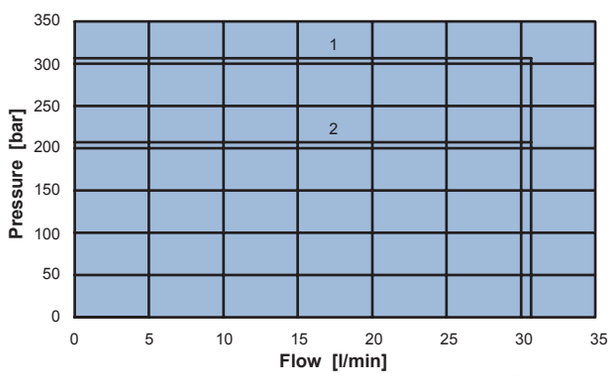
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

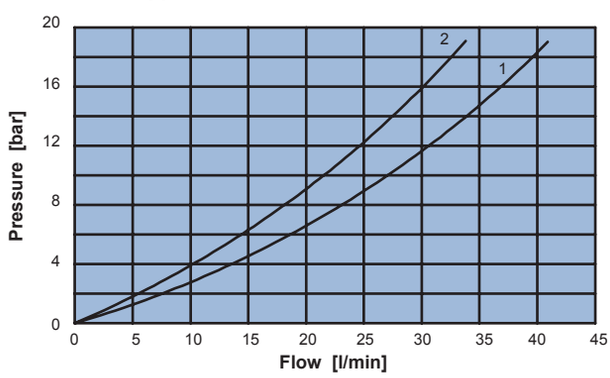
- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **300 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Filter. . . . . **280 micron**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09300** page **178**
  09400 page **179**







1 = Application limits from 2 to 1 without filter
2 = Application limits with filter

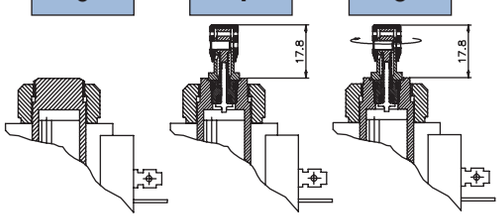


1 = Pressure drop from 2 to 1 without filter
2 = Pressure drop from 2 to 1 with filter

Ordering code

0 5 6 2 5 0 0 ☐ ☐ 0

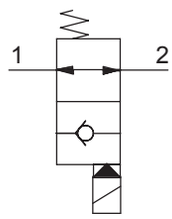
0	4	5	0	1
			Without filter	With filter

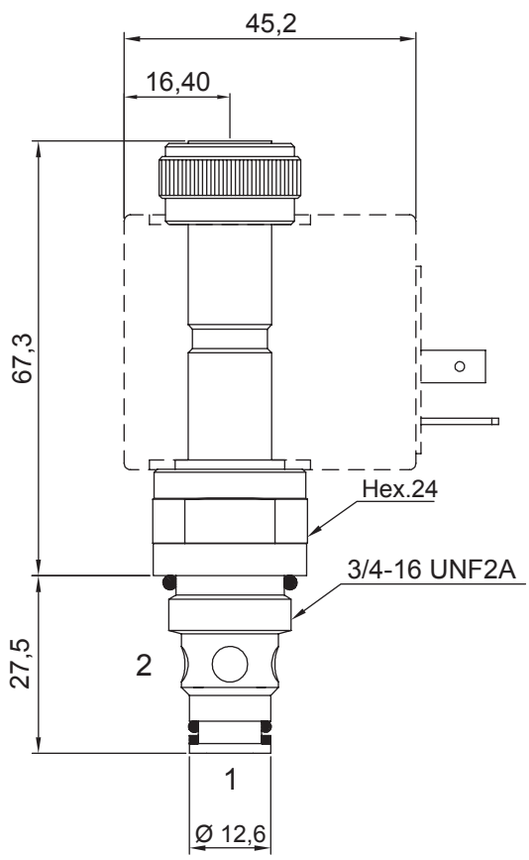


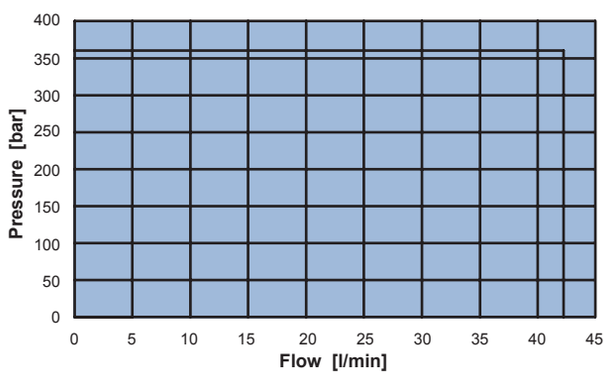
No emergency — Push Button — Push and Twist

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

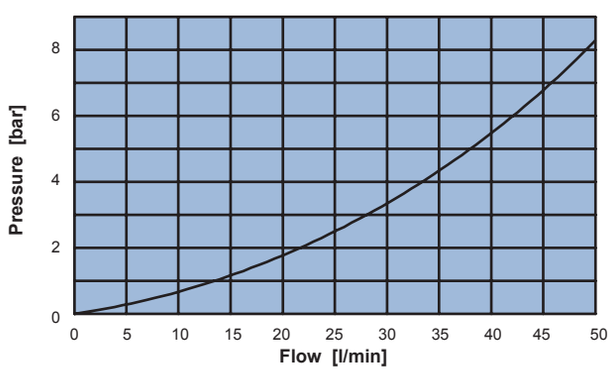
- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**







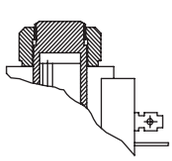
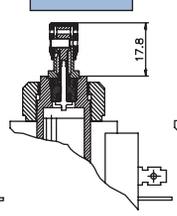
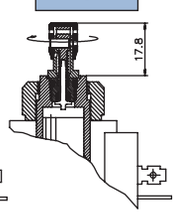
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

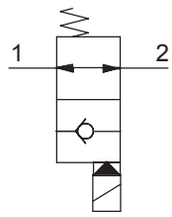
Ordering code

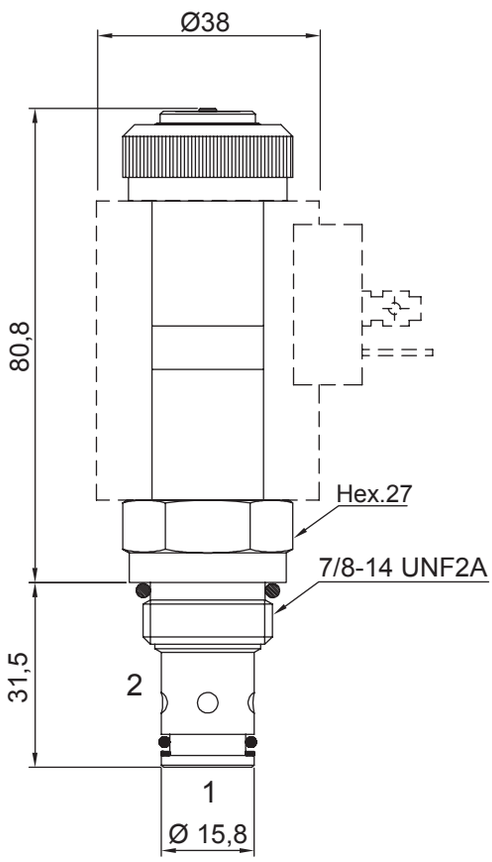
0 5 6 2 0 0 0 ☐ 0 0

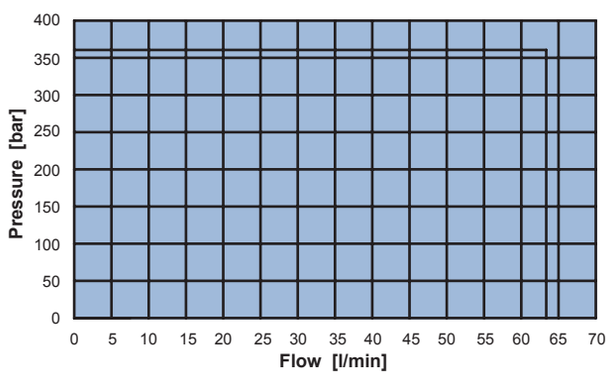
0	4	5
		
No emergency	**Push Button**	**Push and Twist**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

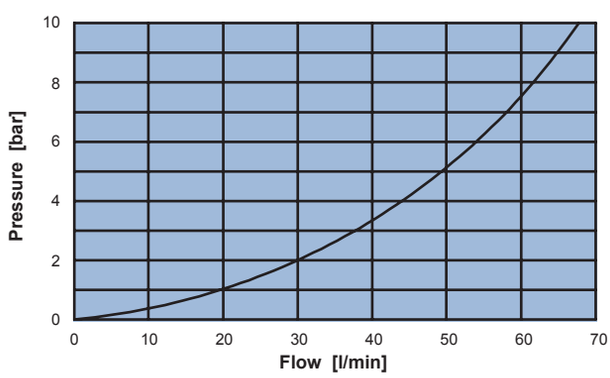
- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**







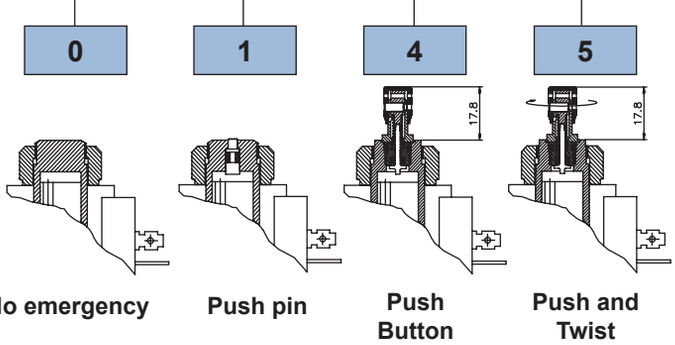
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

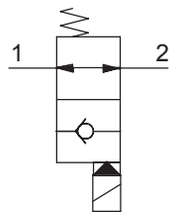
Ordering code

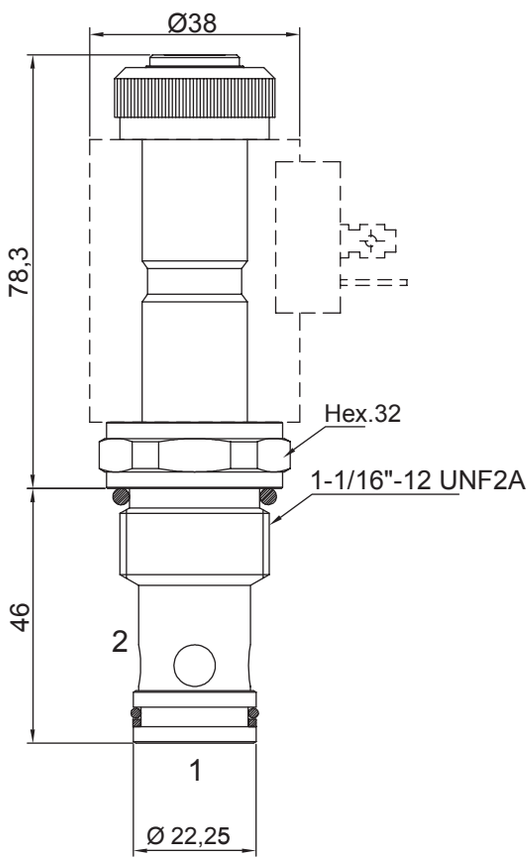
0 5 6 3 0 0 0 ☐ 0 0

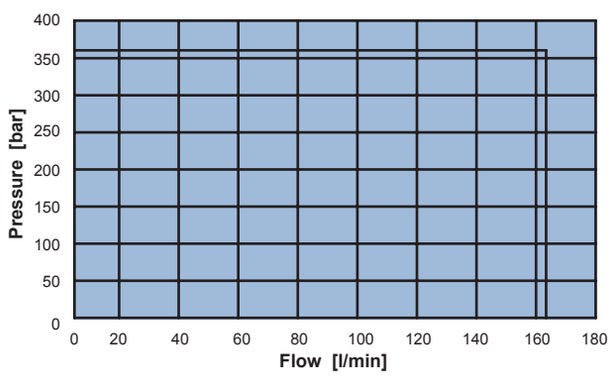


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

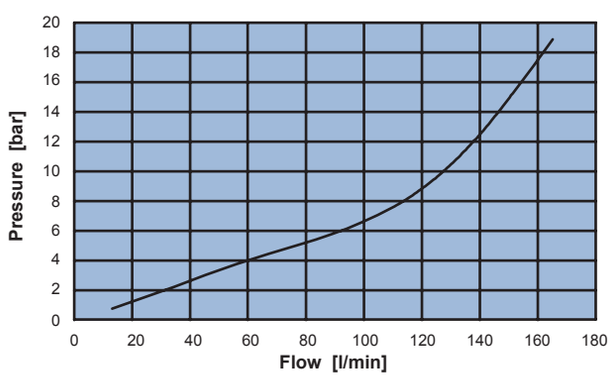
- Flow . . . . . **150 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,58 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**







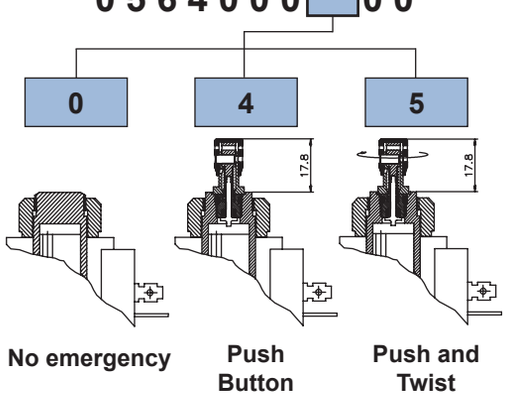
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

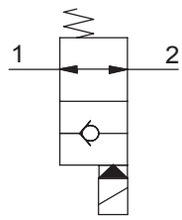
Ordering code

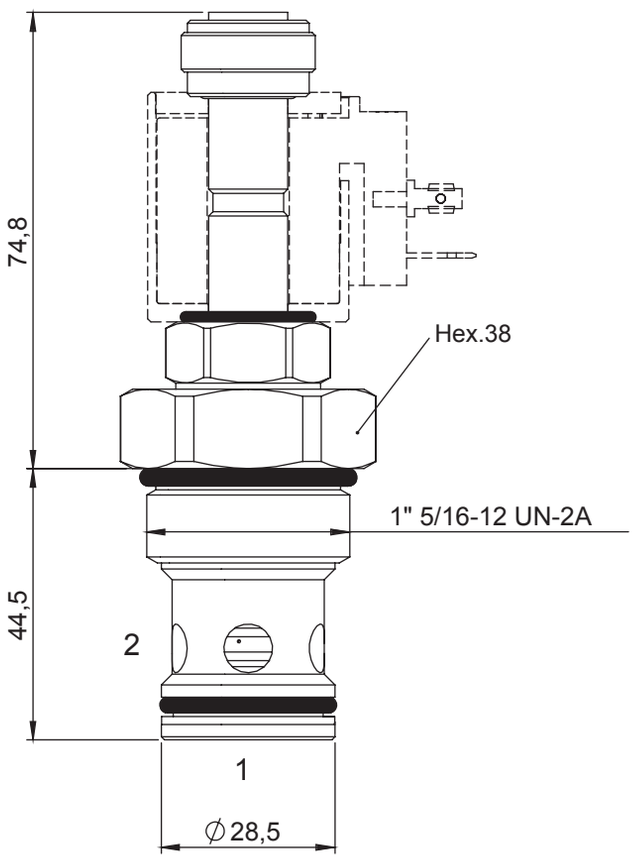
0 5 6 4 0 0 0 ☐ 0 0

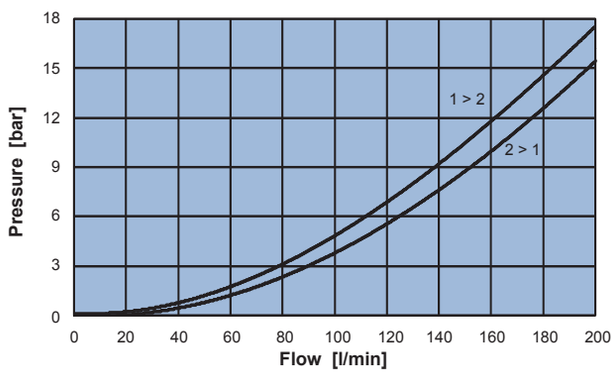


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

- Flow. . . . . **200 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **65 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,58 Kg**
- Cavity . . . . . **C250000** page **215**
- Body. . . . . **171502** page **201**
- Coil (to be ordered separately) . . . . . **09400** page **179**

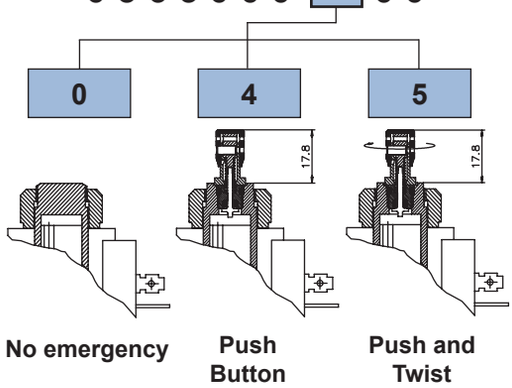






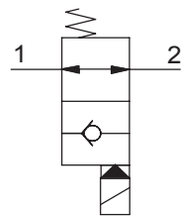
Ordering code

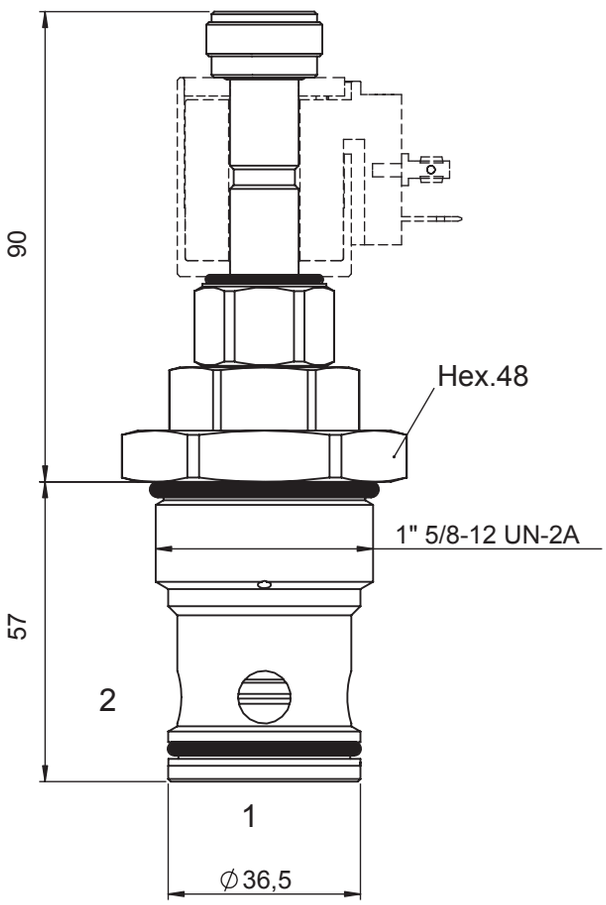
0 5 6 5 0 0 0 ☐ 0 0



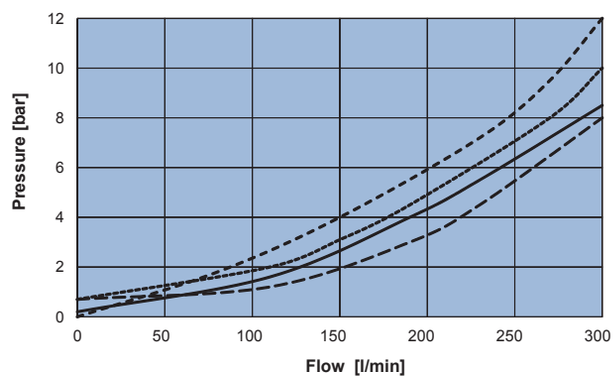
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NO

- Flow. . . . . **300 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **100 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,95 Kg**
- Cavity . . . . . **C260001** page **216**
- Coil (to be ordered separately) . . . . . **09400** page **179**



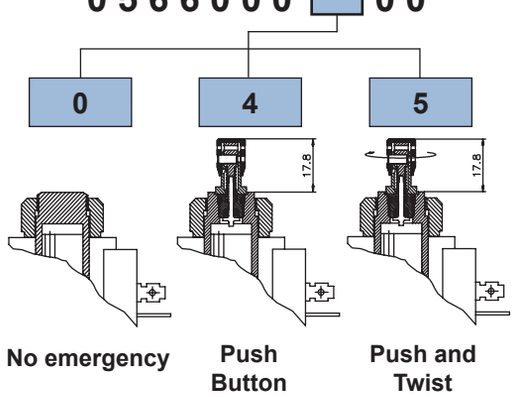


1-2 with cavity undercut ——————
1-2 without cavity undercut - - - - - -
2-1 with cavity undercut — — — — —
2-1 without cavity undercut ----------



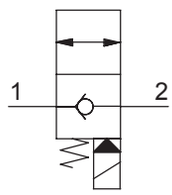
Ordering code

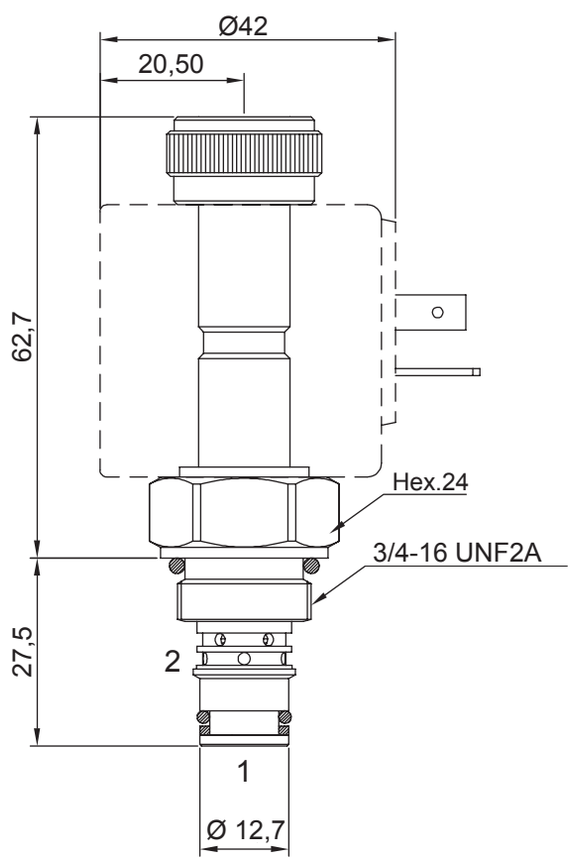
0 5 6 6 0 0 0 ☐ 0 0

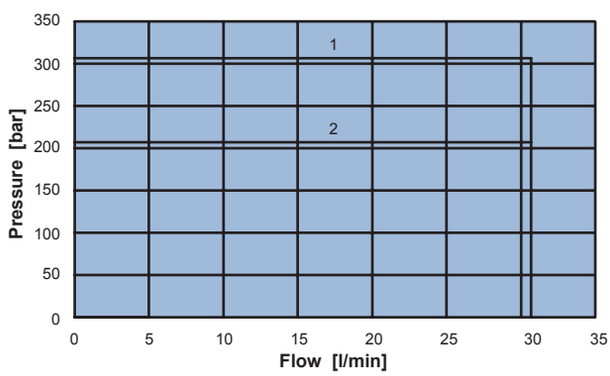


2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

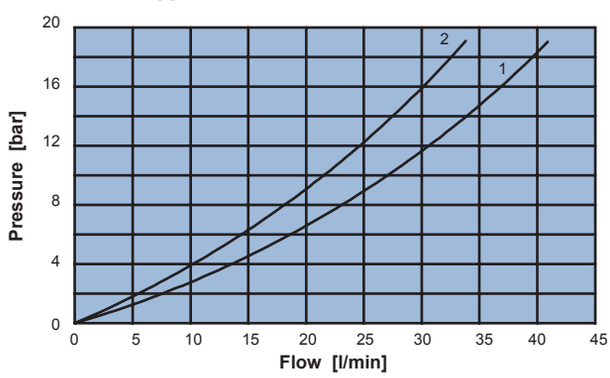
- Flow. . . . . **30 l/min**
- Max working pressure . . . . . **300 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Filter. . . . . **280 micron**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09300** page **178**
  09400 page **179**







1 = Application limits from 2 to 1 without filter
2 = Application limits with filter

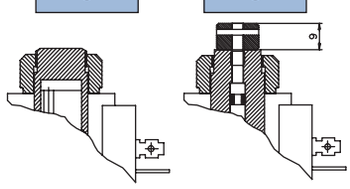


1 = Pressure drop from 2 to 1 without filter
2 = Pressure drop from 2 to 1 with filter

Ordering code

0 5 6 2 6 0 0 ☐ ☐ 0

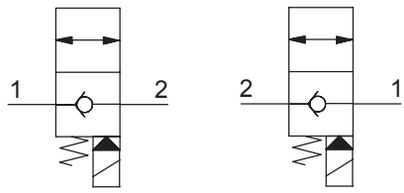
0	6	0	1
		Without filter	With filter



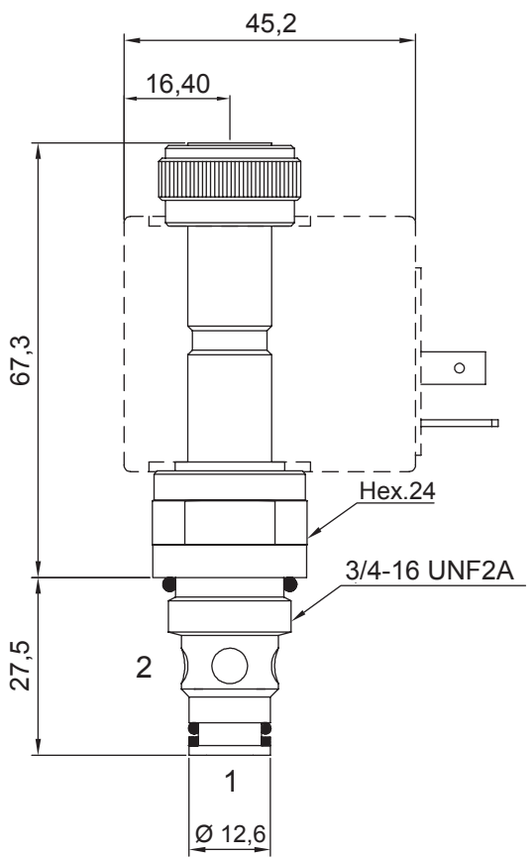
No emergency **Unscrew type**

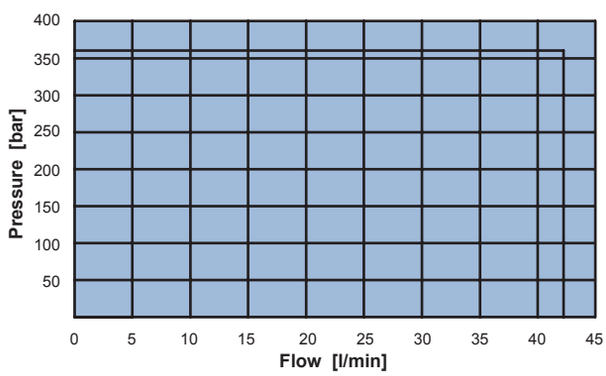
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow . . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,32 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**

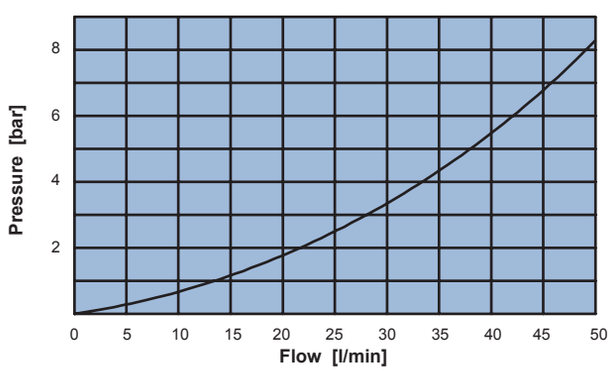


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2

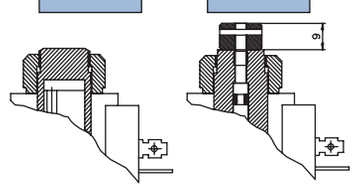


Pressure drop from 2 to 1 and from 1 to 2

Ordering code

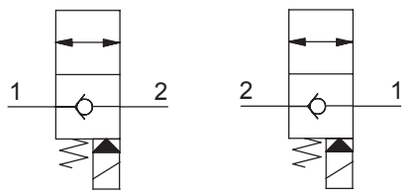
0 5 6 2 1 ☐ 0 ☐ 0 0

0	1	0	6
Hydraulic scheme		No emergency	Unscrew type

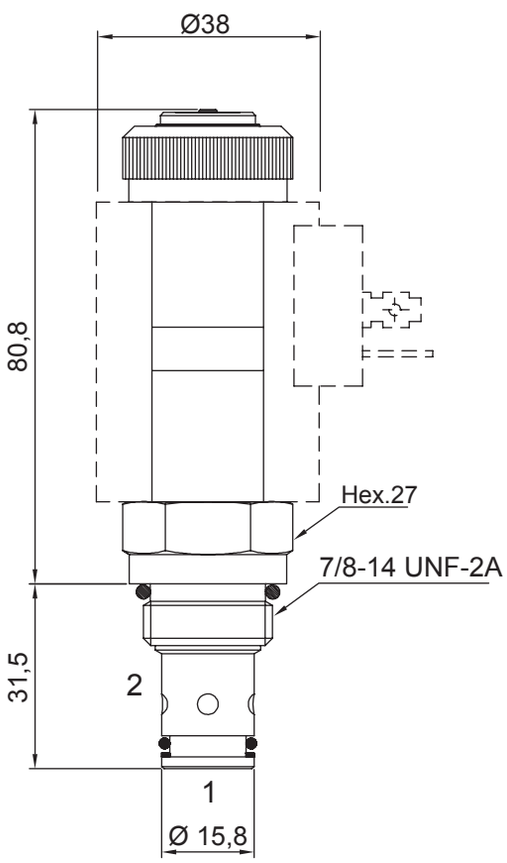


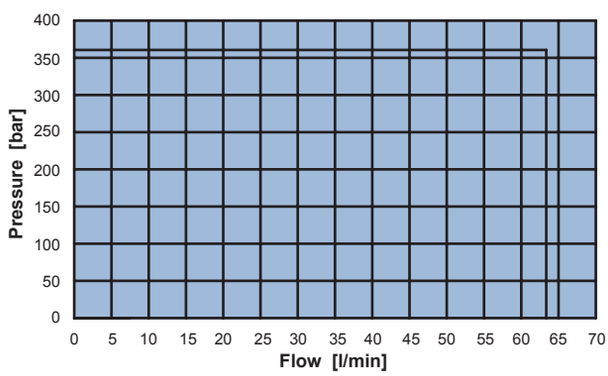
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09801** page **181**

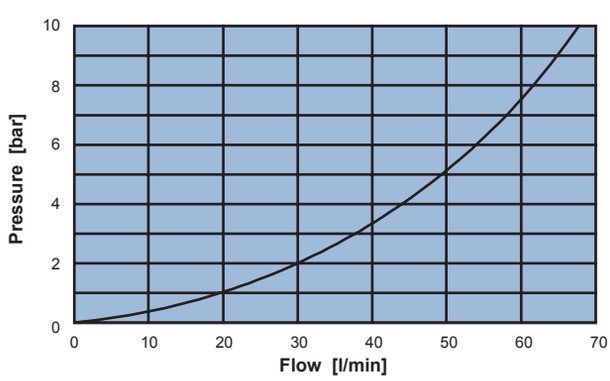


Scheme 0 **Scheme 1**





Application limits from 2 to 1 and 1 to 2



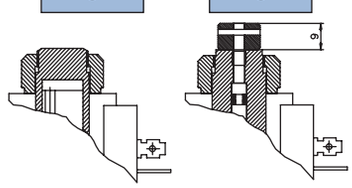
Pressure drop from 2 to 1 and from 1 to 2

Ordering code

0 5 6 3 1 ☐ 0 ☐ 0 0

0	1	0	6

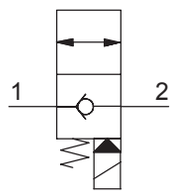
Hydraulic scheme

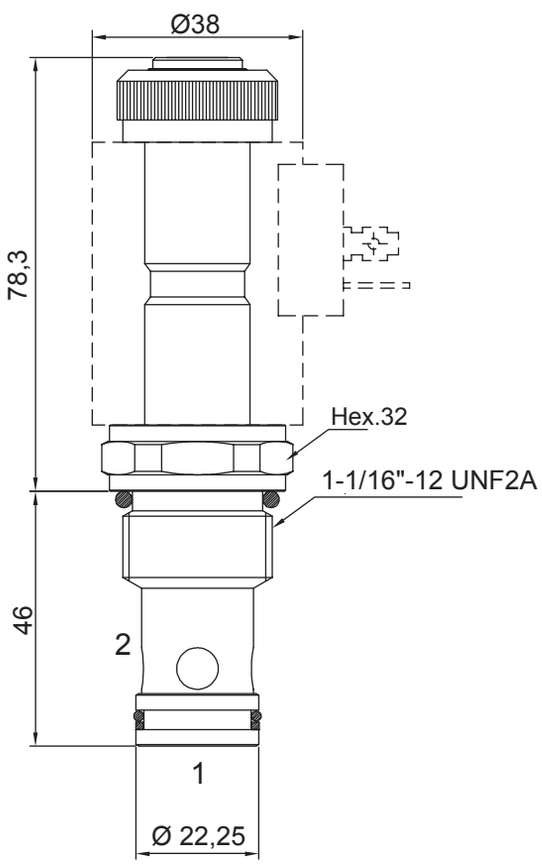


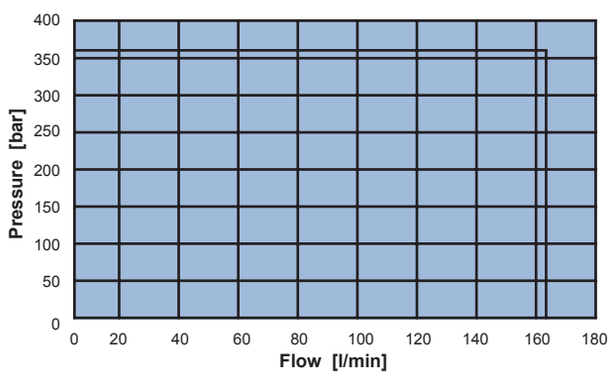
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

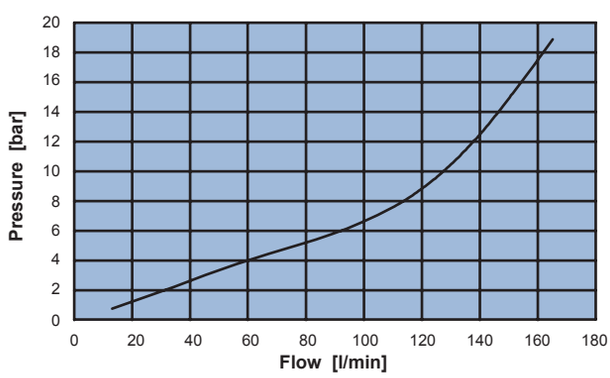
- Flow . . . . . .**150 l/min**
- Max working pressure. . . . . .**350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . .**0,58 Kg**
- Cavity . . . . . **C240000** page **213**
- Body. . . . . **171402** page **196**
- Coil (to be ordered separately) . . . . . **09801** page **181**







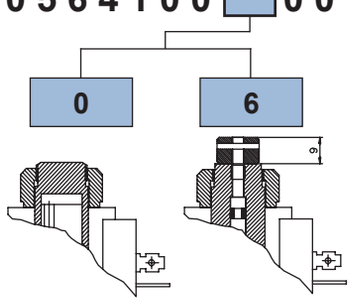
Application limits from 2 to 1 and 1 to 2



Pressure drop from 2 to 1 and from 1 to 2

Ordering code

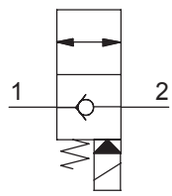
0 5 6 4 1 0 0 ☐ 0 0

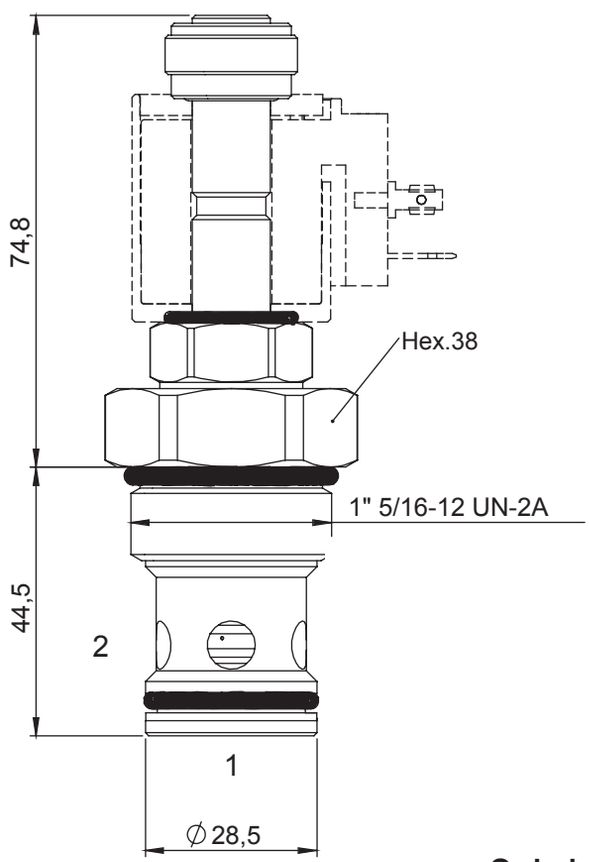


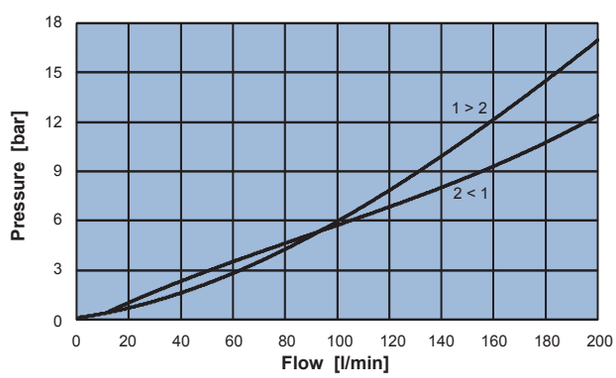
No emergency **Unscrew type**

2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow. . . . . .**200 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **65 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,58 Kg**
- Cavity . . . . . **C250000** page **215**
- Body. . . . . **171502** page **201**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Ordering code

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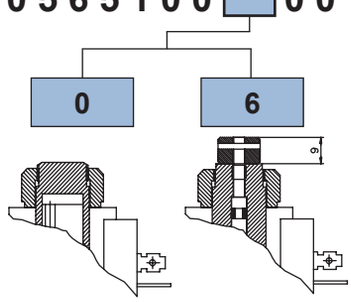
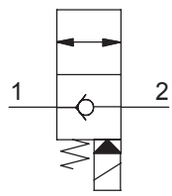
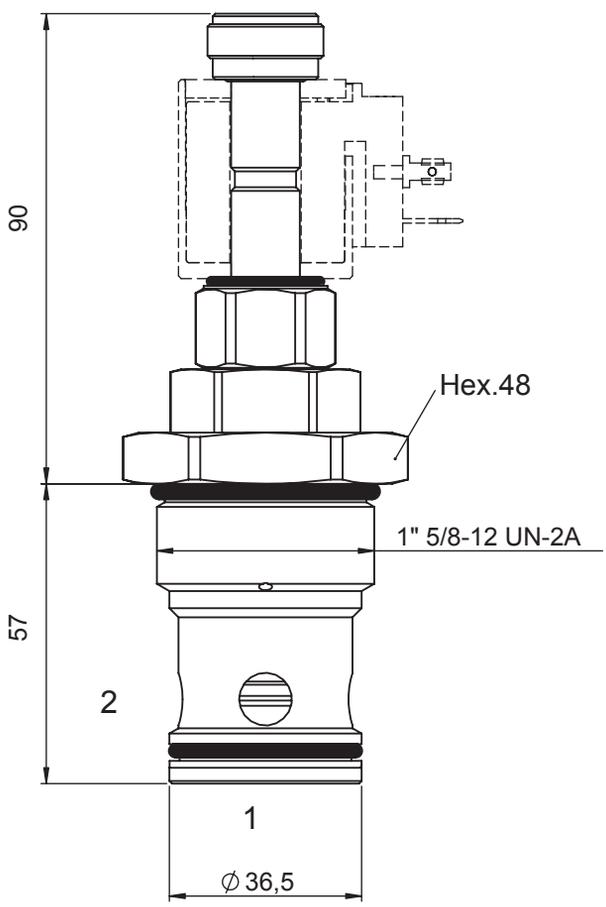


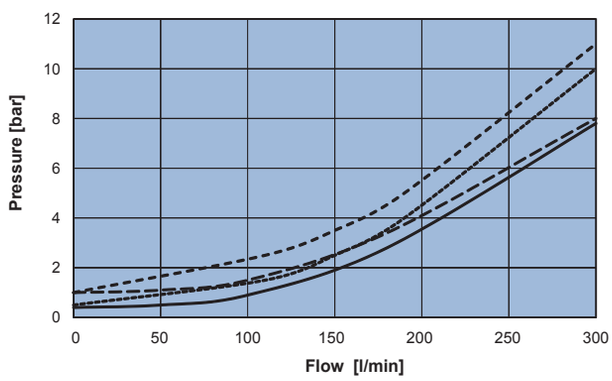
2 WAY 2 POSITION ELECTRIC POPPET VALVE, PILOT OPERATED NC

- Flow. . . . . .**300 l/min**
- Max working pressure. . . . . **350 bar**
- Leakage. . . . . **0,25 cc/min**
- Seals . . . . . .**NBR and PTFE**
- Cartridge tightening torque . . . . . **100 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,95 Kg**
- Cavity . . . . . **C260001** page **216**
- Coil (to be ordered separately) . . . . . **09400** page **179**





1-2 with cavity undercut ——————
1-2 without cavity undercut - - - - - -
2-1 with cavity undercut — — — — —
2-1 without cavity undercut ----------



Ordering code

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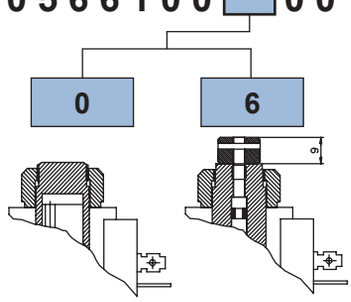
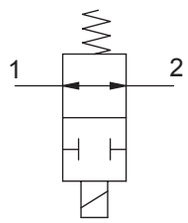
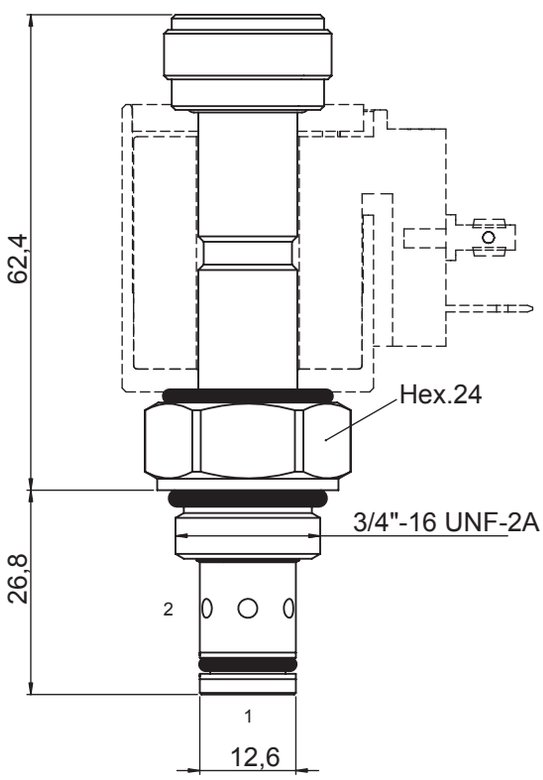


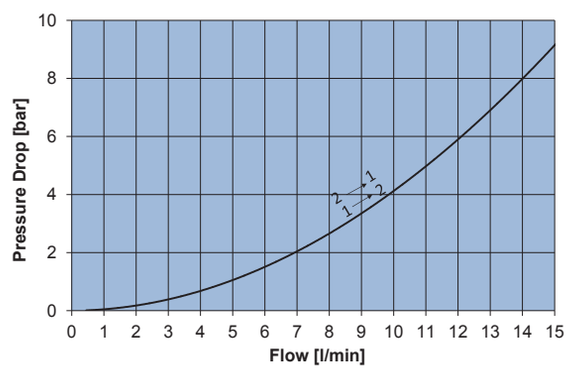
No emergency **Unscrew type**

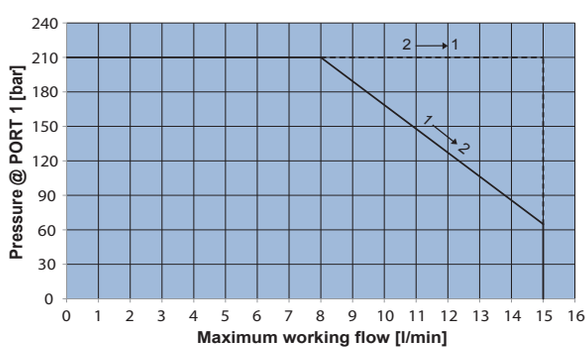
2 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING NO

- Max working flow (P in port 1) . . . . . **8 l/min**
- Max working flow (P in port 2) . . . . . **15 l/min**
- Max working pressure . . . . . **210 bar**
- Leakage . . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **27 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**









Ordering code

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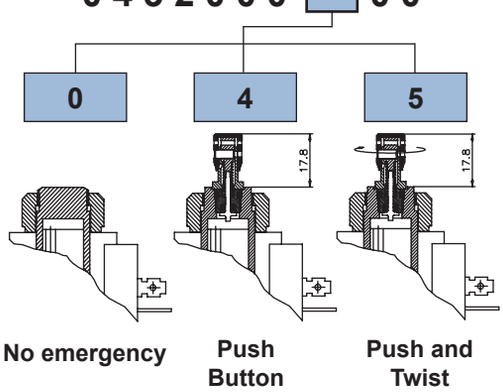
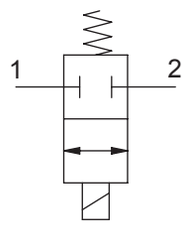
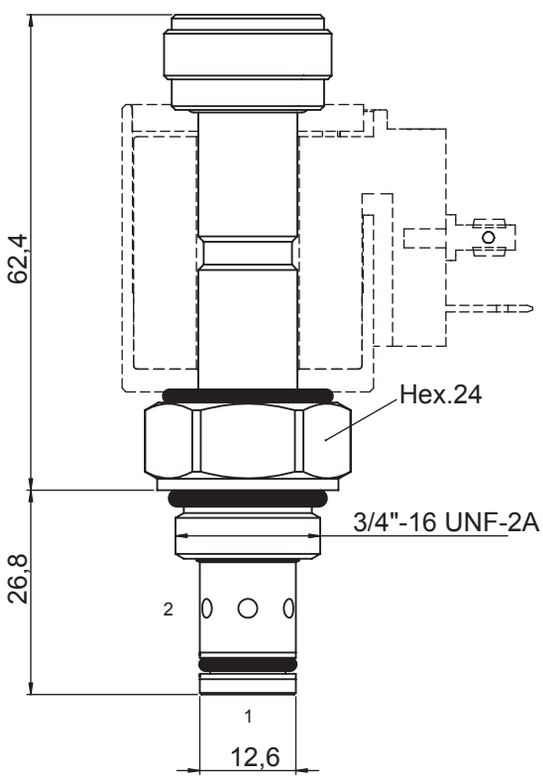
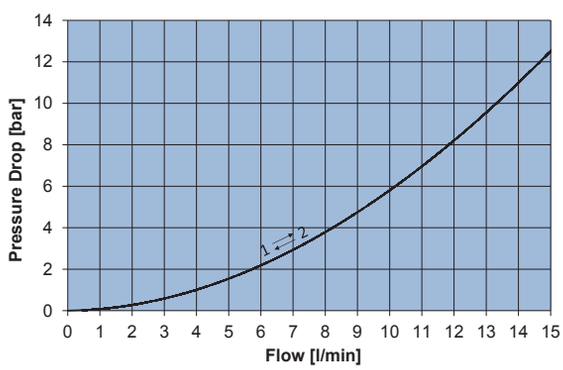


2 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING NC

- Max working flow (P in port 1) . . . . . **9 l/min**
- Max working flow (P in port 2). . . . . **15 l/min**
- Max working pressure. . . . . **210 bar**
- Leakage . . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **27 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Ordering code

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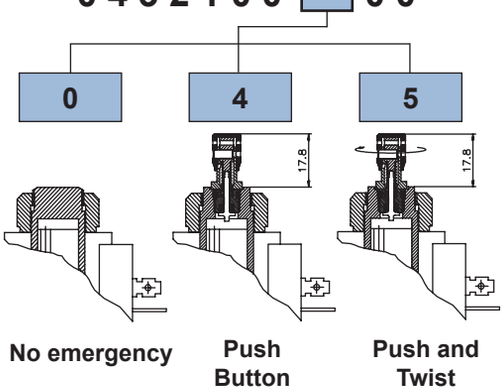
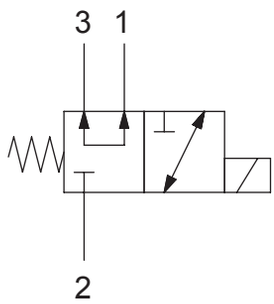
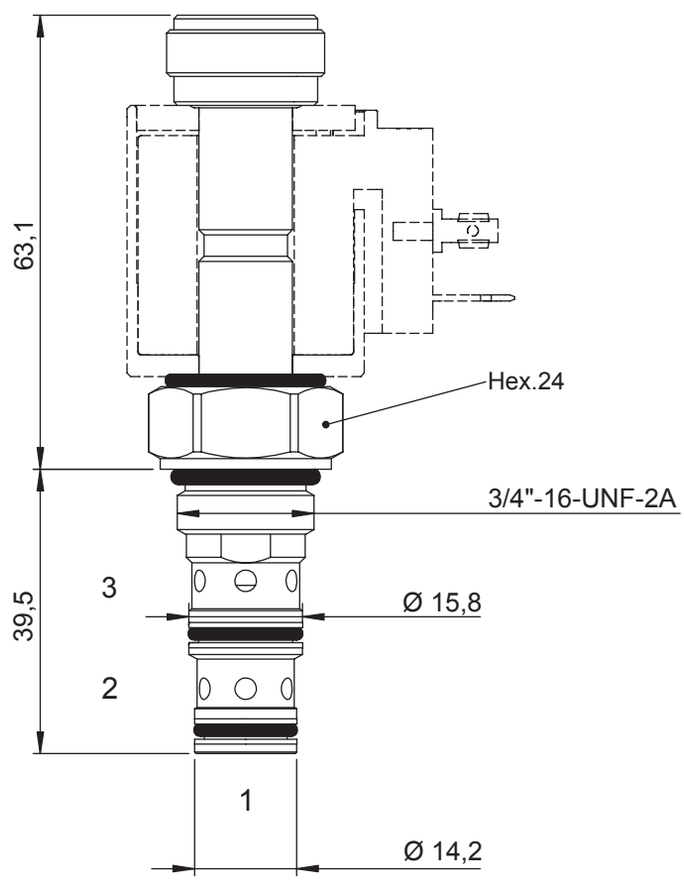
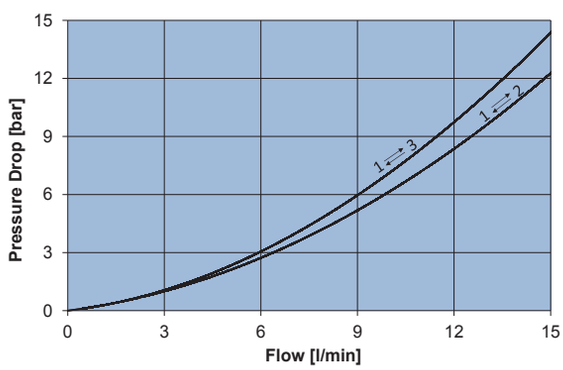


3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Max working flow (P in port 1) . . . . . **6 l/min**
- Max working flow (P in port 2) . . . . . **15 l/min**
- Max working flow (P in port 3) . . . . . **5,5 l/min**
- Max working pressure. . . . . **250 bar**
- Max Leakage at 250 bar. . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Ordering code

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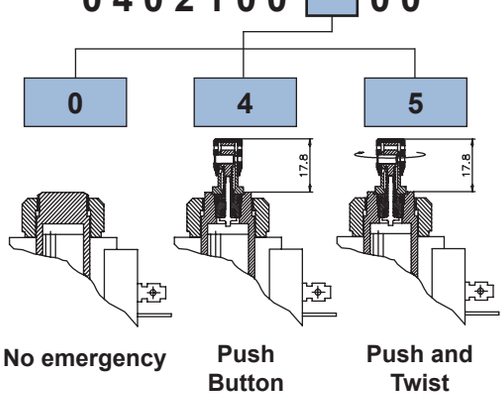
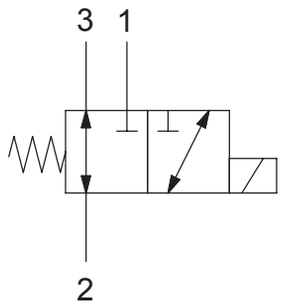
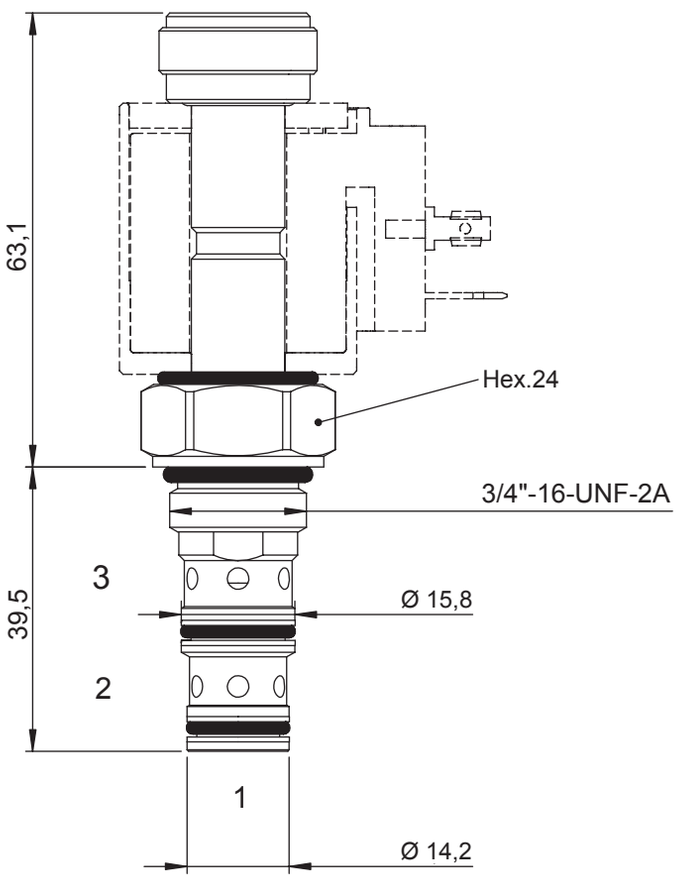
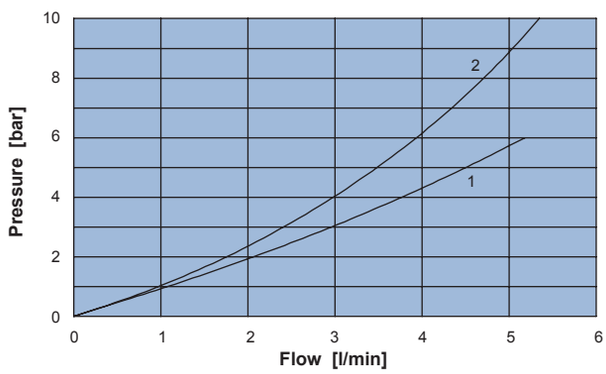


3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING - LOW PRESSURE

- Flow . . . . . .**5 l/min**
- Max working pressure. . . . . **50 bar**
- Leakage . . . . . .**20 cc/min**
- Seals . . . . . .**NBR**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . .**0,35 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**





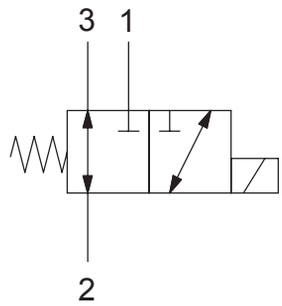


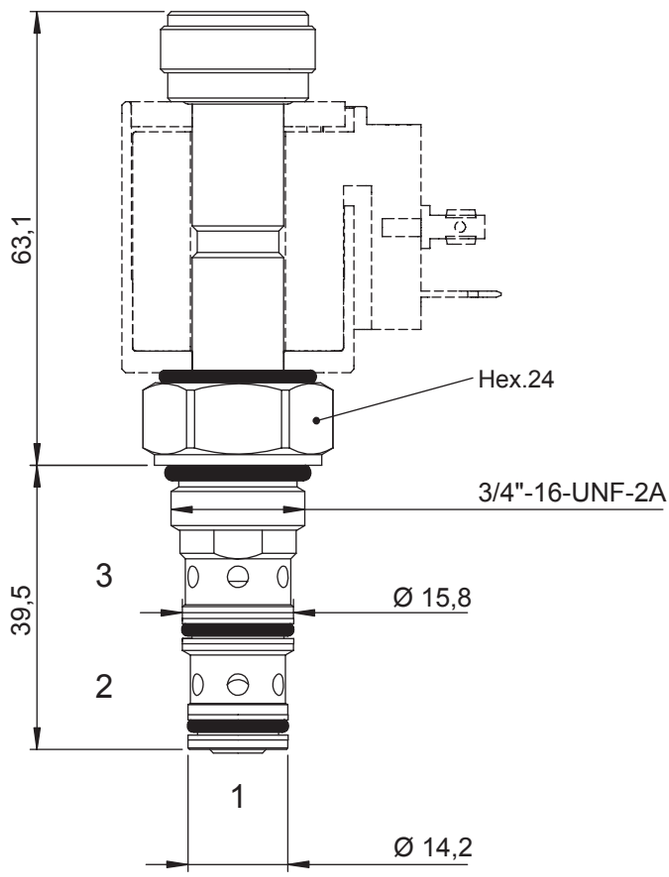
Ordering code

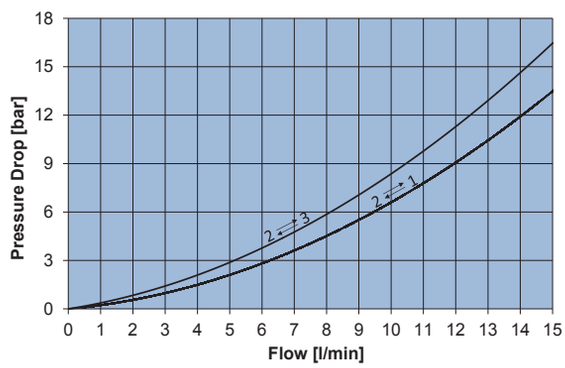
0 4 0 2 3 1 0 0 0 1

3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Max working flow (P in port 1) . . . . . **7 l/min**
- Max working flow (P in port 2) . . . . . **15 l/min**
- Max working flow (P in port 3) . . . . . **15 l/min**
- Max working pressure. . . . . **250 bar**
- Max Leakage at 250 bar. . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Ordering code

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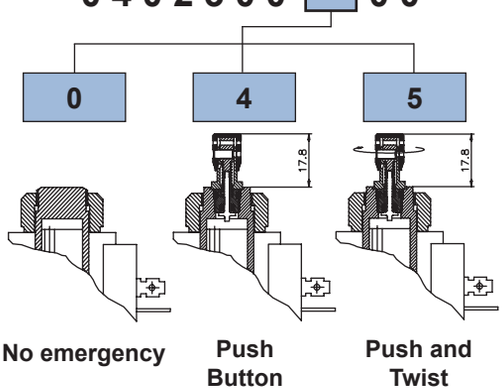
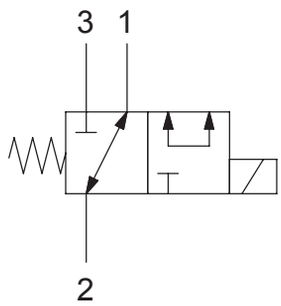
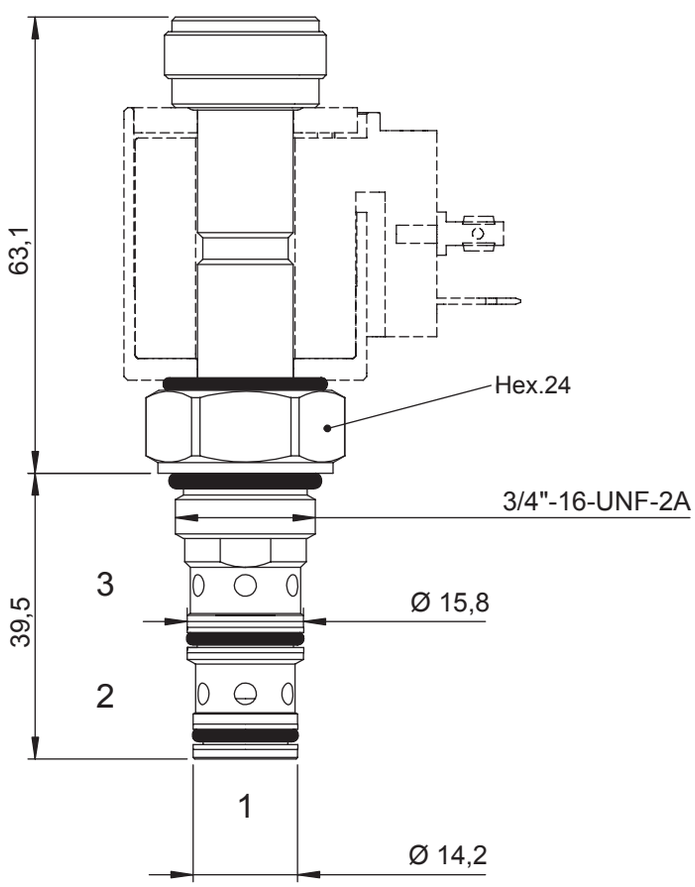
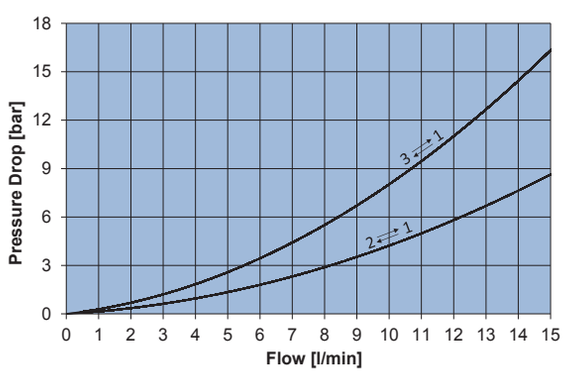


3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Max working flow (P in port 1) . . . . . **7 l/min**
- Max working flow (P in port 2) . . . . . **15 l/min**
- Max working flow (P in port 3) . . . . . **15 l/min**
- Max working pressure. . . . . **250 bar**
- Max Leakage at 250 bar. . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**







Ordering code

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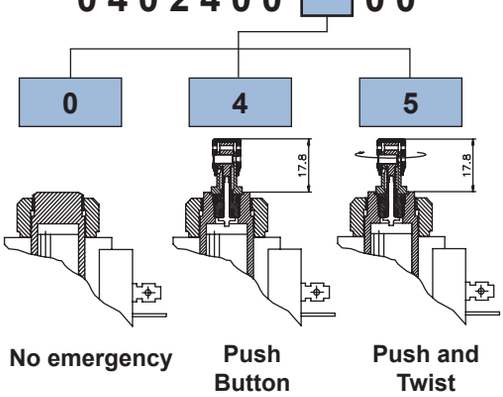
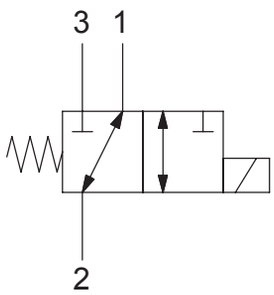
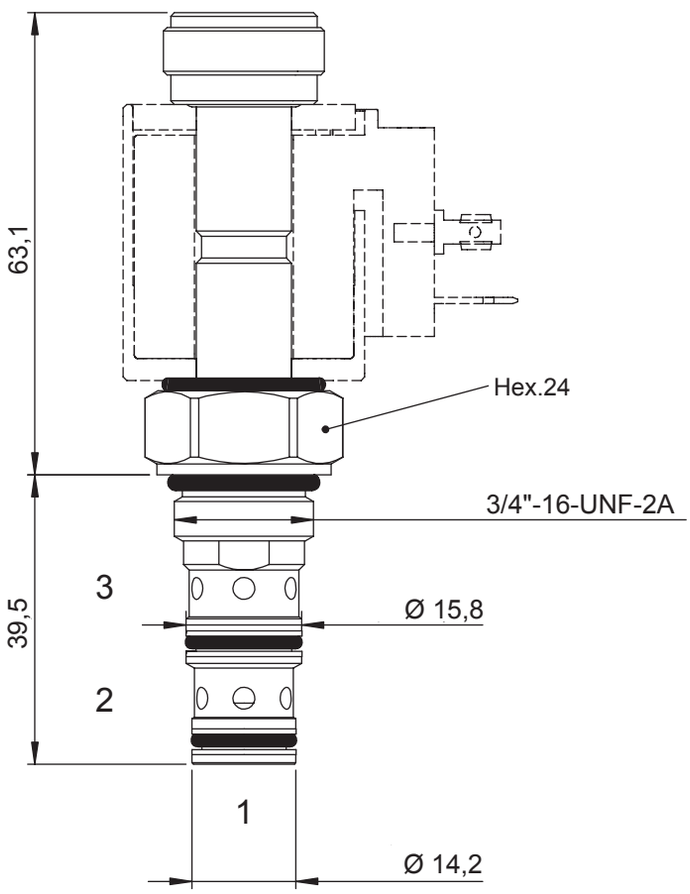
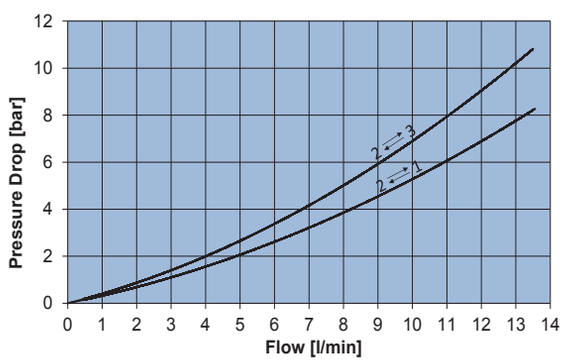


3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Max working flow (P in port 1) . . . . . **7 l/min**
- Max working flow (P in port 2) . . . . . **13,5 l/min**
- Max working flow (P in port 3) . . . . . **5,5 l/min**
- Max working pressure. . . . . **250 bar**
- Max Leakage at 250 bar. . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**

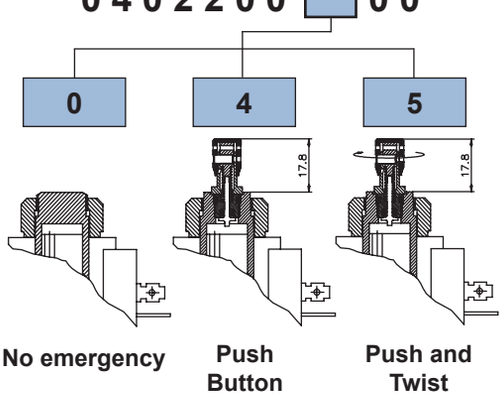






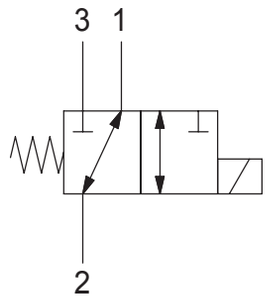
Ordering code

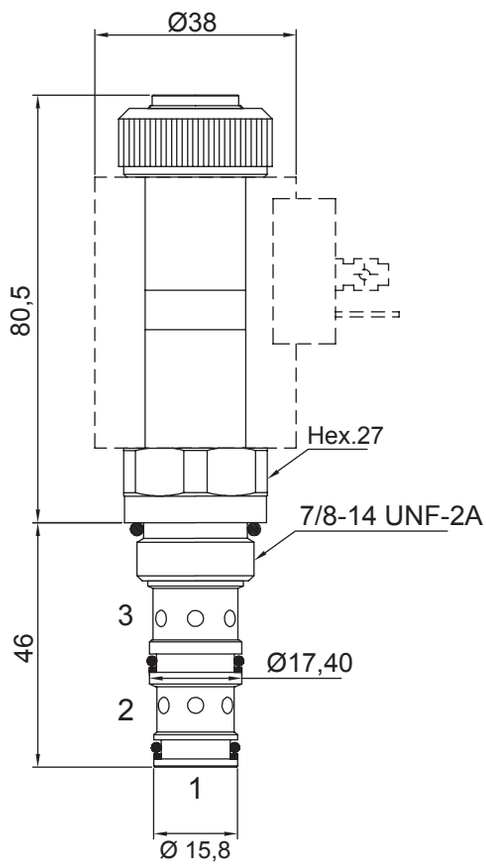
0 4 0 2 2 0 0 ☐ 0 0

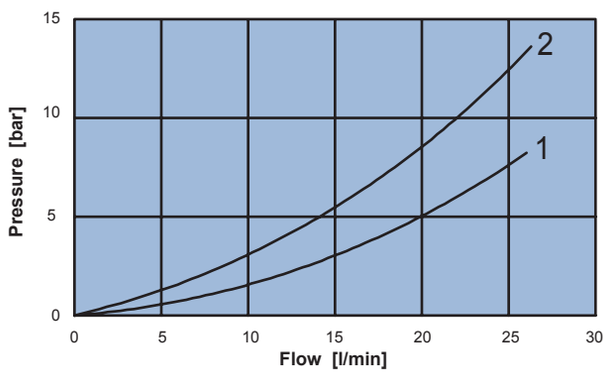


3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

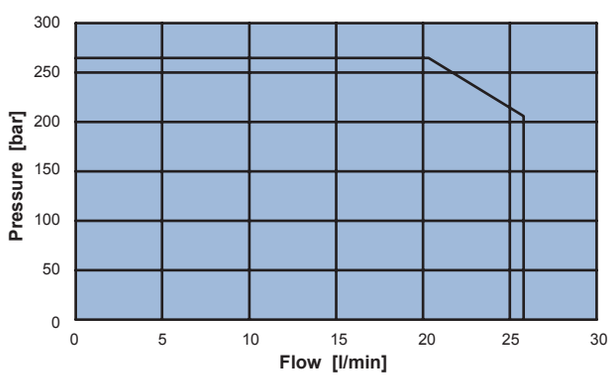
- Flow . . . . . .**20 l/min**
- Max working pressure. . . . . .**250 bar**
- Leakage . . . . . .**100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . .**0,56 Kg**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**
- Coil (to be ordered separately) . . . . . **09801** page **181**







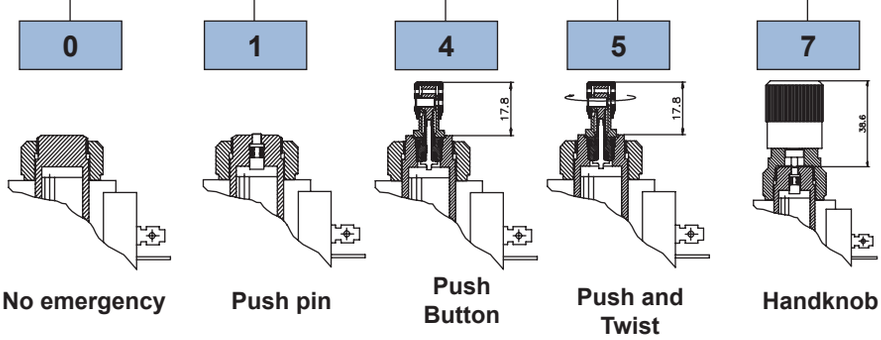
1 = Pressure drop from 2 in 1
2 = Pressure drop from 3 in 2



Application limits from 2 in 1 and 2 in 3

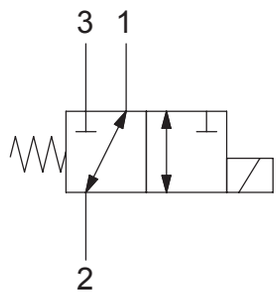
Ordering code

0 4 0 3 2 0 0 ☐ 0 0

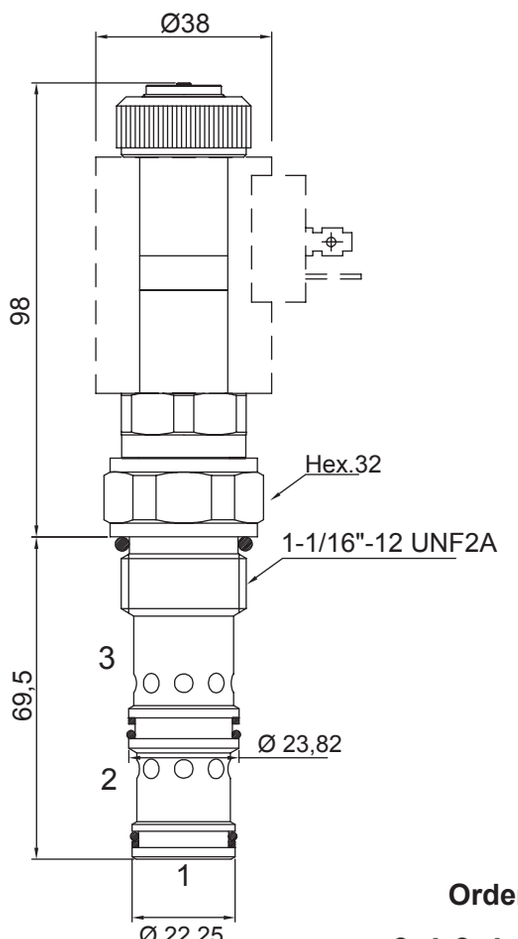


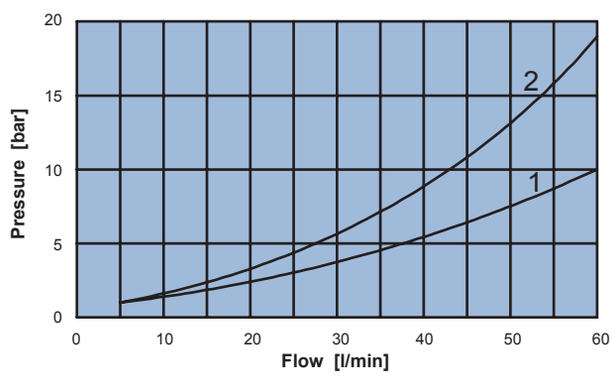
3 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **50 l/min**
- Max working pressure in 1:2:3 . . . . . **250 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,70 Kg**
- Cavity . . . . . **C340000** page **222**
- Body. . . . . **171412** page **197**
- Coil (to be ordered separately) . . . . . **09800** page **180**

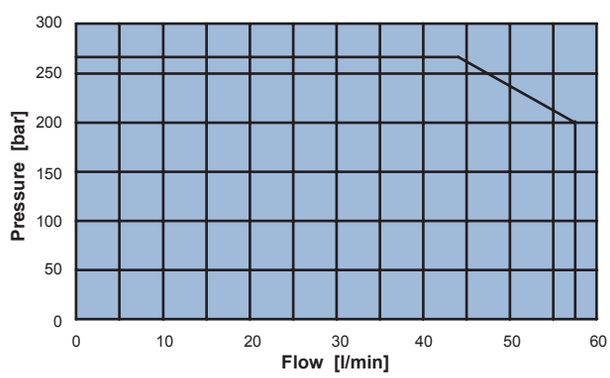


Note: *proportional coil 09800 applied to provide the operating needed power (ED 50%).*
For ED 100% contact NEM customer care service.





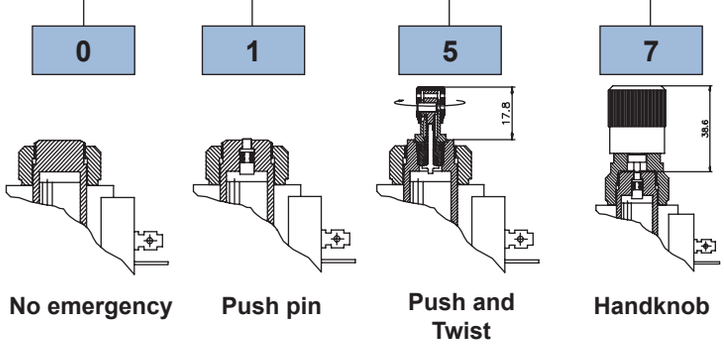
1 = Pressure drop from 2 in 1
2 = Pressure drop from 3 in 2



Application limits from 2 in 1 and 2 in 3

Ordering code

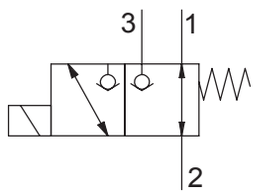
0 4 0 4 2 0 0 ☐ 0 0



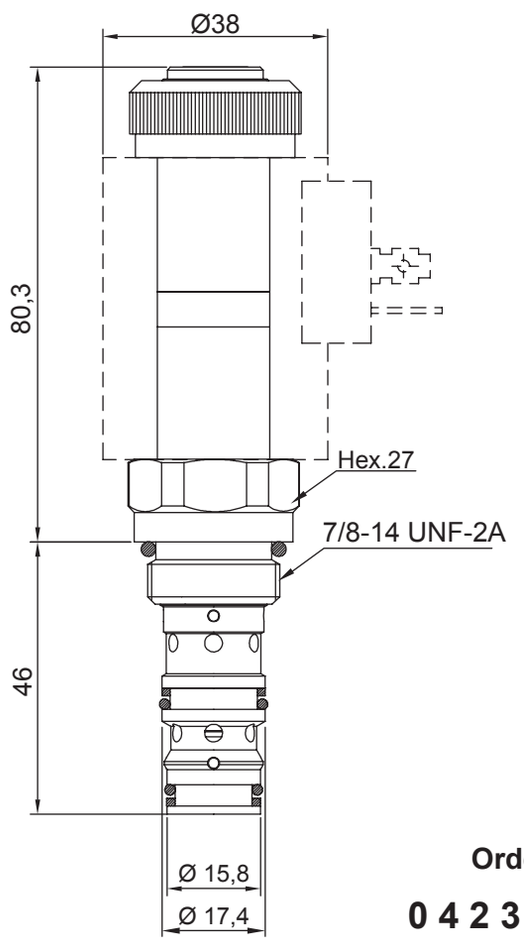
No emergency | **Push pin** | **Push and Twist** | **Handknob**

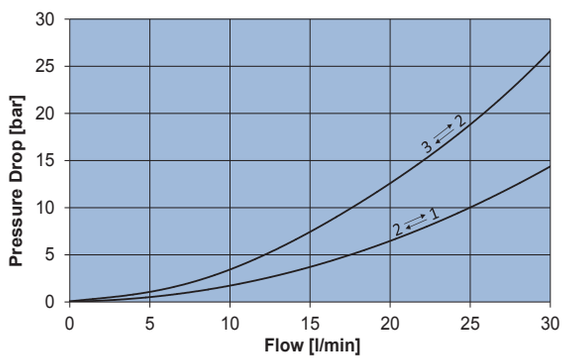
3 WAY 2 POSITION ELECTRIC POPPET VALVE, DIRECT ACTING

- Flow . . . . . **30 l/min**
- Max working pressure in 3:2:1 . . . . . **.350 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **.0,56 Kg**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**
- Coil (to be ordered separately) . . . . . **09800** page **180**



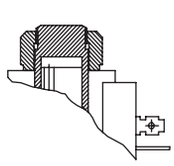
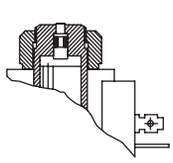
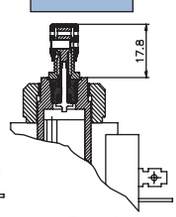
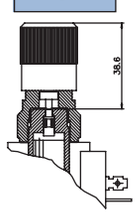
Note: *proportional coil 09800 applied to provide the operating needed power (ED 50%).*
For ED 100% contact NEM customer care service.





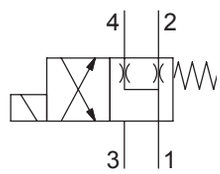
Ordering code

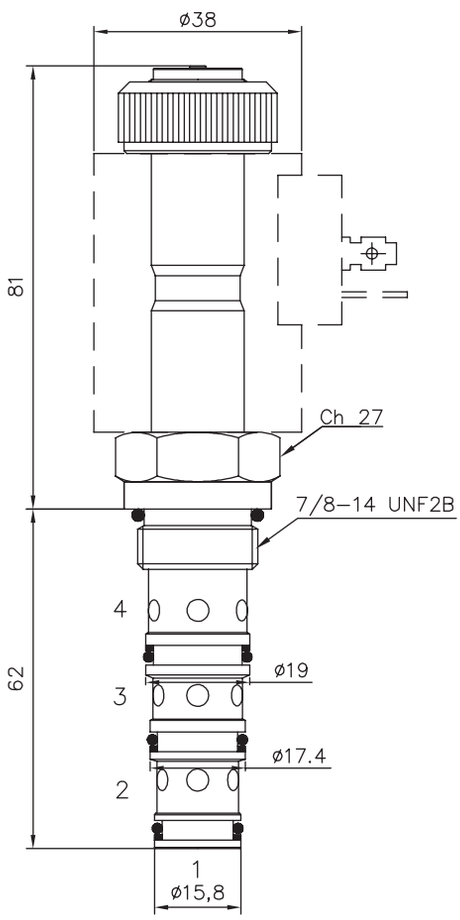
0 4 2 3 2 0 0 ☐ 0 0

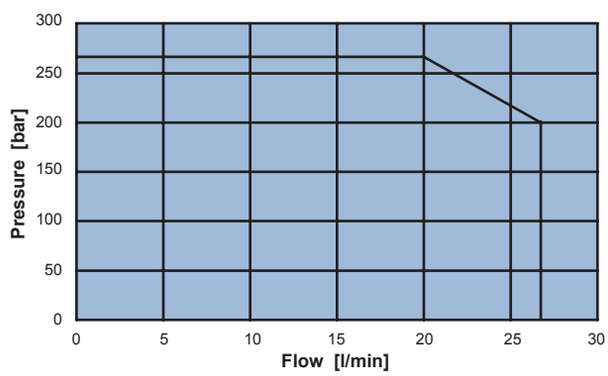
0	1	4	7
			
No emergency	Push pin	Push Button	Handknob

4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

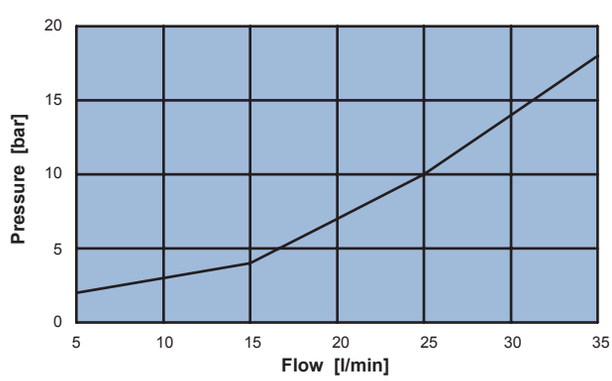
- Flow . . . . . **25 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







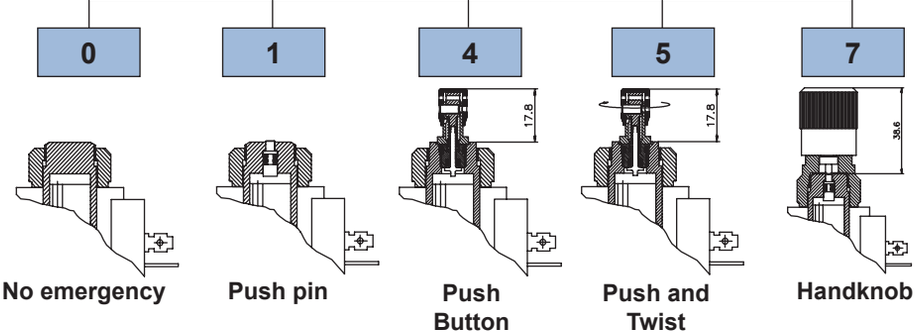
Application limits from 3 in 2/4



Pressure drop from 3 to 2/4

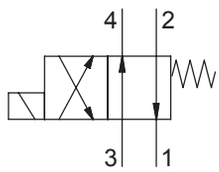
Ordering code

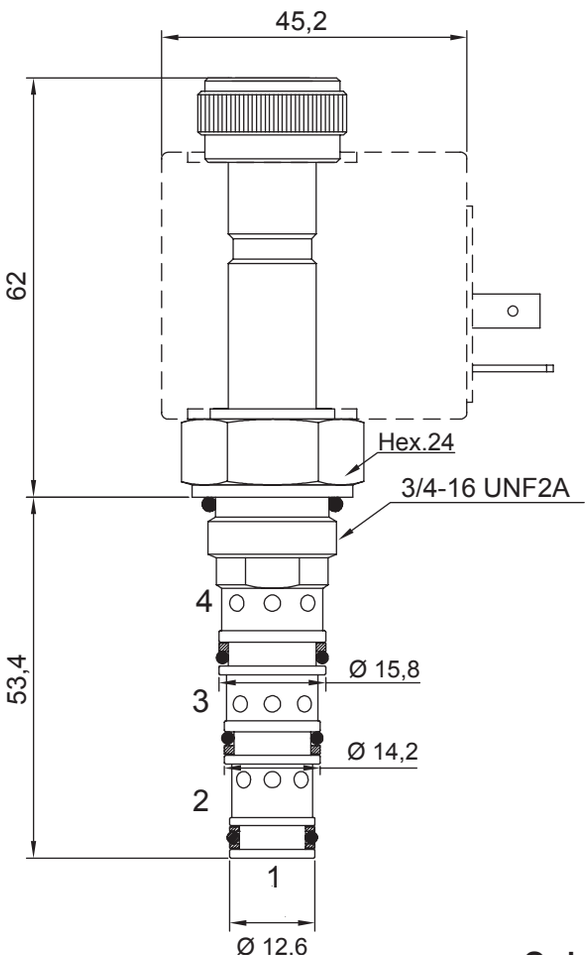
0 4 1 3 1 0 0 ☐ 0 0

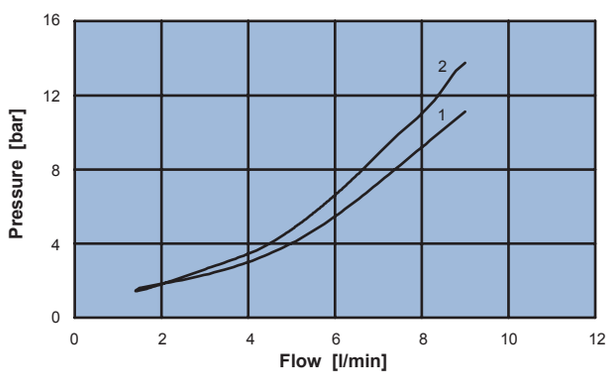


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

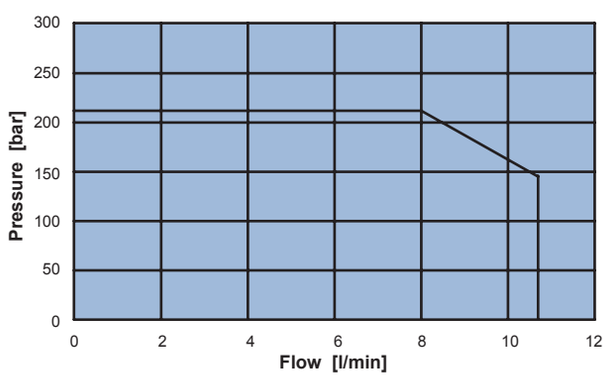
- Flow . . . . . **10 l/min**
- Max working pressure . . . . . **210 bar**
- Leakage . . . . . **60 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**







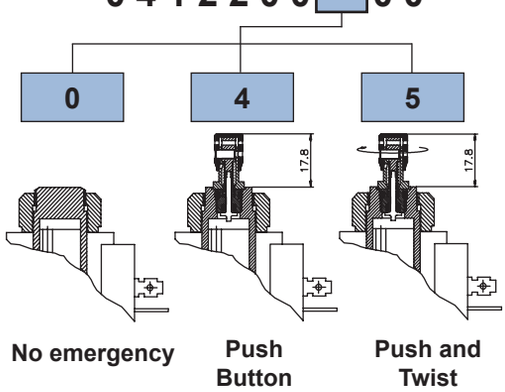
1 = Pressure drop from 2/4 to 3
2 = Pressure drop from 3 to 2/4



Application limits from 3 in 2/4

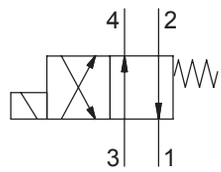
Ordering code

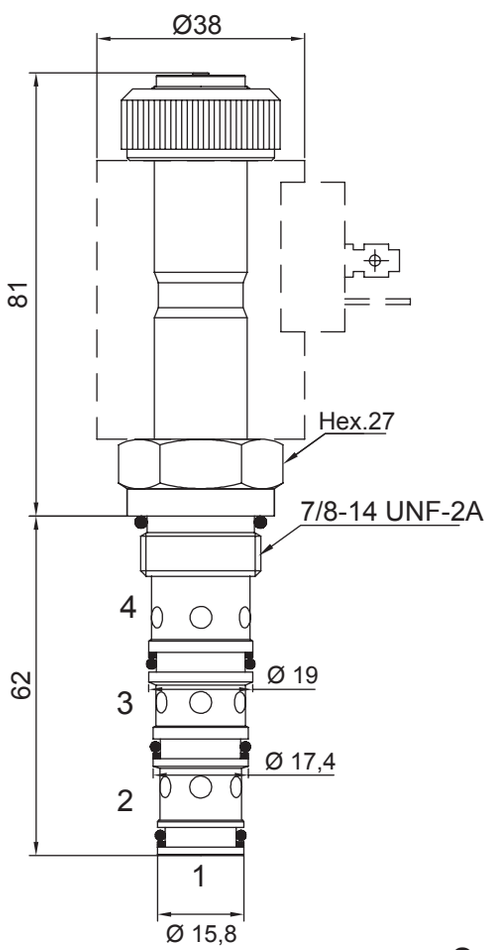
0 4 1 2 2 0 0 ☐ 0 0

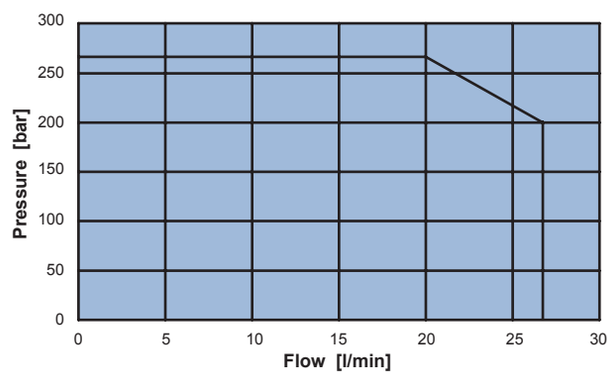


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

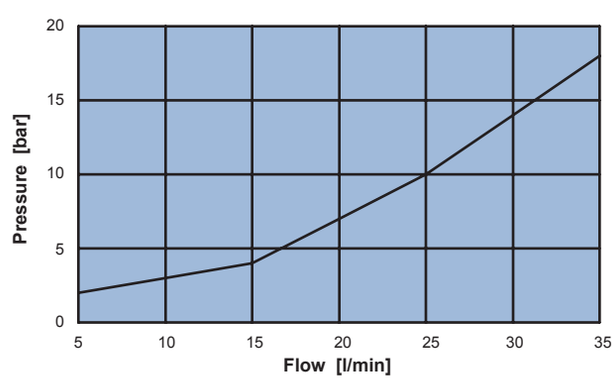
- Flow . . . . . **25 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







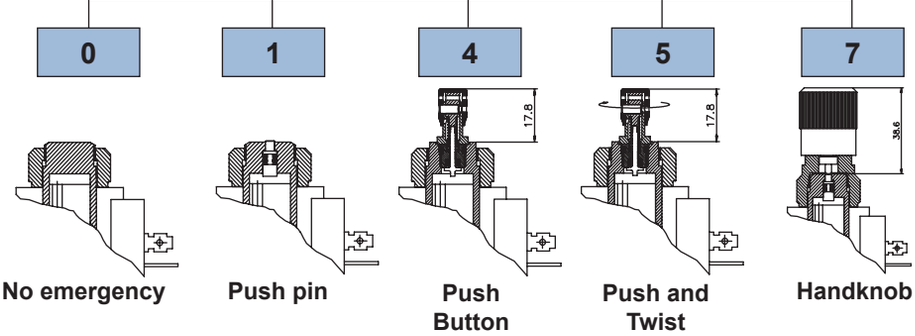
Application limits from 3 in 2/4



Pressure drop from 3 to 2/4

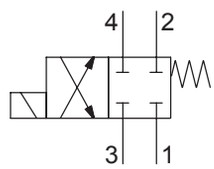
Ordering code

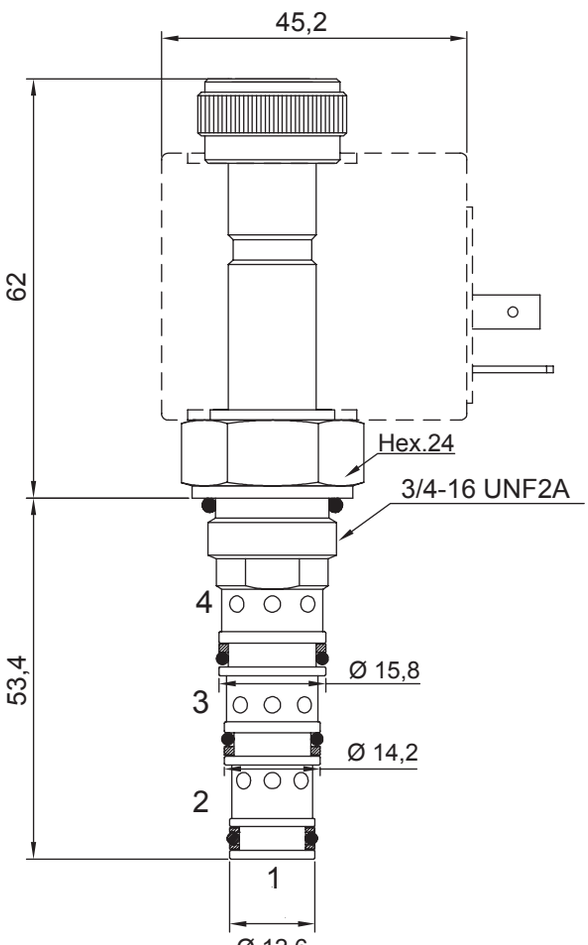
0 4 1 3 2 0 0 ☐ 0 0

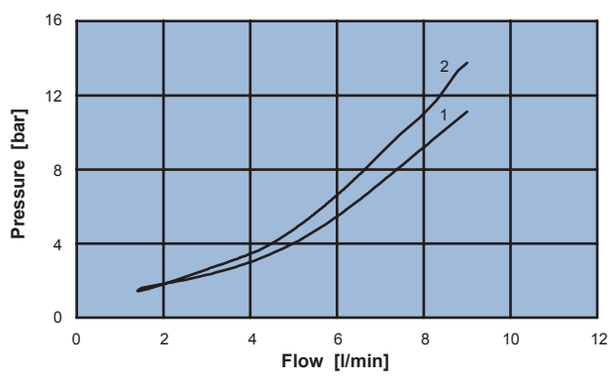


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

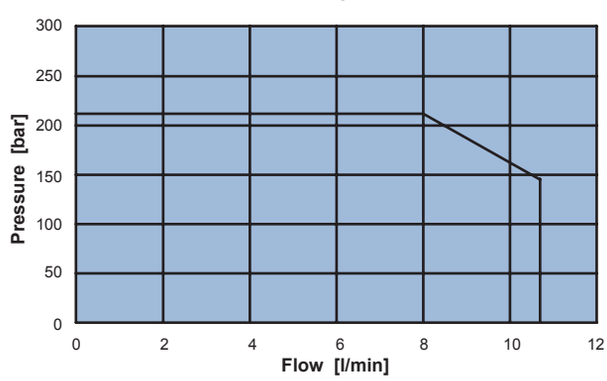
- Flow . . . . . **10 l/min**
- Max working pressure . . . . . **210 bar**
- Leakage . . . . . **60 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**







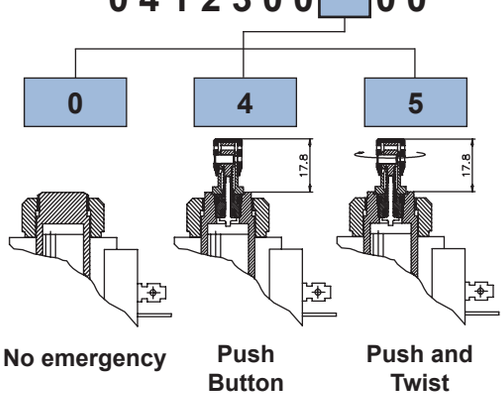
1 = Pressure drop from 2/4 to 3
2 = Pressure drop from 3 to 2/4



Application limits from 3 in 2/4

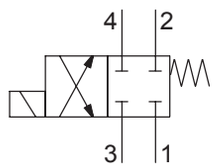
Ordering code

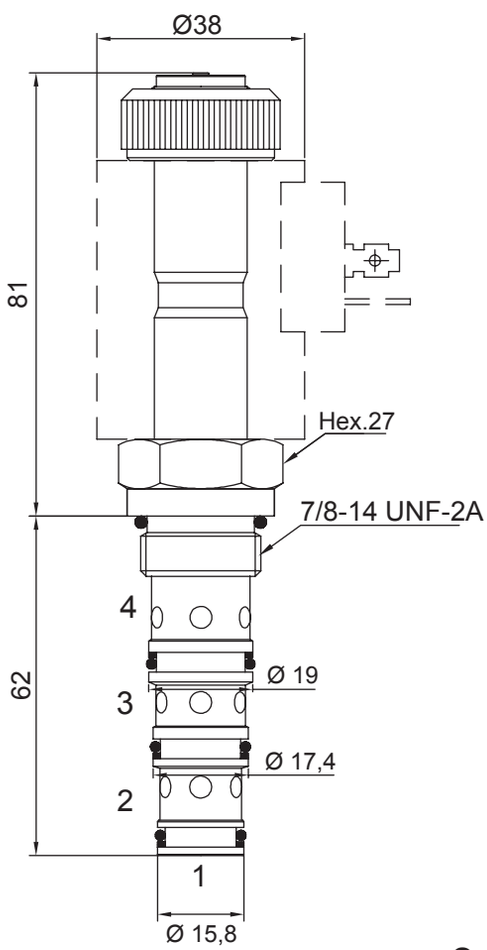
0 4 1 2 3 0 0 ☐ 0 0

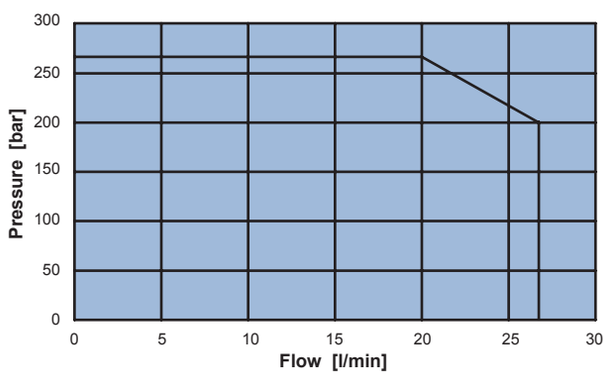


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

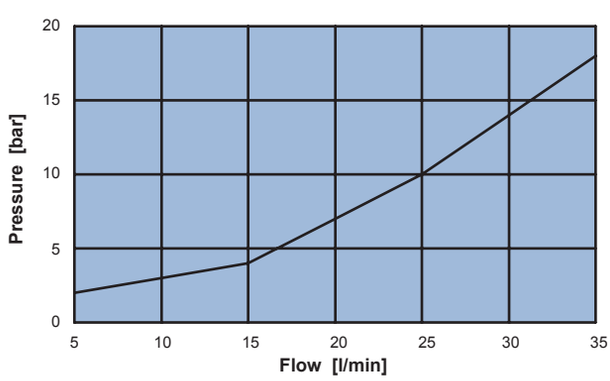
- Flow . . . . . **25 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







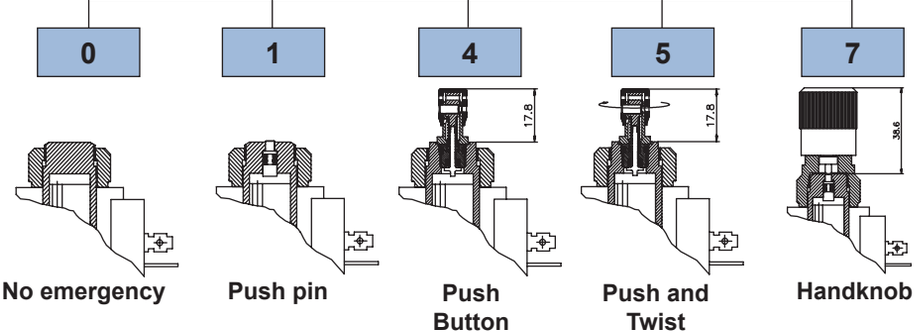
Application limits from 3 in 2/4



Pressure drop from 3 to 2/4

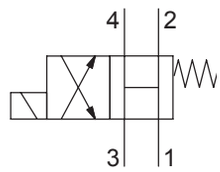
Ordering code

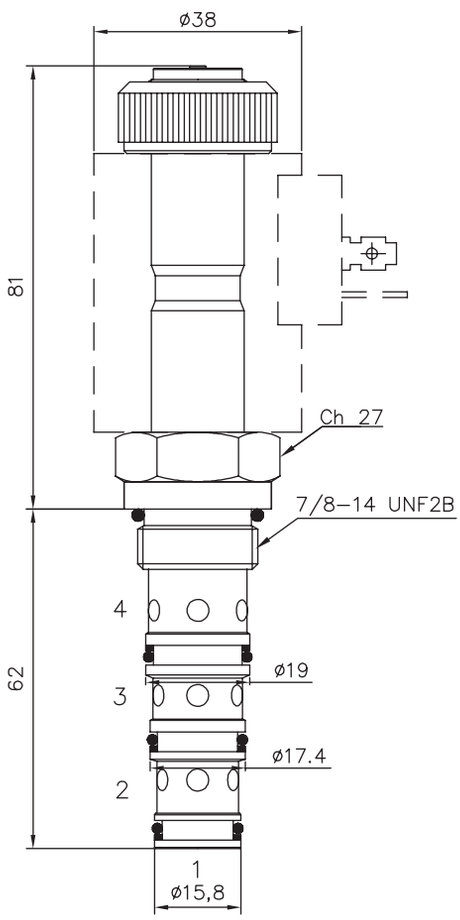
0 4 1 3 3 0 0 ☐ 0 0

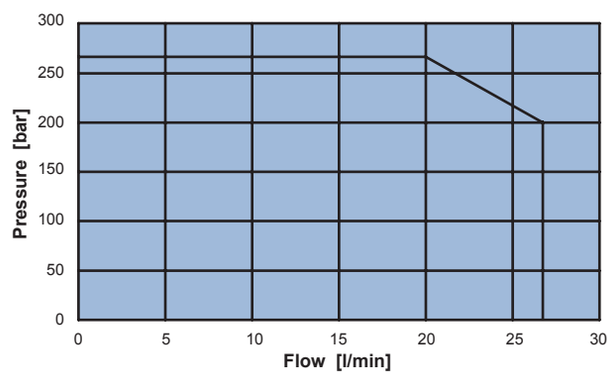


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

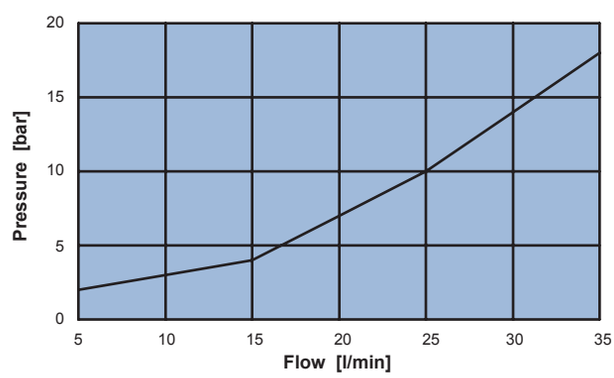
- Flow . . . . . **25 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







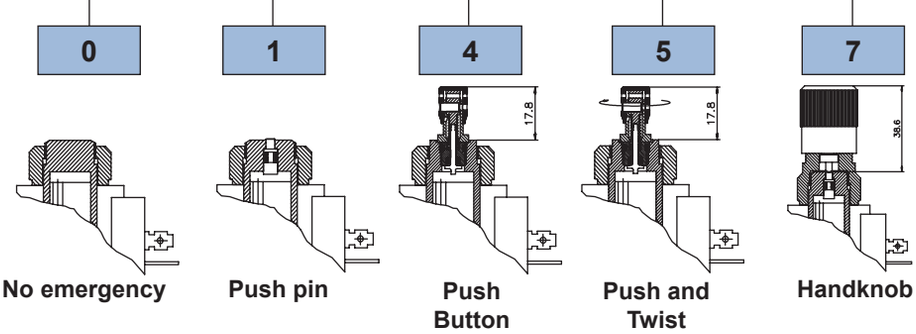
Application limits from 3 in 2/4



Pressure drop from 3 to 2/4

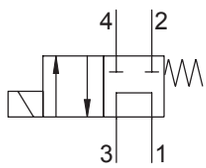
Ordering code

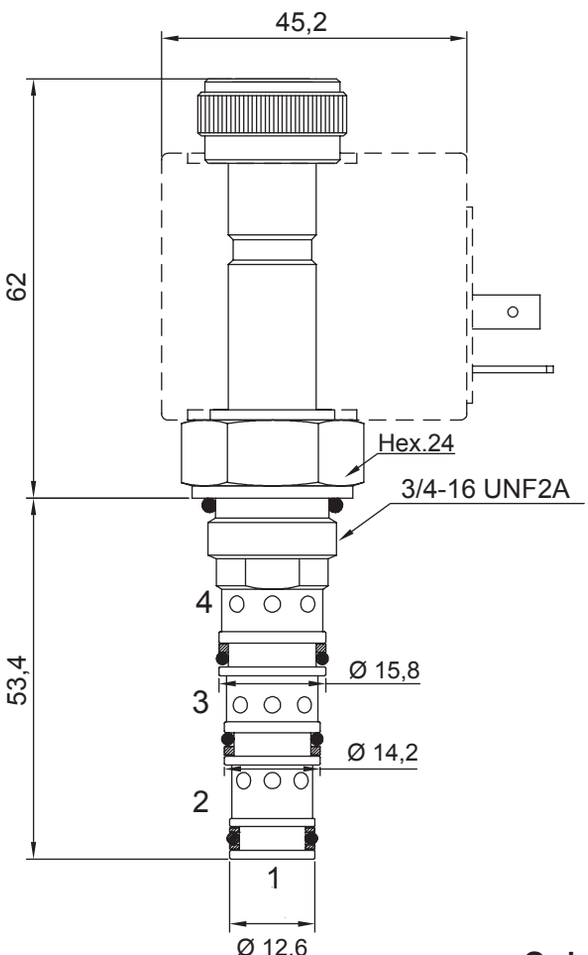
0 4 1 3 4 0 0 ☐ 0 0

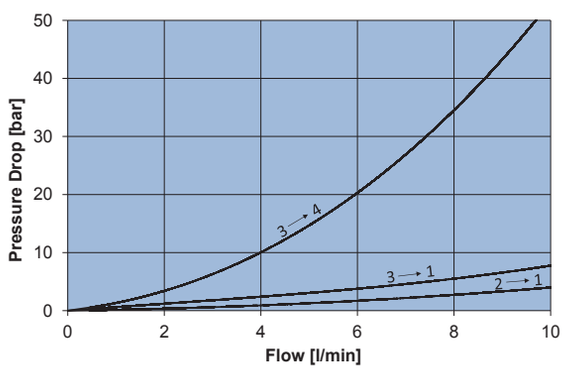


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **10 l/min**
- Max working pressure . . . . . **210 bar**
- Leakage . . . . . **60 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,35 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**

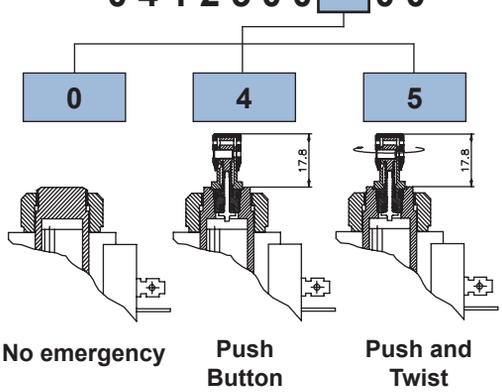






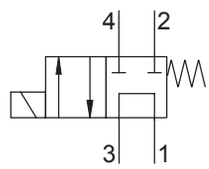
Ordering code

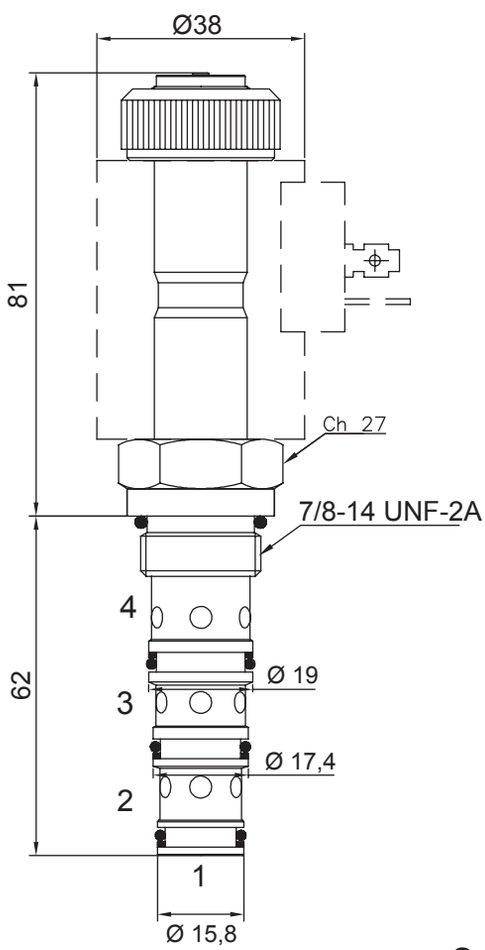
0 4 1 2 5 0 0 □ 0 0

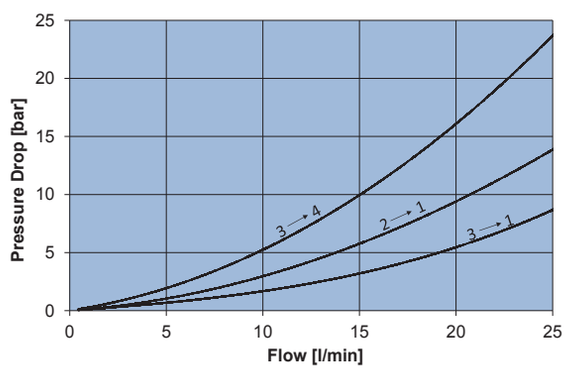


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **25 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**

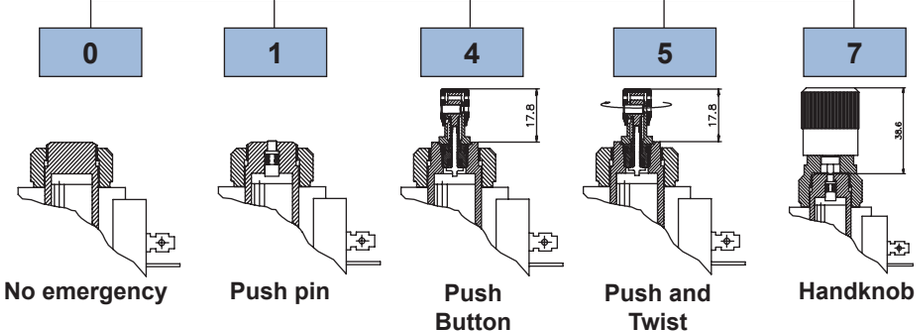






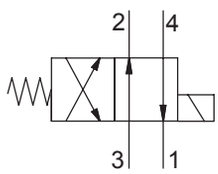
Ordering code

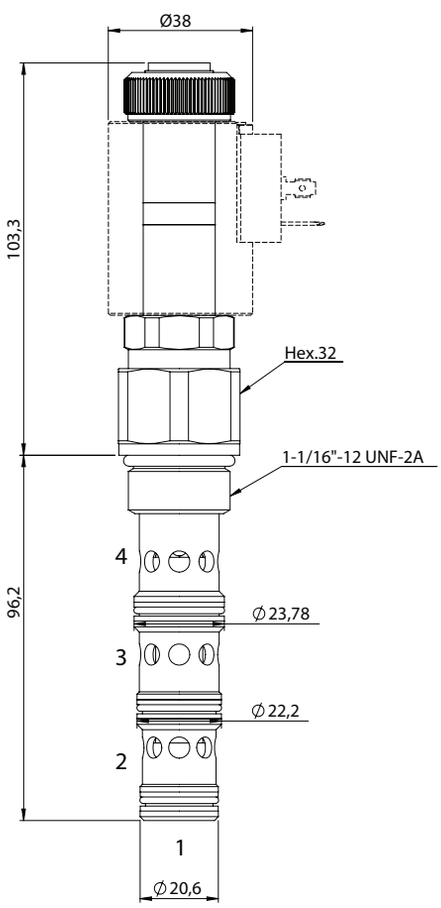
0 4 1 3 5 0 0 ☐ 0 0

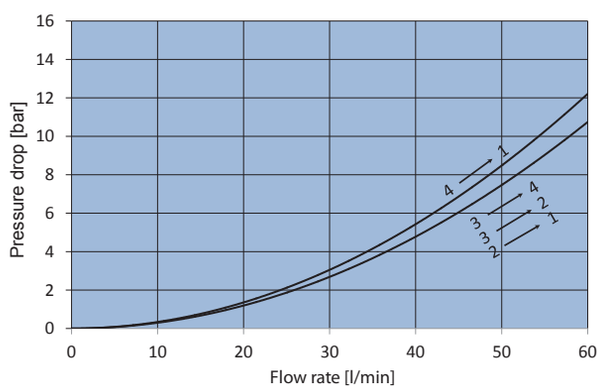


4 WAY 2 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **250 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,54 Kg**
- Cavity . . . . . **C440000** page **227**
- Body. . . . . **171422** page **198**
- Coil (to be ordered separately) . . . . . **09800** page **180**



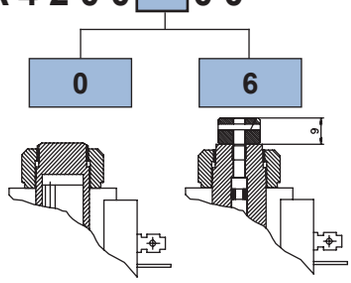




Note:
proportional coil 09800 applied to provide the operating needed power (ED 50%).
For ED 100% contact NEM customer care service.

Ordering code

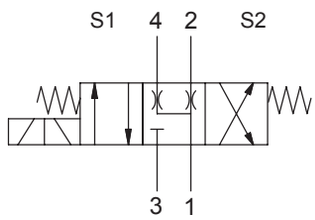
0 4 A 4 2 0 0 ☐ 0 0

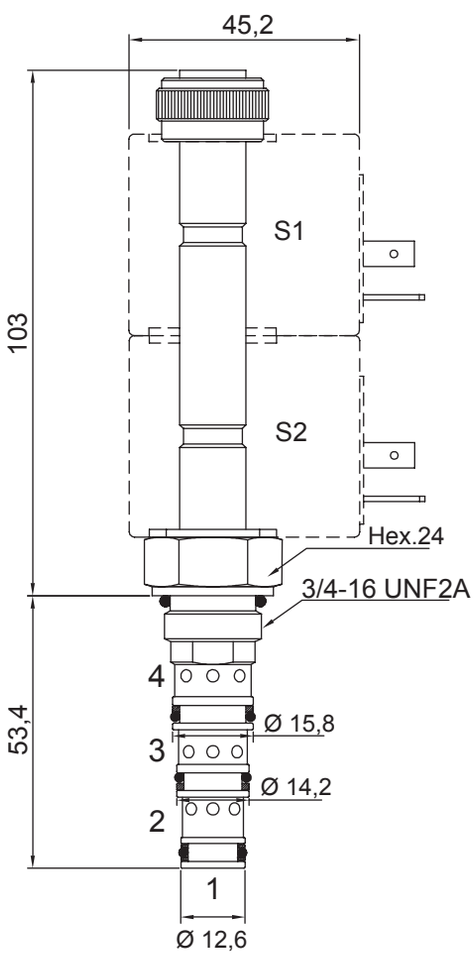


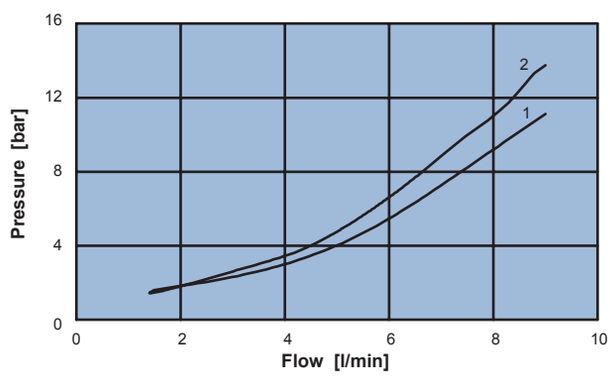
No emergency **Unscrew type**

4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

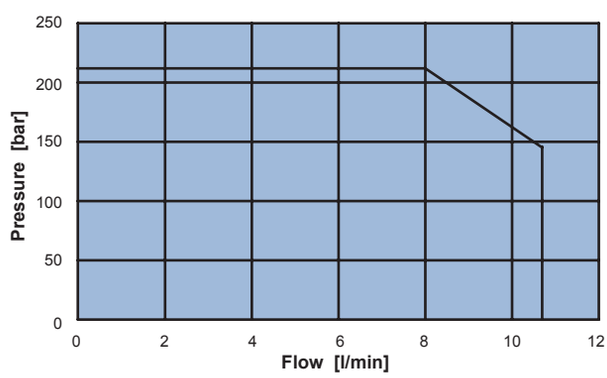
- Flow . . . . . **10 l/min**
- Max working pressure in 2:3:4. . . . . **210 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **60 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,70 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**







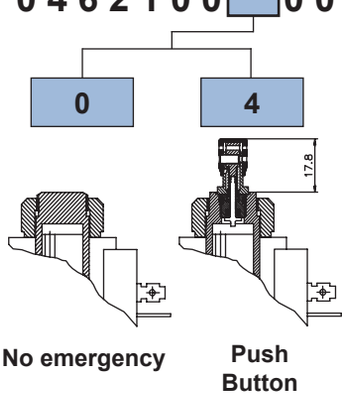
1 = Pressure drop from 2/4 to 3
2 = Pressure drop from 3 to 2/4



Application limits from 3 in 2/4

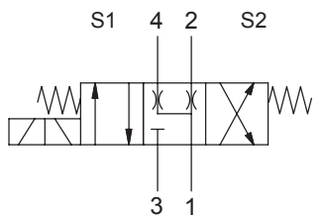
Ordering code

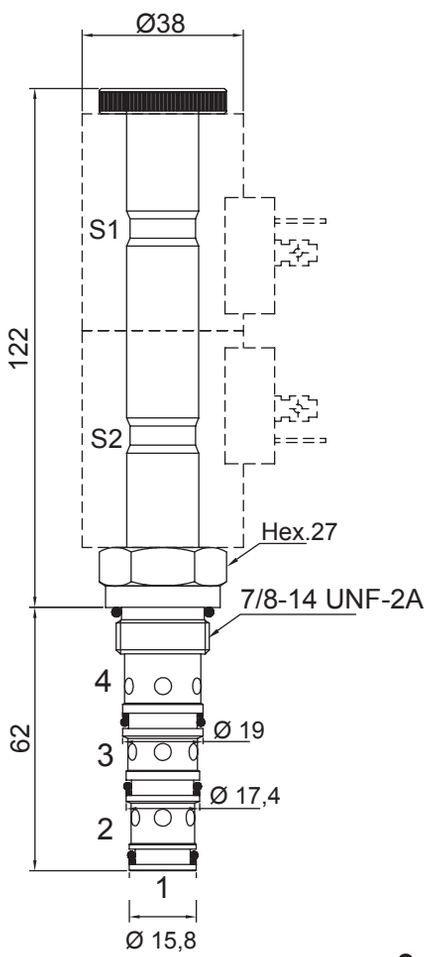
0 4 6 2 1 0 0 ☐ 0 0

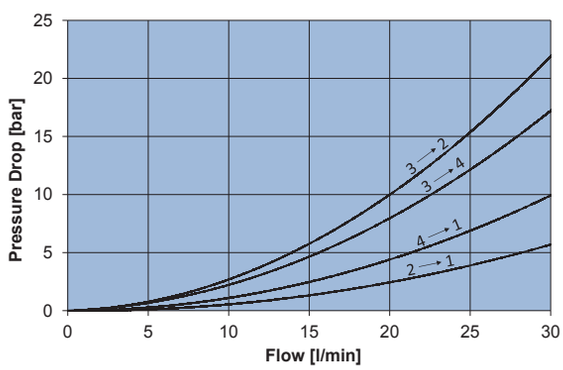


4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

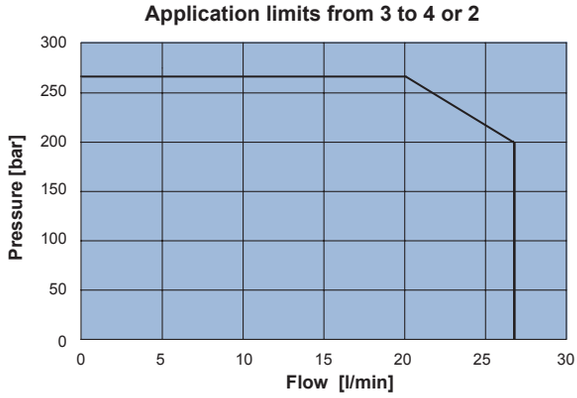
- Flow . . . . . **25 l/min**
- Max working pressure in 2:3:4. . . . . **250 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,9 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







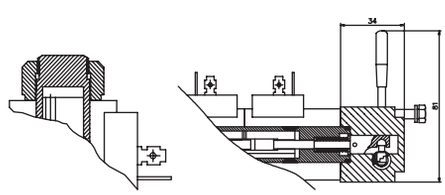
Application limits from 3 to 4 or 2



Ordering code

0 4 6 3 1 0 0 ☐ 0 0

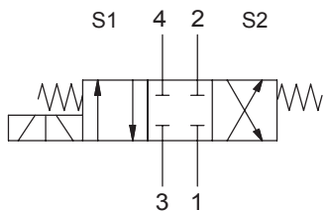
0 — **3**

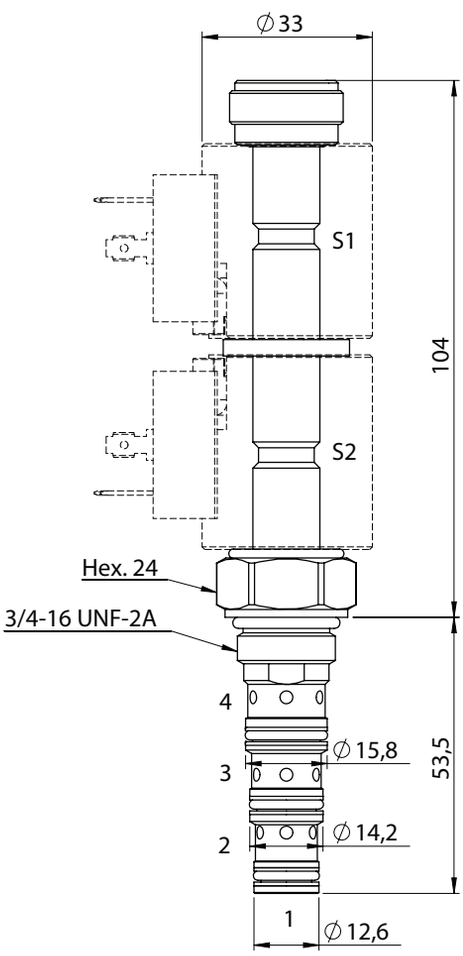


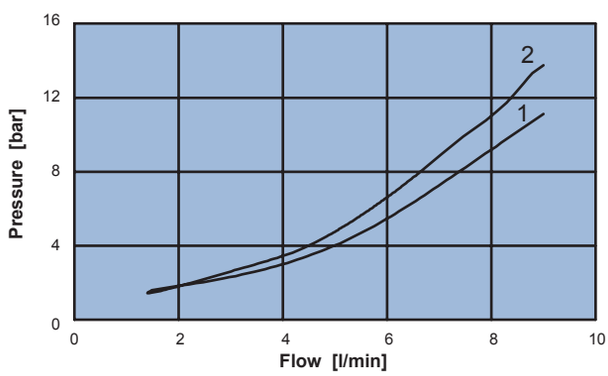
No emergency — **Safety lever**

4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

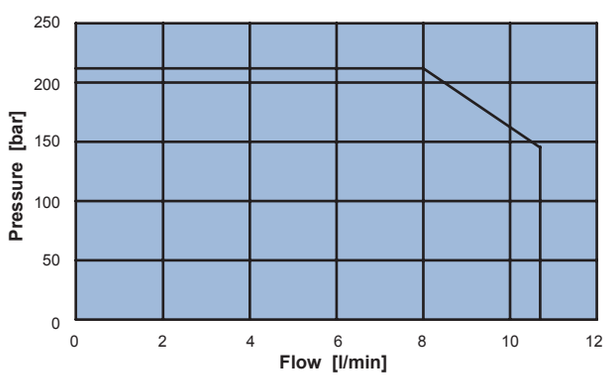
- Flow . . . . . **10 l/min**
- Max working pressure in 2:3:4. . . . . **210 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **60 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,70 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**







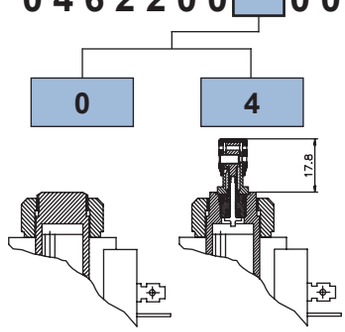
1 = Pressure drop from 2/4 to 3
2 = Pressure drop from 3 to 2/4



Application limits from 3 in 2/4

Ordering code

0 4 6 2 2 0 0 ☐ 0 0

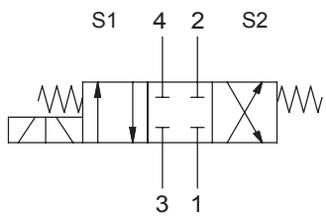


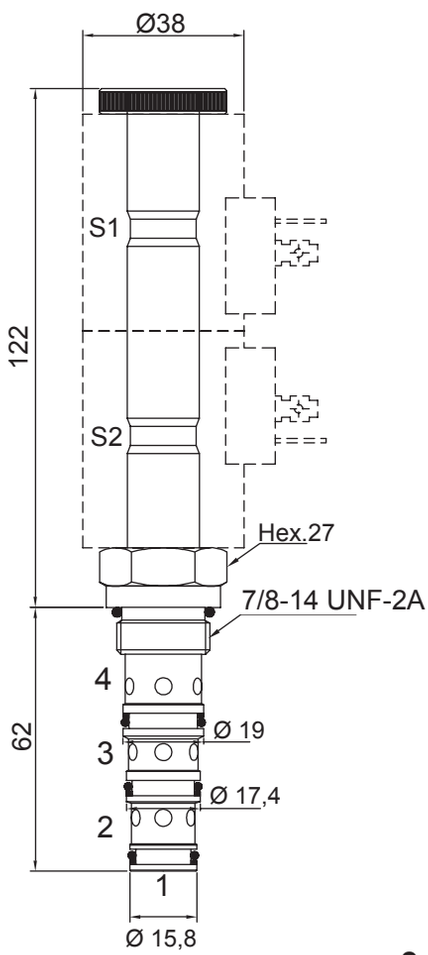
No emergency

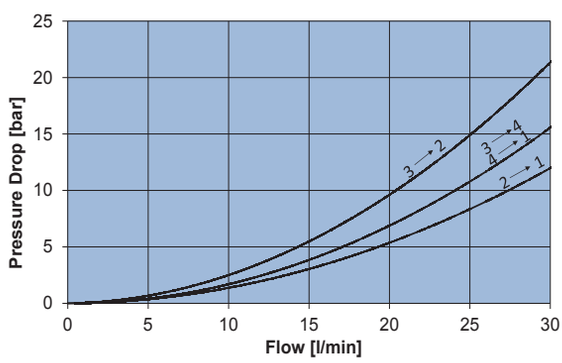
Push Button

4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

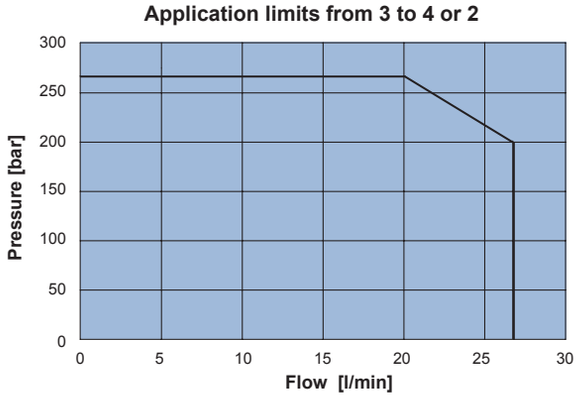
- Flow . . . . . **25 l/min**
- Max working pressure in 2:3:4. . . . . **250 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,9 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







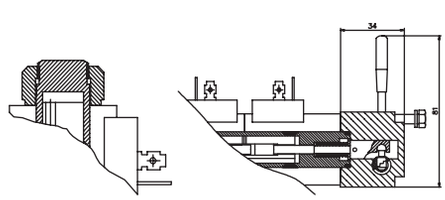
Application limits from 3 to 4 or 2



Ordering code

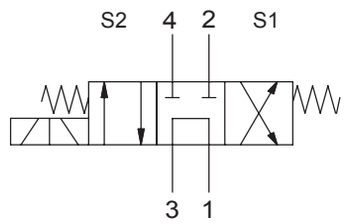
0 4 6 3 2 0 0 ☐ 0 0

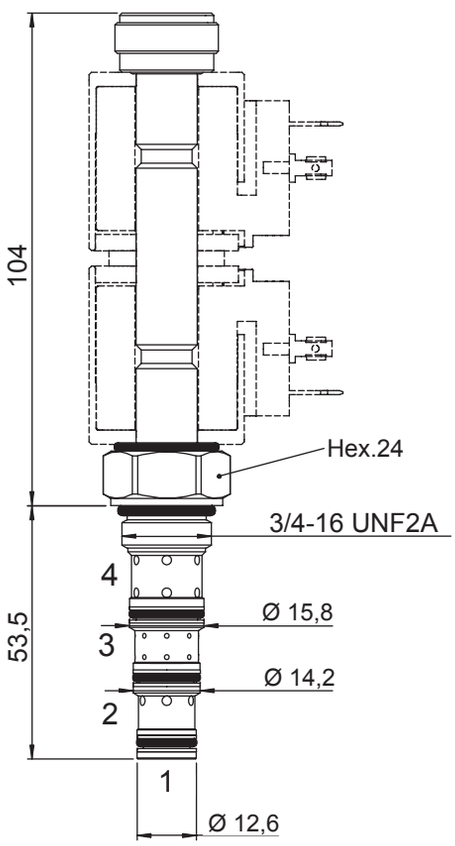
- **0** — **No emergency**
- **3** — **Safety lever**

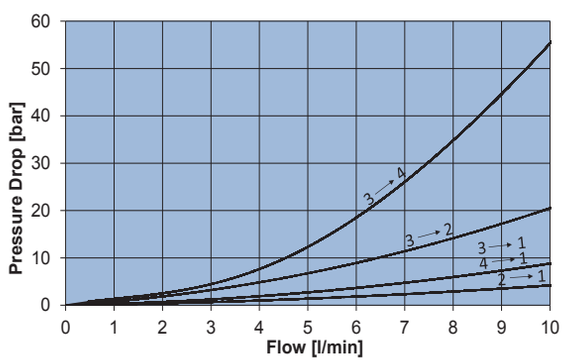


4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **10 l/min**
- Max working pressure in 2:3:4. . . . . **210 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,20 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**



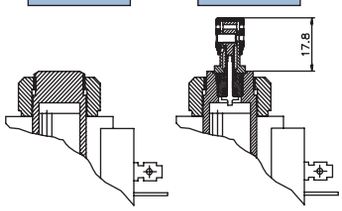




Ordering code

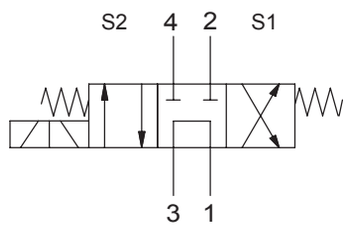
0 4 6 2 3 0 0 ☐ 0 0

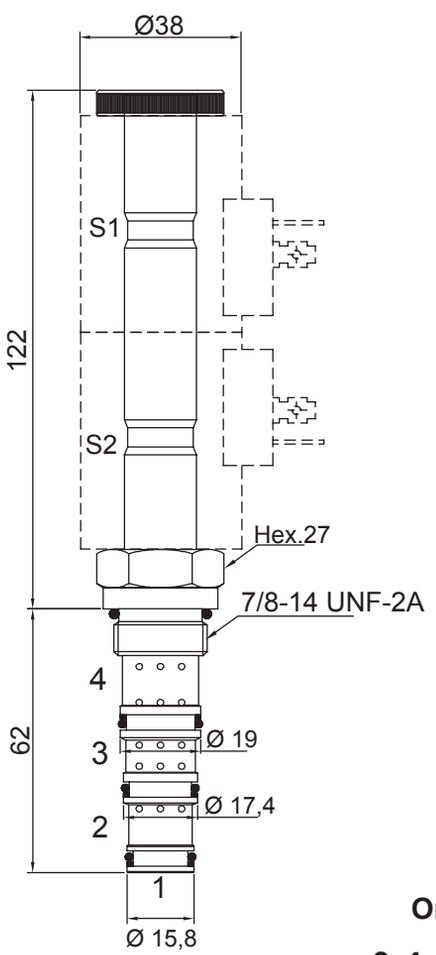
0	4
No emergency	Push Button

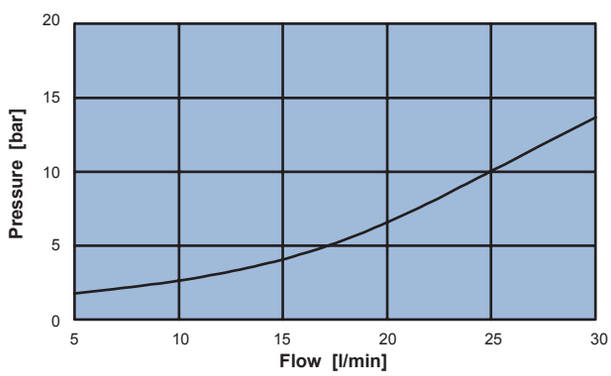


4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

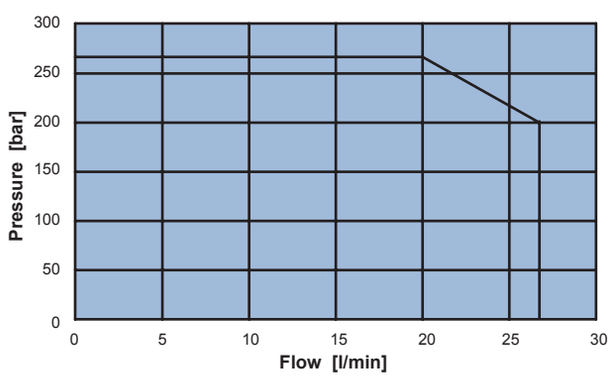
- Flow . . . . . **25 l/min**
- Max working pressure in 2:3:4. . . . . **250 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,9 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







1 = Pressure drop graph from 3 to 1

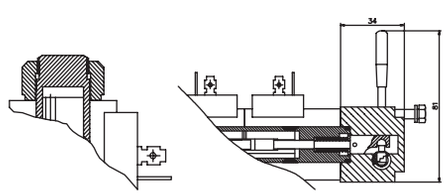


Application limits from 3 to 4 or 2

Ordering code

0 4 6 3 3 0 0 ☐ 0 0

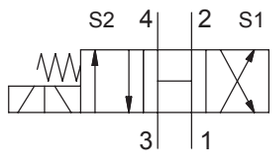
0	3

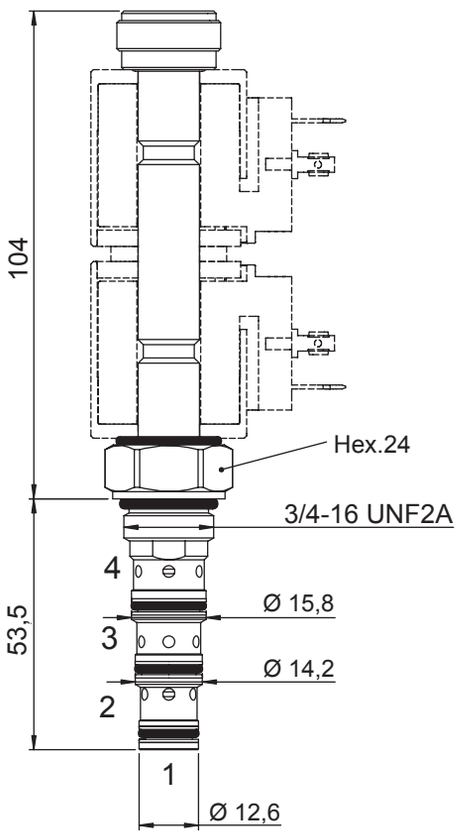


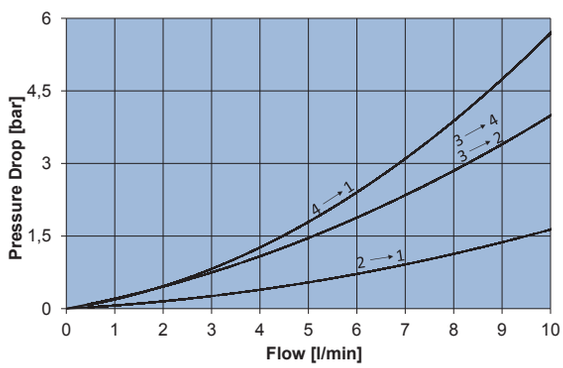
No emergency **Safety lever**

4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

- Flow . . . . . **10 l/min**
- Max working pressure in 2:3:4. . . . . **210 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **40 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **30 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,7 Kg**
- Cavity . . . . . **C420000** page **225**
- Body. . . . . **171222** page **190**
- Coil (to be ordered separately) . . . . . **09400** page **179**



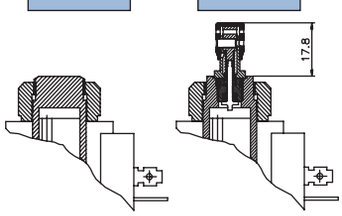




Ordering code

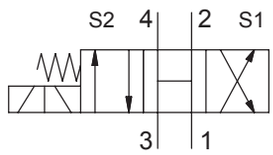
0 4 6 2 4 0 0 [ ] 0 0

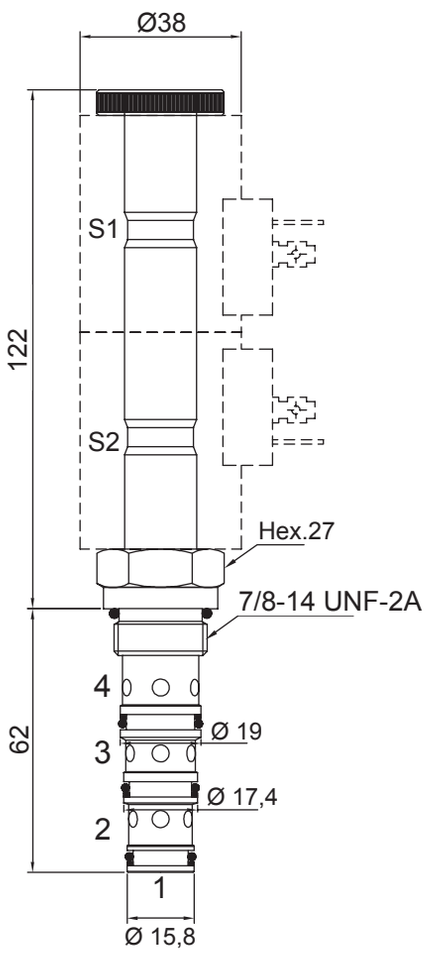
0	4
No emergency	Push Button

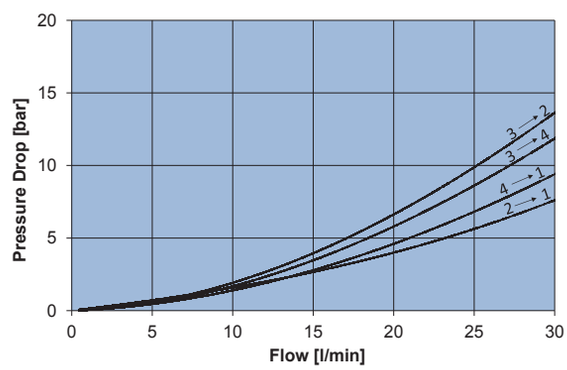


4 WAY 3 POSITION ELECTRIC SPOOL VALVE, DIRECT ACTING

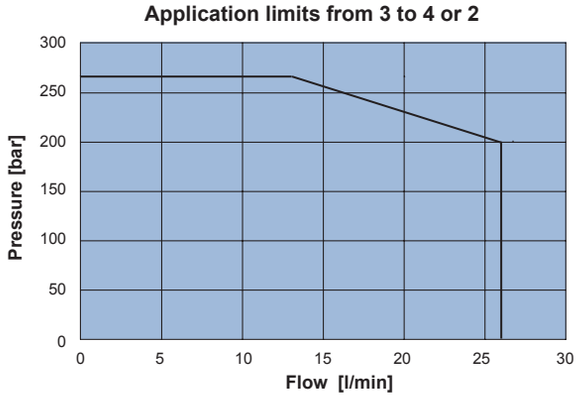
- Flow . . . . . **25 l/min**
- Max working pressure in 2:3:4. . . . . **250 bar**
- Max working pressure in 1. . . . . **20 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,9 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09801** page **181**







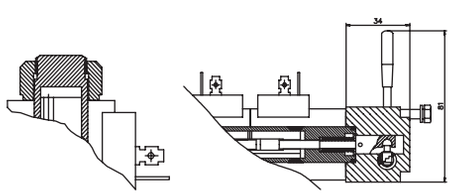
Application limits from 3 to 4 or 2



Ordering code

0 4 6 3 4 0 0 ☐ 0 0

0	3

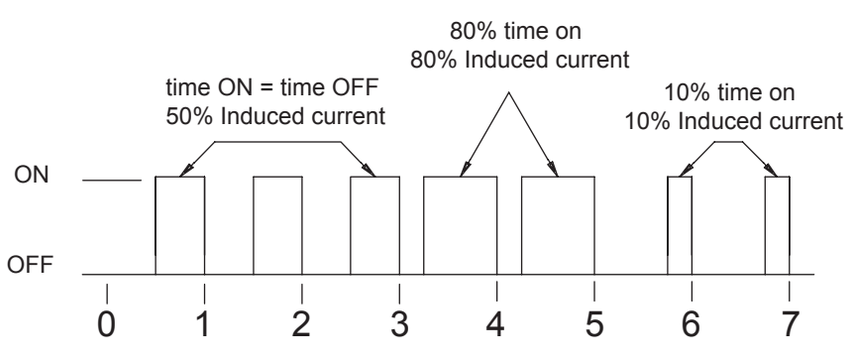


No emergency **Safety lever**

ELECTRO-PROPORTIONAL VALVES

ELECTRO-PROPORTIONAL VALVES

In the follow of this chapter, NEM presents the electro-proportional flow control cartridges, the flow regulator cartidges and the pressure regulator cartridges.
The flow control valves, equipped with proportional solenoid, provide the adjustment of the efflux area by imposing energy to the electric coils.
The proportional cartridges are seat in standard cavities and can be connected to pressure compensators in order to obtain flow regulator circuits.
Below, a glossary of technical terms, which have been used in this catalogue, has been reported.
Current: electrons flow produced by voltage across a coil. whose power is proportional to the crossing current and the number of coils. Common abbreviation is I.
No load current: power consumed by the proportional controller when no coil output is available.
Threshold current (or polarization): point where increasing input current causes a flow or pressure variation
Maximum working current: is the point where input current no longer results into a flow pressure variation.
I min - I max: is the minimum and maximum control current fed to the solenoid of the proportional cartridge.
Hysteresis: is the measure of the output current difference between increasing and decreasing current in the solenoid. Example: when current is increasing you need 1200 mA current to produce a 3L/min flow. When current is decreasing,you need 1140 mA current to get the same flow. So there is a 60 mA difference in input current to achieve 3 gpm flow depending on whether current is increasing or decreasing. If I max = 1600mA, and Imin = 350 mA the total input difference is = 1250 mA. Hysteresis=(60/1250)100 = 4.8%.
Pulse with modulation (PWM): amount method used to vary the average current induced in a coil by a squere wave of fixed frequency and variable time ratios.

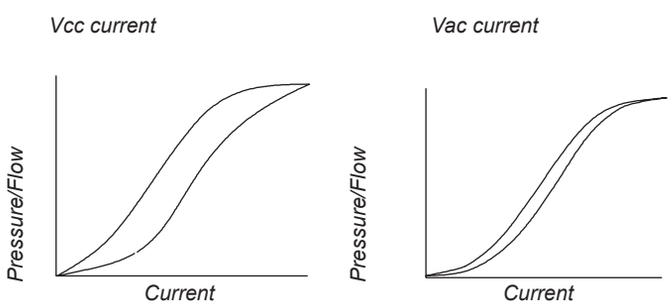


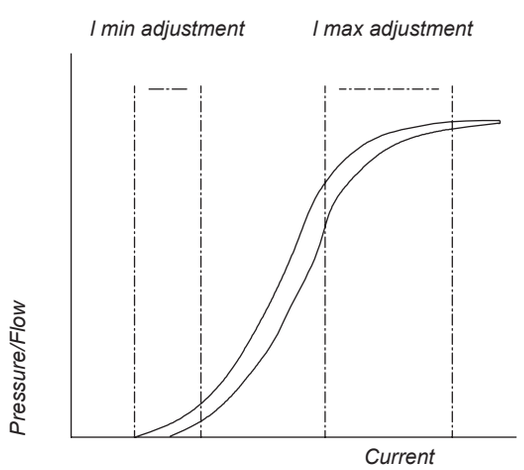
Proportional controller or amplifier: electronic device converting a low - power input signal into an output signal capable of operating the valve. This output signal can be modified to include PWM ramping or dither.
Ramping: a system for adjustment of output current variation of a proportional control.
Compensator: hydraulic device combined to proportional control valves to provide fixed outlet flow when pressure change.
Voltage: current flow potential in an electric circuit. It is measured in units called volts (and is sometimes abbreviated V). Generally, higher voltage will induce a higher current.

ELECTRIC CONTROL REQUIREMENTS

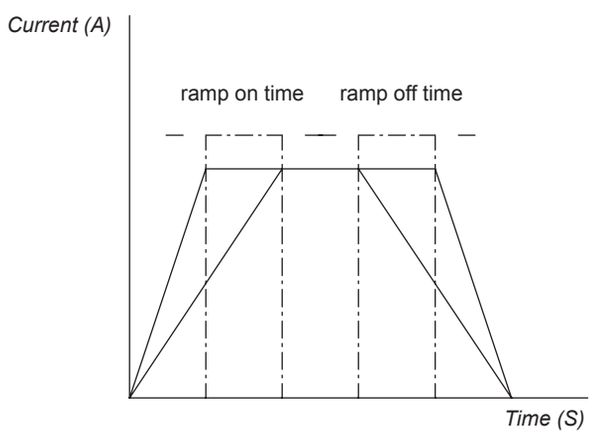
NEM spa offers a range of electro proportional controls equipped with 12 and 24 Vcc coils.
On going test indicates that a current from 110 to 150 Hz significantly improves the valve performance, as against operation with straight Vcc. The graphs on the side show how the addition of PWM noticeably reduces hysteresis. This feature is available from virtually all standard controls manufacturers at low cost. For valves,hysteresis is represented by a double tracking curve where as the lower and upper track show decreasing and increasing current respectively. These valves are not designed for rapid operation rates. Please consult the factory if relatively fast valve response is required. One way of enhancing operation rates is to add a control function for (I min - I max) adjustment. This function will allow control across the full range. Again, this feature is widely available on commercial products. Many commercially available controllers also include ramping control.

TYPICAL HYSTERESIS



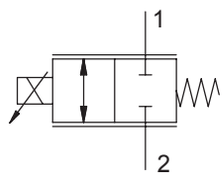


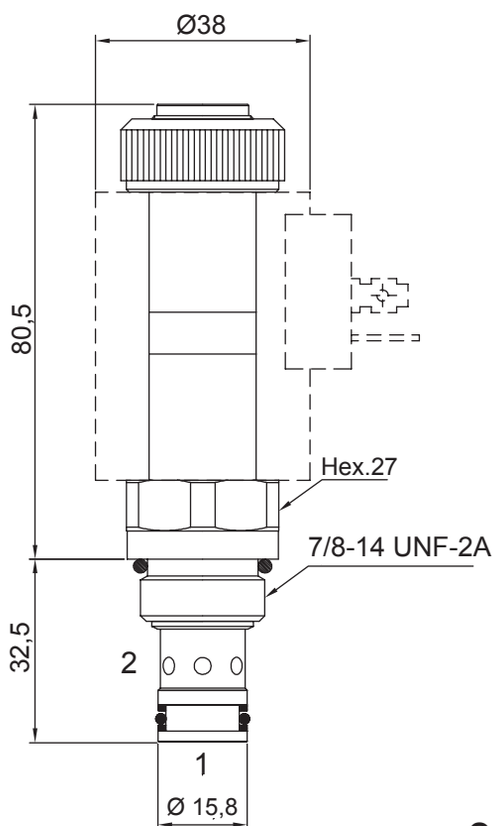
RAMP SLOPE CONTROL

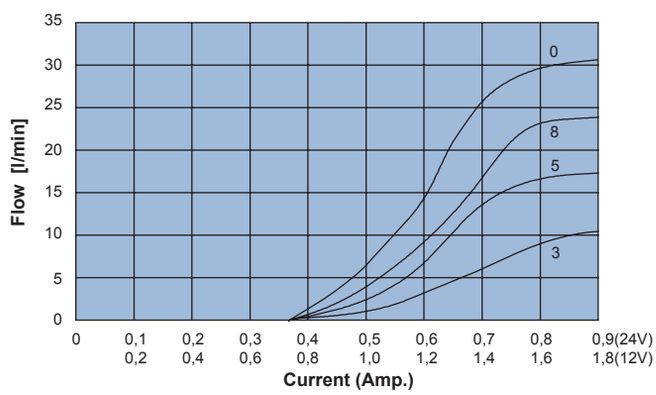


2 WAY NORMALLY CLOSED SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

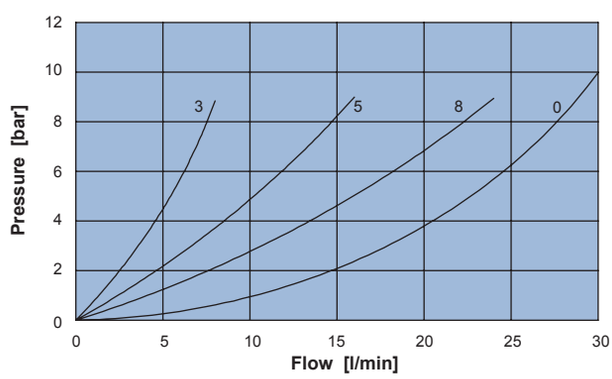
- Flow . . . . . **30 l/min**
- Max working pressure in 1:2. . . . . **350 bar**
- Application limits with Δp max from 1 to 2. . . . . **15 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **4 Nm**
- Weight (with coil). . . . . **0,48 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09800** page **180**







Graph flow/current with Δp from 1 to 2 of 7 bar



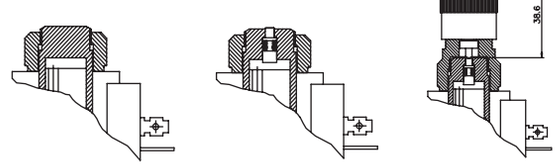
Pressure drop with energized coil

Ordering code

0 3 4 3 1 ☐ 0 ☐ 0 1

0	**3**	**5**	**8**	**0**	**1**	**7**
100% Q.max	**30% Q.max**	**50% Q.max**	**80% Q.max**			

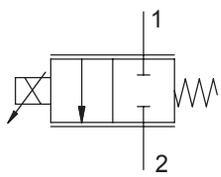
Flow range

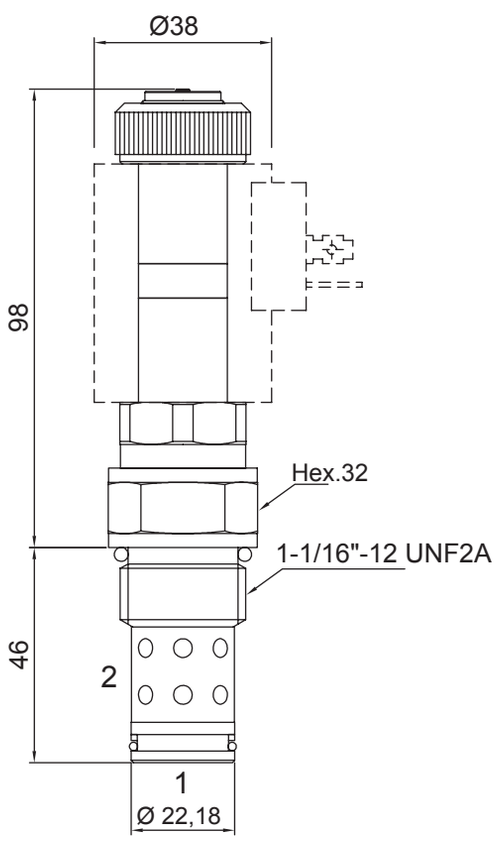


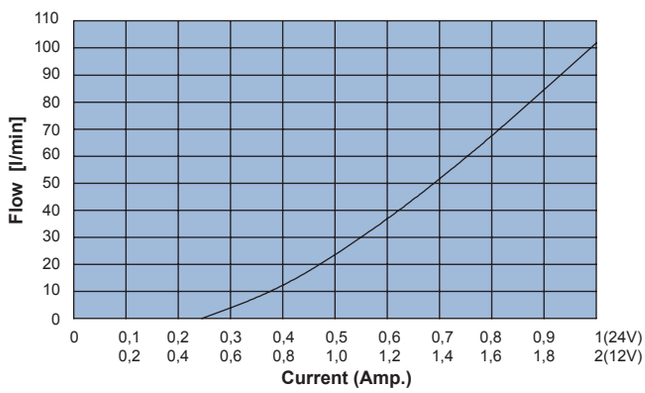
No emergency **Push pin** **Handknob**

2 WAY NORMALLY CLOSED SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

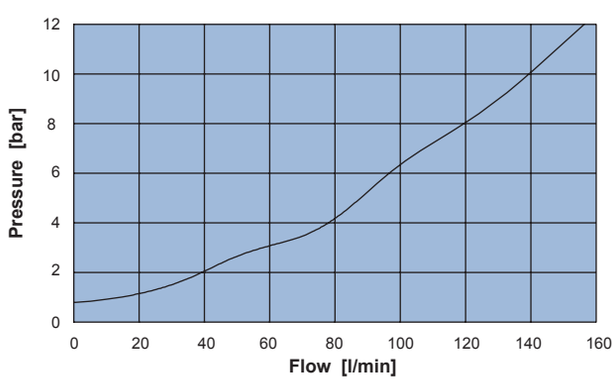
- Flow . . . . . **75 l/min**
- Max working pressure in 1:2. . . . . **350 bar**
- Application limits with Δp max from 1 to 2. . . . . **10 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque . . . . . **4 Nm**
- Weight (with coil). . . . . **0,61 Kg**
- Cavity . . . . . **C240001** page **214**
- Coil (to be ordered separately) . . . . . **09800** page **180**







Graph flow/current with Δp from 1 to 2 of 5 bar



Pressure drop from 1 to 2

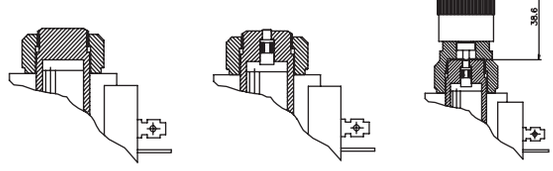
Ordering code

0 3 4 4 1 ☐ 0 ☐ 0 1

Flow range

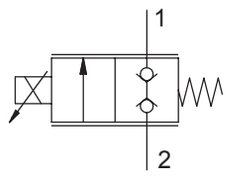
- **0** — Qmax 75 l/min
- **5** — Qmax 50 l/min

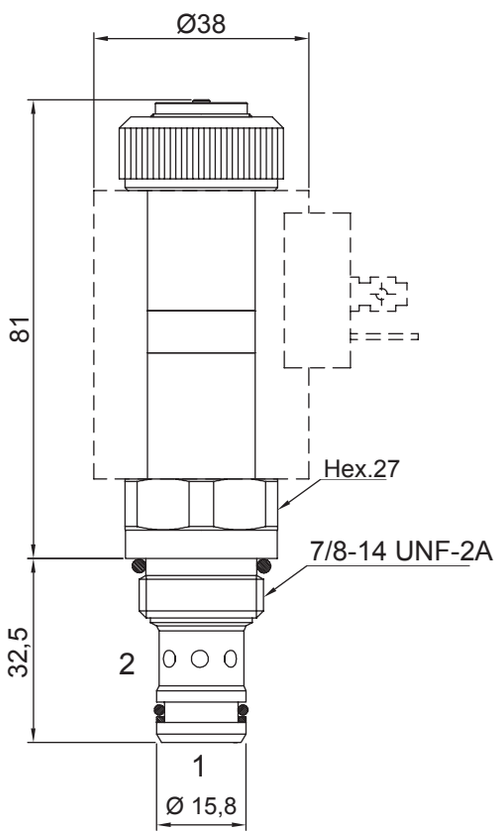
- **0** — No emergency
- **1** — Push pin
- **7** — Handknob

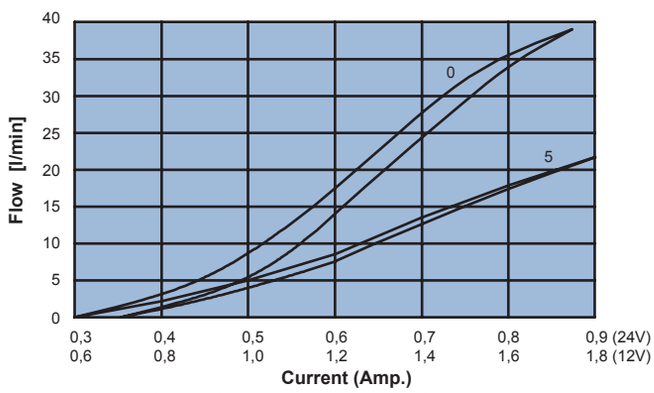


2 WAY NORMALLY CLOSED POPPET VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

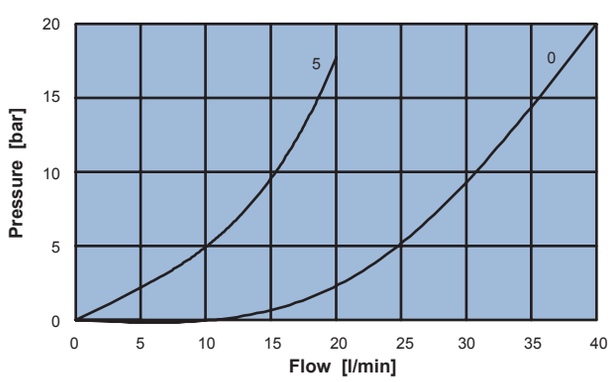
- Flow . . . . . **40 l/min**
- Max working pressure in 1:2. . . . . **250 bar**
- Leakage . . . . . **0,25 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,53 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09800** page **180**







Graph flow/current with Δp from 2 to 1



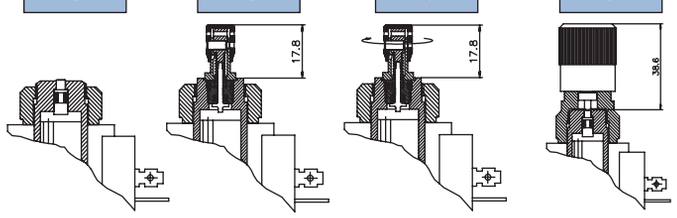
Pressure drop from 2 to 1

Ordering code

0 5 2 3 1 0 0 ☐ ☐ 0

1	4	5	7	0	5
				100% Q.max	50% Q.max

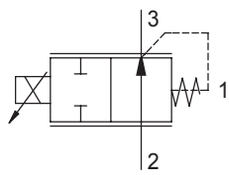
Flow range

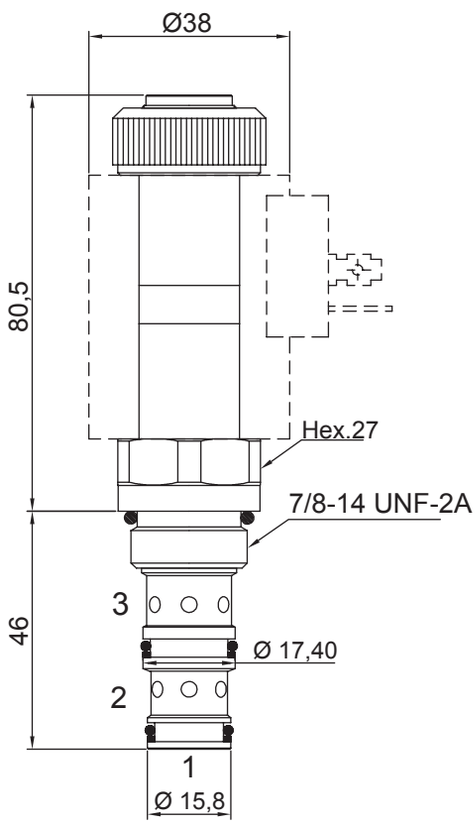


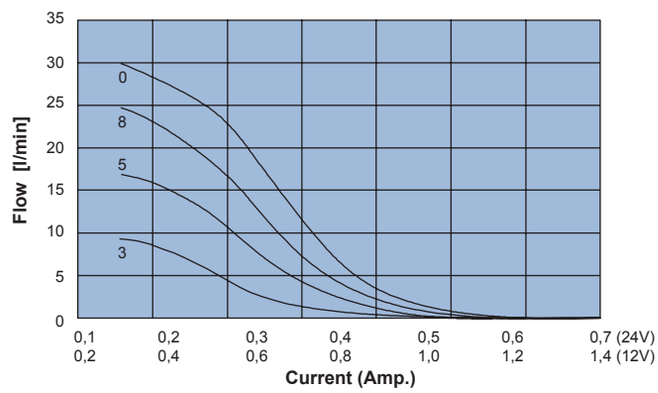
Push pin | Push Button | Push and Twist | Handknob

3 WAY NORMALLY OPEN SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

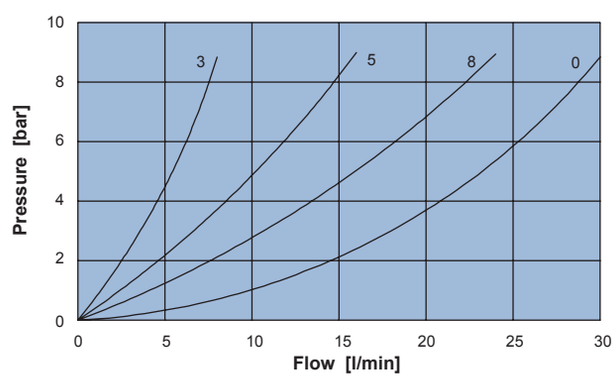
- Flow . . . . . **30 l/min**
- Max working pressure in 1:2:3. . . . . **350 bar**
- Application limits with Δp max from 2 to 3. . . . . **15 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **4 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**
- Coil (to be ordered separately) . . . . . **09800** page **180**







Graph flow/current with Δp from 2 to 3 of 7 bar

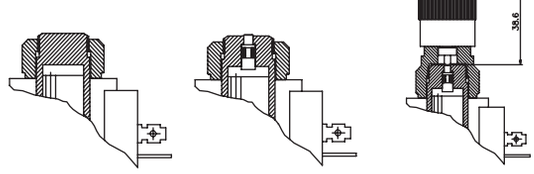


Pressure drop with de-energized coil

Ordering code

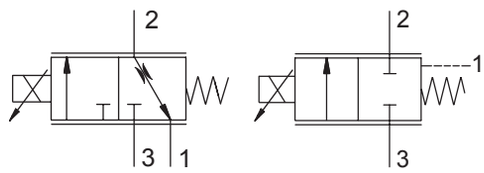
0 3 5 3 4 ☐ 0 ☐ 0 1

0	**3**	**5**	**8**	**0**	**1**	**7**
100% Q.max	30% Q.max	50% Q.max	80% Q.max			
Flow range				No emergency	Push pin	Handknob

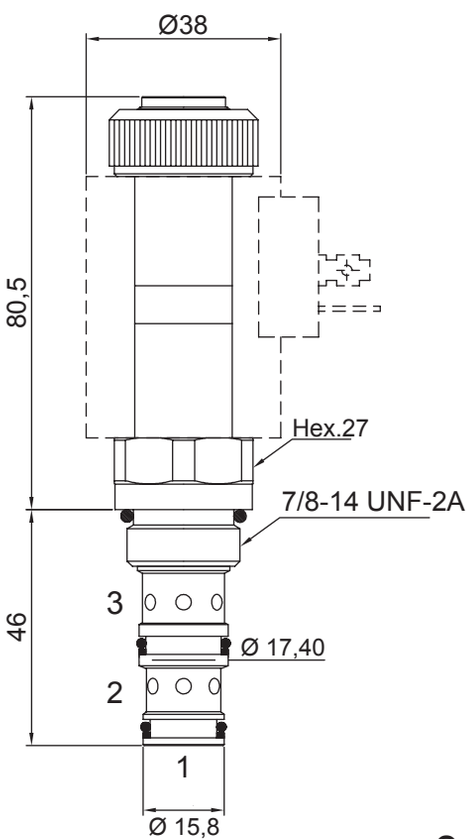


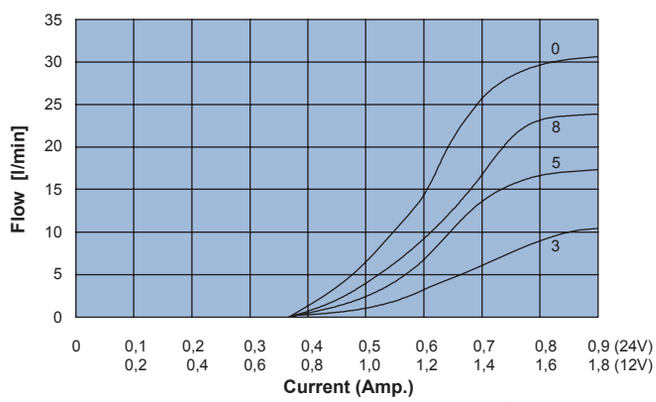
3 WAY NORMALLY CLOSED SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

- Flow . . . . . **30 l/min**
- Max working pressure in 1:2:3. . . . . **350 bar**
- Application limits with Δp max from 3 to 2. . . . . **15 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**
- Coil (to be ordered separately) . . . . . **09800** page **180**

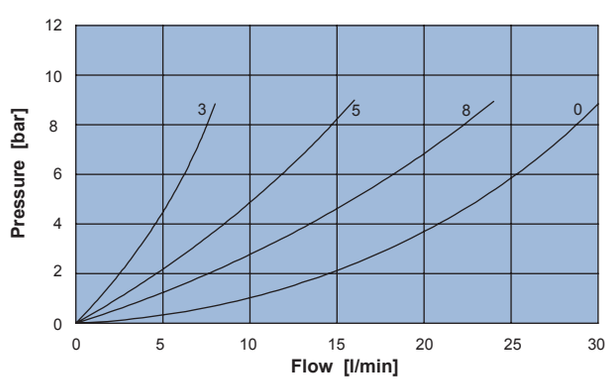


Scheme 0 **Scheme 1**





Graph flow/current with Δp from 3 to 2 of 7 bar



Pressure drop with de-energized coil

Ordering code

0 3 5 3 ☐ ☐ 0 ☐ 0 1

Hydraulic scheme

0	1

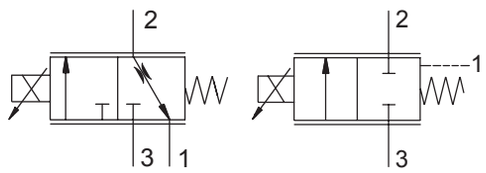
Flow range

0	3	5	8
100% Q.max	30% Q.max	50% Q.max	80% Q.max

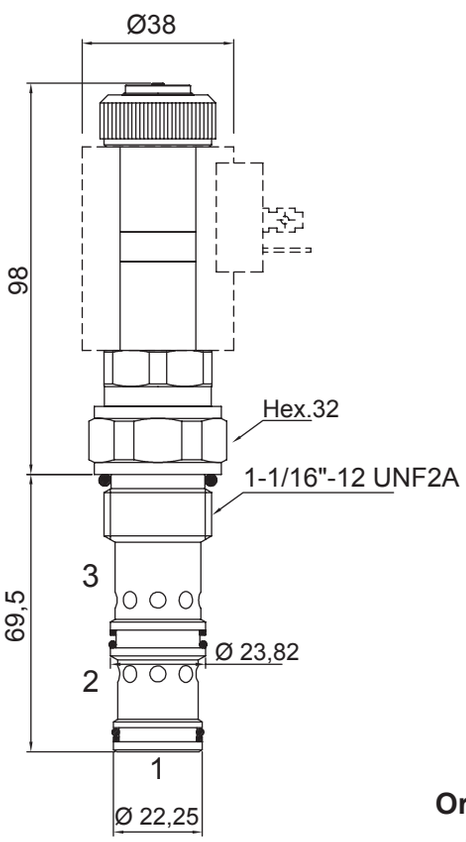
0	1	7
No emergency	Push pin	Handknob

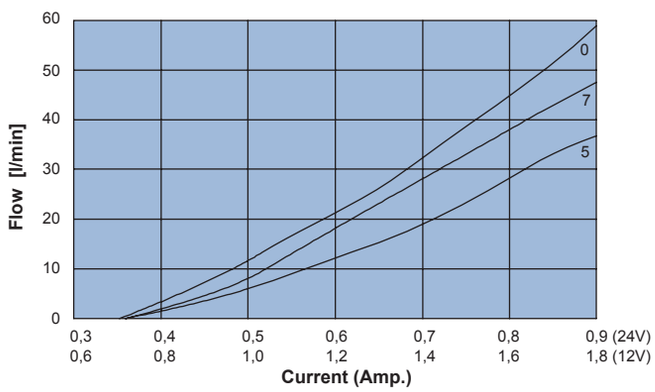
3 WAY NORMALLY CLOSED SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

- Flow . . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Max working pressure in 1. . . . . **10 bar**
- Application limits with Δp max from 3 to 2. . . . . **15 bar**
- Leakage . . . . . **250 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,70 Kg**
- Cavity . . . . . **C340000** page **222**
- Body. . . . . **171412** page **197**
- Coil (to be ordered separately) . . . . . **09800** page **180**

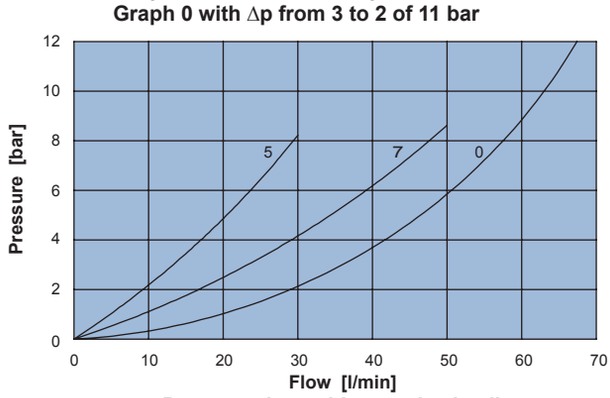


Scheme 0 **Scheme 1**





Graph flow/current with Δp from 3 to 2 of 7 bar
Graph 0 with Δp from 3 to 2 of 11 bar



Pressure drop with energized coil

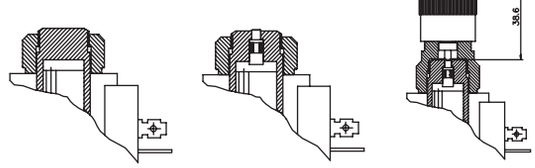
Ordering code

0 3 5 4 ☐ ☐ 0 ☐ 0 1

0 **1**
Hydraulic scheme

0 **5** **7**
100% Q.max **50% Q.max** **70% Q.max**
Flow range

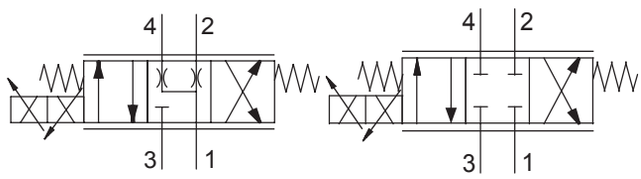
0 **1** **7**



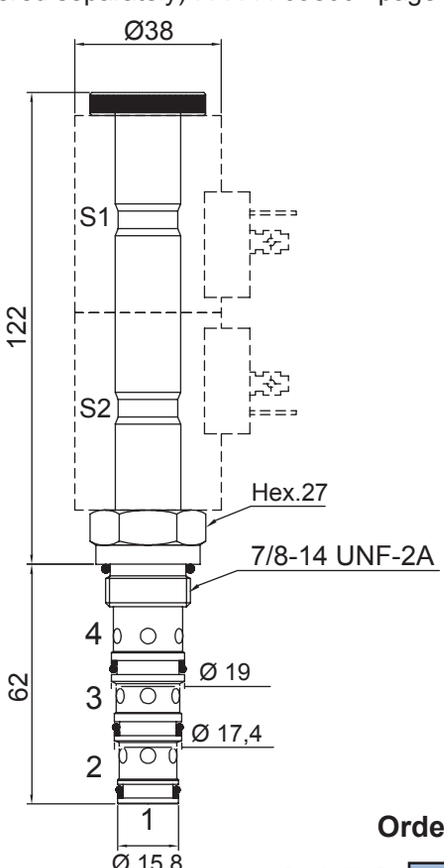
No emergency **Push pin** **Handknob**

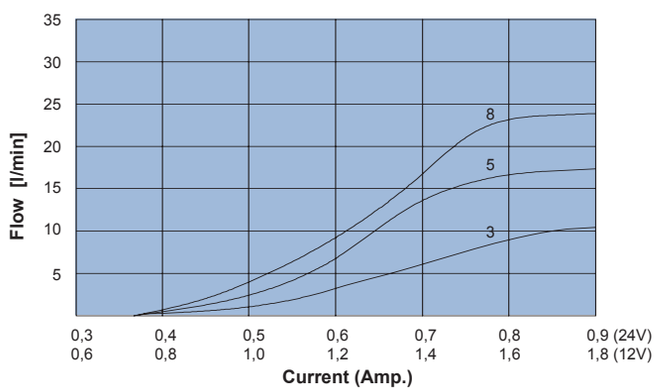
4 WAY SPOOL VALVE, ELECTRO-PROPORTIONAL FLOW CONTROL

- Maximum flow . . . . . **24 l/min**
- Max working pressure in 2:3:4. . . . . **250 bar**
- Max working pressure in 1. . . . . **20 bar**
- Application limits with Δp max from 3 to 4/2 . . . . **15 bar**
- Leakage . . . . . **100 cc/min**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,9 Kg**
- Cavity . . . . . **C430000** page **226**
- Body. . . . . **171322** page **195**
- Coil (to be ordered separately) . . . . . **09800** page **180**

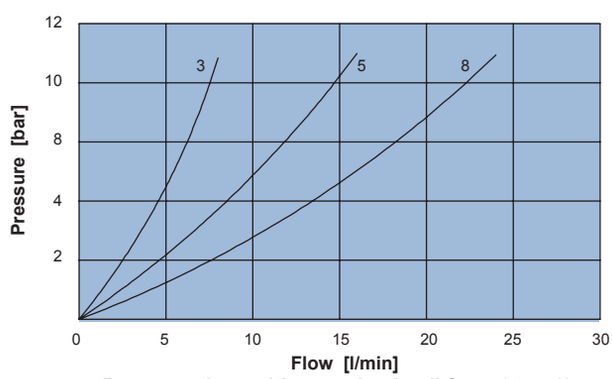


Scheme 1 **Scheme 2**





Graph flow/current with Δp from 3 to 4/2 of 7 bar



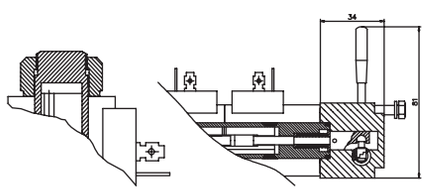
Pressure drop with energized coil from 3 to 4/2

Ordering code

0 4 7 3 ☐ 0 0 ☐ ☐ 0

1	**2**	**0**	**3**	**3**	**5**	**8**
Hydraulic scheme				**Qmax 9 l/min**	**Qmax 15 l/min**	**Qmax 24 l/min**

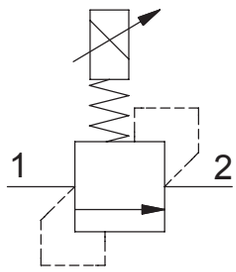
Flow range

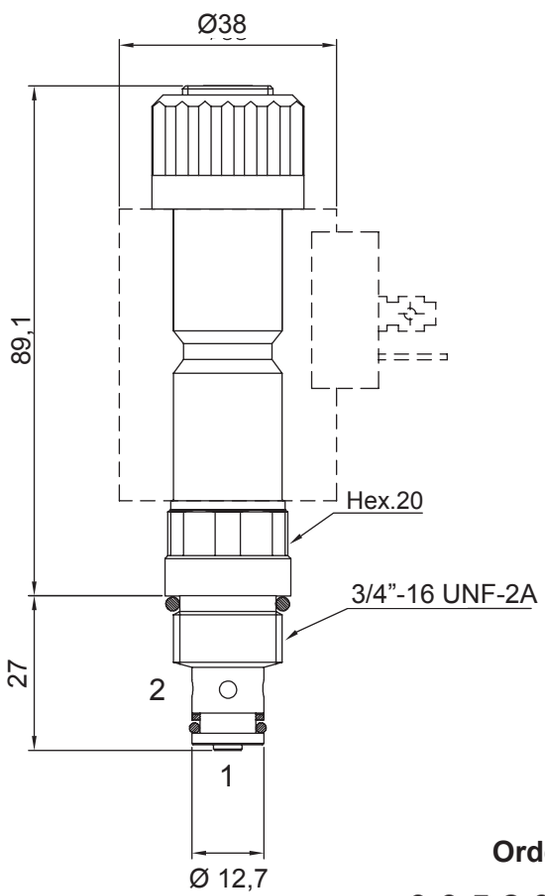


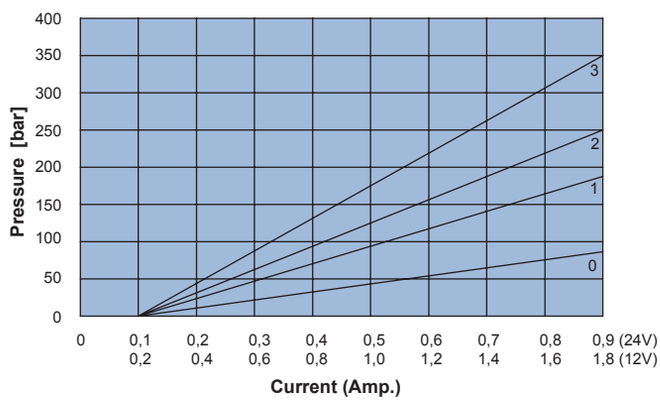
No emergency **Safety lever**

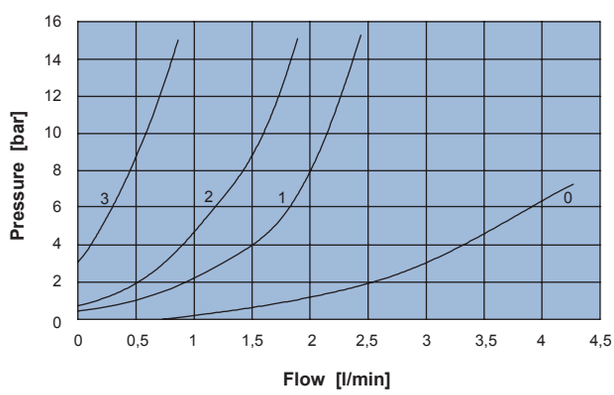
ELECTRO-PROPORTIONAL PRESSURE RELIEF VALVE, DIRECT ACTING

- Flow . . . . . **2 l/min**
- Max working pressure in 1. . . . . **350 bar**
- Max working pressure in 2. . . . . **20 bar**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque . . . . . **4 Nm**
- Weight (with coil). . . . . **0,46 Kg**
- Cavity . . . . . **C220000** page **208**
- Body. . . . . **171202** page **186**
- Coil (to be ordered separately) . . . . . **09800** page **180**





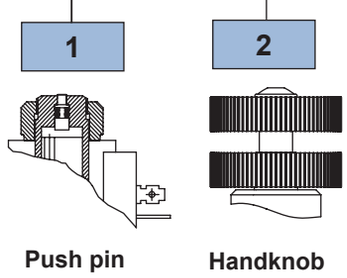




Ordering code

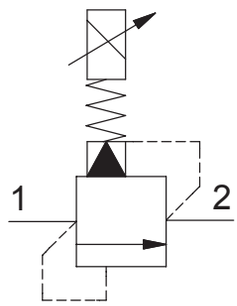
0 0 5 2 0 ☐ 0 ☐ 0 0

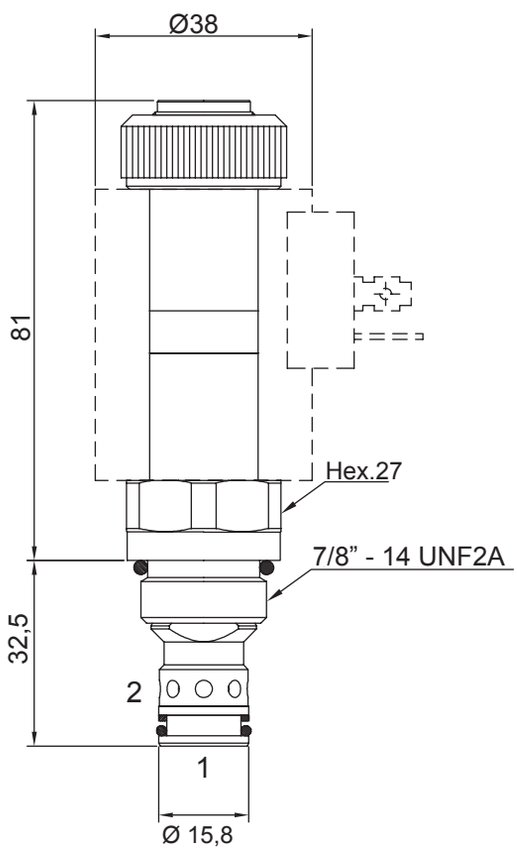
SETTING RANGE	0	1	2	3
Min - Max [bar]	10 ÷ 80	30 ÷ 150	40 ÷ 250	70 ÷ 350

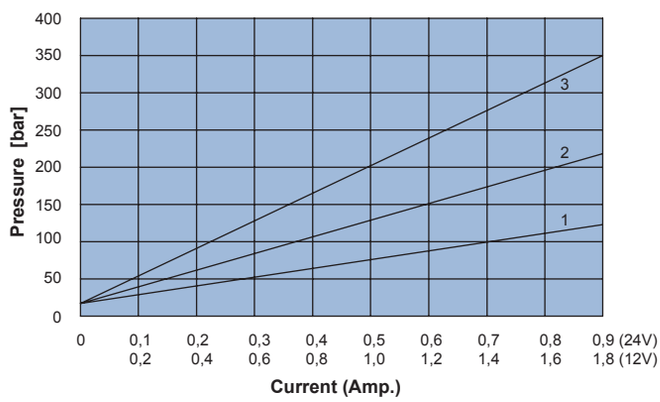


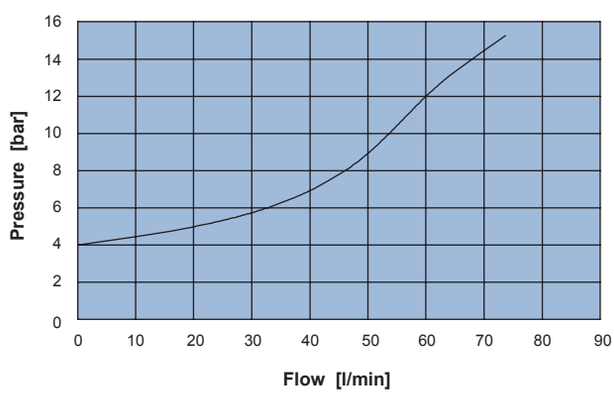
ELECTRO-PROPORTIONAL PRESSURE RELIEF VALVE, PILOT OPERATED

- Flow . . . . . **60 l/min**
- Max working pressure. . . . . **350 bar**
- Seals . . . . . **NBR and PTFE**
- Max current at 12 Vcc **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **40 Nm**
- Ring nut tightening torque . . . . . **4 Nm**
- Weight (with coil). . . . . **0,48 Kg**
- Cavity . . . . . **C230000** page **210**
- Body. . . . . **171302** page **191**
- Coil (to be ordered separately) . . . . . **09800** page **180**





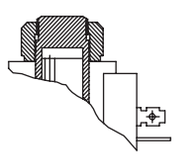
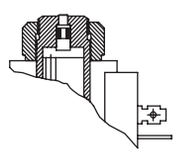
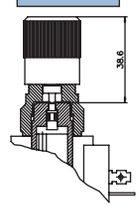




Ordering code

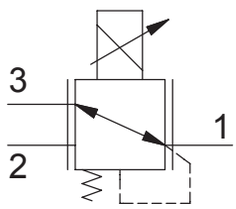
0 0 6 3 0 ☐ 0 ☐ 0 0

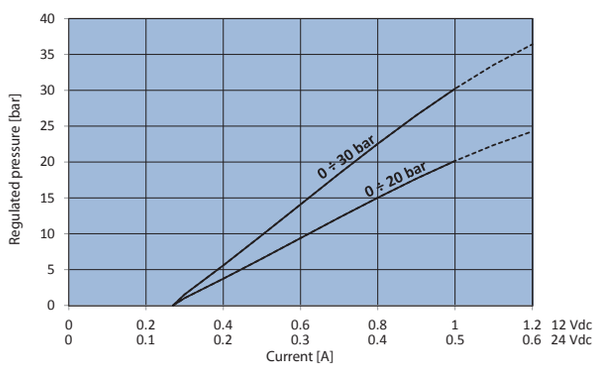
SETTING RANGE	1	2	3
Min - Max [bar]	0 ÷ 150	0 ÷ 250	0 ÷ 350

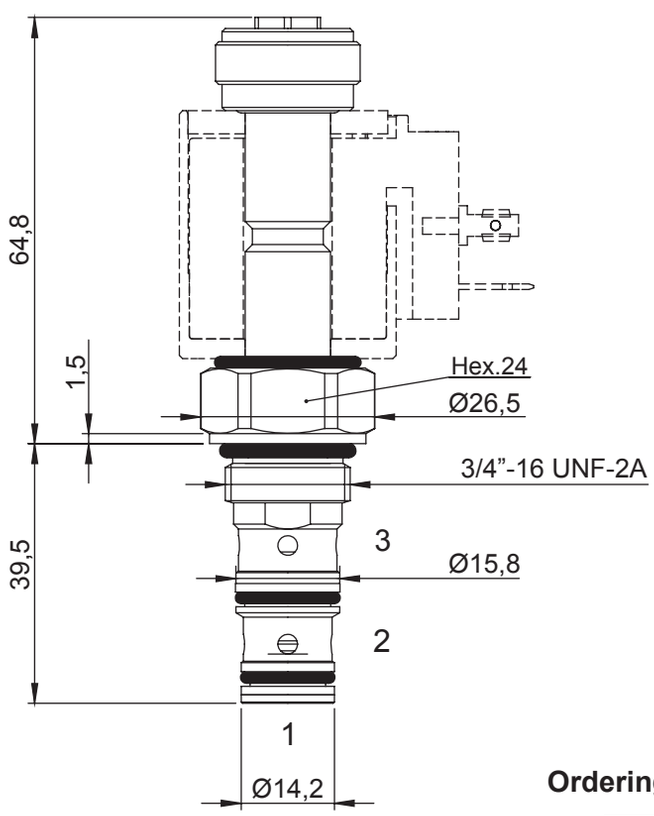
0	1	7
		
No emergency	Push pin	Handknob

ELECTRO-PROPORTIONAL PRESSURE REDUCING VALVE

- Flow . . . . . **4 l/min**
- Max working pressure in 2. . . . . **210 bar**
- Max working pressure in 1. . . . . **30 bar**
- Max working pressure in 3. . . . . **1 bar**
- Seals . . . . . **NBR and PTFE**
- Leakage . . . . . **150 cc/min**
- Max current at 12 Vcc **1200mA**
- Max current at 24 Vcc **600mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Cartridge tightening torque . . . . . **30 Nm**
- Ring nut tightening torque. . . . . **5 Nm**
- Weight (with coil). . . . . **0,4 Kg**
- Cavity . . . . . **C320000** page **218**
- Body. . . . . **171212** page **187**
- Coil (to be ordered separately) . . . . . **09400** page **179**







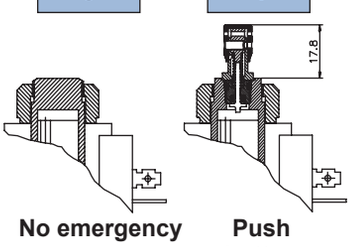
Ordering code

0 1 7 2 2 ☐ 0 ☐ ☐ 0

SETTING RANGE	0	1
Min - Max [bar]	0 ÷ 20	0 ÷ 30

0 — **No emergency**

4 — **Push button**

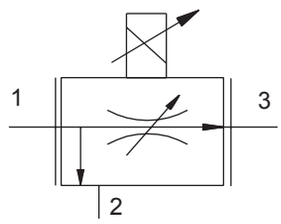


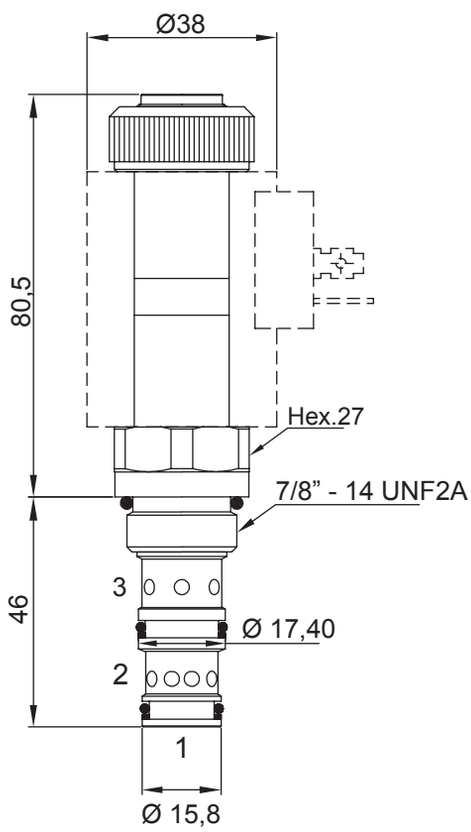
0 — **Without filter**

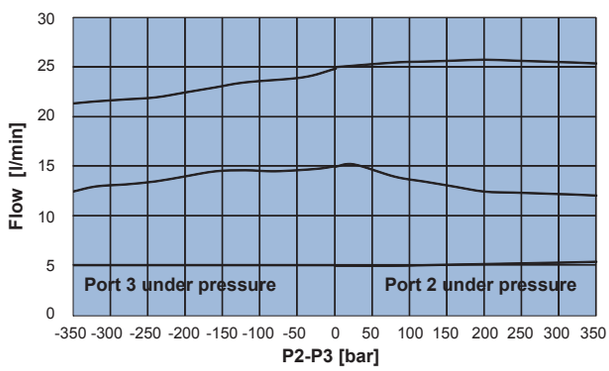
1 — **With filter**

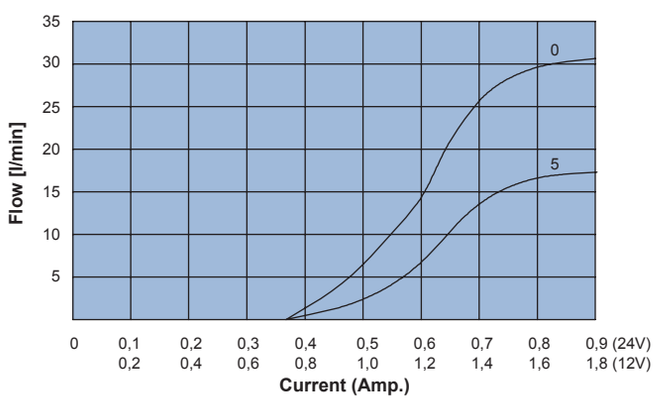
3 WAY FLOW REGULATOR VALVE

- Max working flow in 1 . . . . . **50 l/min**
- Max working pressure in 1:2:3 . . . . . **250 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **40 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,56 Kg**
- PWM . . . . . **120 Hz**
- Hysteresis **5%**
- Max current at 24 Vcc **900mA**
- Max current at 12 Vcc. **1800mA**
- Cavity . . . . . **C330000** page **220**
- Body. . . . . **171312** page **192**
- Coil (to be ordered separately) . . . . . **09800** page **180**





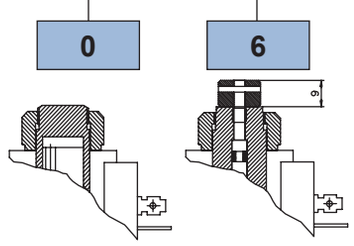




Ordering code

0 3 6 3 1 ☐ 0 ☐ 0 1

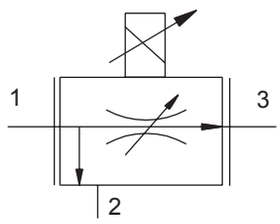
FLOW RANGE	0	5
Min - Max [l/min]	0÷25	0÷15

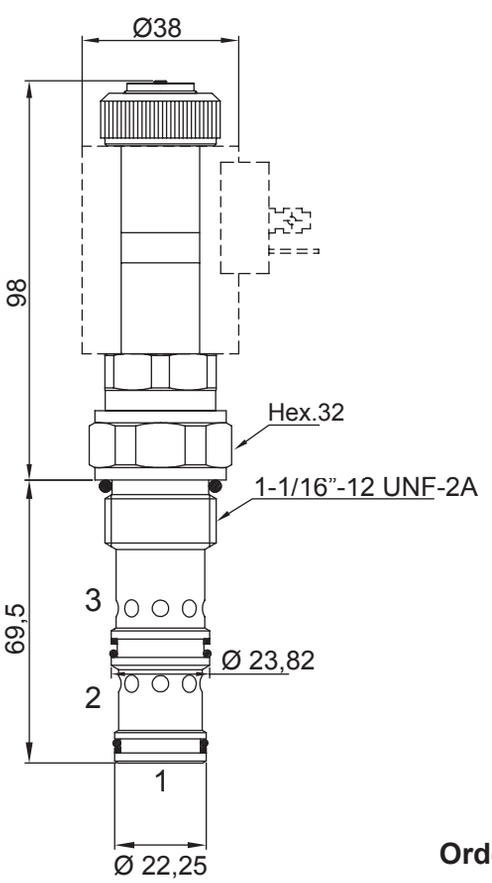


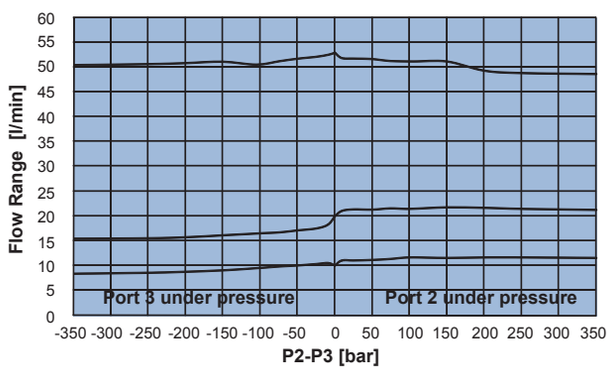
No emergency **Unscrew type**

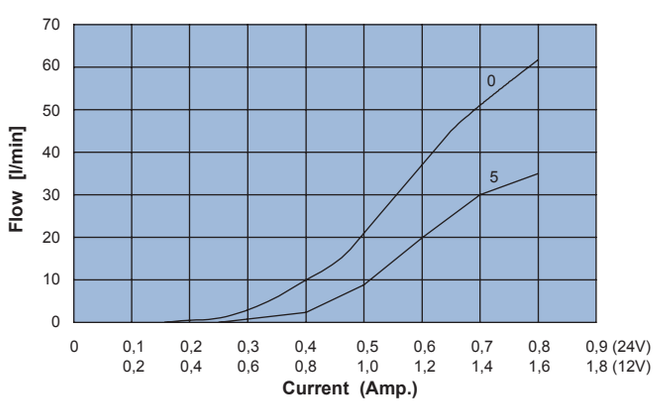
3 WAY FLOW REGULATOR VALVE

- Max flow range in 1 . . . . . **80 l/min**
- Max working pressure in 1:2:3 . . . . . **250 bar**
- Leakage . . . . . **150 cc/min**
- Seals . . . . . **NBR and PTFE**
- Cartridge tightening torque. . . . . **50 Nm**
- Ring nut tightening torque . . . . . **5 Nm**
- Weight (with coil). . . . . **0,7 Kg**
- PWM . . . . . **120 Hz**
- Hysteresis **5%**
- Max current at 24 Vcc **900mA**
- Max current at 12 Vcc. **1800mA**
- Cavity . . . . . **C340000** page **222**
- Body. . . . . **171412** page **197**
- Coil (to be ordered separately) . . . . . **09800** page **180**





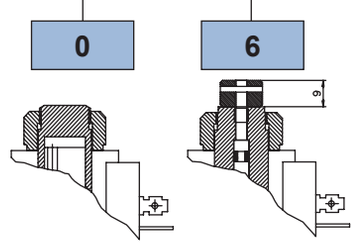




Ordering code

0 3 6 4 1 ☐ 0 ☐ 0 1

FLOW RANGE	0	5
Min - Max [l/min]	0÷50	0÷35



No emergency **Unscrew type**

COILS AND CONNECTORS

COILS AND CONNECTORS

INTRODUCTION

For each NEM electrically operated valve, indication of coil type is available, the coil must be selected through the technical specification, referring to feeding voltage and connector type.

Here follows some technical definitions of the coil's characteristics.

Feeding voltage

In order to obtain correct functionality and long life of the coil it is strongly recommended to maintain the feeding voltage always at +/-10% of the nominal value.

Thermal insulation class (DIN VDE 0580)

The insulation class of the coil gives max absolute working temperature (T).

Class F - T = 155°C
Class H - T = 185°C

The max absolute working temperature value "T" is the sum of the working temperature ΔT of the coil energized for 1 hour and of the ambient temperature Ta:

$$T = \Delta T + Ta$$

The insulation class of the wire gives the max working temperature inside the coil, before a short circuit damages of the wire insulation.
All NEM coil are produced with "H" class insulation copper wire, with >185°C resistance capability.

ED - Working intermittent (DIN VDE 0580)

Intermittent working (ED) is the max acceptable percentage of energized time "ti" versus the total cicle time "tc" (tc=ti+tr / tr=rest time).

ED=(tr/tc)*100 [100%]

All coils can be used with ED=100%, as long as the max acceptable insulation class temperature is not exceeded.
Moreover, all NEM proportional coils can be considered as ON-OFF coils with ED=50% if the maximum total cycle time is defined as 5 minutes (according to the DIN VDE 0580).

Protection class (EN60529)

The protection class IP is a code based on two numbers that gives the level of protection for an electric equipment against the acid. or inadv. contact with human body or objects and the water resistance.
The first value gives the level of protection against external solid objects, the second value gives the level of protection against liquid penetration.

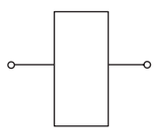
Some example of protection class:

IP RATE	DEFINITION
IP 65	• *Total protection against accid. or inadv. contact. Protection against dust.* • *Protection against water (out of a nozzle) from all direction*
IP 67	• *Total protection against accid. or inadv. contact. Protection against dust.* • *Protection against water plunging*

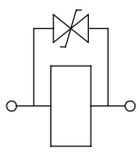
COIL - TUBE ∅ 13 — 22 W

- Wire insulation class. . . . . .**H (>185°C)**
- ED. **100%**
- Coil power at 20° C. . . . . .**22 W**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,19 Kg**

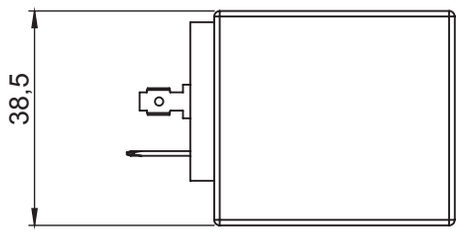
ELECTRIC CIRCUITS



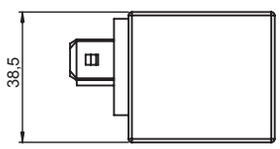
STANDARD

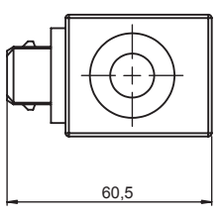


WITH DIODE (BI-DIRECTIONAL)

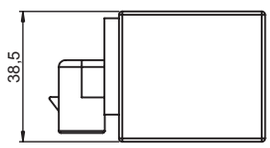


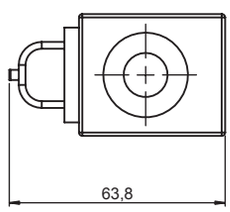
AMP - JUNIOR

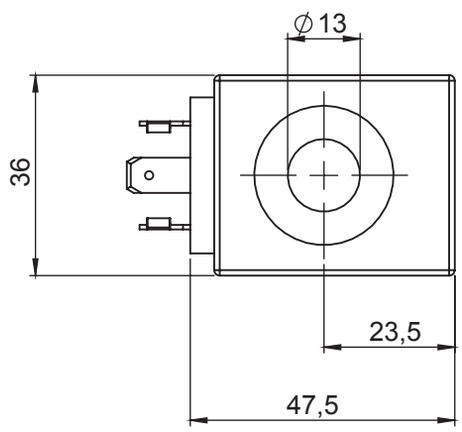




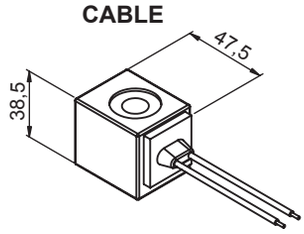
AMP - SUPER SEAL







CABLE



Note:
- Coil interchangeable with CT-9400 model.

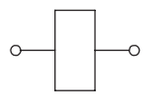
CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	F	12 V dc	6,5	STANDARD	**092001130**
DIN 43650	IP65*	F	14 V dc	8,9	STANDARD	**092001132**
DIN 43650	IP65*	F	24 V dc	26,5	STANDARD	**092002130**
DIN 43650	IP65*	F	26 V dc	30,6	STANDARD	**092002132**
AMP-JUNIOR	IP65*	F	12 V dc	6,5	STANDARD	**092201130**
AMP-JUNIOR	IP65*	F	24 V dc	26,5	STANDARD	**092202130**
AMP-JUNIOR	IP65*	H	26 V dc	32,5	WITH DIODE	**092202132**
CABLE L=300mm	IP65*	F	14 V dc	8,9	STANDARD	**092601130**
CABLE L=300mm	IP65*	F	26 V dc	30,6	STANDARD	**092602130**
AMP-SUPER SEAL	IP67*	F	24 V dc	26,5	STANDARD	**092702130**

*** Protection index with standard connector**

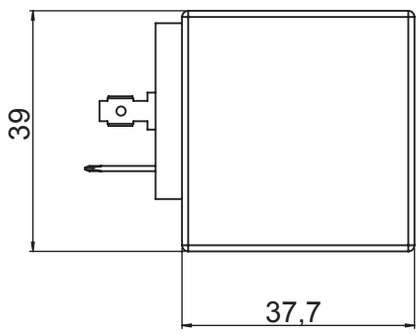
COIL - TUBE ∅ 13 — 18 W

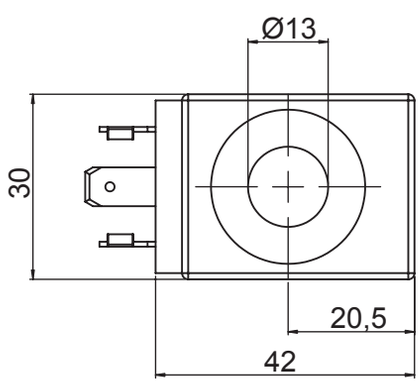
- Wire insulation class. . . . . .**H (>185°C)**
- ED. **100%**
- Coil power at 20° C. . . . . .**18 W**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,15 Kg**

ELECTRIC CIRCUITS



STANDARD





CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	F	12 V dc	7,5	STANDARD	**093001131**
DIN 43650	IP65*	F	24 V dc	30,1	STANDARD	**093002131**
DIN 43650	IP65*	F	24 V rac**	25,6	STANDARD	**093007130**
KOSTAL M27x1	IP65*	F	12 V dc	7,5	STANDARD	**093401131**
KOSTAL M27x1	IP65*	F	24 V dc	30,1	STANDARD	**093402131**

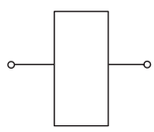
*** Protection index with standard connector**

**** Rectifier not included**

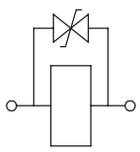
COIL - TUBE ∅ 13 — 20,5 W

- Wire insulation class. . . . . .**H (>185°C)**
- ED. **100%**
- Coil power at 20° C. . . . . **20,5 W**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,16 Kg**

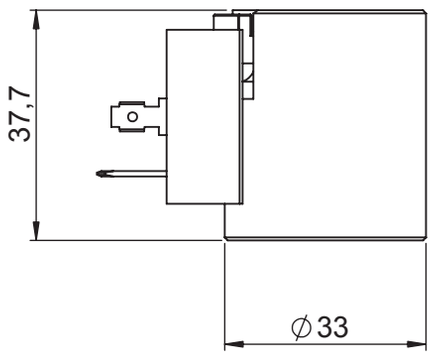
ELECTRIC CIRCUITS

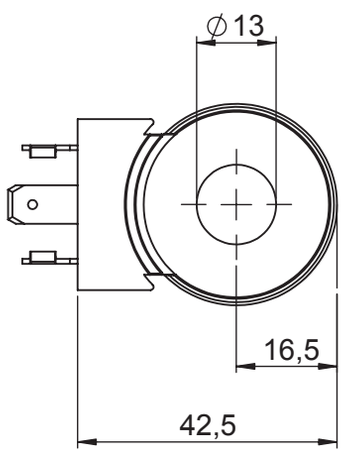


STANDARD

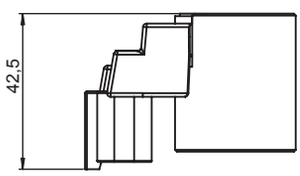


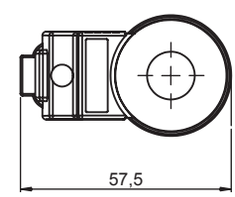
WITH DIODE (BI-DIRECTIONAL)



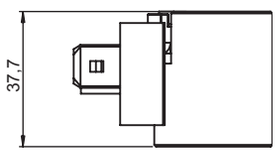


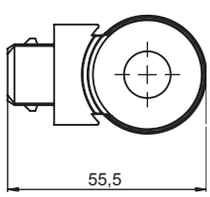
DEUTSCH DT4





AMP - JUNIOR





Note:
- Coil interchangeable with CT-9200 model.

CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	H	12 V dc	7	STANDARD	**094001000**
DIN 43650	IP65*	H	24 V dc	28	STANDARD	**094002000**
DEUTSCH DT 4	IP67	H	12 V dc	7	WITH DIODE	**094101000**
DEUTSCH DT 4	IP67	H	24 V dc	28	WITH DIODE	**094102000**
AMP - JUNIOR	IP65*	H	12 V dc	7	STANDARD	**094201000**
AMP - JUNIOR	IP65*	H	24 V dc	28	STANDARD	**094202000**

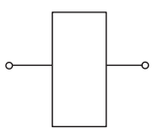
*** Protection index with standard connector**

PROPORTIONAL COIL - TUBE ∅ 19 — 36 W

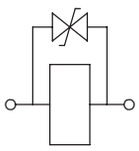
- Wire insulation class. . . . . .**H (>185°C)**
- ED *. **100%**
- Coil power at 20° C. . . . . .**36 W**
- Max current at 24 V dc. . . . . **0,9 A**
- Max current at 12 V dc . . . . . **1,8 A**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,28 Kg**

** ON/OFF use allowed only with ED 50% max (ED 50% according to the DIN VDE 0580)*

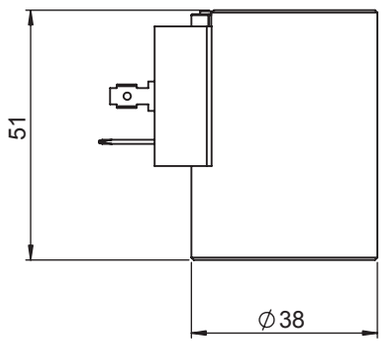
ELECTRIC CIRCUITS

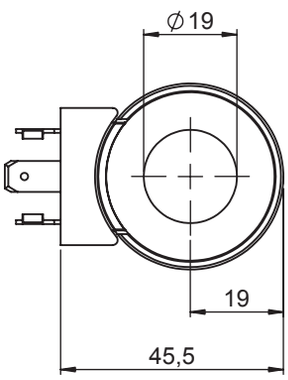


STANDARD

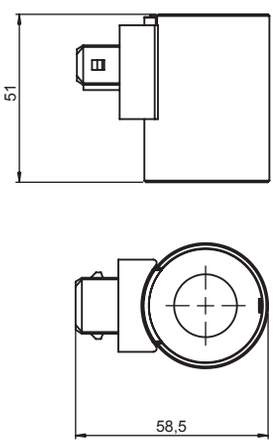


WITH DIODE (BI-DIRECTIONAL)

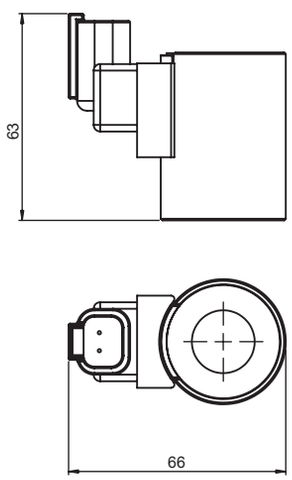




AMP - JUNIOR



DEUTSCH DT4



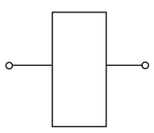
CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	H	12 V dc	3,9	STANDARD	**098001190**
DIN 43650	IP65*	H	24 V dc	14,5	STANDARD	**098002190**
DEUTSCH DT 4	IP67	F	12 V dc	3,9	WITH DIODE	**098101190**
DEUTSCH DT 4	IP67	F	24 V dc	14,5	WITH DIODE	**098102190**
AMP - JUNIOR	IP65*	F	12 V dc	3,9	WITH DIODE	**098201190**
AMP - JUNIOR	IP65*	F	24 V dc	14,5	WITH DIODE	**098202190**
AMP - JUNIOR	IP65*	H	26 V dc	18,8	WITH DIODE	**098212192**

*** Protection index with standard connector**

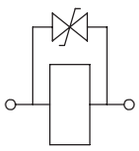
COIL - TUBE ∅ 19 — 24 W

- Wire insulation class. . . . . .**H (>185°C)**
- ED. **100%**
- Coil power at 20° C. . . . . .**24 W**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,28 Kg**

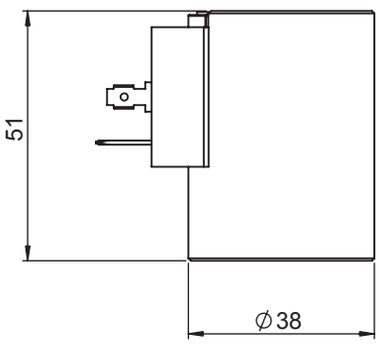
ELECTRIC CIRCUITS

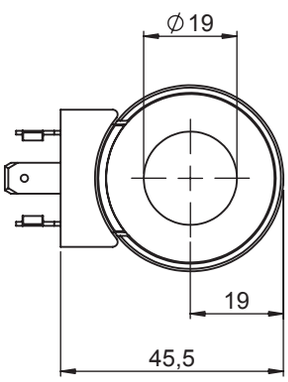


STANDARD

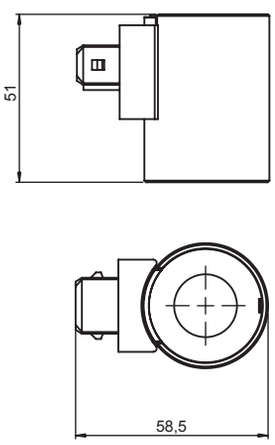


WITH DIODE (BI-DIRECTIONAL)

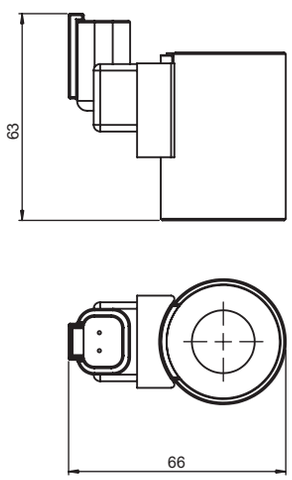




AMP - JUNIOR



DEUTSCH DT4



CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	H	12 V dc	6,8	STANDARD	**098011190**
DIN 43650	IP65*	H	24 V dc	24	STANDARD	**098012190**
DIN 43650	IP65*	H	26 V dc	27,1	STANDARD	**098012191**
DIN 43650	IP65*	H	220 V Rac**	1470	STANDARD	**098016190**
DEUTSCH DT 4	IP67	F	12 V dc	6,8	WITH DIODE	**098111190**
DEUTSCH DT 4	IP67	F	24 V dc	24	WITH DIODE	**098112190**
AMP - JUNIOR	IP65*	F	12 V dc	6,8	WITH DIODE	**098211190**
AMP - JUNIOR	IP65*	F	24 V dc	24	WITH DIODE	**098212190**
AMP - JUNIOR	IP65*	H	26 V dc	28,1	WITH DIODE	**098212193**

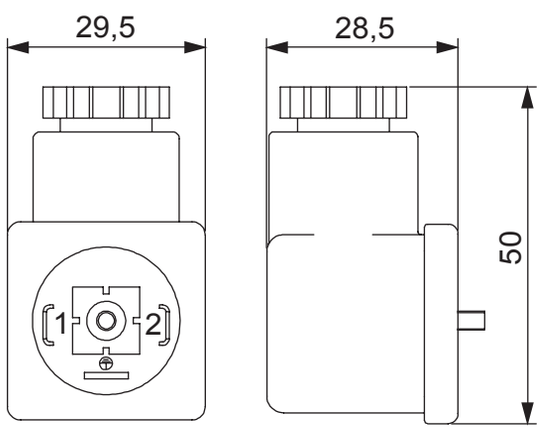
*** Protection index with standard connector**

**** Rectifier not included - Power 25W**

CONNECTOR DIN 43650 - ISO 4400

- Insulation class. . . . . **VDE 0110-1/89**
- Protection index. . . . . **IP 65**
- Distance between poles . . . . . **18 mm**
- Poles resistance at 20°C. . . . . **6 < Ohm**
- Ambient temperature . . . . . **-40 +90° C**
- Max conductor cross sett. . . . . **1,5 mm**
- Weight. . . . . **0,05 Kg**

DIN 43650



Ordering code

4 3 5 2 2 0 1 0 0 0

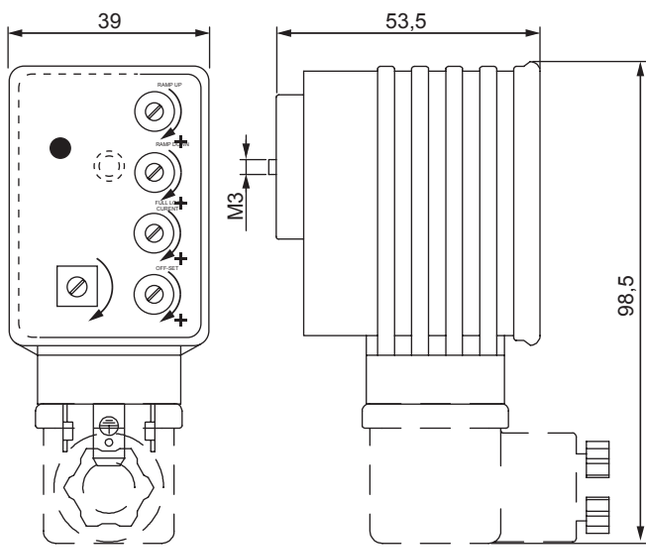
NITRILE SEAL

PROPORTIONAL ELECTRIC DRIVER

- Power supply voltage **12-24VDC**
- Rectified and filtered ripple voltage. **10%**
- Output current **0-1,7A**
- Max current absorbition without load **30mA**
- Off-set current. **0-1,0A**
- Medium power absorption. **35W**
- Dither frequency. **50-400Hz**
- Ramp up-down time. . . . . **0,1-10 S**
- Current stability on temperature range. **3%**
- Maximum time delay of the ramp indipendently of the full load current setting. . . . . **YES**
- Operating temperature range. . . . . **-10/+50°C**
- Protection class. **IP65**
- Weight. **100g**

GENERAL DESCRIPTION

This miniature electronic regulator is embedded into the plug housing with DIN43650 - ISO 4400 connector and allows open loop driving of the solenoid of proportional valves. It is protected against power supply polarity inversion and solenoid short circuit.The minimum and maximum current values are adjusteded with two potentiometers, and other two separate potentiometers allow the ramp-up and ramp- down parameter adjustment. A yellow led is lit when the system is powered.



NOTE

The power supply voltage must be in the 12 to 24 V DC range. It is necessary to power the system with rectified and filtered voltage. The use of a 4700 mF 35V electrolytic capacitor is recommended to filter the power voltage supply.The electronic controller can drive valves with coil powered at 12 or 24 Vdc. In order to assure the nominal maximum current value of the coil it is necessary that the voltage supply of the controller exceeds the nominal voltage supply of the coil valve at least of 1,5V.

Ordering code

2 9 8 0 0 1 0 0 0 0

PROPORTIONAL ELECTRIC DRIVER

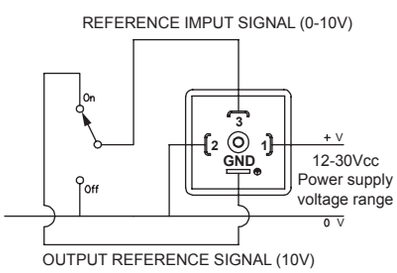
APPLICATIONS

1 - On-Off application mode with switch and ramp setting for acceleration and deceleration uses.
The **GND** and **3** terminals are connected to the two terminals of the switch (normally open). When the switch is closed, the input reference signal is tied to the maximum voltage value and consequently the current of the solenoid reaches the maximum value. When the switch is open the current flowing into the solenoid reaches the minim value. The **ramp up** and **ramp down** potentiometers allow to adjust, using linear ramp, respectively the time delay between the switching from minimum to maximum current and the delay between the switching from maximum to minimum current. The minimum and maximum current values are adjusted with the offset andfull load potentiometers.

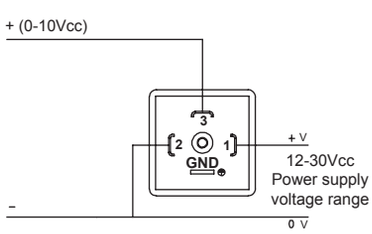
2 - Control mode using a voltage generator as input signal.
The external signal control must be connected to terminal 3 and ground (0V) must be connected to terminal 2. The input voltage on the terminal 3 can be regulated from 0 to 10V. The current on the valve coil is proportional to the input command voltage. Set this signal to the maximum value(10V), then proceed to the adjustment of the full load potentiometer, in order to set the maximum current value on the solenoid.

3 - Control mode with potentiometer.
Pins 1, 2 and 3 of the potentiometer must be connected respectively to the **GND**, **3** and **2** terminals of the controller. To setup the controller, rotate the potentiometer fully clockwise and follow the“**Adjustment instructions**”. A 5KOhm potentiometer is recommended. In any case the potentiometer value must be between 2KOhm and 5KOhm.

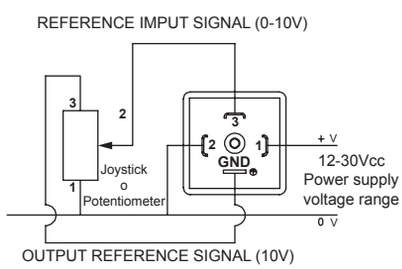
4 - Two axes control with joystick.
This control can be done using a joystick with two axes and two EPC-H02 devices. The joystick is connected to a voltage converter; this converters supplies the input reference signals for the two devices. The currents and the ramps of the two devices are independent. By doubling the above said system, it is possible to realize a four axes system.



(ON-OFF CONNECTION)



(EXTERNAL CONNECTION)



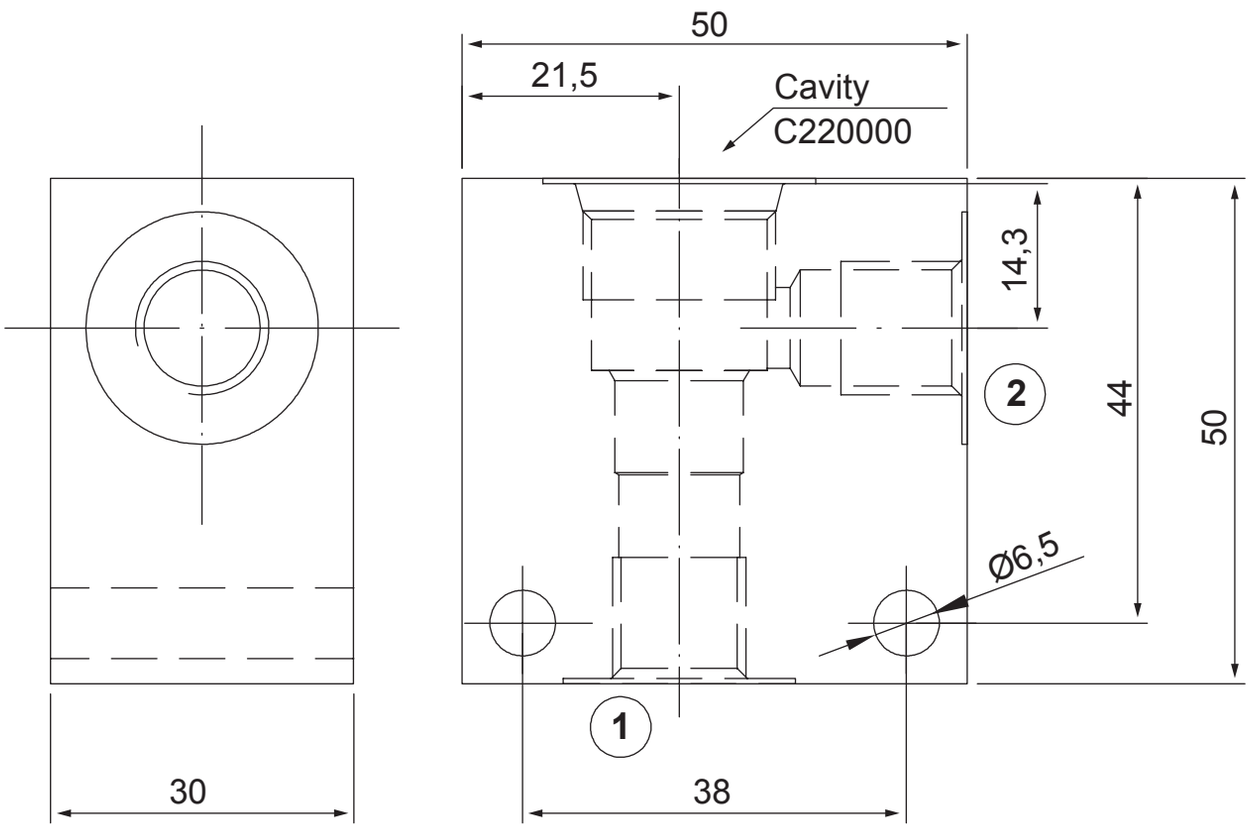
(POTENTIOMETER CONNECTION)

ADJUSTMENT INSTRUCTIONS

After the system is connected, verify that is possible to move the hydraulic cylinder using the potentiometer or the switch. Set the ramp up and ramp down potentiometers to zero, rotating the cursor completely counter clockwise. Set the external potentiometer to zero (or open the external switch) and set the minimum current of the solenoid using the offset potentiometer, rotating it until the hydraulic device begins to move: with this setting, the system will operate without delay. Set the full load potentiometer to zero and rotate the external control potentiometer completely clockwise (or close the external switch): rotate the full load potentiometer clockwise until the hydraulic cylinder reaches the maximum displacement, then rotate the full load potentiometer back until the hydraulic cylinder comes back slightly. Once the tuning of the start and end positions of the hydraulic cylinder stroke is complete, it is possible to regulate the switching speed between the two extreme positions of the stroke using the ramp up and ramp down potentiometers. This further adjustment doesn’t affect the previouslytuned settings.

STANDARD BODIES

STANDARD BODY FOR LINE MOUNTING



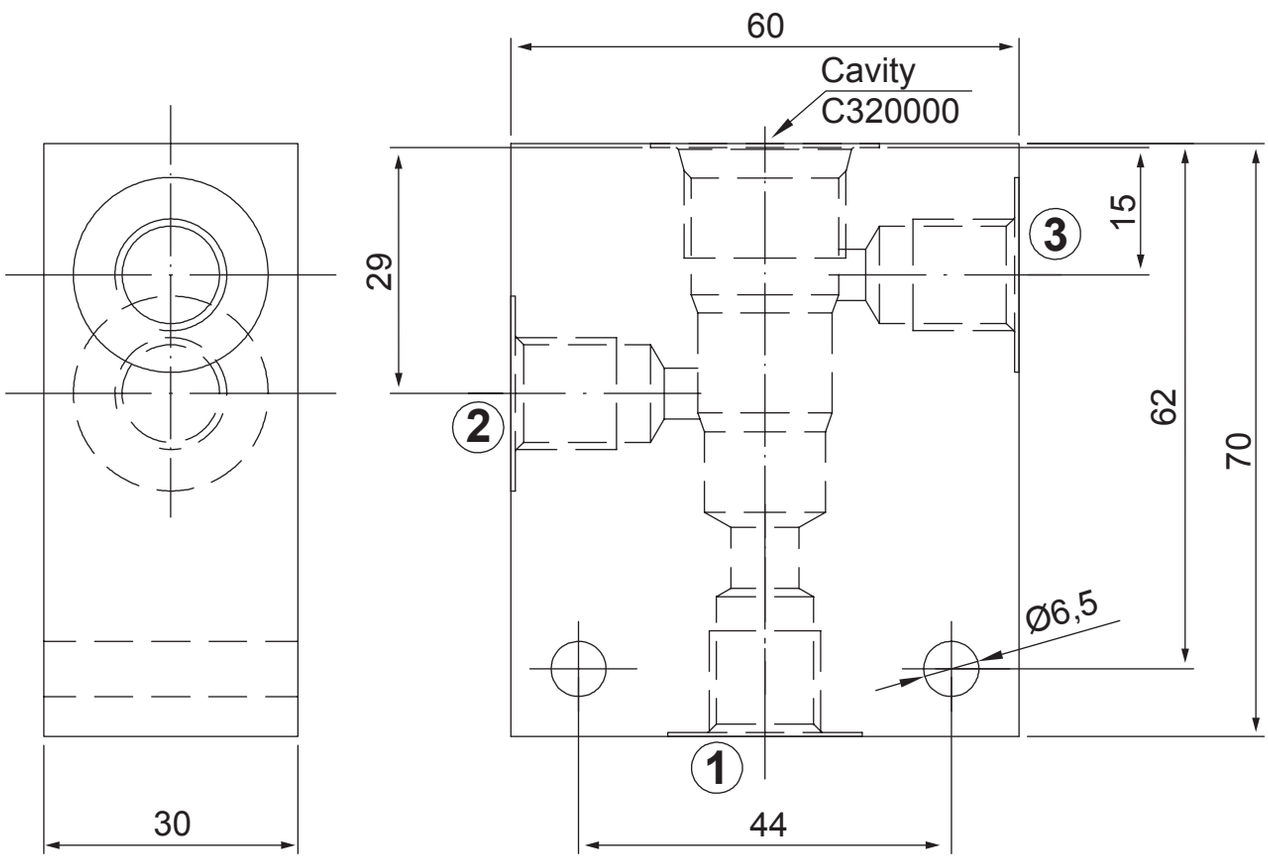
Ordering code

1 7 1 2 0 2 ☐ ☐ 0 0

PORTS SIZE	
G1/4 = **1**	G3/8 = **2**

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING



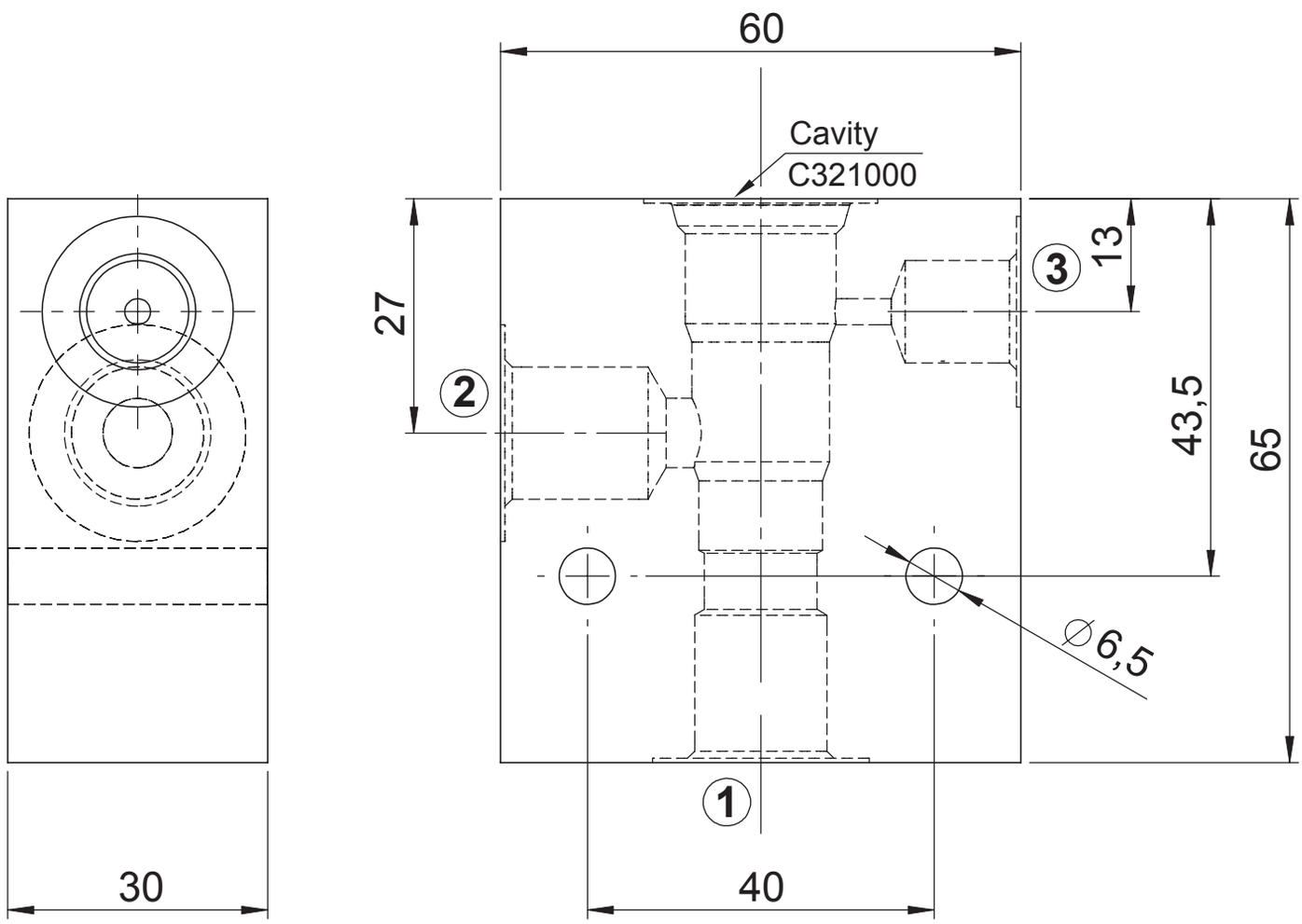
Ordering code

1 7 1 2 1 2 ☐ ☐ 0 0

PORTS SIZE	
G1/4 = **1**	G3/8 = **2**

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES



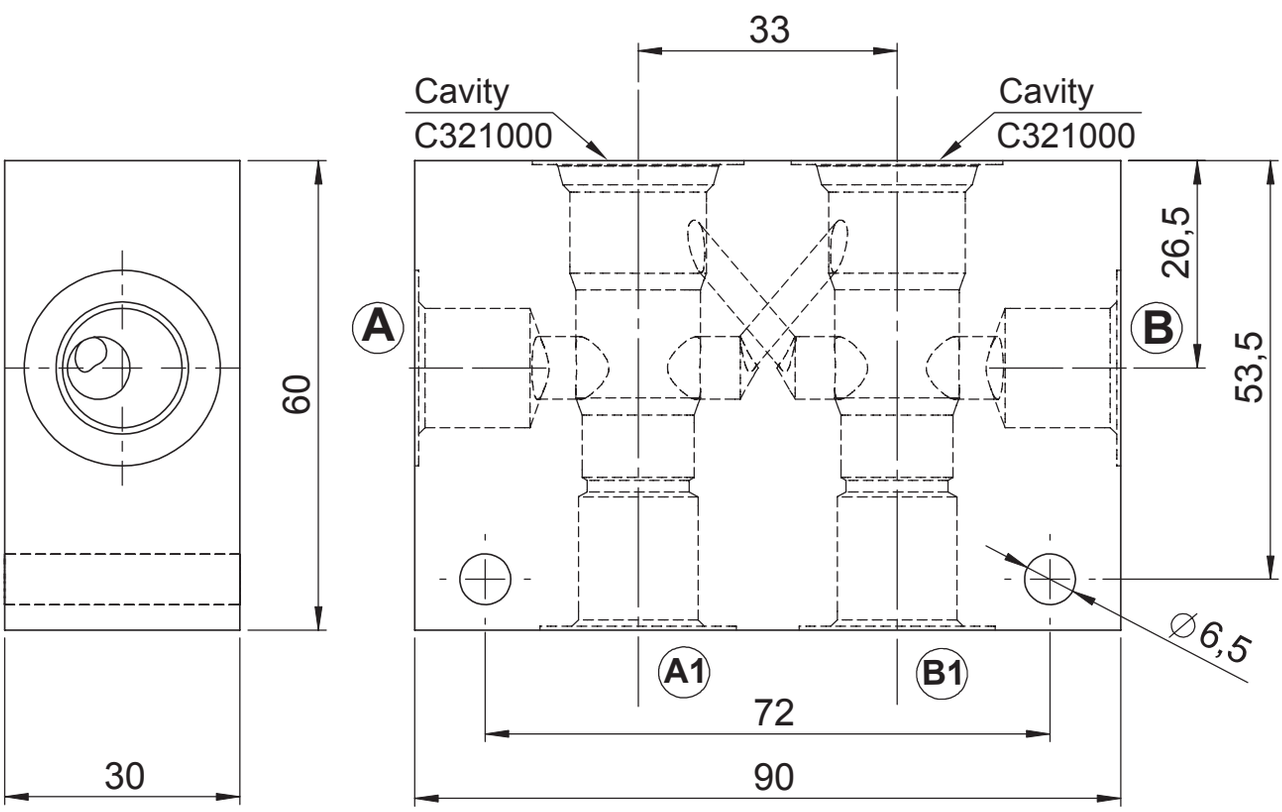
Ordering code

1 7 2 2 1 2 ☐ ☐ 0 0

PORTS SIZE	1-2	3
2	G3/8	G1/4

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES DOUBLE CAVITY



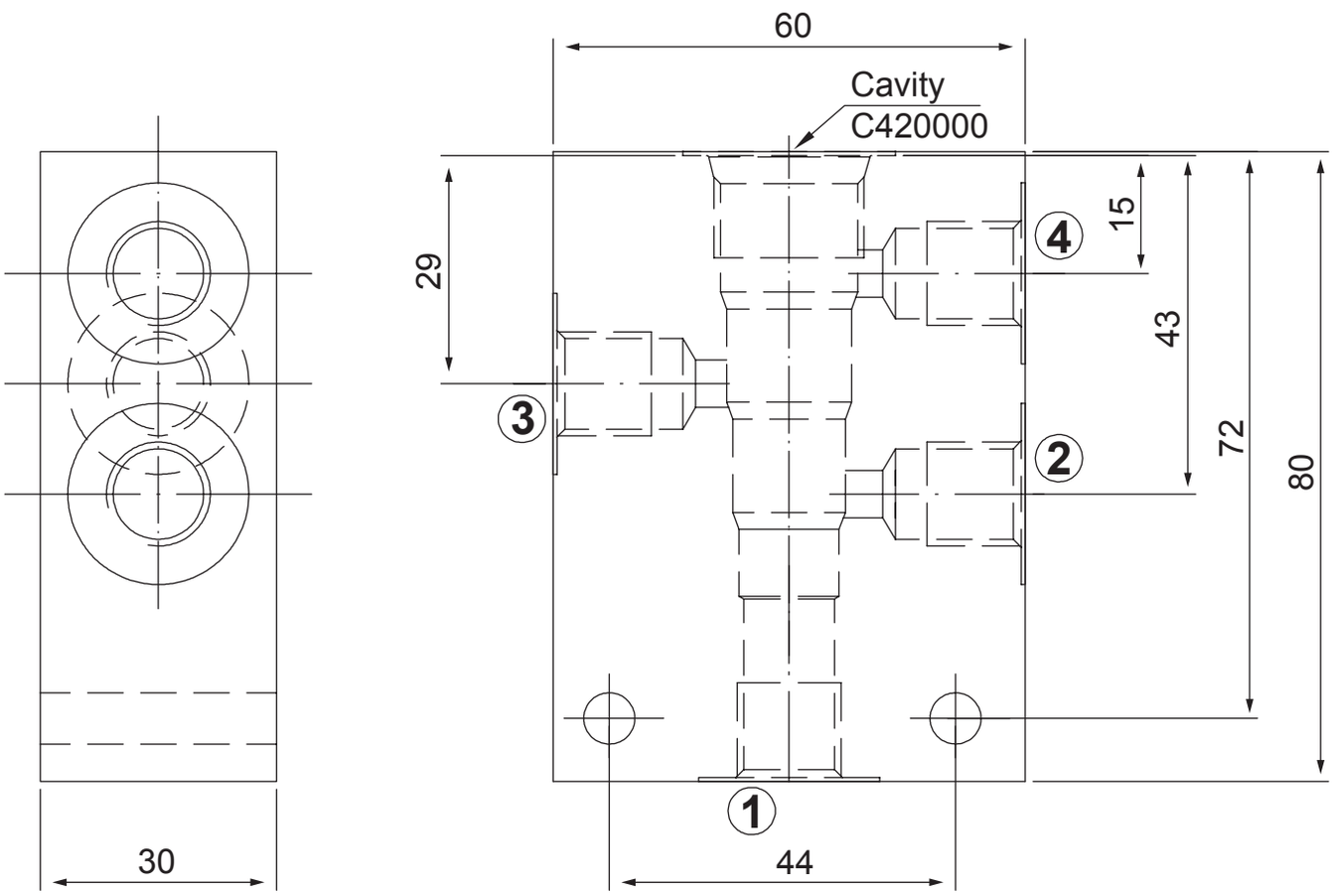
Ordering code

1 7 6 2 1 2 ☐ ☐ 0 0

PORTS SIZE	A1-B1	A-B
2	G3/8	G3/8

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING



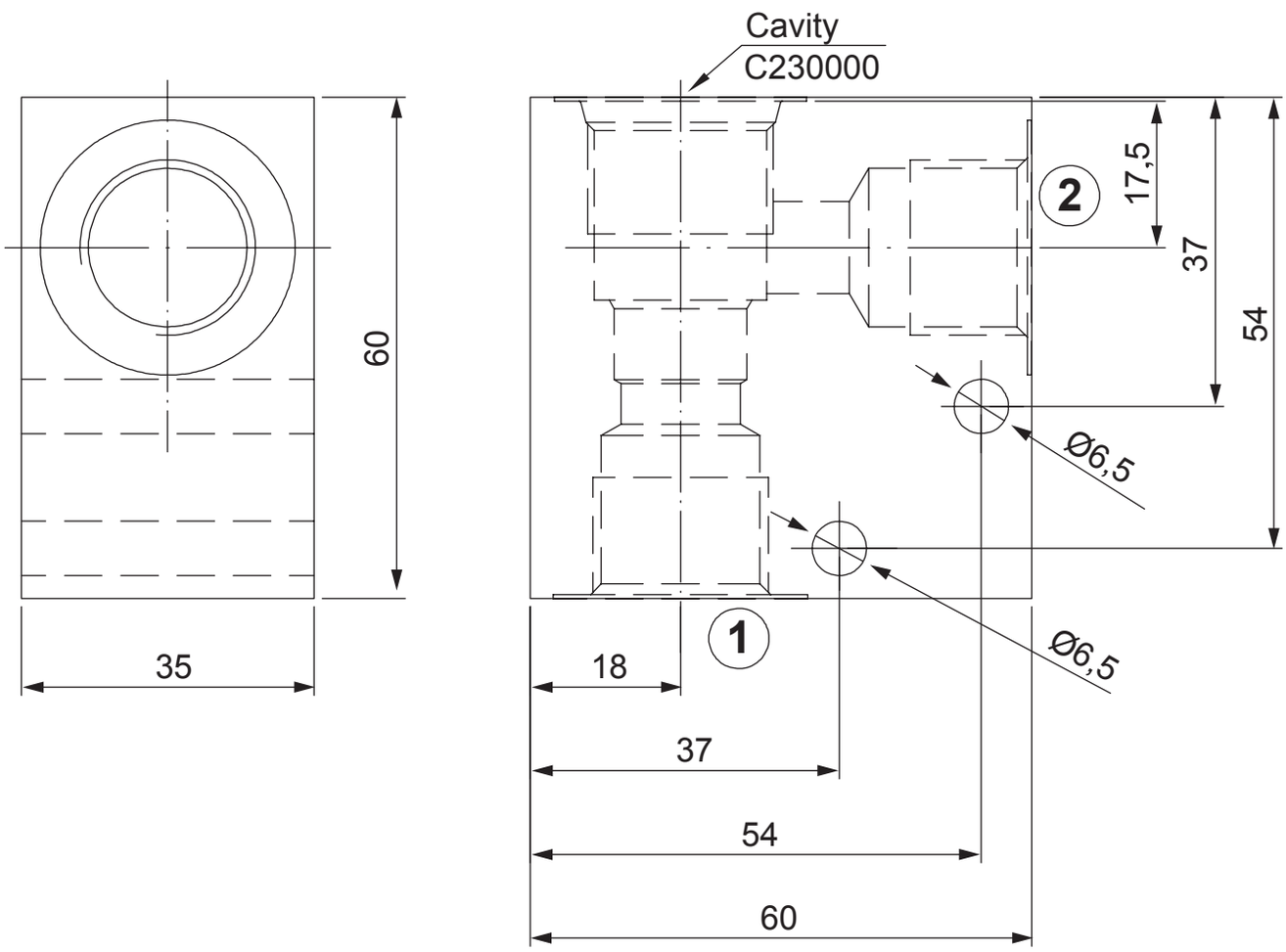
Ordering code

1 7 1 2 2 2 ☐ ☐ 0 0

PORTS SIZE	
G1/4 = 1	G3/8 = 2

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING



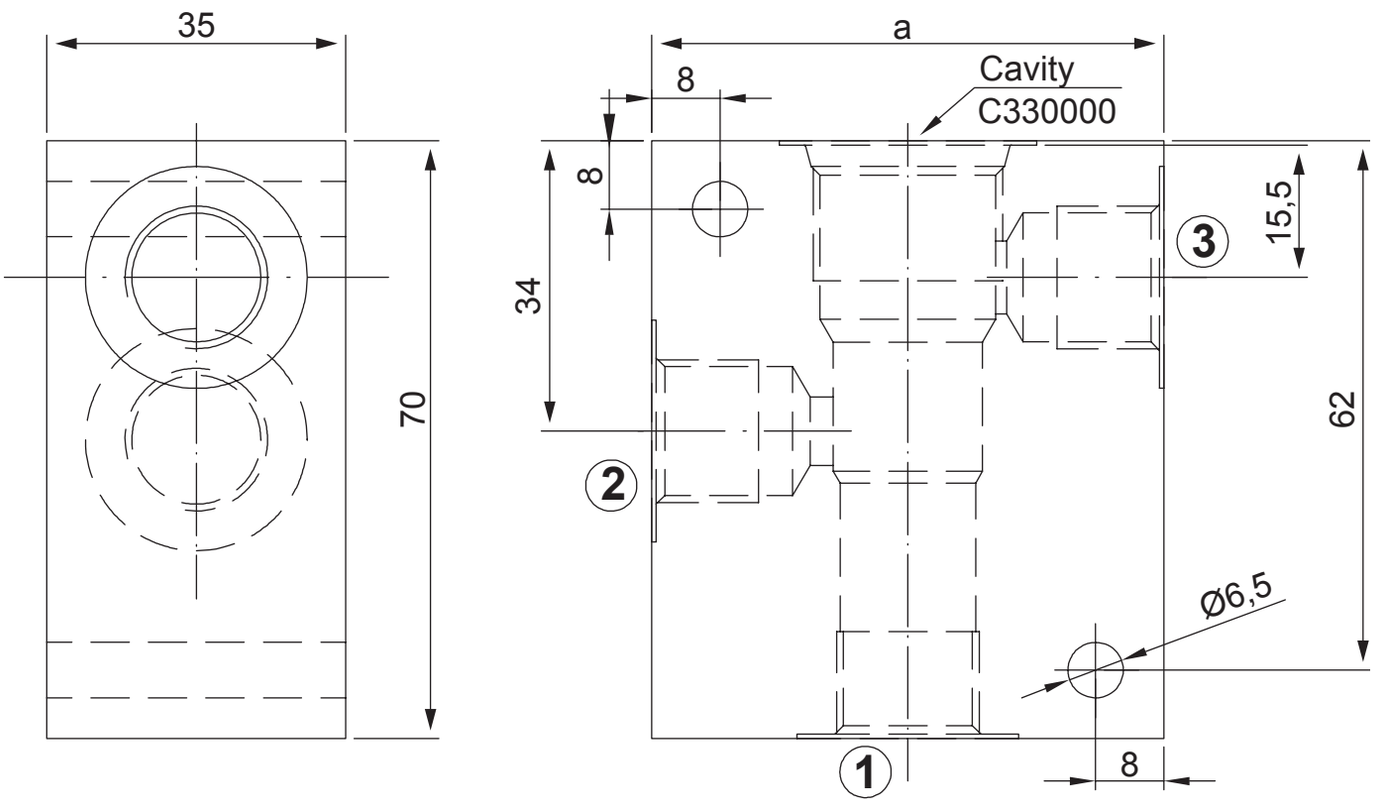
Ordering code

1 7 1 3 0 2 ☐ ☐ 0 0

PORTS SIZE	
G3/8 = **2**	G1/2 = **3**

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING



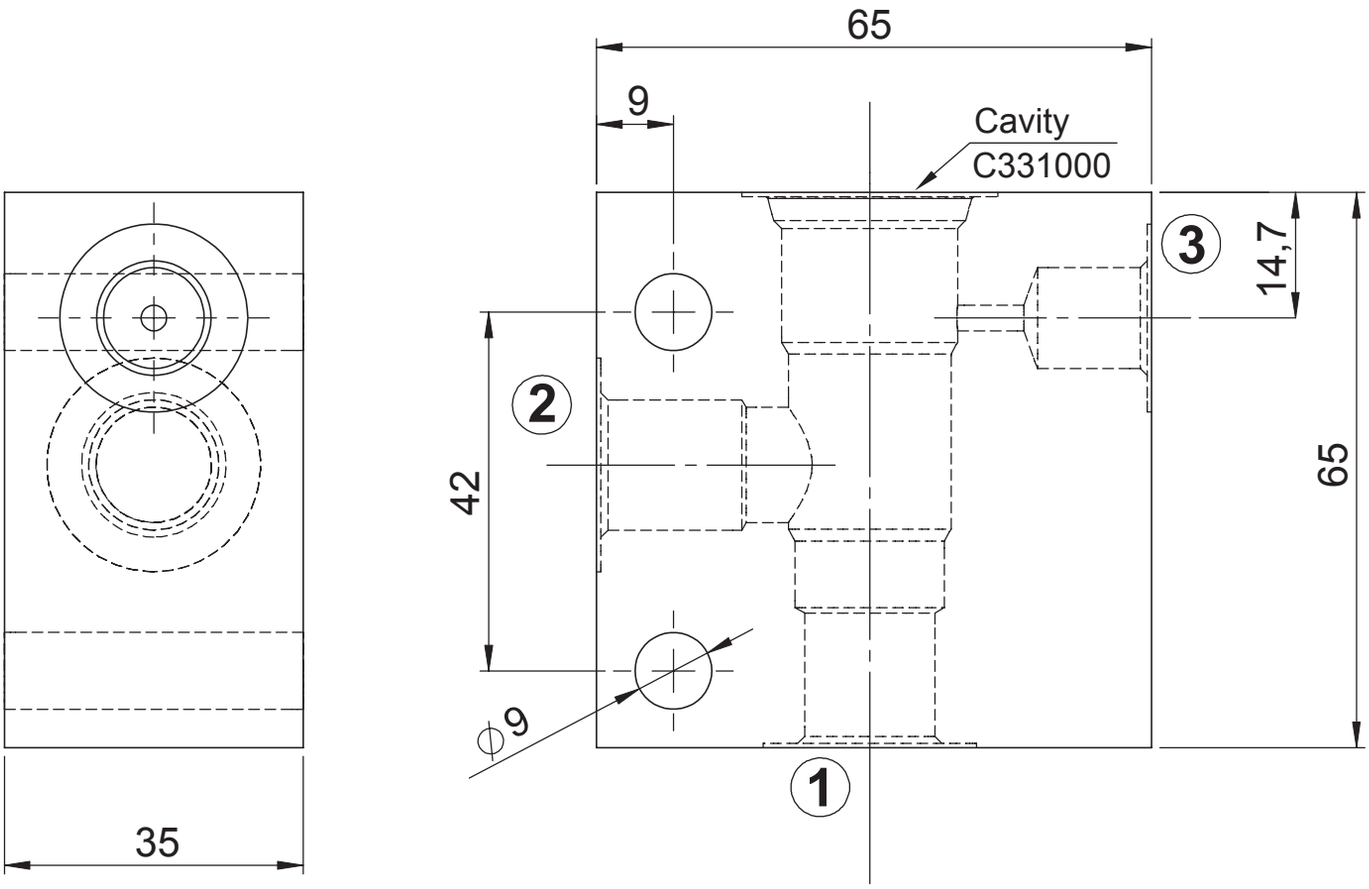
Ordering code

1 7 1 3 1 2 ☐ ☐ 0 0

PORTS SIZE			
	1	**2**	**3**
PORTS 1-2-3	G1/4	G3/8	G1/2
a	60	60	70

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES



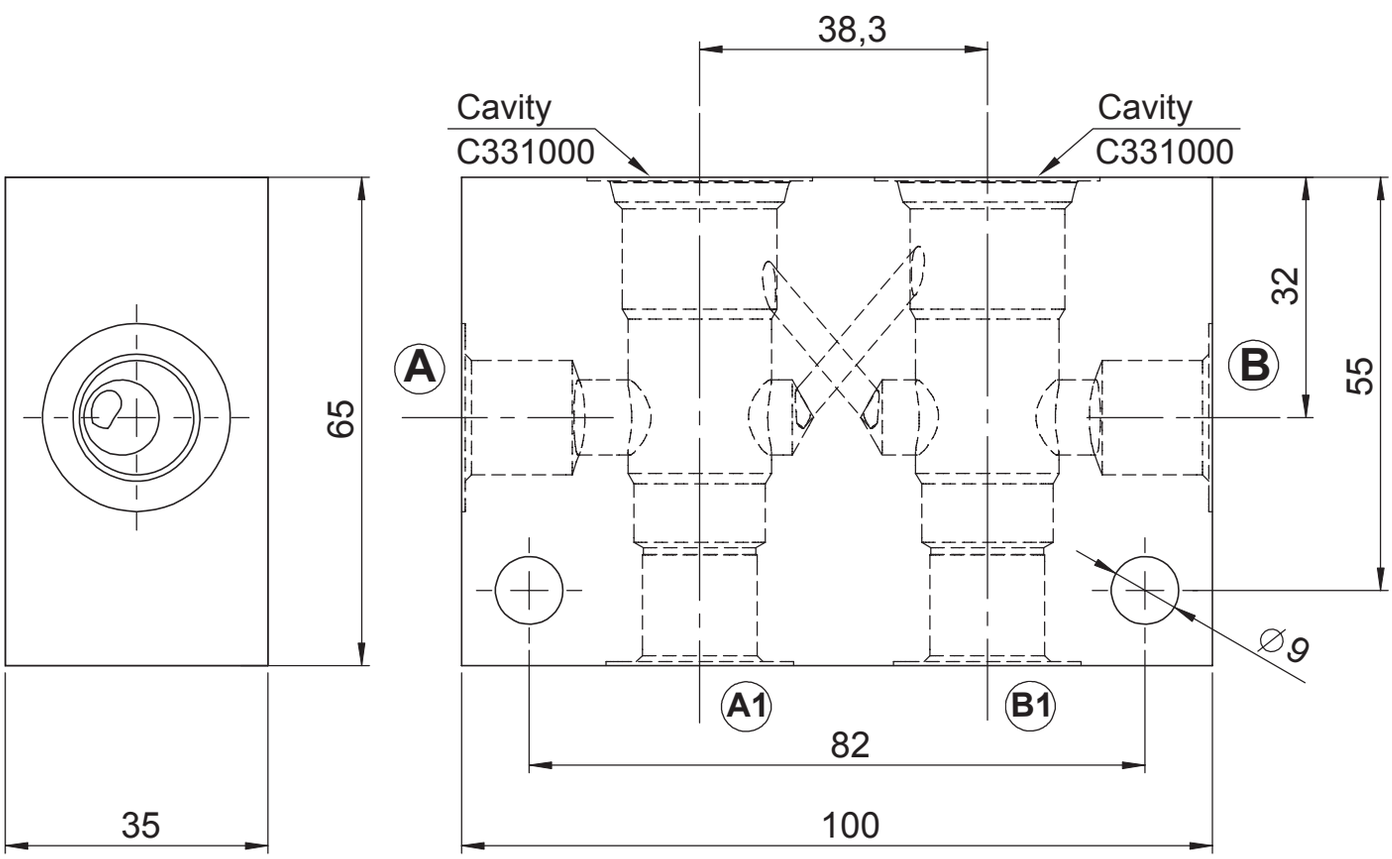
Ordering code

1 7 2 3 1 2 ☐ ☐ 0 0

PORTS SIZE	1-2	3
2	G3/8	G1/4

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES DOUBLE CAVITY



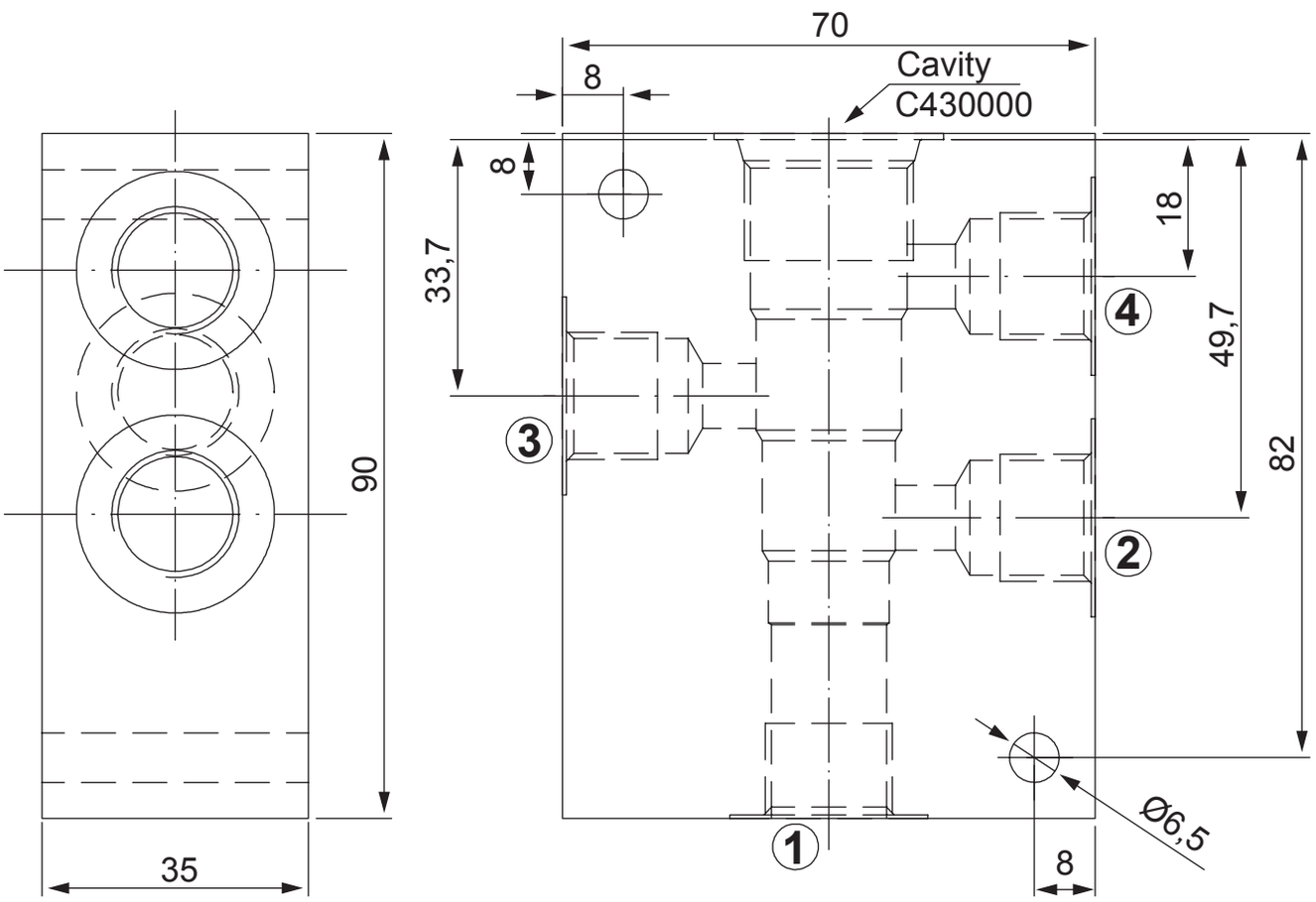
Ordering code

1 7 6 3 1 2 ☐ ☐ 0 0

PORTS SIZE	A1-B1	A-B
2	G3/8	G3/8

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING



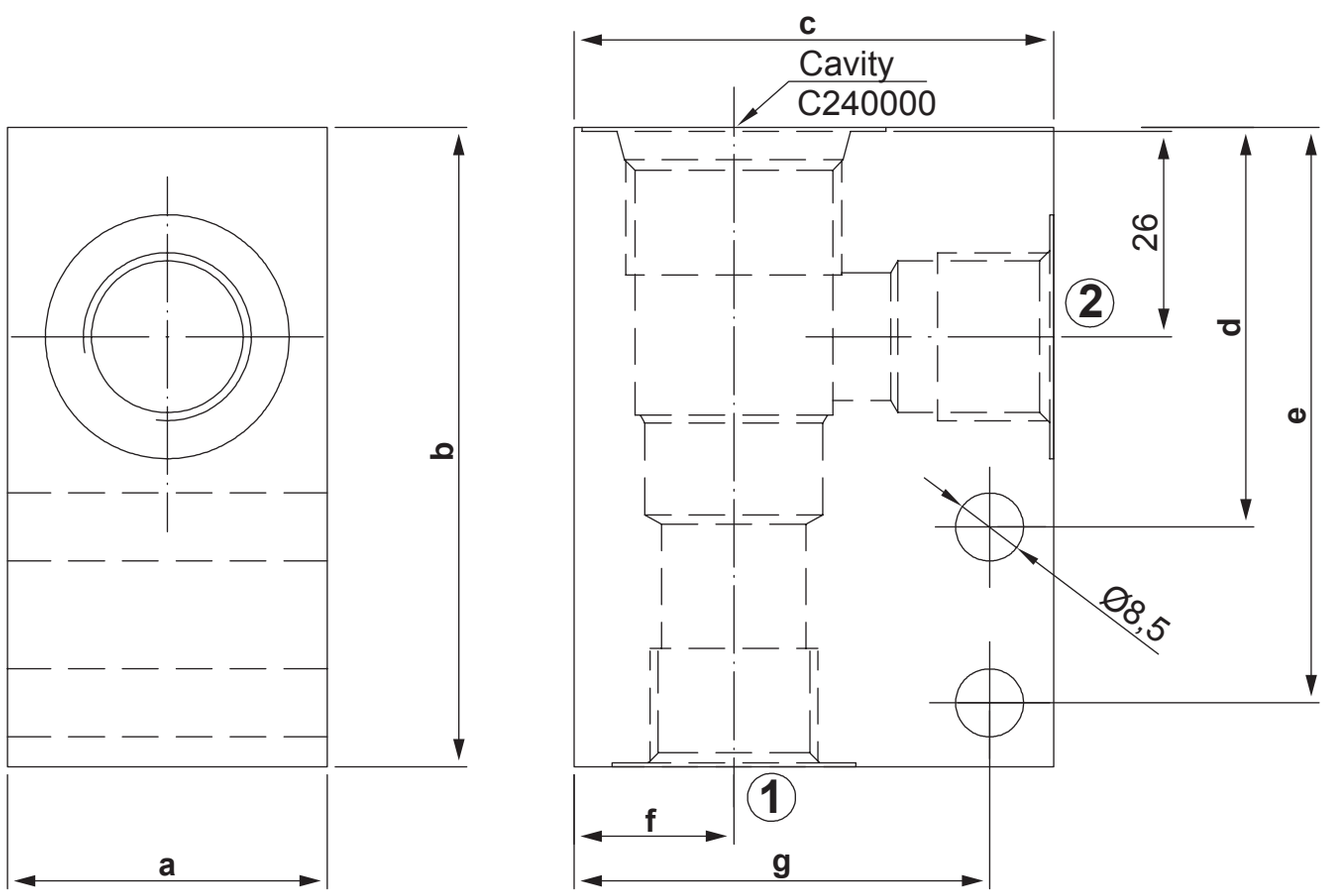
Ordering code

1 7 1 3 2 2 ☐ ☐ 0 0

PORTS SIZE	
G3/8 = **2**	G1/2 = **3**

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING



Ordering code

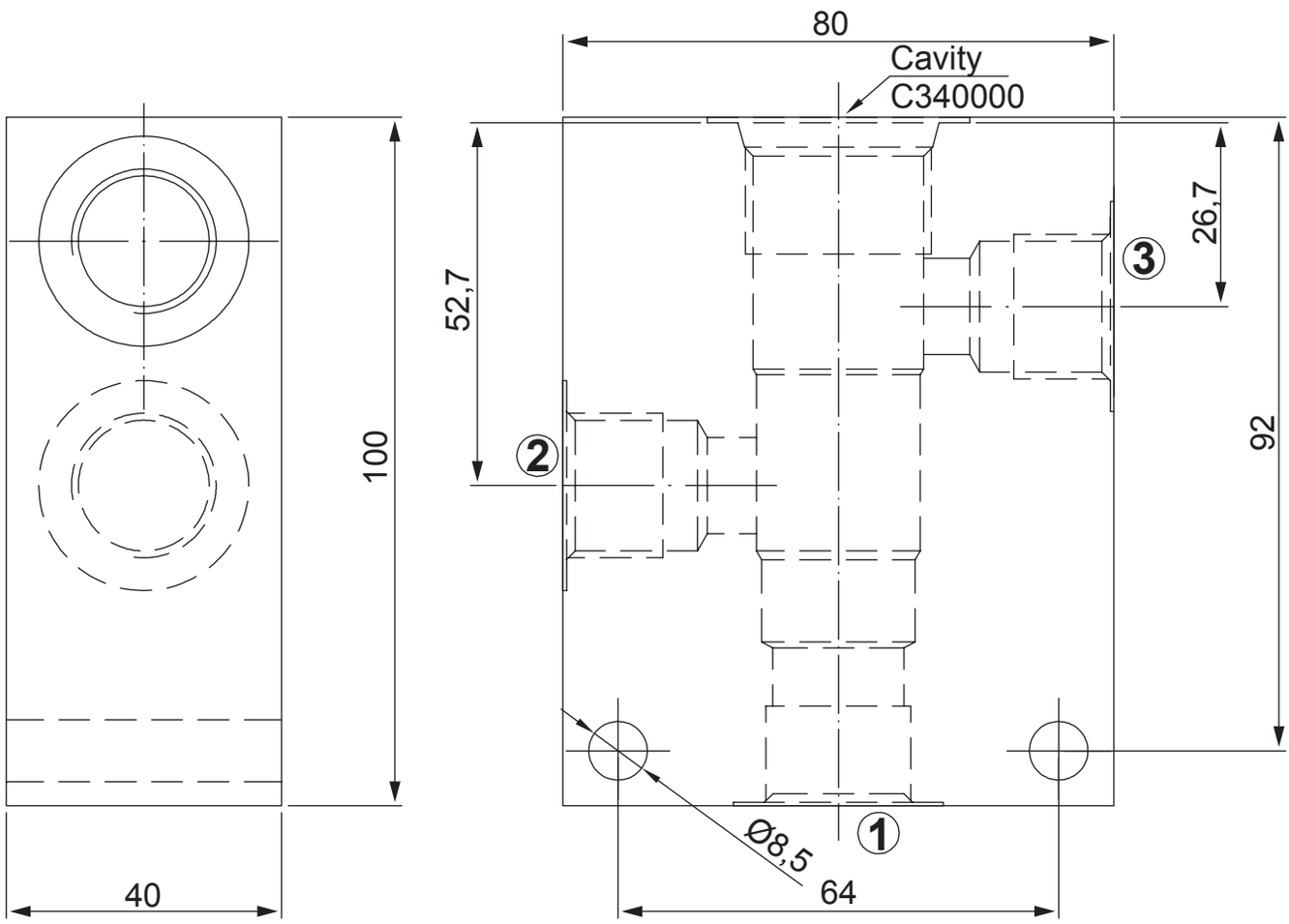
1 7 1 4 0 2 ☐ ☐ 0 0

PORT SIZE		
G1/2 = **3**	G3/4 = **4**	G1 = **5**

ALUMINIUM	STEEL
0	**1**

	a	b	c	d	e	f	g
G1/2 = **3**	40	80	60	50	72	20	52
G3/4 = **4**	40	80	60	50	72	20	52
G1 = **5**	50	85	70	55	77	25	62

STANDARD BODY FOR LINE MOUNTING



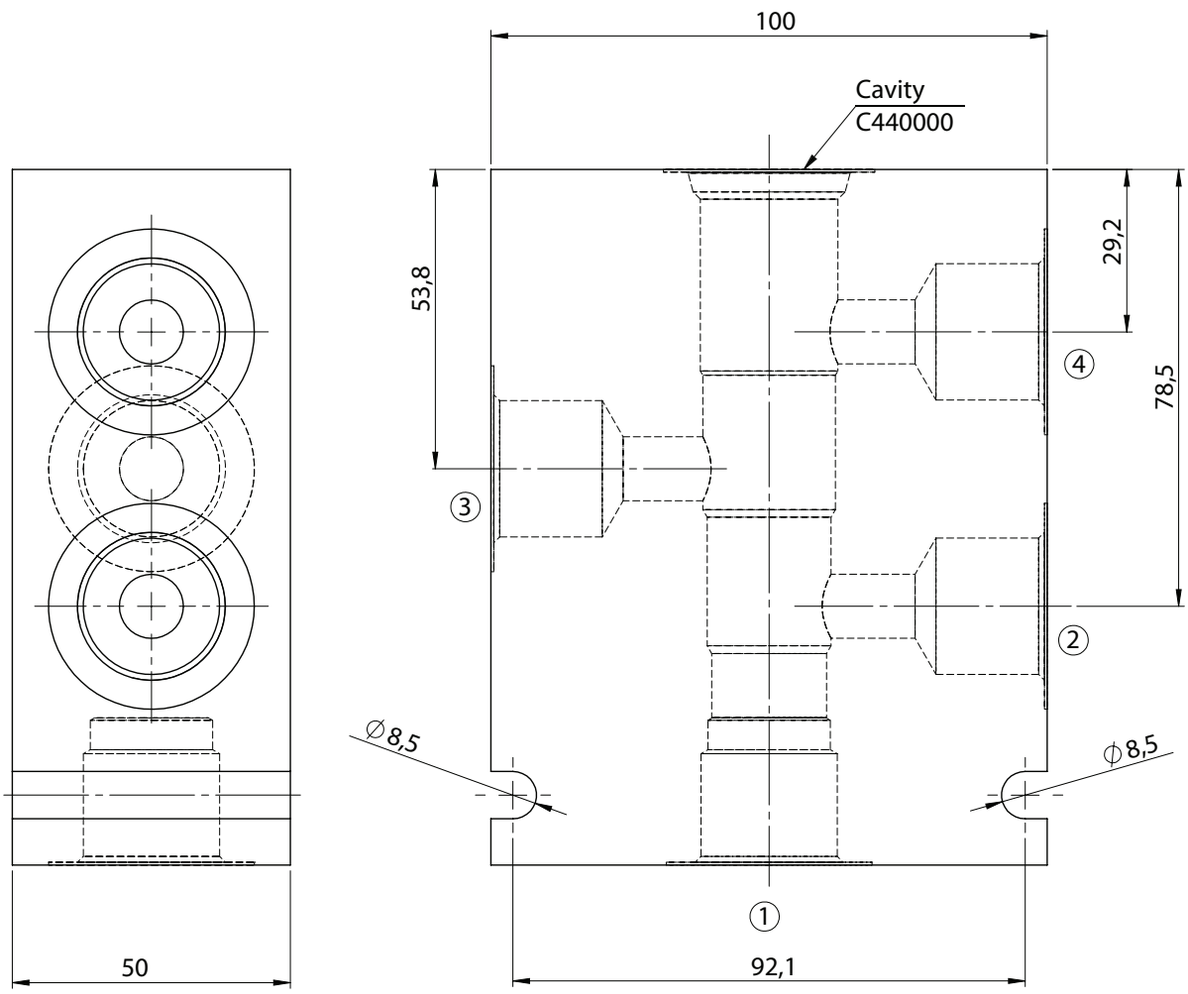
Ordering code

1 7 1 4 1 2 ☐ ☐ 0 0

PORTS SIZE	
G1/2 = **3**	G3/4 = **4**

ALUMINIUM	STEEL
0	**1**

STANDARD BODY FOR LINE MOUNTING



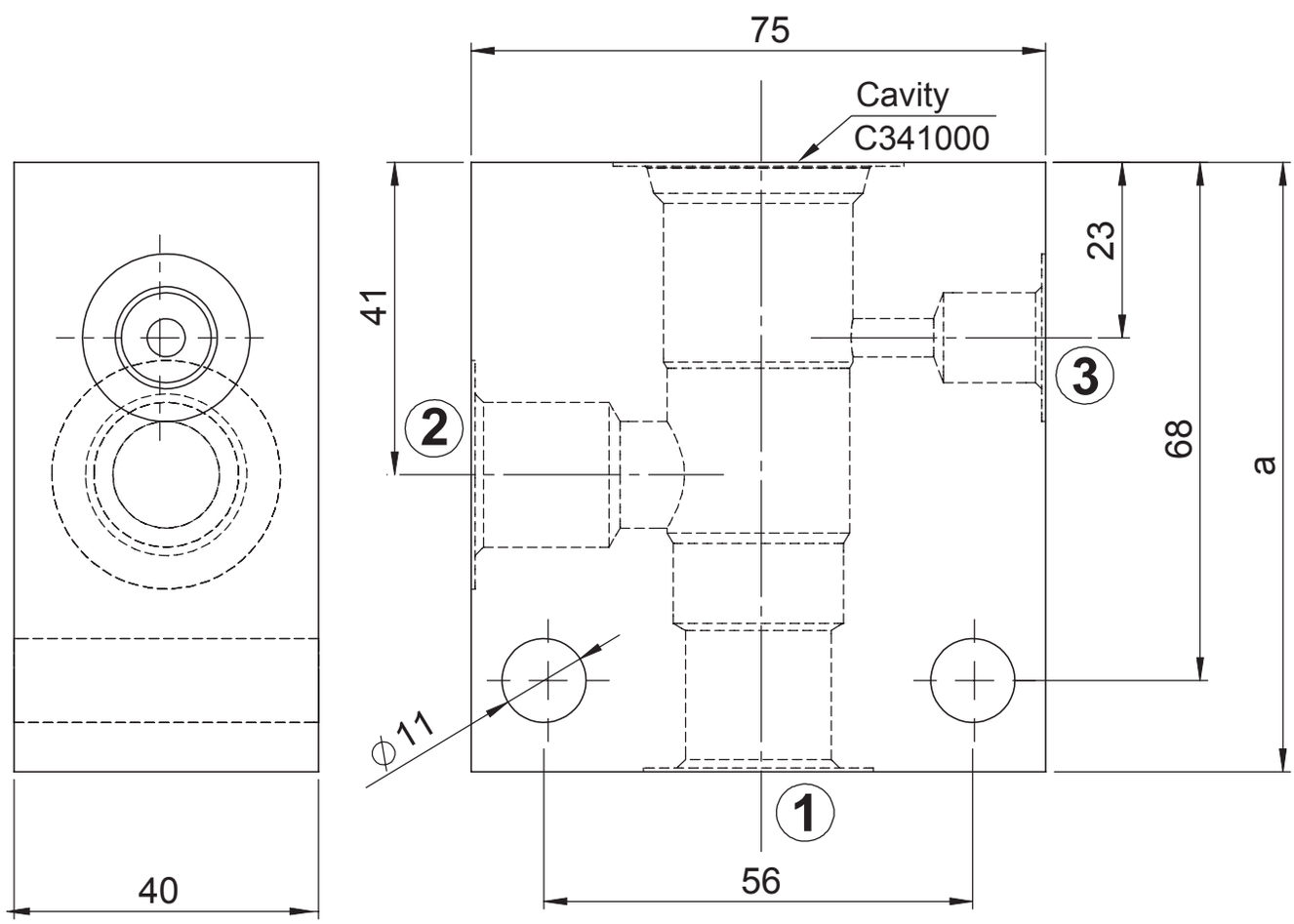
Ordering code

1 7 1 4 2 2 ☐ ☐ 0 0

PORTS SIZE	
4	5
G3/4	G1

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES



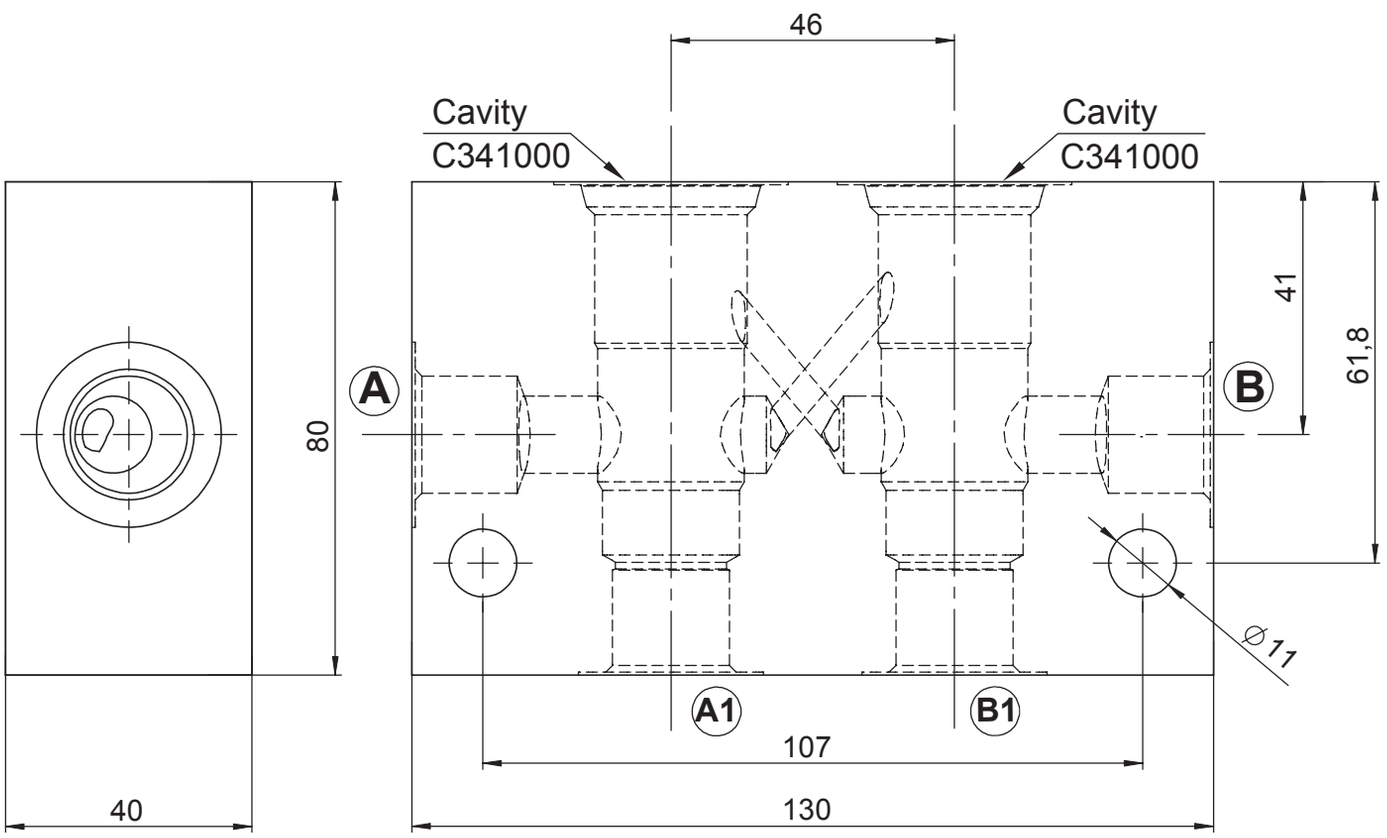
Ordering code

1 7 2 4 1 2 ☐ ☐ 0 0

	PORTS SIZE	
	3	4
PORTS 1-2	G1/2	G3/4
PORT 3	G1/4	G1/4
a	80	90

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES DOUBLE CAVITY

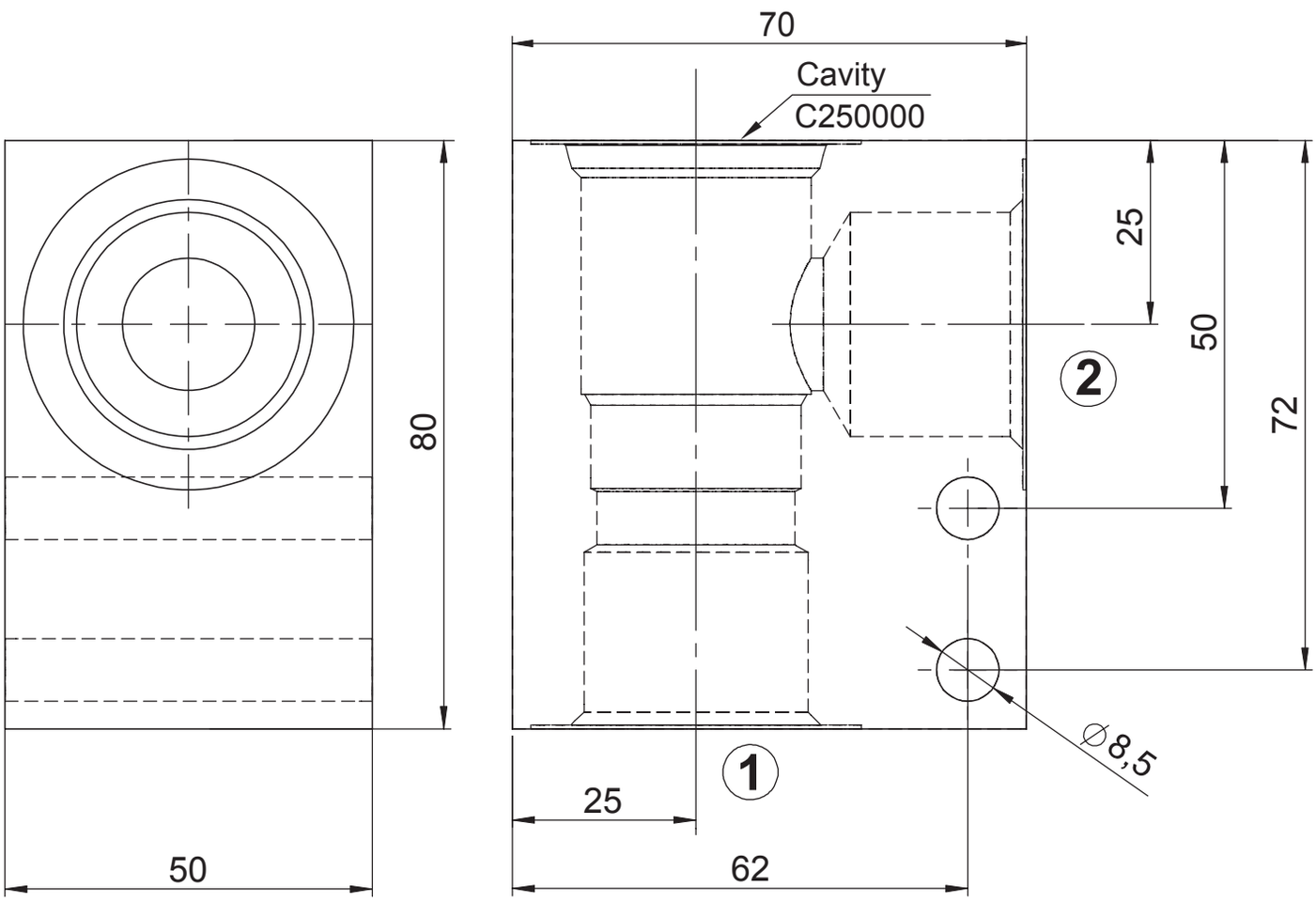


176412 ☐ ☐ 00

PORTS SIZE	A1-B1	A-B
3	G1/2	G1/2

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING



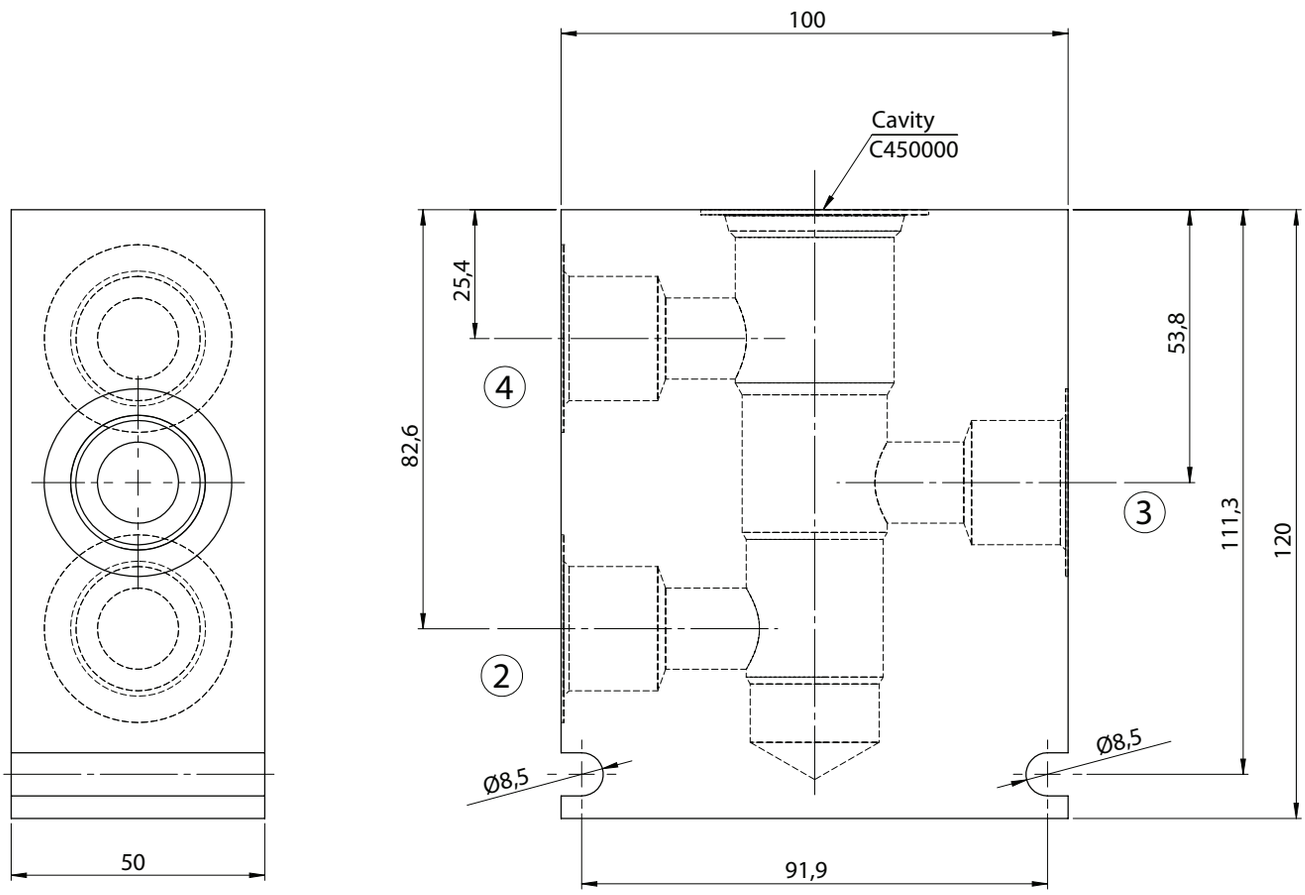
Ordering code

1 7 1 5 0 2 ☐ ☐ 0 0

PORTS SIZE
G1 = **5**

ALUMINIUM	STEEL
0	**1**

BODY FOR 0825.0 - FLOW DIVIDER / COMBINER



Ordering code

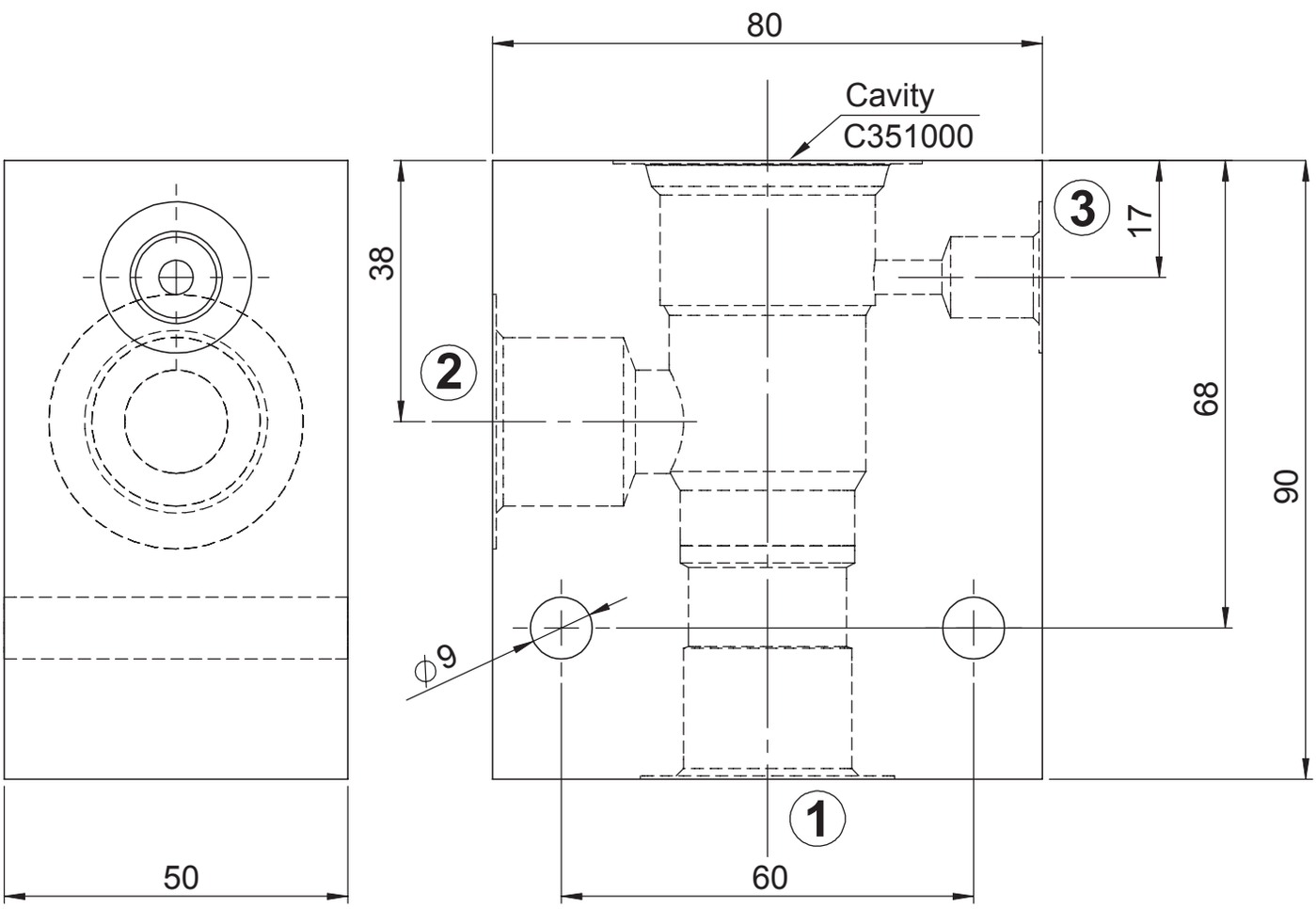
1 7 1 5 1 2 ☐ ☐ 0 0

PORTS SIZE	
4	5
G3/4	G1

ALUMINIUM	STEEL
0	1

Note:
manifold specific for flow divider/combiner SAE 16 (p/n 0825.0, pag. xxx).

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES



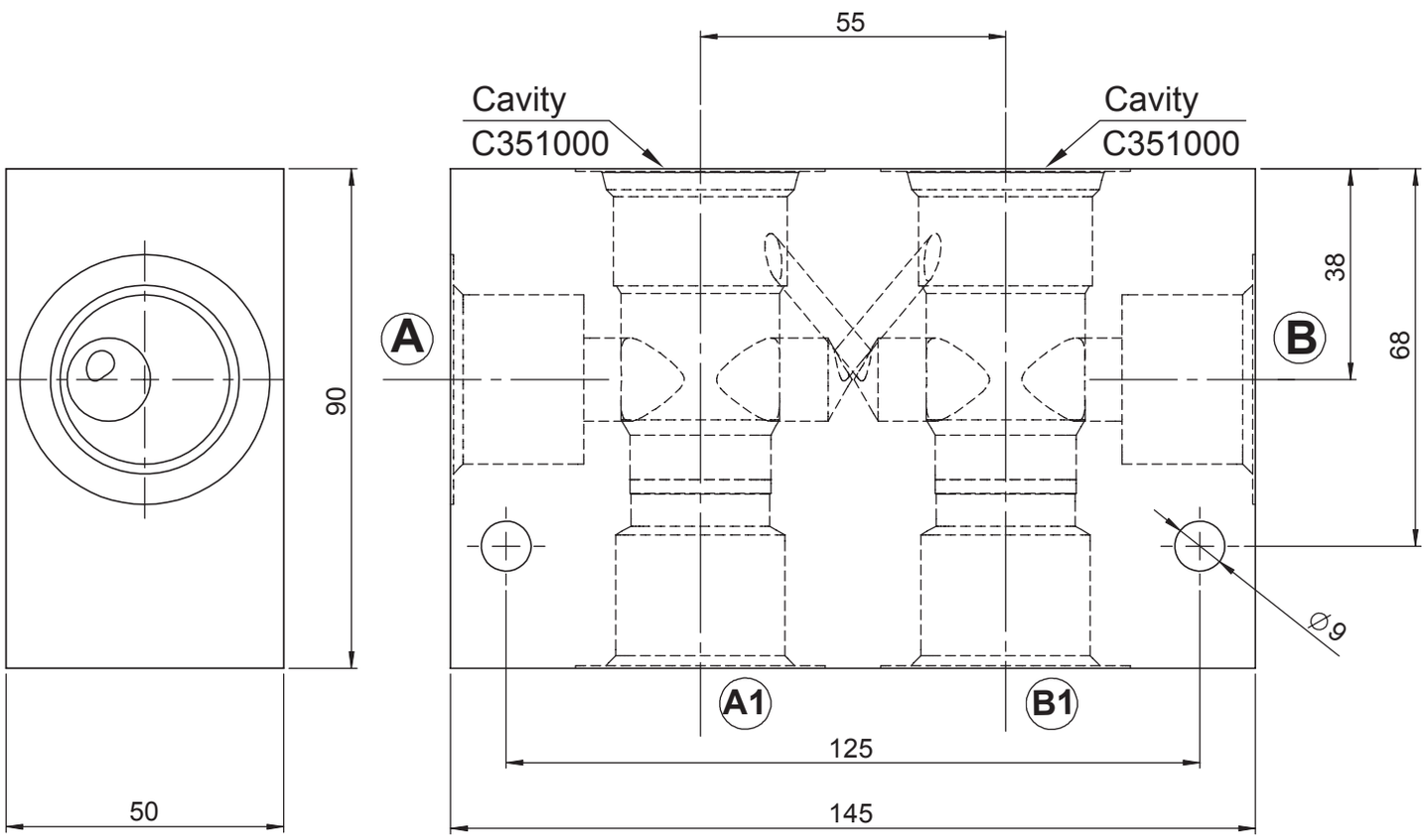
Ordering code

1 7 2 5 1 2 ☐ ☐ 0 0

PORTS SIZE	1-2	3
4	G3/4	G1/4

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING COUNTERBALANCE VALVES DOUBLE CAVITY



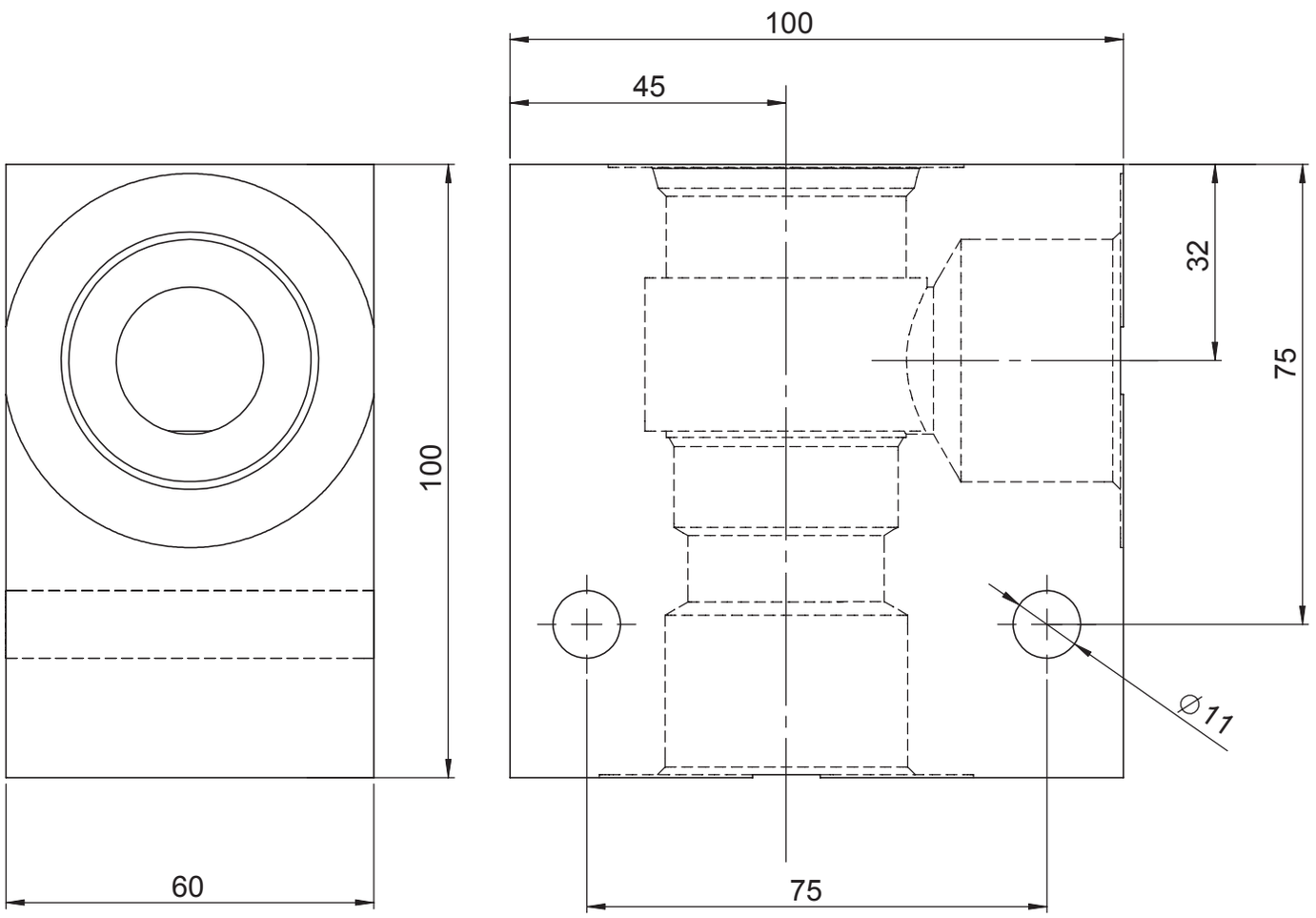
Ordering code

1 7 6 5 1 2 ☐ ☐ 0 0

PORTS SIZE	A1-B1	A-B
2	G1	G1

ALUMINIUM	STEEL
0	1

STANDARD BODY FOR LINE MOUNTING



Ordering code

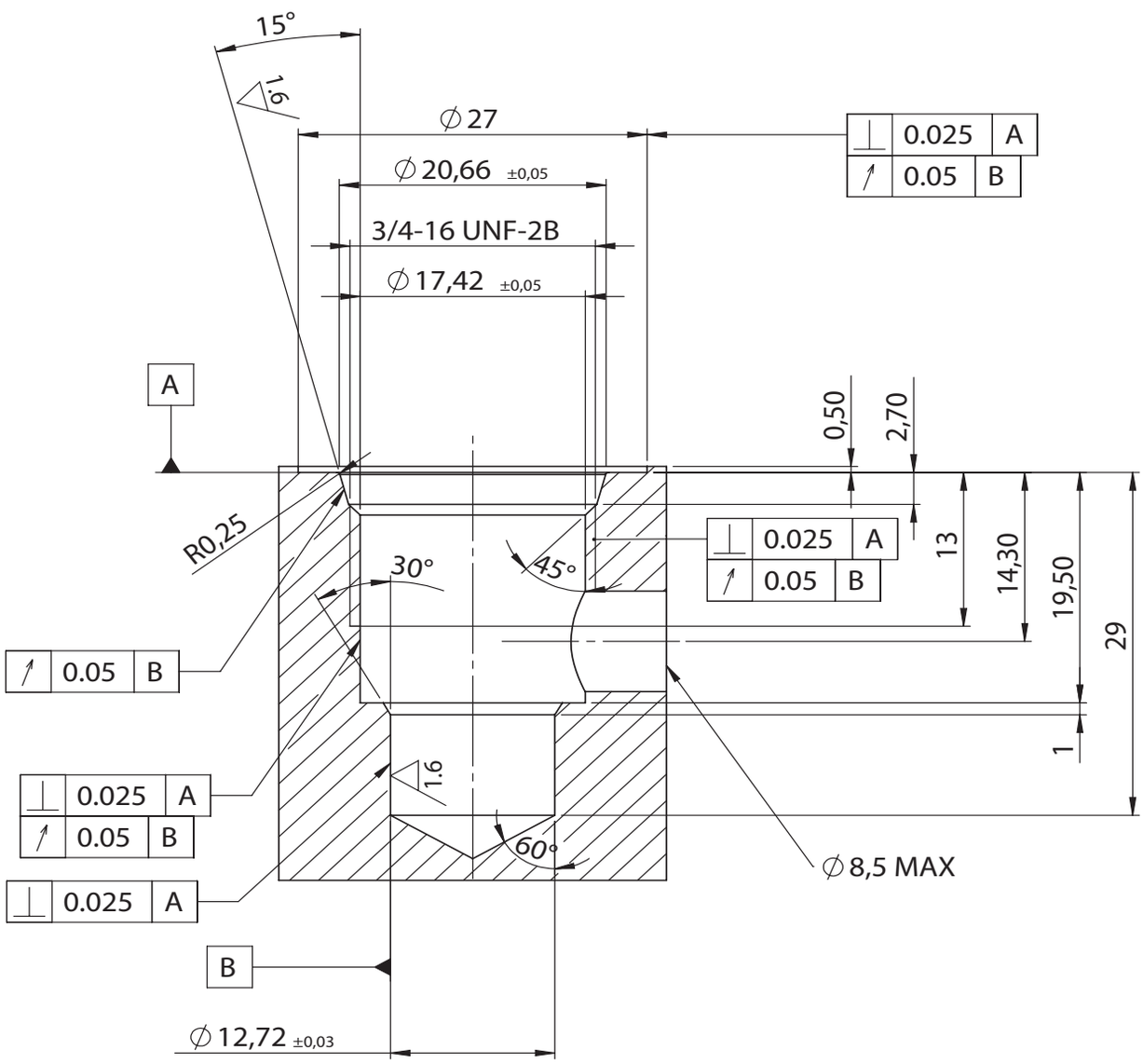
1 7 1 6 0 2 ☐ ☐ 0 0

PORTS SIZE	
G1 = **5**	G1-1/4= **6**

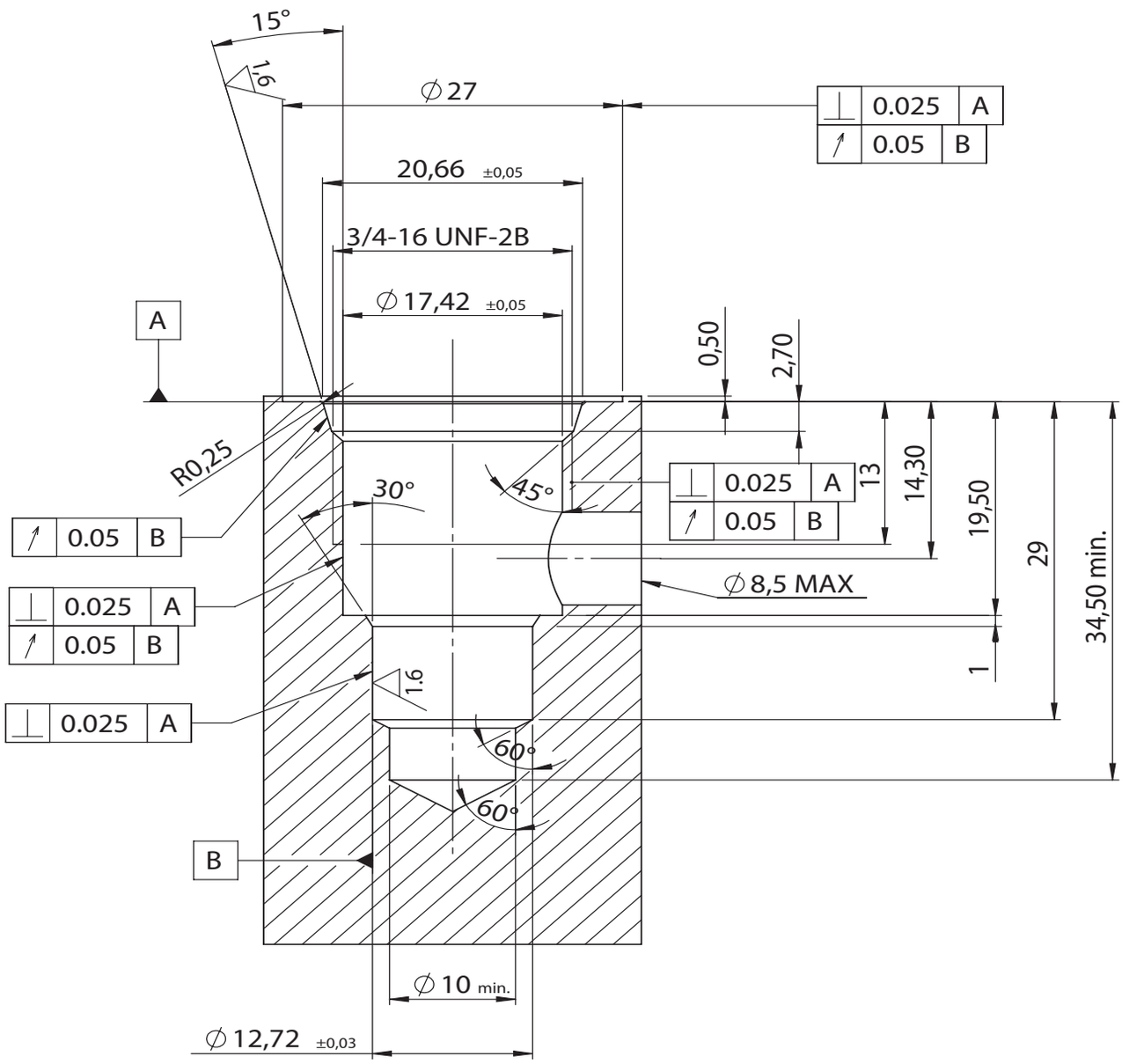
ALUMINIUM	STEEL
0	**1**

CAVITIES

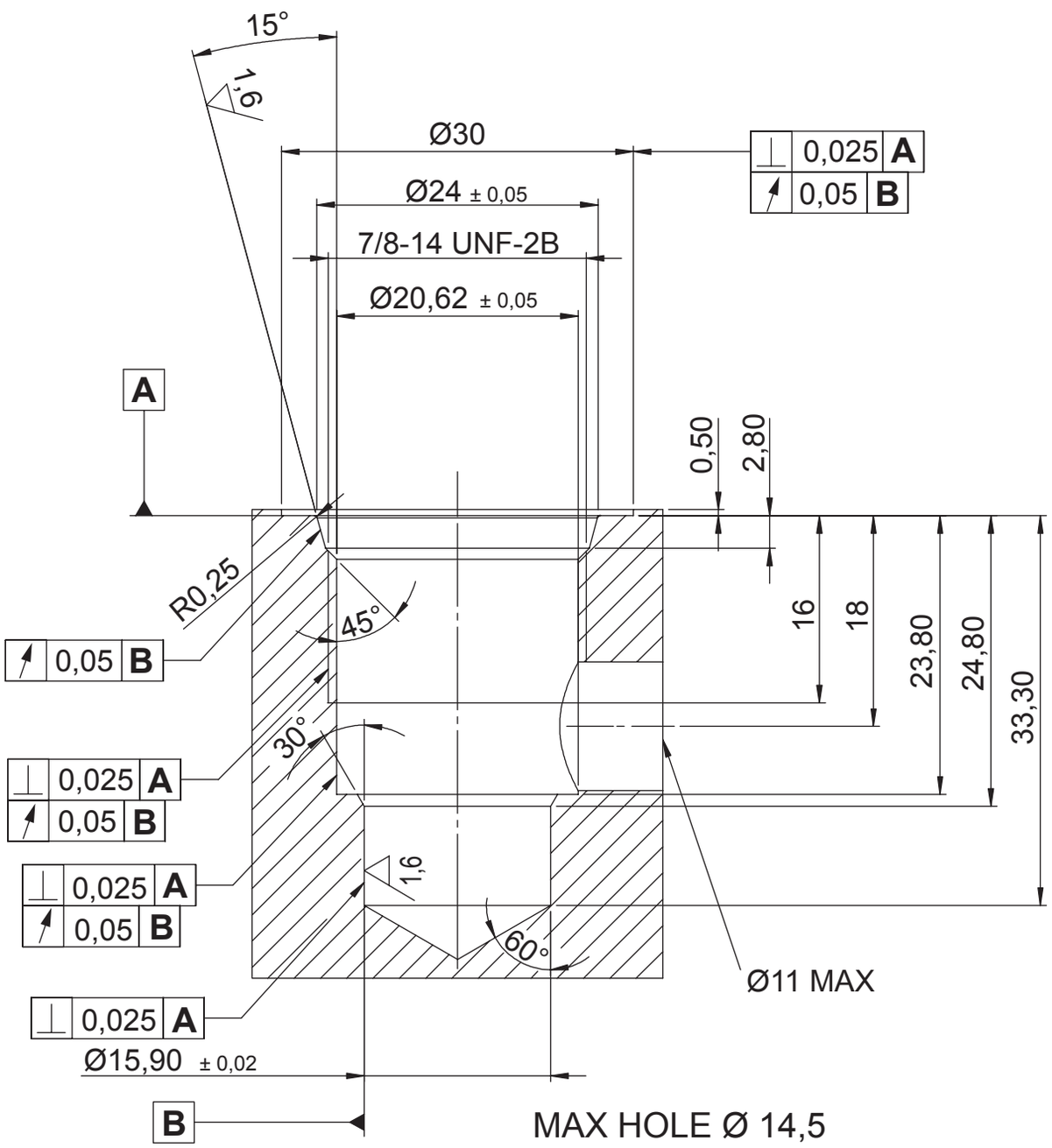
CAVITIES


15°
1.9
∅27
∅20,66 ±0,05
3/4-16 UNF-2B
∅17,42 ±0,05
0.025 A
0.05 B
A
0,50
2,70
R0,25
30°
45°
13
14,30
19,50
29
1
1.6
60°
∅8,5 MAX
B
∅12,72 ±0,03

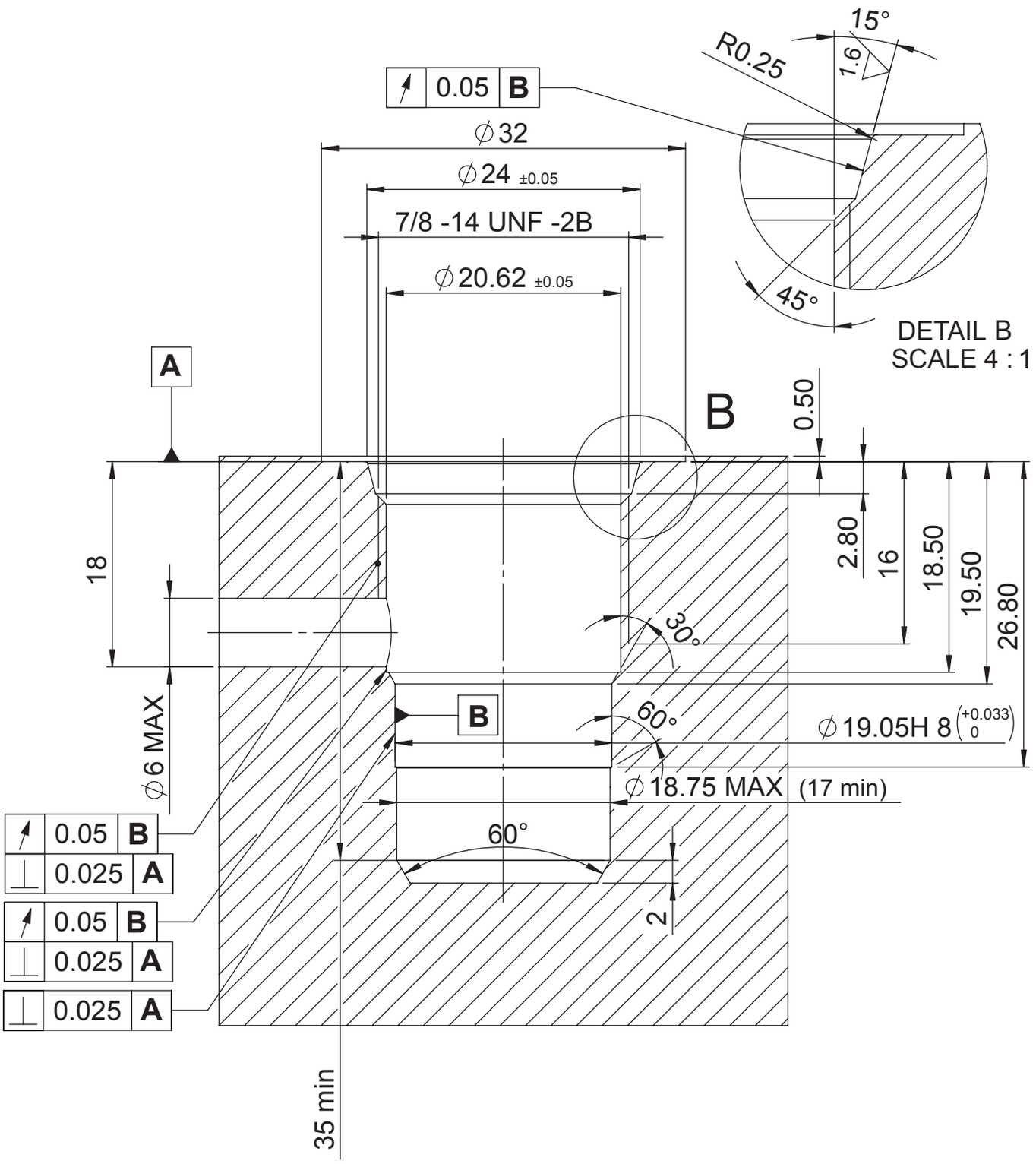
CAVITIES


15°
1.6
∅27
0.025 A
0.05 B
20,66 ±0,05
3/4-16 UNF-2B
∅17,42 ±0,05
A
0,50
2,70
R0,25
30°
45°
0.025 A
0.05 B
13
14,30
19,50
29
34,50 min.
0.05 B
0.025 A
0.05 B
∅8,5 MAX
1
1.6
0.025 A
60°
60°
B
∅10 min.
∅12,72 ±0,03

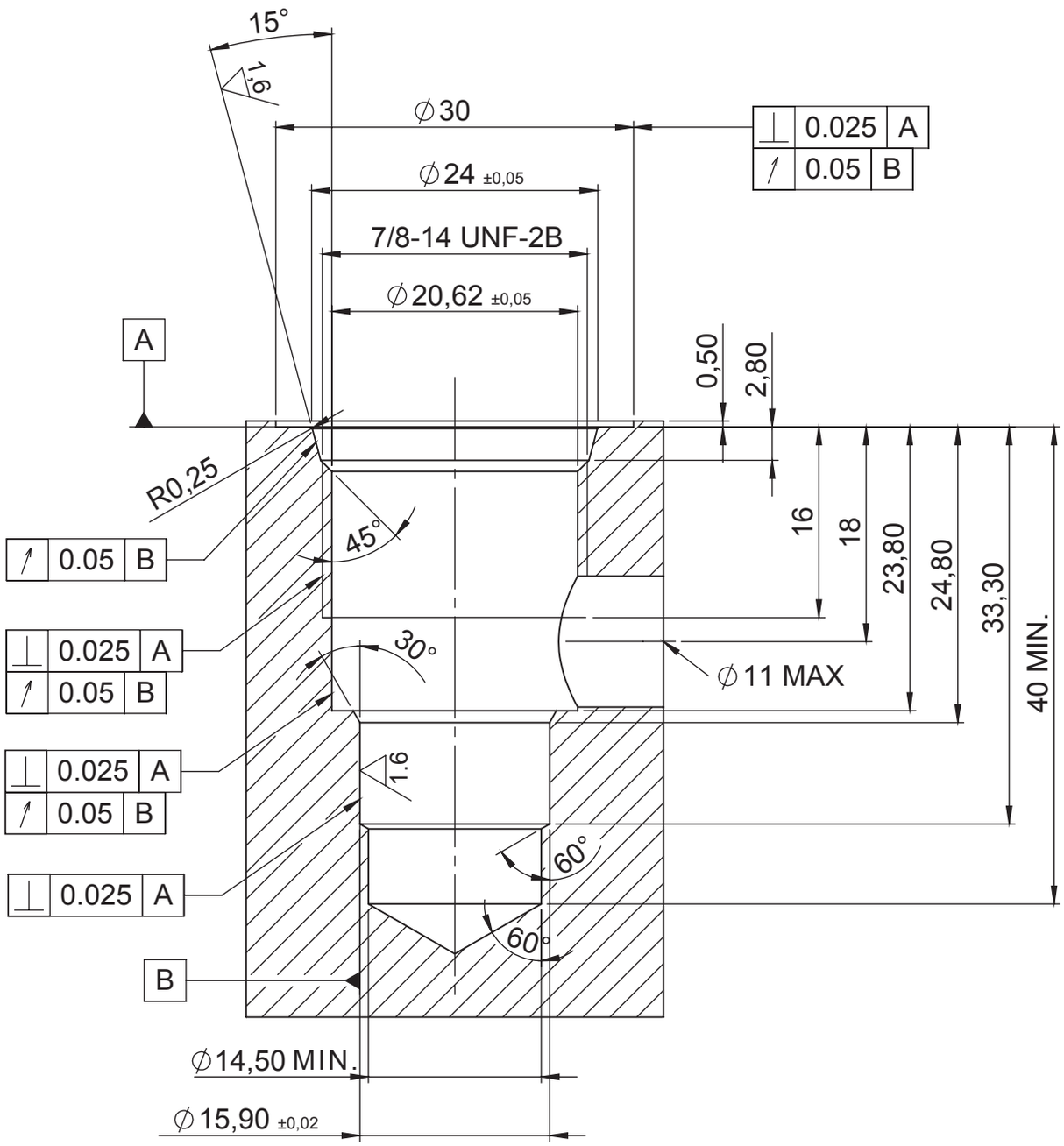
CAVITIES


15°
1,6
Ø30
0,025 A
0,05 B
Ø24 ± 0,05
7/8-14 UNF-2B
Ø20,62 ± 0,05
A
0,50
2,80
16
18
23,80
24,80
33,30
R0,25
45°
0,05 B
30°
0,025 A
0,05 B
0,025 A
0,05 B
1,6
60°
Ø11 MAX
0,025 A
Ø15,90 ± 0,02
B
MAX HOLE Ø 14,5

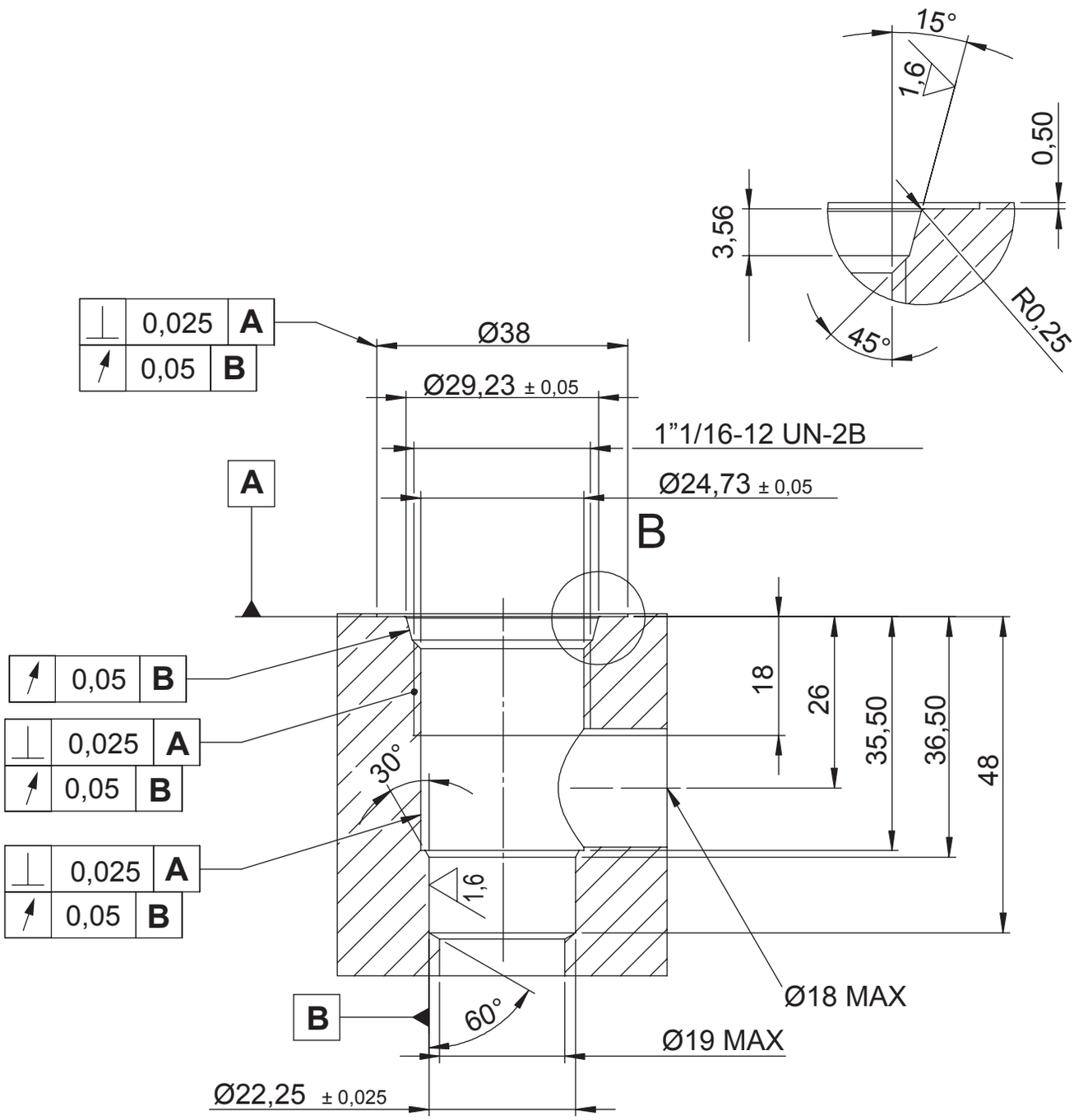
CAVITIES


0.05 B
∅32
∅24 ±0.05
7/8 -14 UNF -2B
∅20.62 ±0.05
15°
R0.25
1.6
45°
DETAIL B
SCALE 4 : 1
A
B
0.50
2.80
16
18.50
19.50
26.80
18
30°
60°
∅19.05H 8 (+0.033 0)
∅6 MAX
B
∅18.75 MAX (17 min)
60°
2
0.05 B
0.025 A
0.05 B
0.025 A
0.025 A
35 min

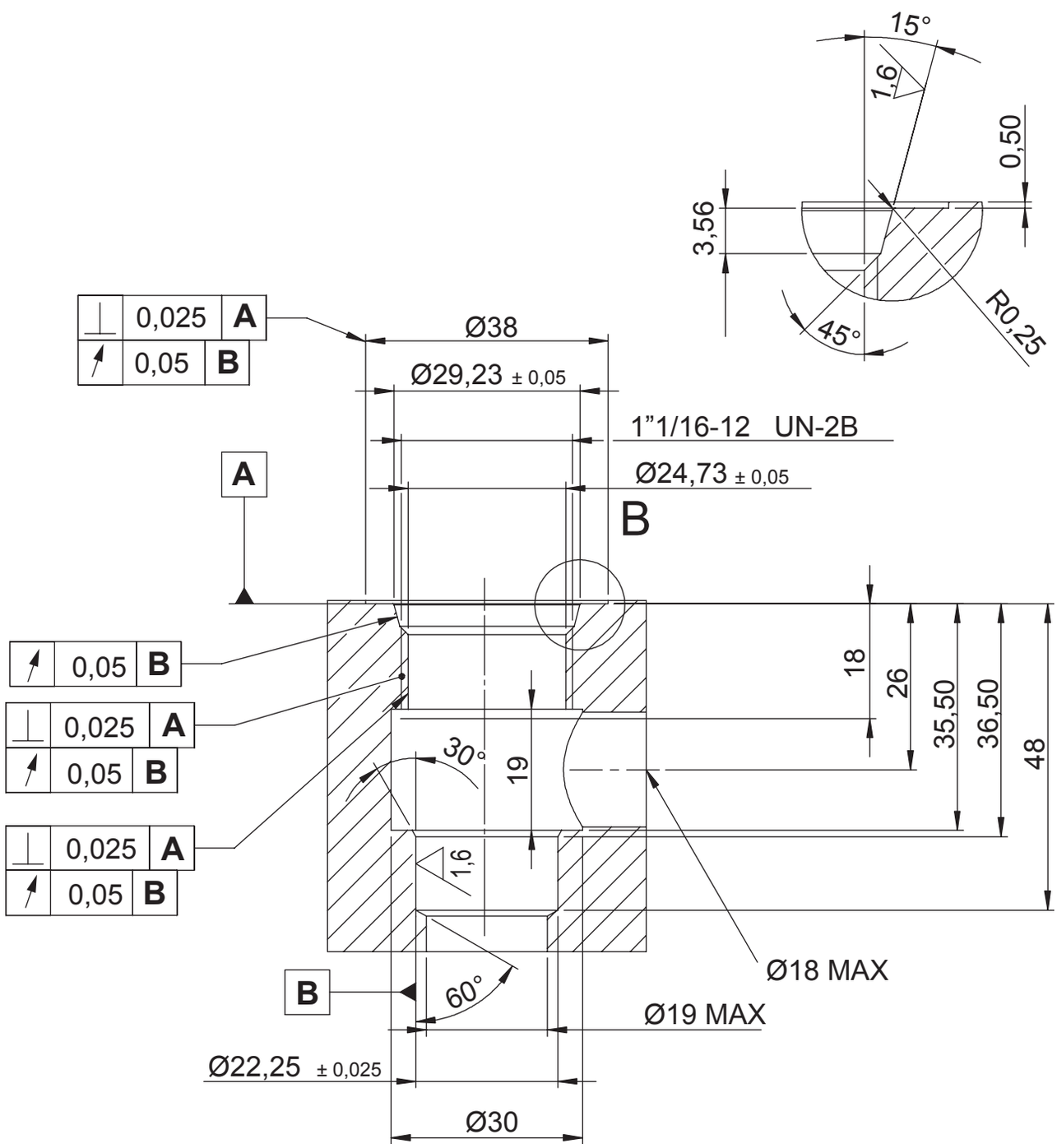
CAVITIES


15°
1.6
∅30
0.025 A
0.05 B
∅24 ±0,05
7/8-14 UNF-2B
∅20,62 ±0,05
A
0,50
2,80
R0,25
0.05 B
45°
16
18
23,80
24,80
33,30
40 MIN.
0.025 A
0.05 B
30°
∅11 MAX
1.6
0.025 A
0.05 B
60°
60°
0.025 A
B
∅14,50 MIN.
∅15,90 ±0,02

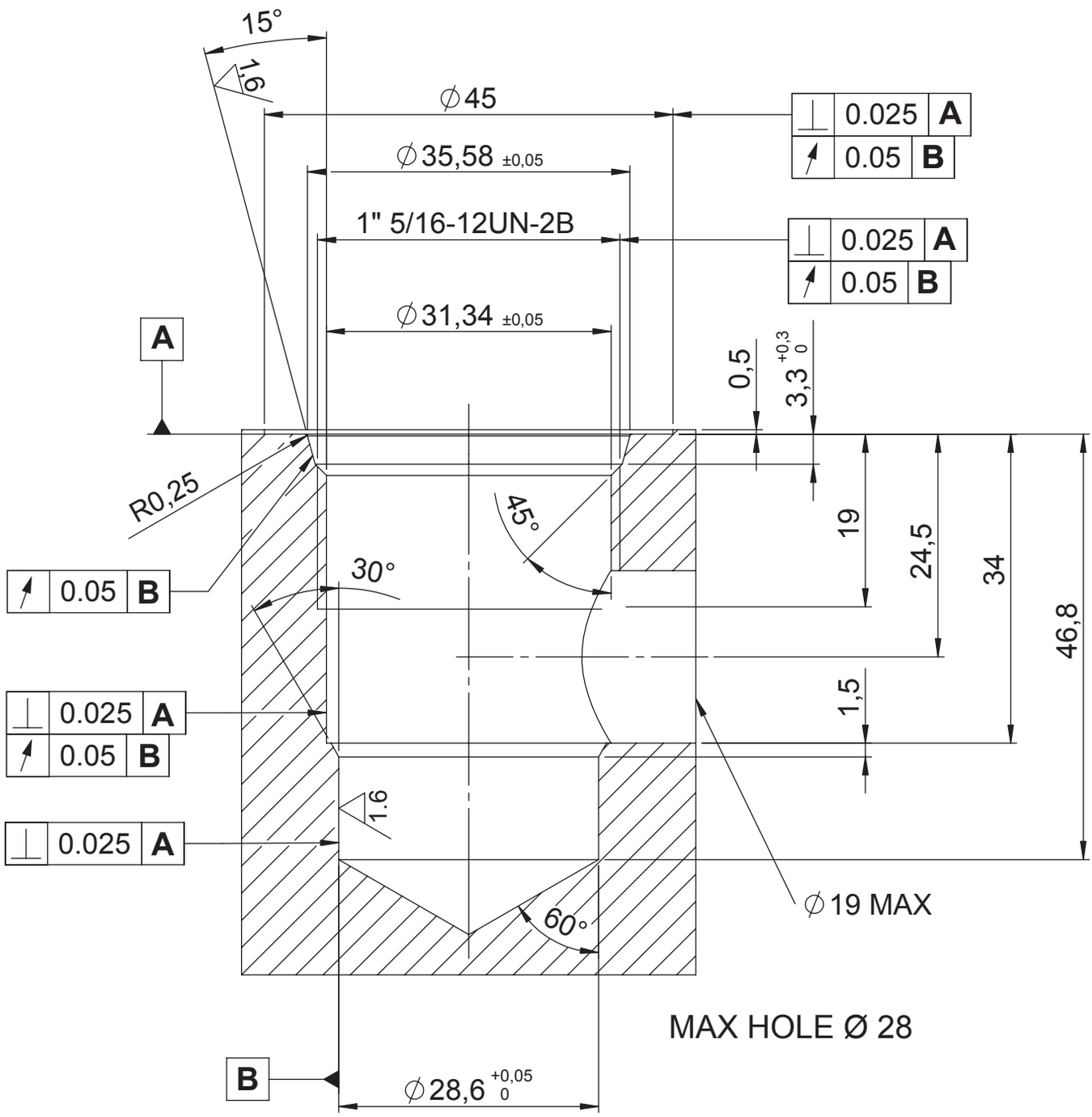
CAVITIES


15°
1,6
0,50
3,56
R0,25
45°
0,025 A
0,05 B
Ø38
Ø29,23 ± 0,05
1”1/16-12 UN-2B
A
Ø24,73 ± 0,05
B
0,05 B
0,025 A
0,05 B
0,025 A
0,05 B
30°
18
26
35,50
36,50
48
1,6
B
60°
Ø18 MAX
Ø19 MAX
Ø22,25 ± 0,025

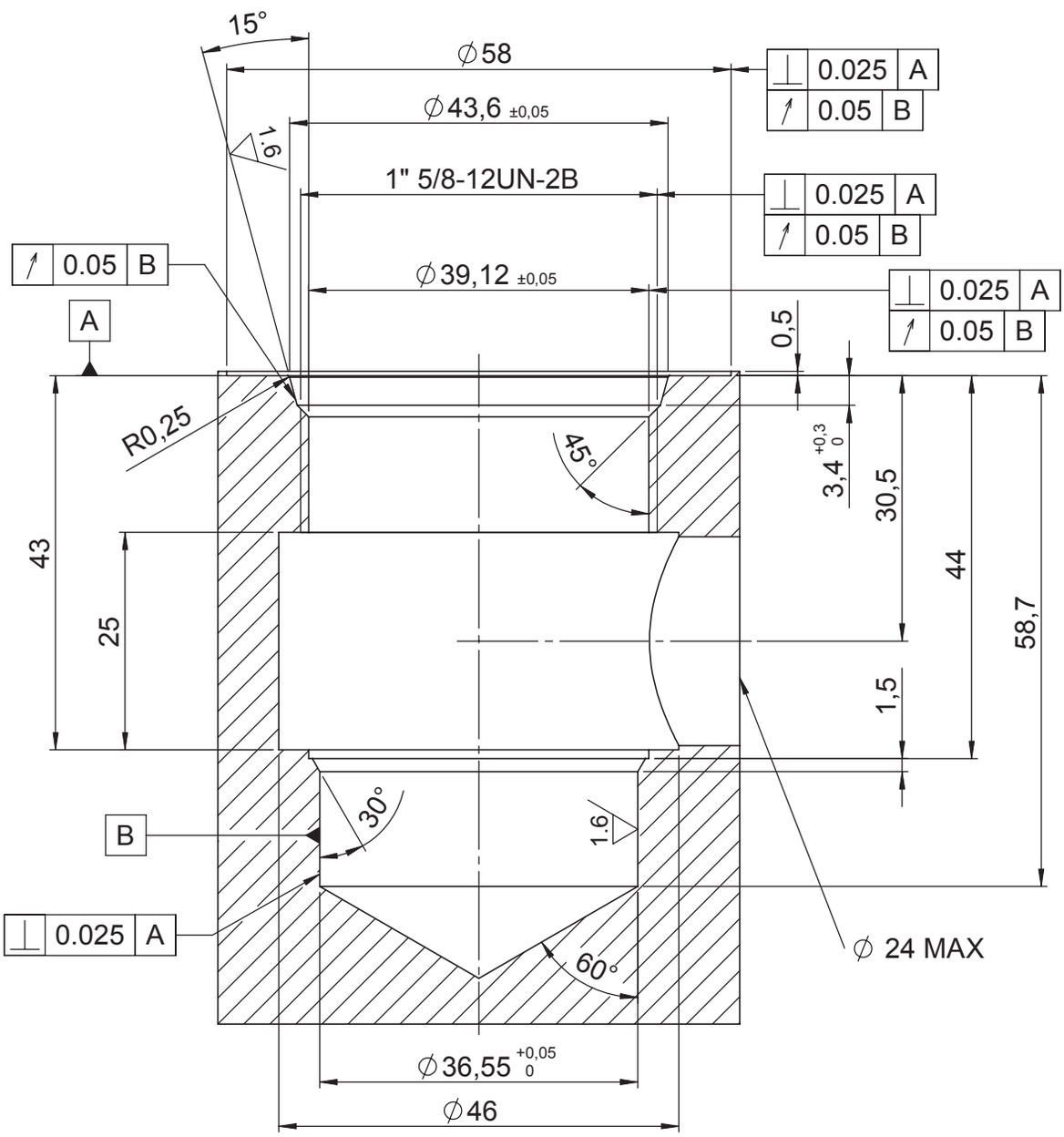
CAVITIES


15°
1,6
0,50
3,56
R0,25
45°
0,025 A
0,05 B
Ø38
Ø29,23 ± 0,05
1”1/16-12 UN-2B
Ø24,73 ± 0,05
A
B
0,05 B
0,025 A
0,05 B
0,025 A
0,05 B
18
26
35,50
36,50
48
30°
19
1,6
Ø18 MAX
B
60°
Ø19 MAX
Ø22,25 ± 0,025
Ø30

CAVITIES

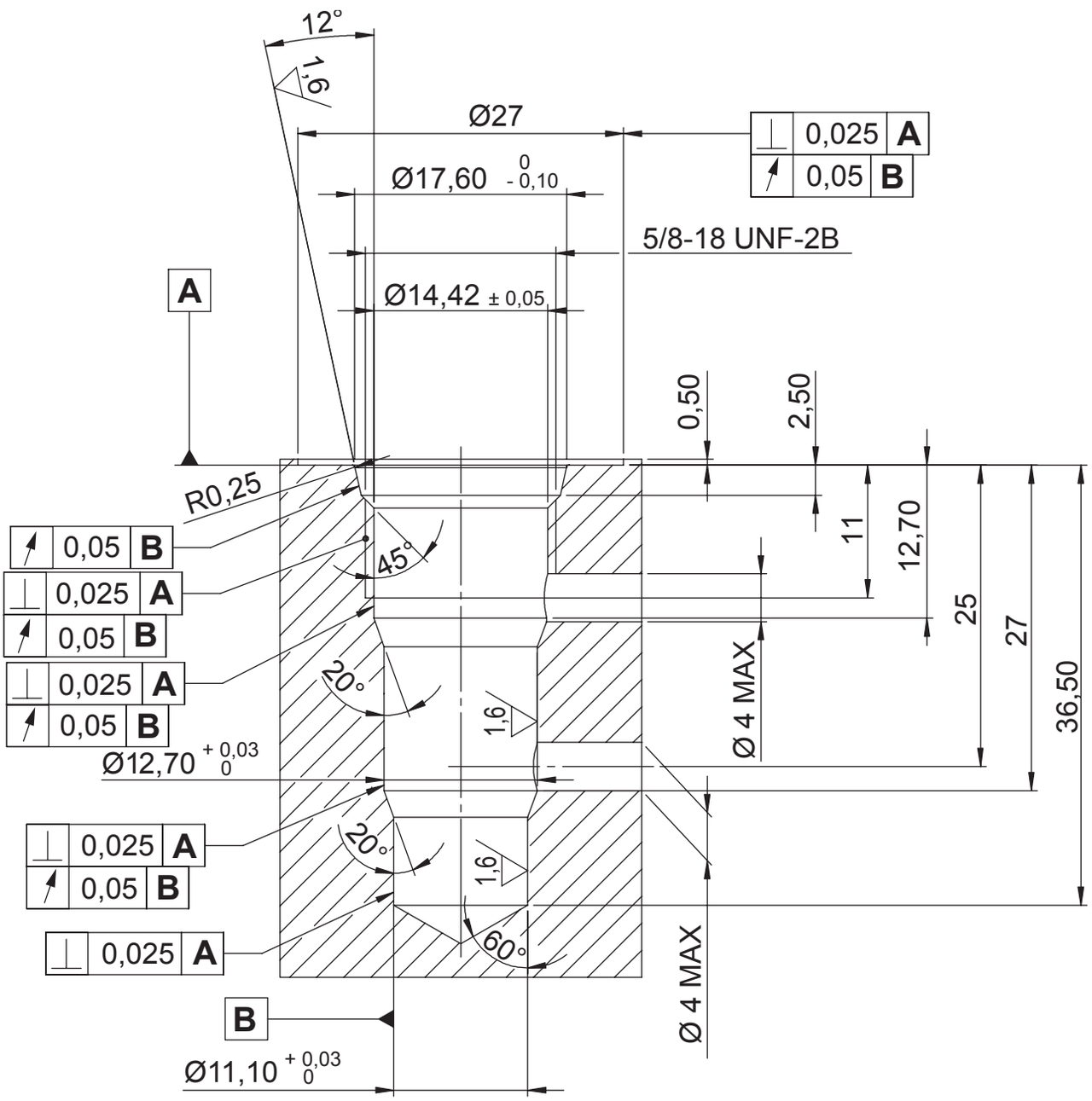

15°
1.6
⌀45
⌀35,58 ±0,05
1" 5/16-12UN-2B
⌀31,34 ±0,05
0.025 A
0.05 B
A
0,5
3,3 +0,3 0
R0,25
45°
30°
19
24,5
34
46,8
1,5
1.6
60°
⌀19 MAX
MAX HOLE Ø 28
B
⌀28,6 +0,05 0

CAVITIES



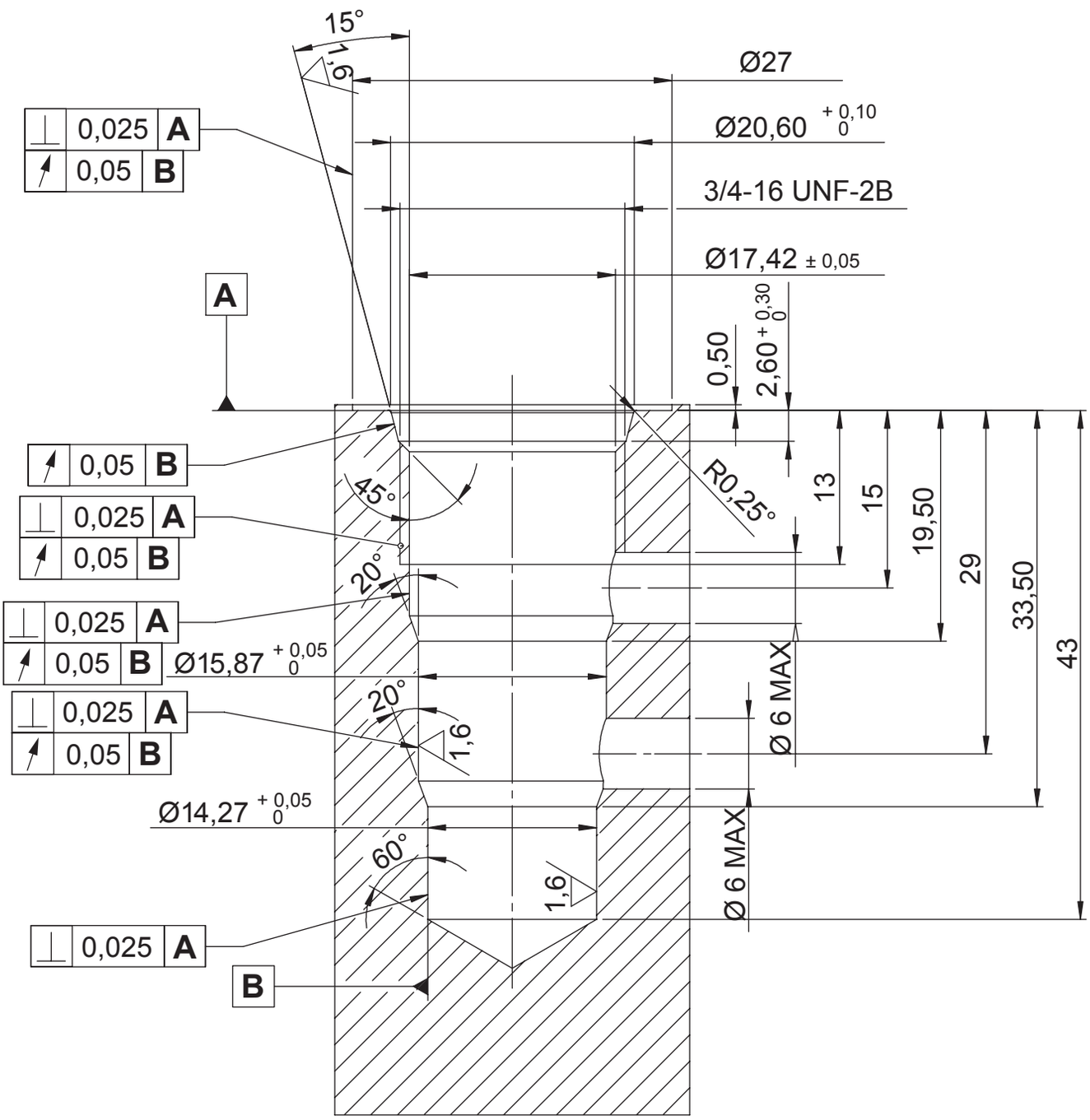
MAX HOLE Ø 36

CAVITIES



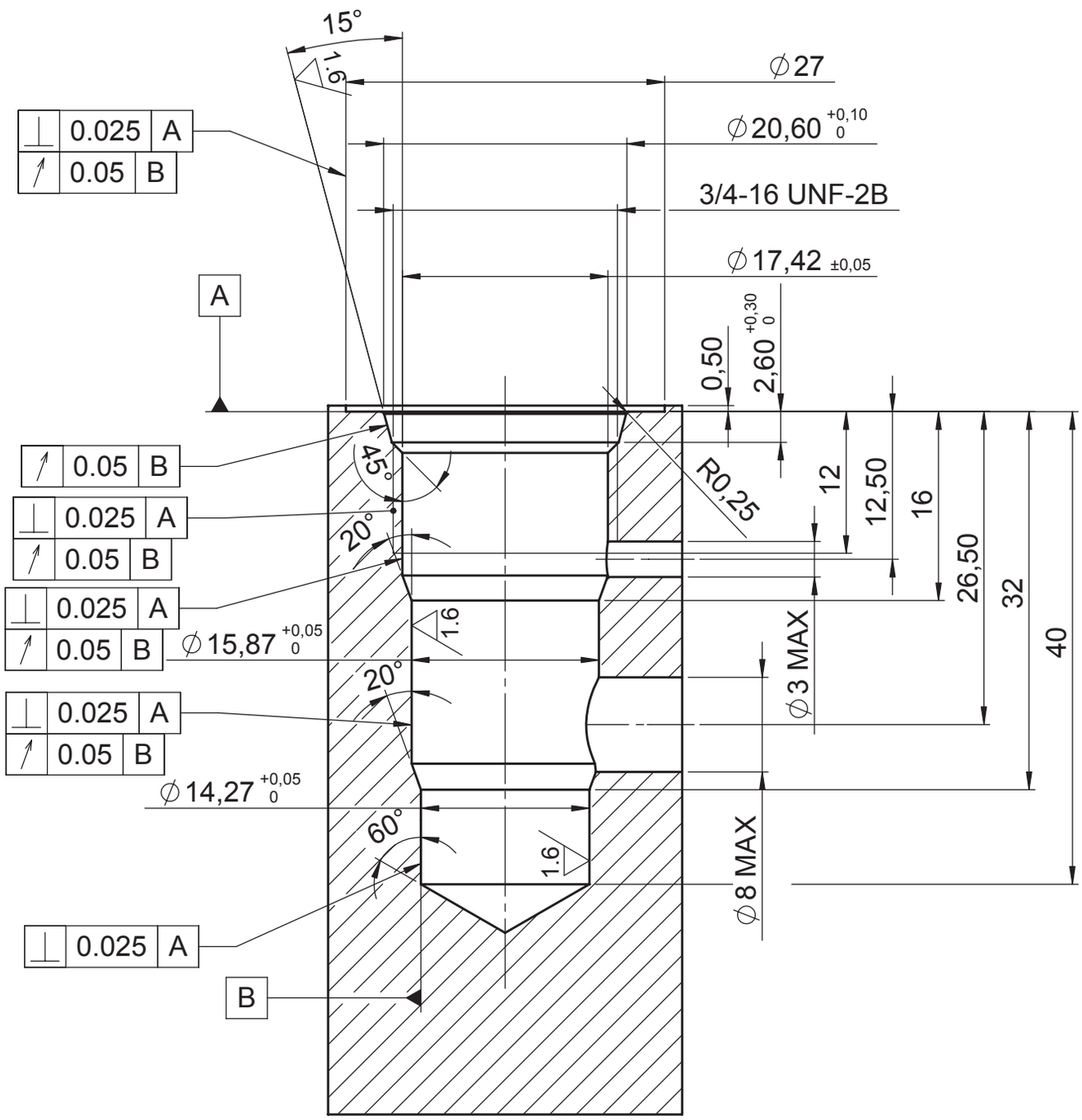
MAX HOLE Ø 8

CAVITIES



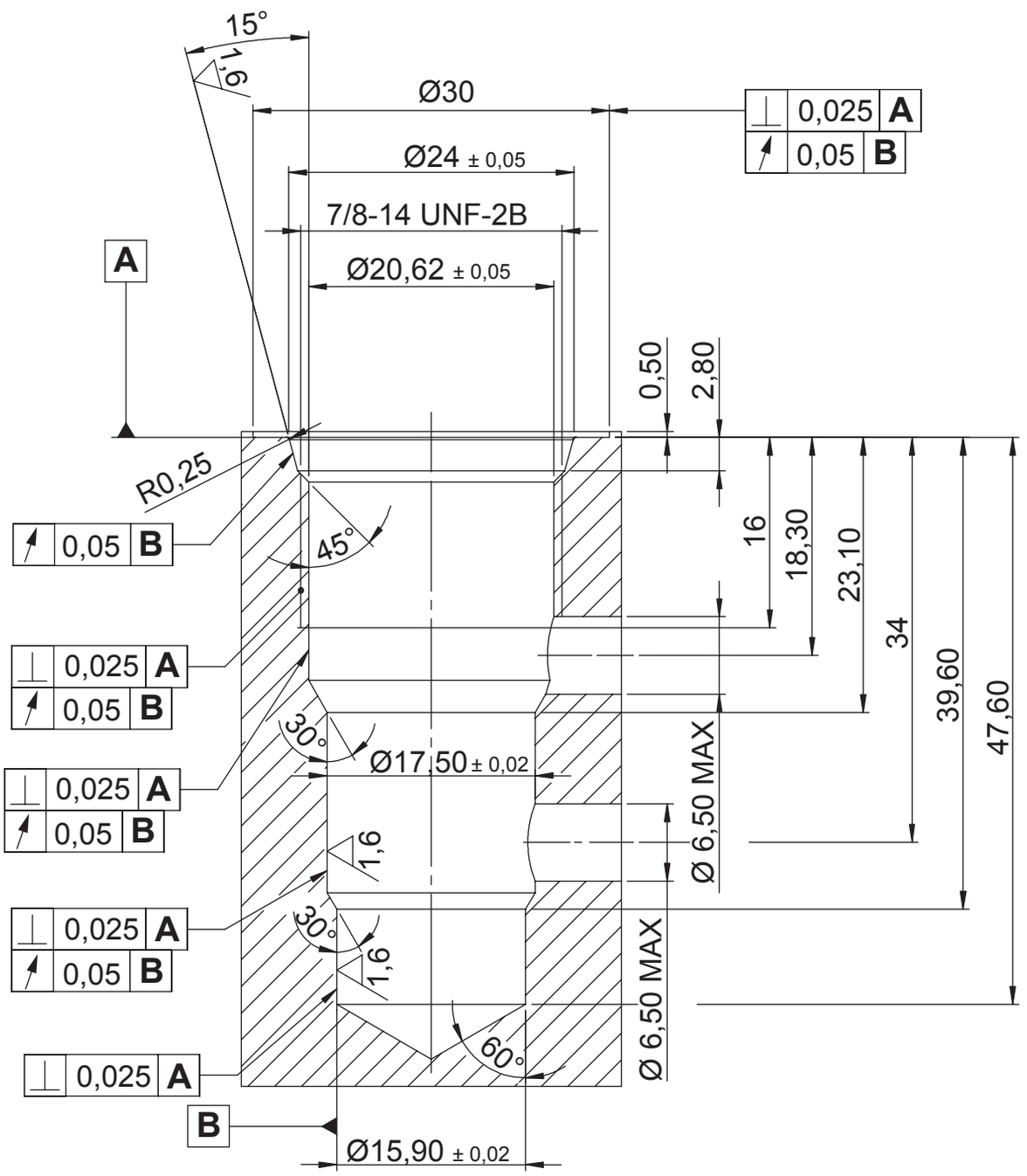
MAX HOLE Ø 13

CAVITIES

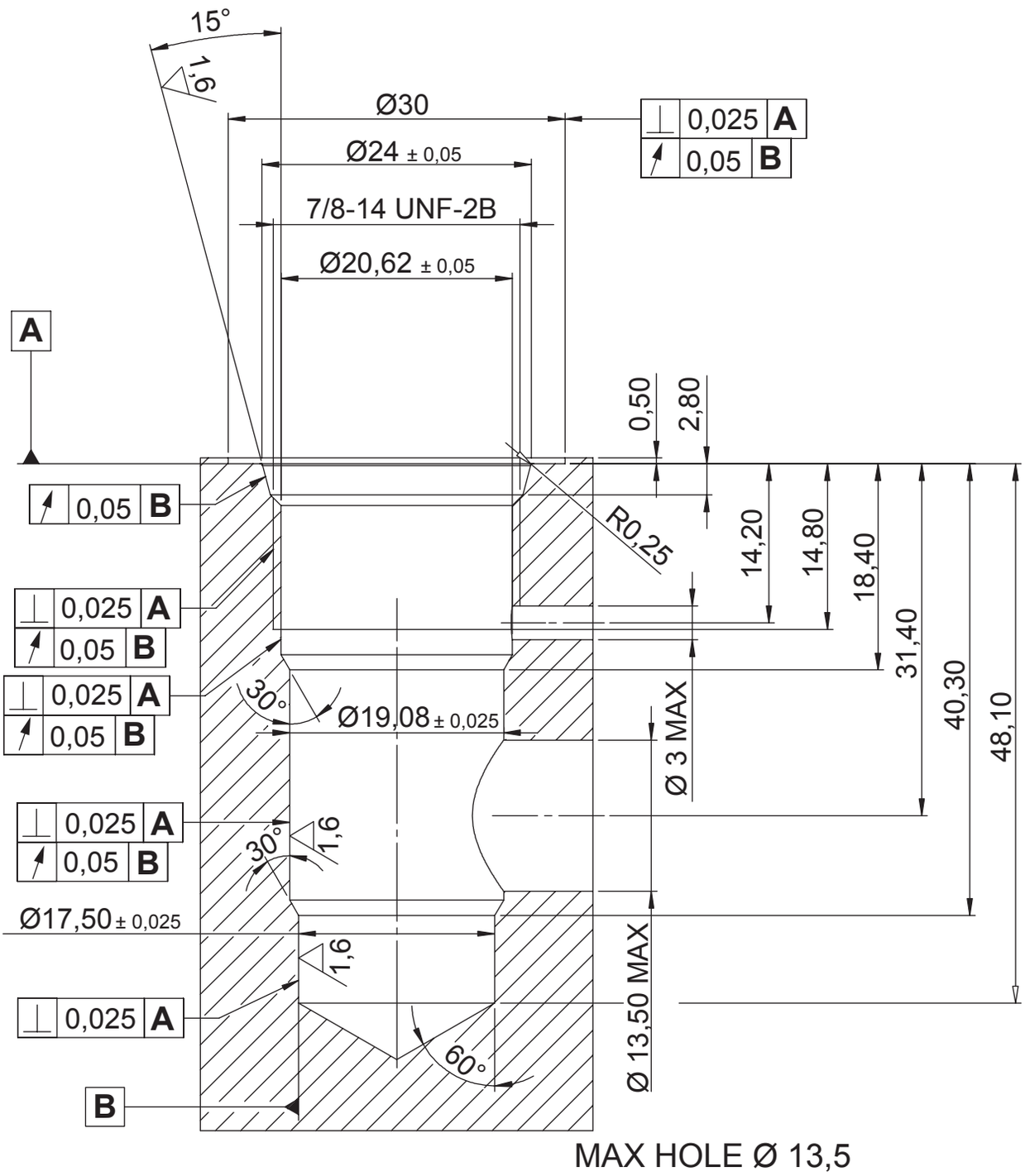


MAX HOLE Ø 13

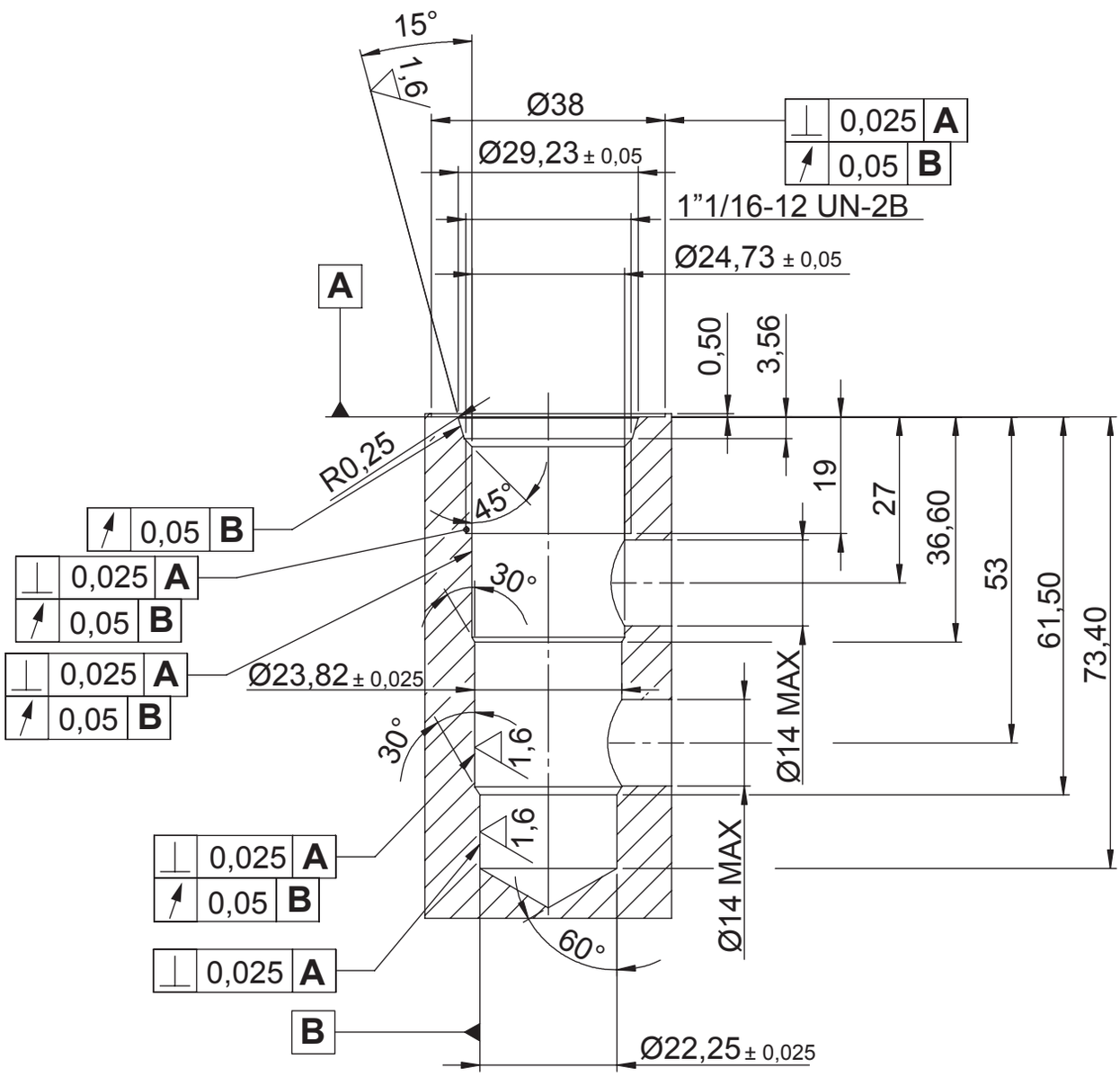
CAVITIES


15°
1,6
Ø30
0,025 A
0,05 B
Ø24 ± 0,05
7/8-14 UNF-2B
Ø20,62 ± 0,05
A
0,50
2,80
R0,25
0,05 B
45°
16
18,30
23,10
34
39,60
47,60
0,025 A
0,05 B
30°
Ø17,50 ± 0,02
0,025 A
0,05 B
1,6
Ø 6,50 MAX
0,025 A
0,05 B
30°
1,6
Ø 6,50 MAX
60°
0,025 A
B
Ø15,90 ± 0,02

CAVITIES

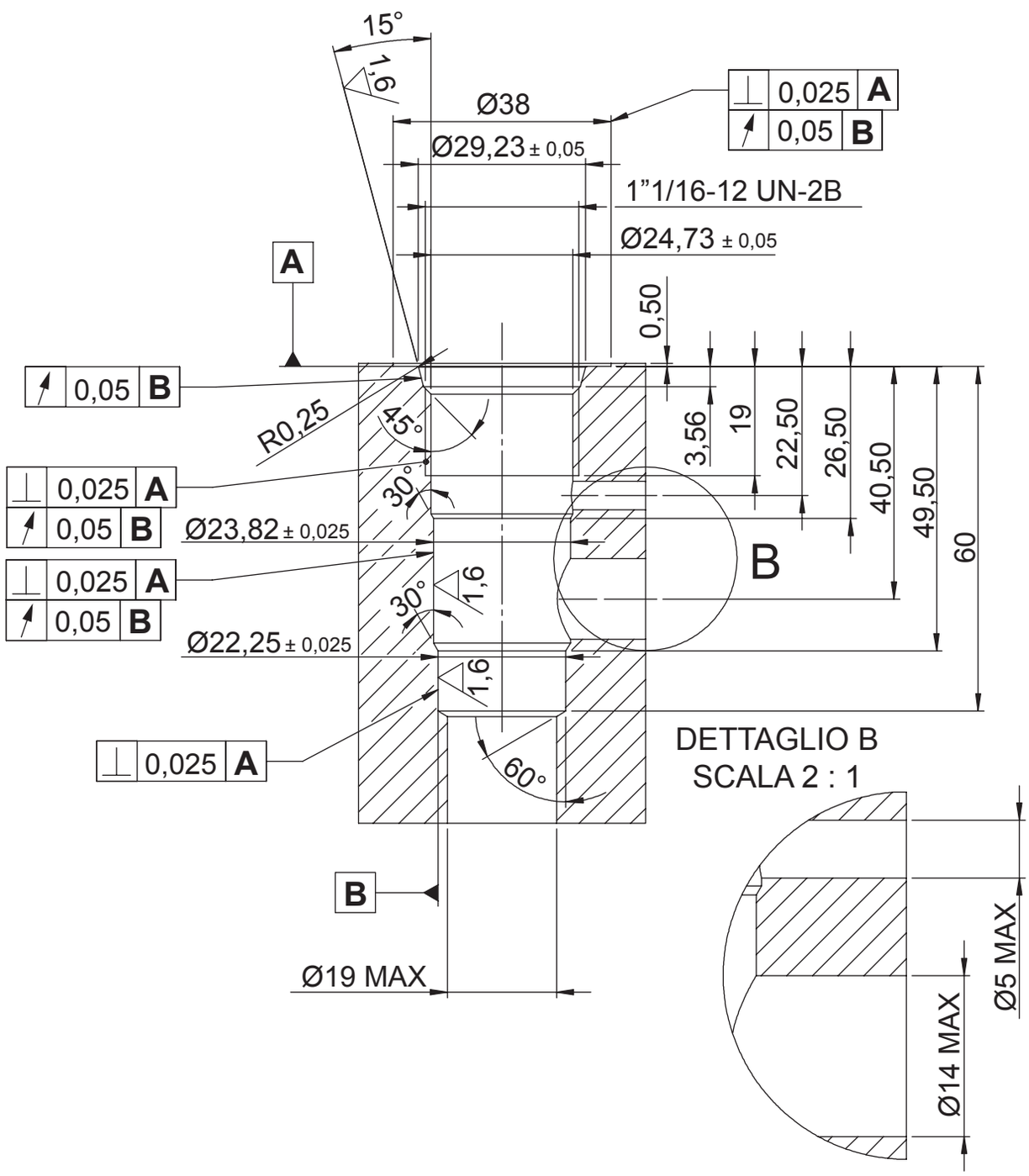

15°
1,6
Ø30
Ø24 ± 0,05
7/8-14 UNF-2B
Ø20,62 ± 0,05
0,025 A
0,05 B
A
0,50
2,80
0,05 B
R0,25
14,20
14,80
18,40
31,40
40,30
48,10
0,025 A
0,05 B
30°
Ø19,08 ± 0,025
Ø 3 MAX
0,025 A
0,05 B
30°
1,6
Ø17,50 ± 0,025
1,6
0,025 A
Ø 13,50 MAX
60°
B
MAX HOLE Ø 13,5

CAVITIES

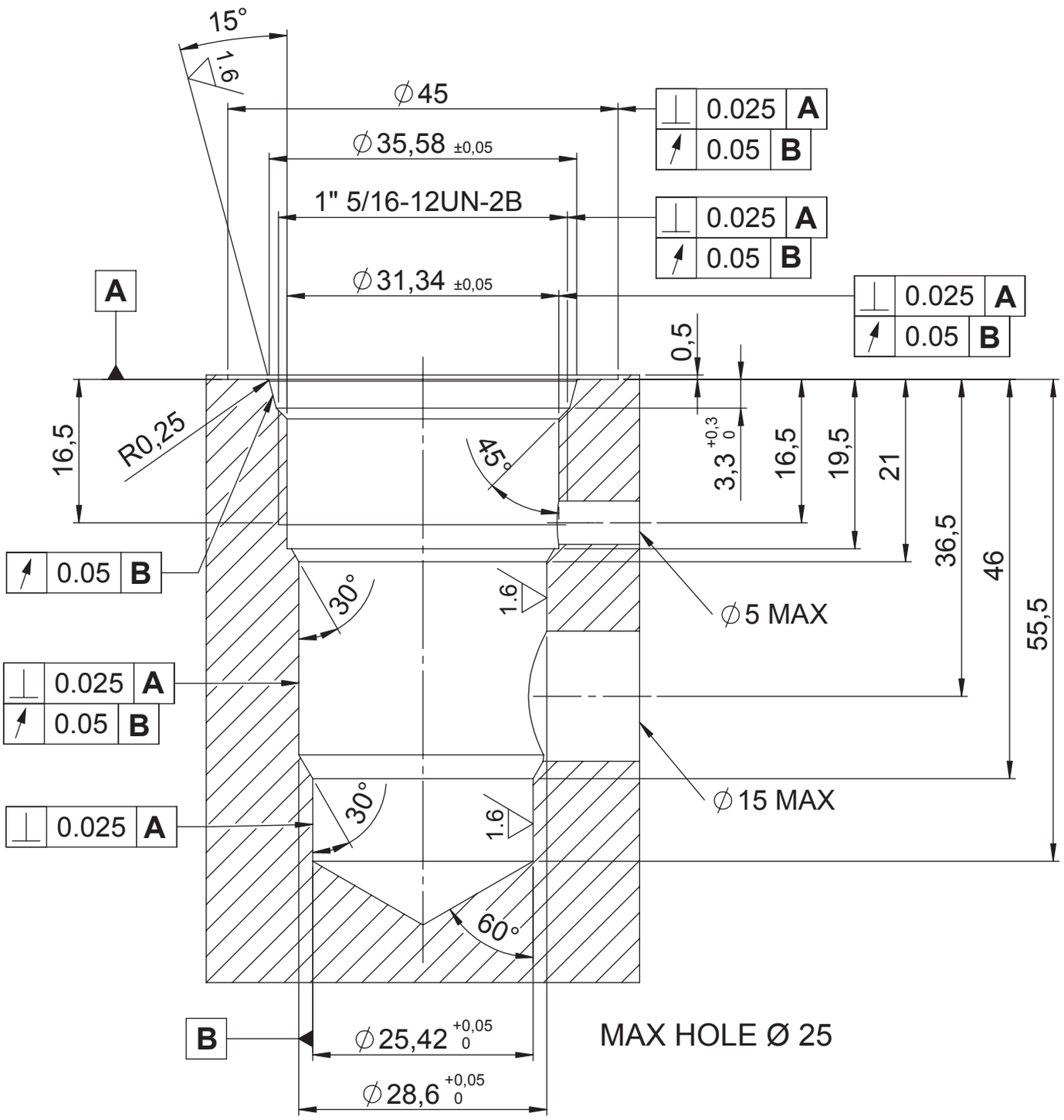


MAX HOLE Ø 19

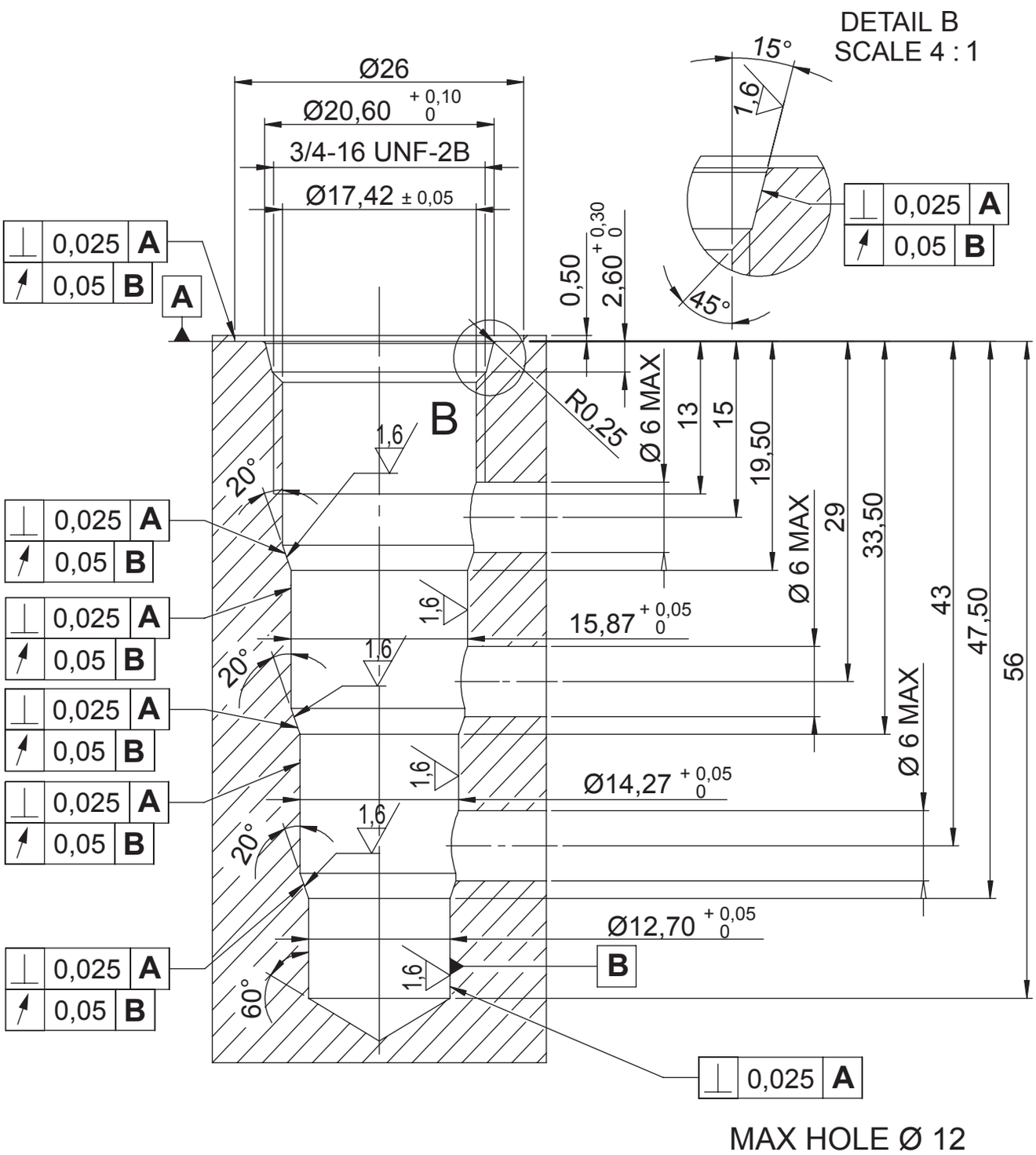
CAVITIES


15°
1,6
Ø38
Ø29,23 ± 0,05
0,025 A
0,05 B
1”1/16-12 UN-2B
Ø24,73 ± 0,05
A
0,50
0,05 B
R0,25
45°
30°
3,56
19
22,50
26,50
40,50
49,50
60
0,025 A
0,05 B
Ø23,82 ± 0,025
B
0,025 A
0,05 B
30°
1,6
Ø22,25 ± 0,025
1,6
0,025 A
60°
DETTAGLIO B
SCALA 2 : 1
B
Ø19 MAX
Ø5 MAX
Ø14 MAX

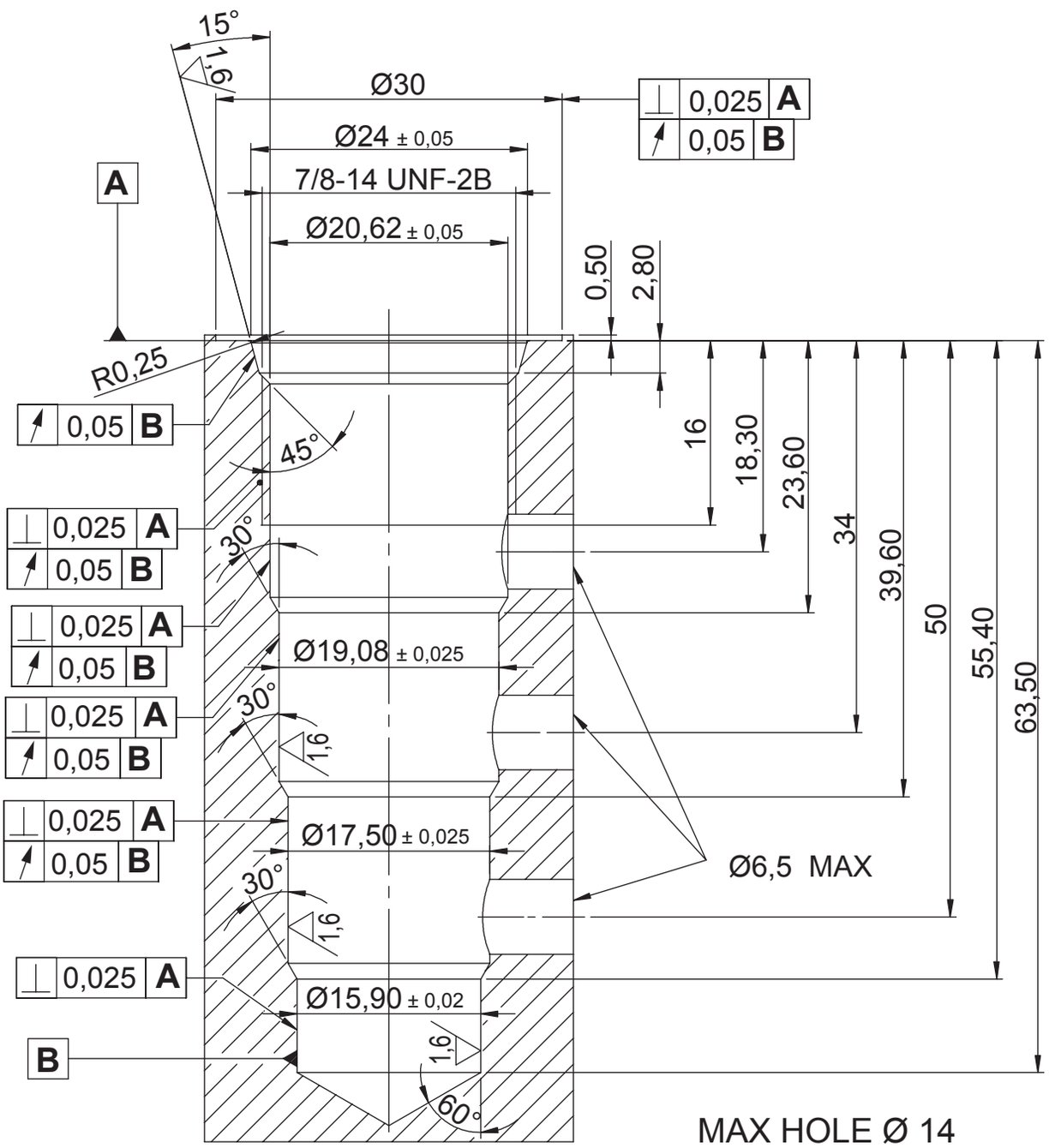
CAVITIES


15°
1.6
⌀45
⌀35,58 ±0,05
1" 5/16-12UN-2B
⌀31,34 ±0,05
0.025 A
0.05 B
A
0,5
16,5
R0,25
45°
3,3 +0,3 0
16,5
19,5
21
36,5
46
55,5
0.05 B
30°
1.6
⌀5 MAX
0.025 A
0.05 B
0.025 A
30°
1.6
⌀15 MAX
60°
B
⌀25,42 +0,05 0
⌀28,6 +0,05 0
MAX HOLE Ø 25

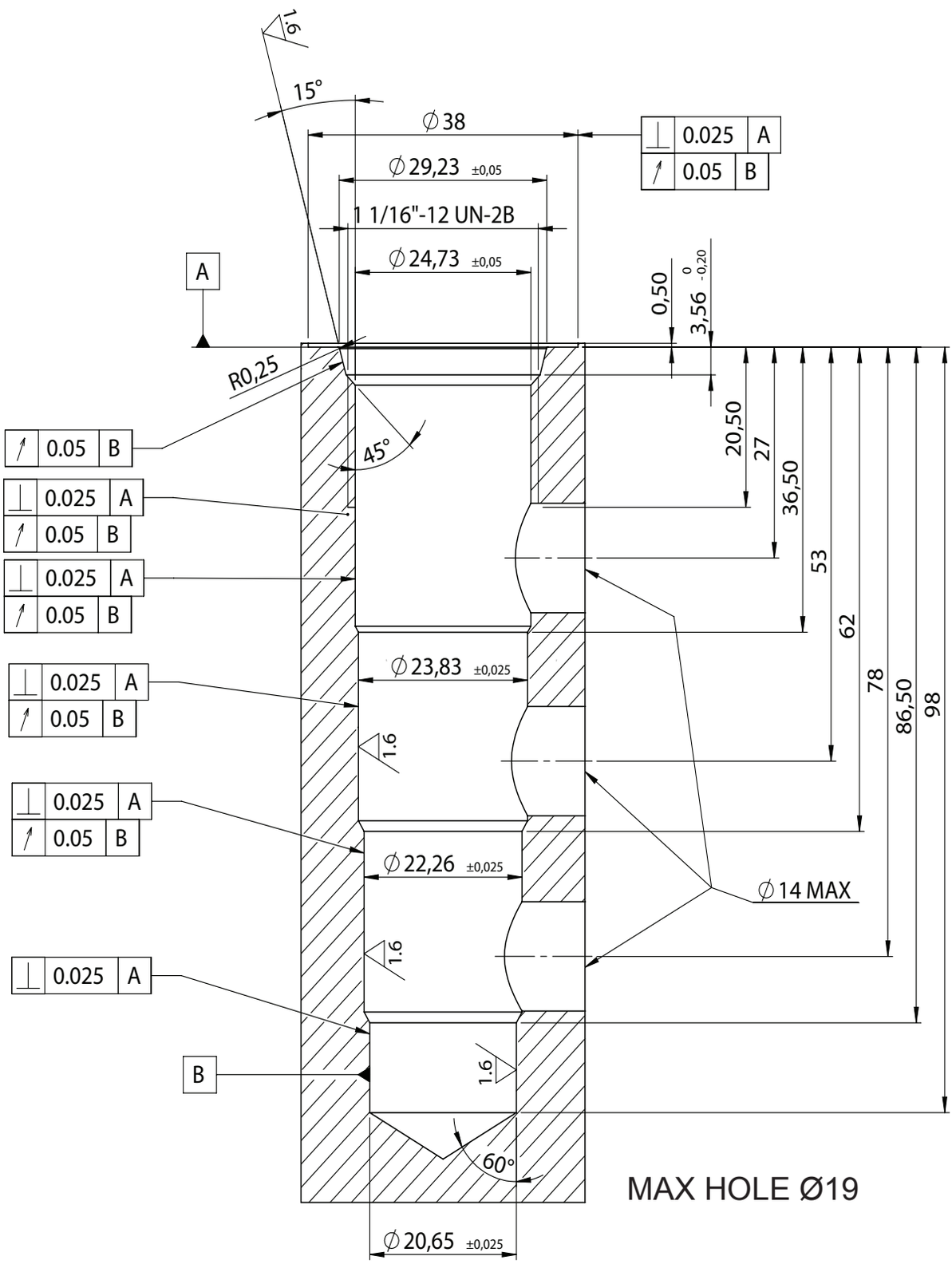
CAVITIES


DETAIL B
SCALE 4 : 1
15°
1,6
0,025 A
0,05 B
45°
Ø26
Ø20,60 + 0,10 0
3/4-16 UNF-2B
Ø17,42 ± 0,05
0,50
2,60 + 0,30 0
A
B
R0,25
Ø 6 MAX
13
15
19,50
29
33,50
43
47,50
56
1,6
20°
15,87 + 0,05 0
Ø14,27 + 0,05 0
Ø12,70 + 0,05 0
60°
MAX HOLE Ø 12

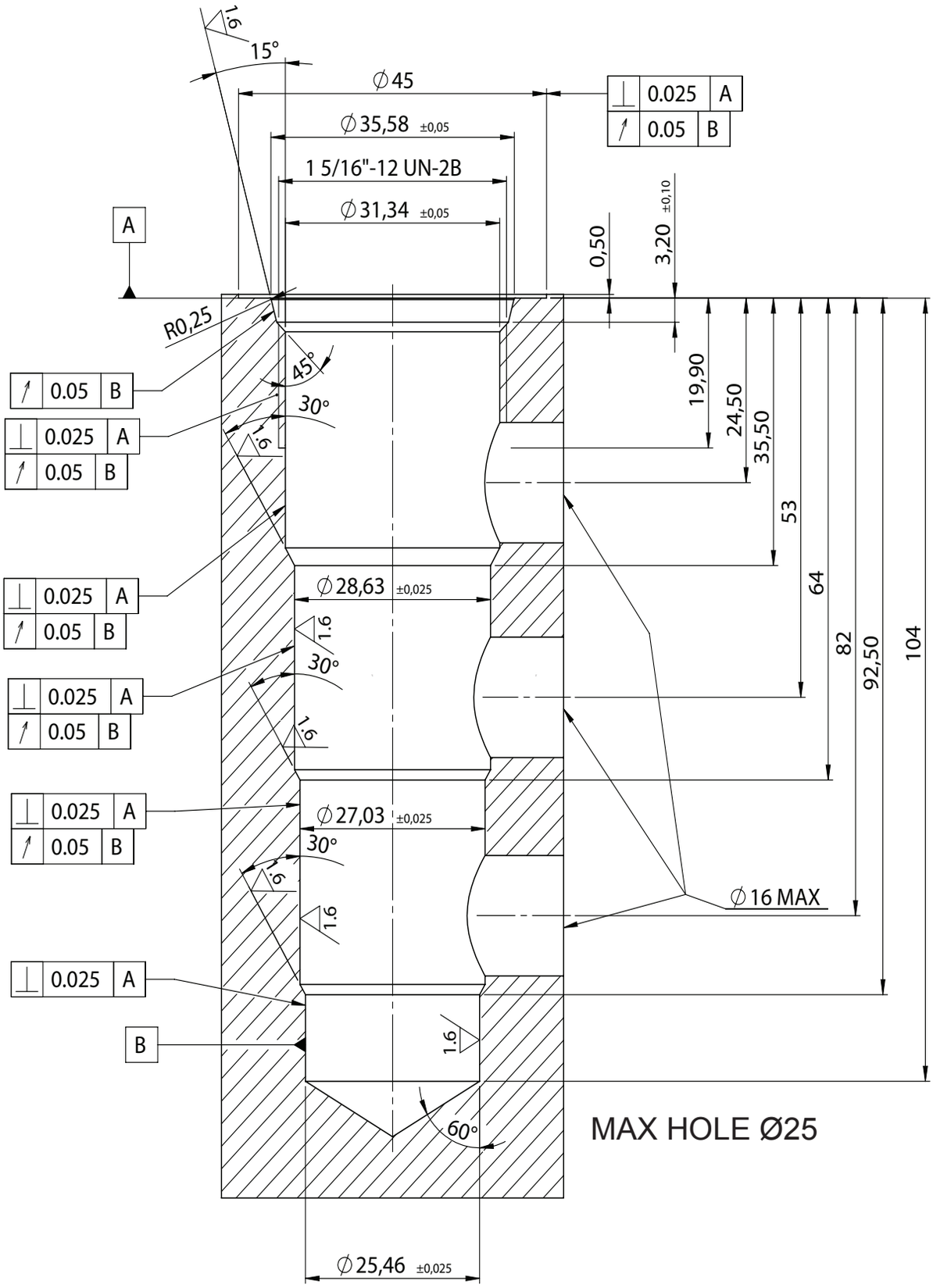
CAVITIES


15°
1,6
Ø30
0,025 A
0,05 B
Ø24 ± 0,05
7/8-14 UNF-2B
Ø20,62 ± 0,05
A
0,50
2,80
R0,25
0,05 B
45°
16
18,30
23,60
34
39,60
50
55,40
63,50
0,025 A
0,05 B
30°
Ø19,08 ± 0,025
1,6
Ø17,50 ± 0,025
Ø6,5 MAX
Ø15,90 ± 0,02
B
60°
MAX HOLE Ø 14

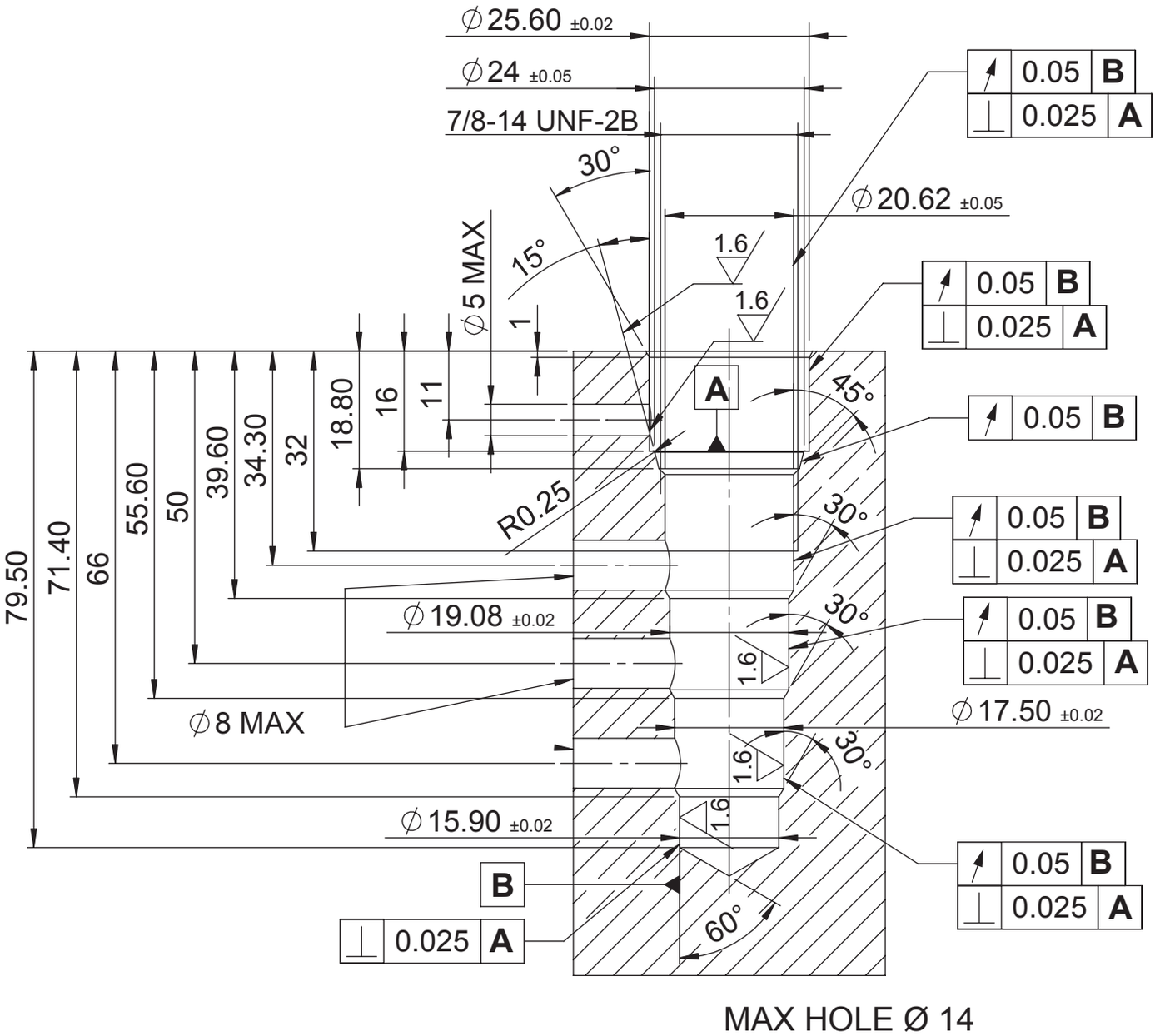
CAVITIES


1.6
15°
∅38
0.025 A
0.05 B
∅29,23 ±0,05
1 1/16"-12 UN-2B
∅24,73 ±0,05
A
0,50
3,56 0 -0,20
R0,25
0.05 B
45°
0.025 A
0.05 B
0.025 A
0.05 B
20,50
27
36,50
53
62
78
86,50
98
0.025 A
0.05 B
∅23,83 ±0,025
1.6
0.025 A
0.05 B
∅22,26 ±0,025
∅14 MAX
0.025 A
1.6
B
1.6
60°
MAX HOLE Ø19
∅20,65 ±0,025

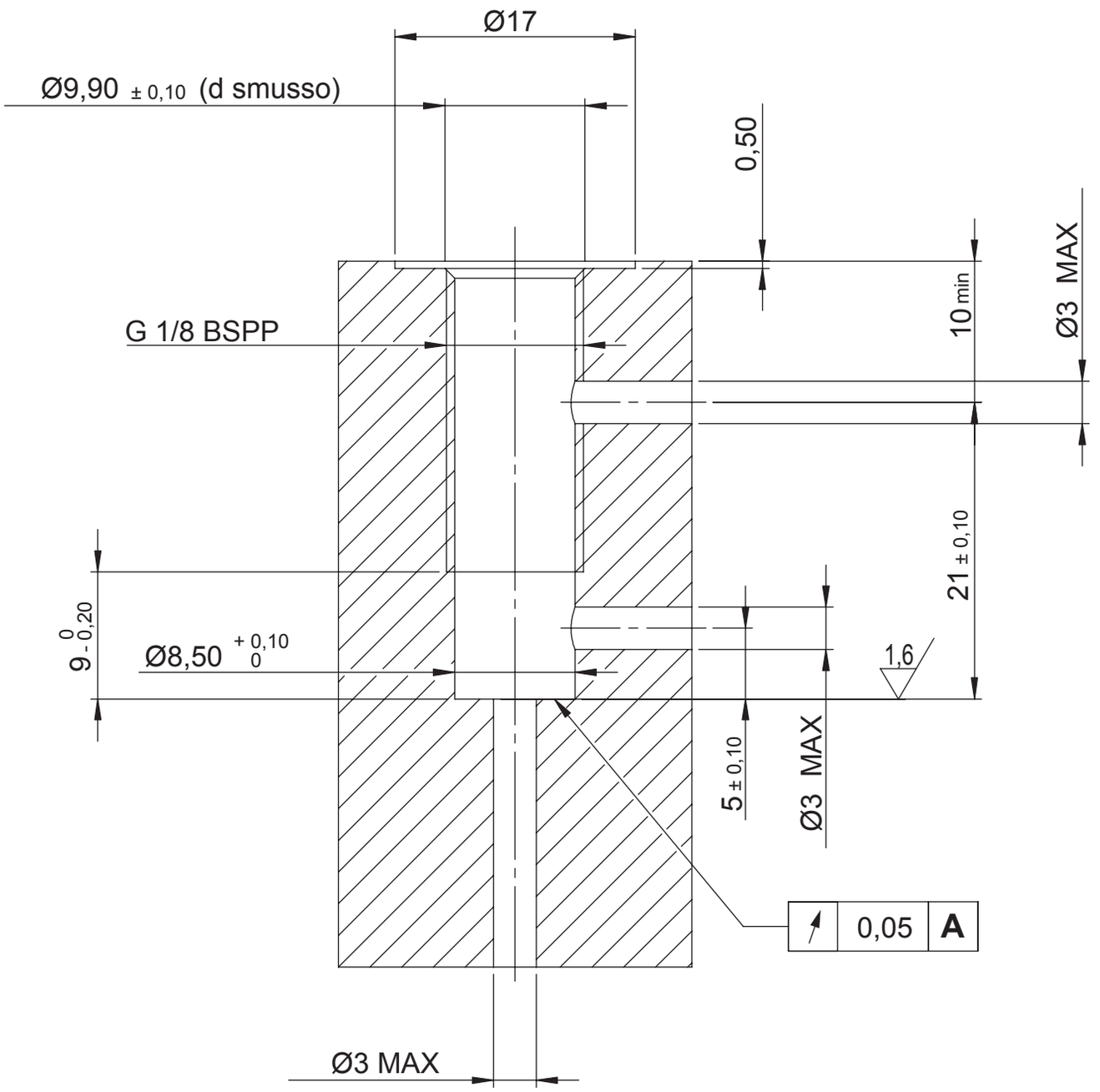
CAVITIES


1.6
15°
∅45
0.025 A
0.05 B
∅35,58 ±0,05
1 5/16"-12 UN-2B
∅31,34 ±0,05
A
0,50
3,20 ±0,10
R0,25
45°
30°
1.6
0.05 B
0.025 A
0.05 B
19,90
24,50
35,50
53
64
82
92,50
104
∅28,63 ±0,025
1.6
30°
1.6
∅27,03 ±0,025
30°
1.6
1.6
∅16 MAX
B
1.6
60°
MAX HOLE Ø25
∅25,46 ±0,025

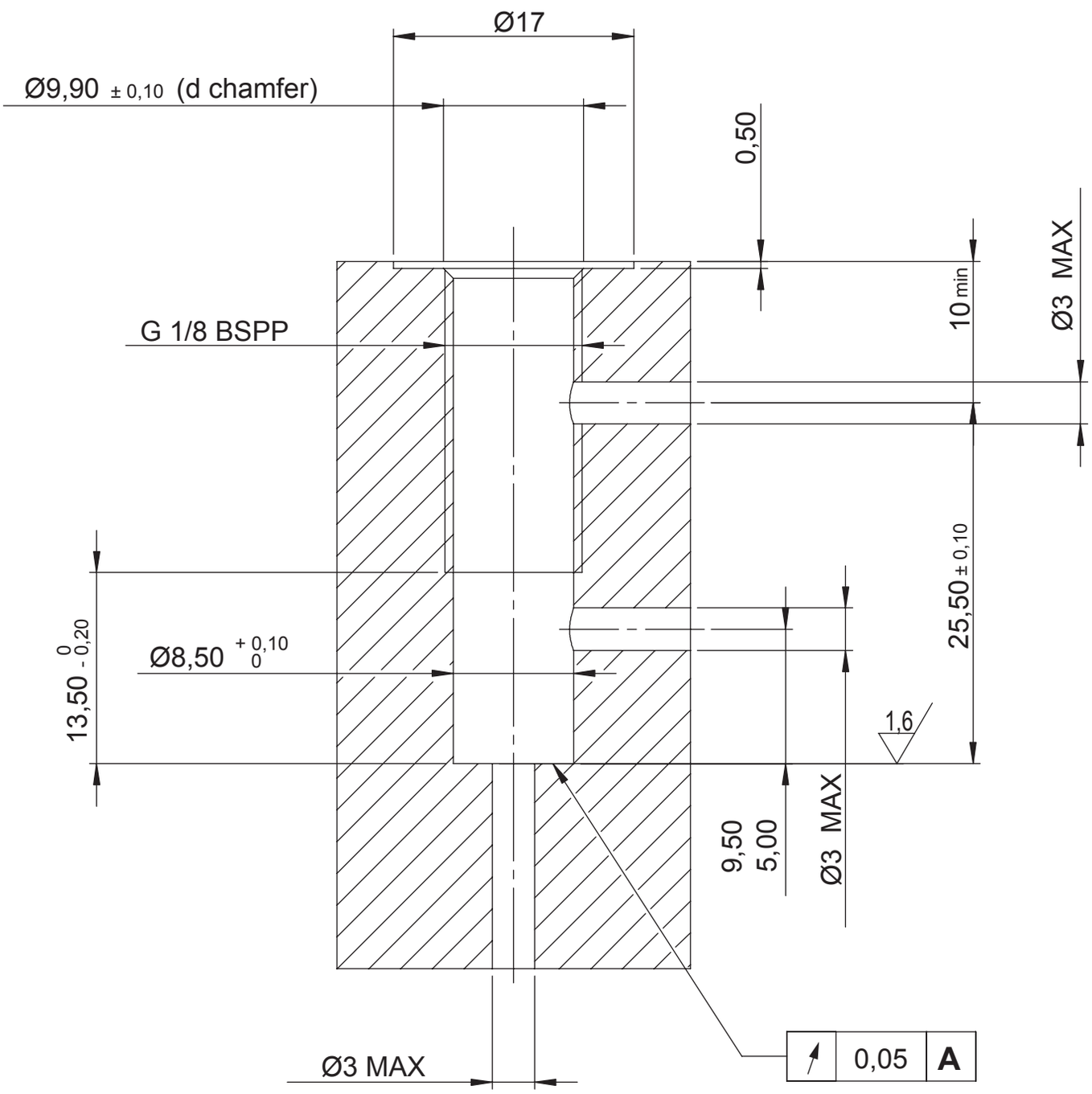
CAVITIES


∅25.60 ±0.02
∅24 ±0.05
7/8-14 UNF-2B
30°
∅20.62 ±0.05
15°
∅5 MAX
1
1.6
1.6
0.05 B
0.025 A
45°
R0.25
30°
∅19.08 ±0.02
∅8 MAX
∅17.50 ±0.02
∅15.90 ±0.02
60°
79.50
71.40
66
55.60
50
39.60
34.30
32
18.80
16
11
A
B
MAX HOLE Ø 14

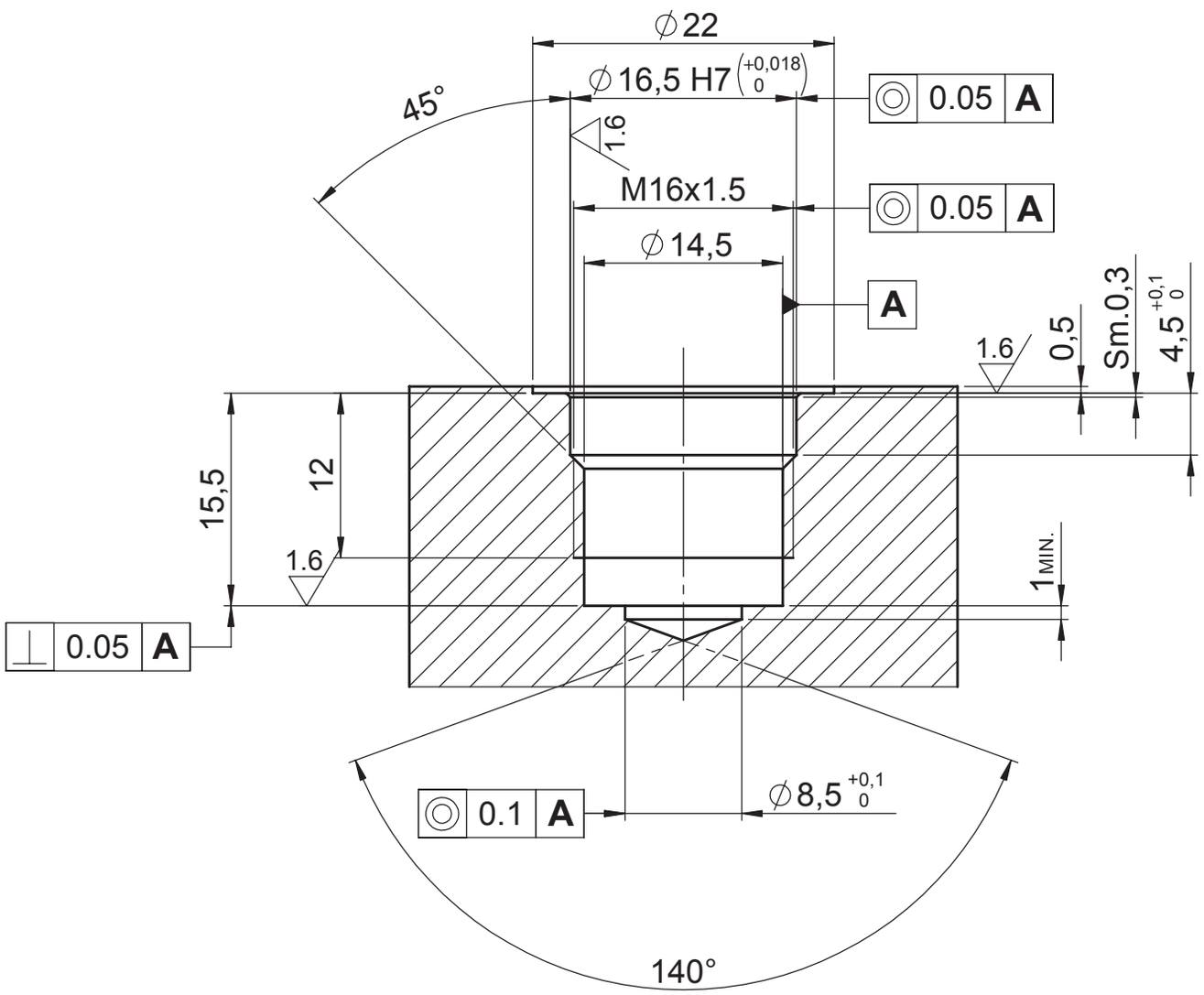
CAVITIES


Ø17
Ø9,90 ± 0,10 (d smusso)
0,50
10 min
Ø3 MAX
G 1/8 BSPP
21 ± 0,10
9 0 -0,20
Ø8,50 + 0,10 0
1,6
5 ± 0,10
Ø3 MAX
0,05 A
Ø3 MAX

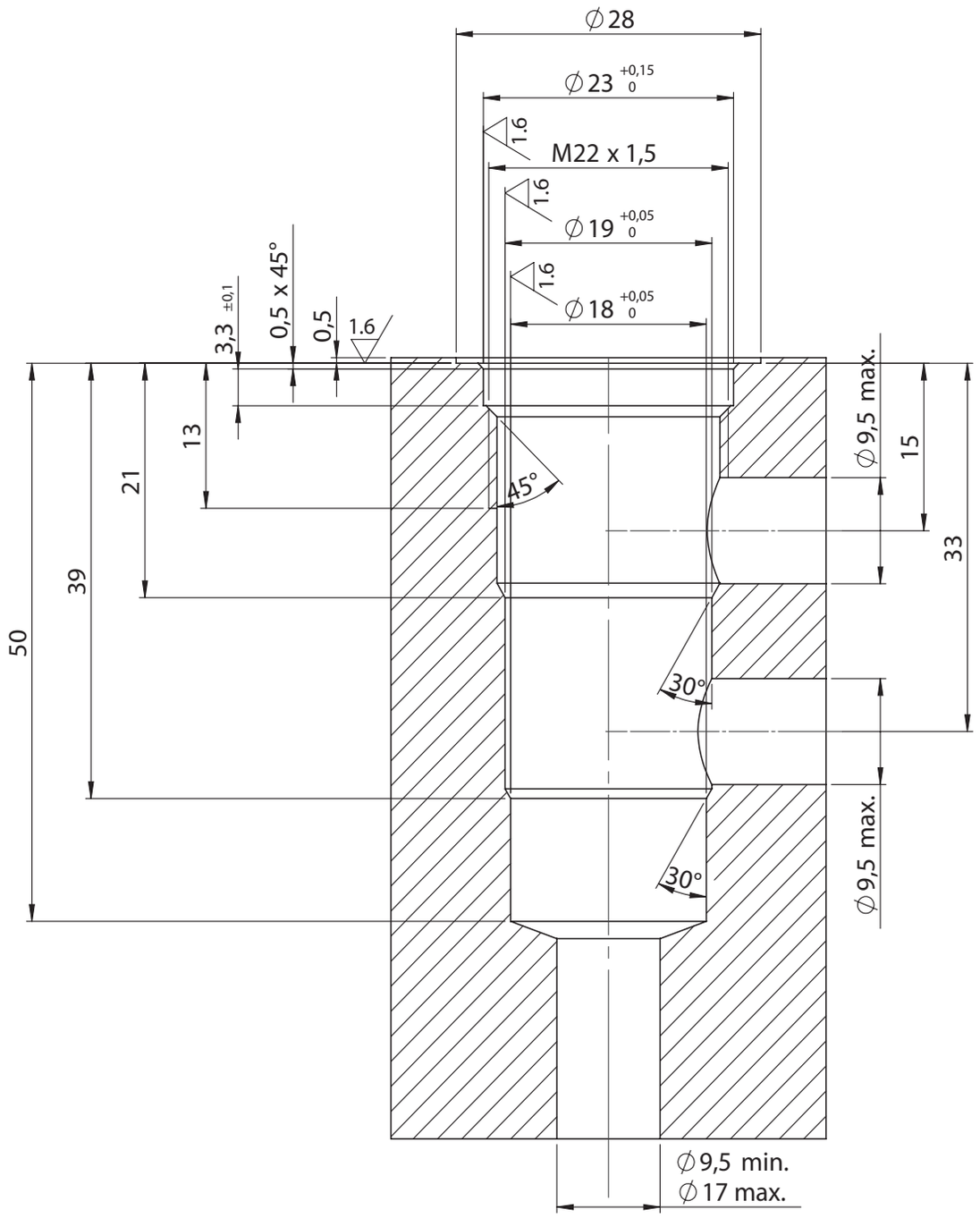
CAVITIES


Ø17
Ø9,90 ± 0,10 (d chamfer)
0,50
10 min
Ø3 MAX
G 1/8 BSPP
25,50 ± 0,10
13,50 0 -0,20
Ø8,50 +0,10 0
1,6
9,50
5,00
Ø3 MAX
0,05 A
Ø3 MAX

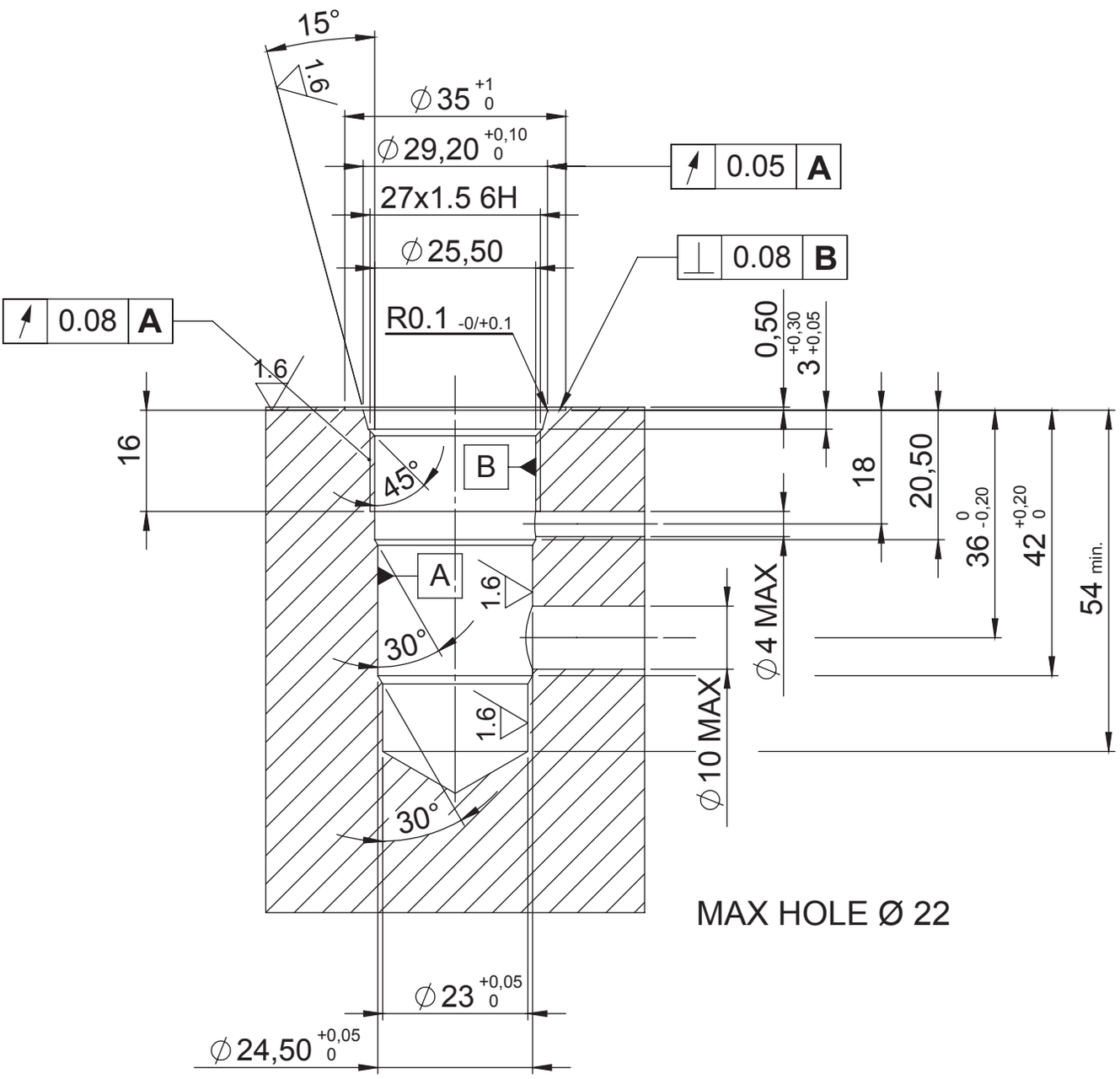
CAVITIES


∅22
∅16,5 H7 (+0,018 0)
0.05 A
45°
1.6
M16x1.5
0.05 A
∅14,5
A
1.6
0,5
Sm.0,3
4,5 +0,1 0
15,5
12
1.6
1 MIN.
0.05 A
0.1 A
∅8,5 +0,1 0
140°

CAVITIES


∅28
∅23 +0,15 0
1.6
M22 x 1,5
1.6
∅19 +0,05 0
1.6
∅18 +0,05 0
3,3 ±0,1
0,5 x 45°
0,5
1.6
13
21
39
50
45°
∅9,5 max.
15
33
30°
30°
∅9,5 max.
∅9,5 min.
∅17 max.

CAVITIES


15°
1.6
∅35 +1 0
∅29,20 +0,10 0
27x1.5 6H
∅25,50
0.05 A
0.08 B
0.08 A
R0.1 -0/+0.1
1.6
16
45°
B
A
1.6
30°
1.6
30°
0,50
3 +0,30 +0,05
18
20,50
36 0 -0,20
42 +0,20 0
54 min.
∅4 MAX
∅10 MAX
MAX HOLE Ø 22
∅23 +0,05 0
∅24,50 +0,05 0

TECHNICAL SPECIFICATIONS

AND GENERAL CONDITIONS

FILTRATION

The state of oil used for hydraulic systems and machines is one of the main factors for proper use and performance. Use of excessive dirty oil may lead to earlier wearing of parts and components, faster hardening and thus functional troubles of your equipment. Due Filtration is a must to assure top efficiency and life of your hydraulic equipment. Selection of the most suitable filtration systems must be done according to the technical features of your equipment. However, the following table provides most current oil recommendations.

HYDRAULIC OILS

The use of mineral based oil is recommended (like HLP to DIN 51524). All performances and calibrations are carried out by using hydraulic oil with approximate viscosity of 46 cSt at 40° C.

VISCOSITY CLASS

Normally expressed as ISO-VG in accordance to ISO DIN standards. Average viscosity is figured at 40°C (mm 2/s or centistokes - cSt). Recommended oil viscosity for NEM parts is: from 15 cSt to 250 cSt.

Chart:
Selection of filtration

Filtration type	Type of equipment Nominal filtration (micron)	Absolute Filtration as for ISO 4572	Polluting class	
			ISO4406	**NAS1653**
High pressure equipment (>200 bar) Proportional valves reachin to dirty	**5**	**X=5.....10**	**19/17/14**	**8**
Medium pressure equipment (<200 Bar)	**10**	**X=10.....15**	**20/18/15**	**9**

POLLUTING CLASS ISO 4406

with two figures respectively showing the quantity of 5 and 15µ or larger particles in 1 ml oil.

MATERIALS

The valves are made out high quality steel, while all movable parts are hardened and rectified.
Manifolds are produced in steel or aluminum in relation to the max working pressure.

POLLUTING CLASS NAS 1653

Expressed with one figure showing the quantity of variable size particles in 100 ml oil.

SEALING

O-RING. made out of butadiene/acrylonitril(BUNA N or NBR according to ASTM standards). The ASTM standards D76 set a brittleness safety temperature of -30°C +125° C. For use at higher temperature consult our technical office.

BACK UP RINGS

Made out of poly-tetrafluoroethylene (PTFE).

Q - RINGS: special sealing gaskets with 4 shaped lobes designed to prevent gaskets pull-off chances in case of dynamic applications. All O-rings are made out of Acrylonytril-Butadiene (NBR).

CARTRIDGE VALVE INSTALLATION

PLEASE CAREFULLY READ THESE INSTRUCTIONS

BEFORE VALVE INSTALLATION

Check-up general valve conditions and make sure there is no dirt. Check-up gaskets and seals conditions identifying their exact location. Lubricate the sals. First hand screw the cartridge in. Tightening should be performed according to the technical datas listed for each product.

TEST CURVES

All diagrams in this catalogue report performance curves obtained by use of mineral oil at ISO viscosity VG46 and at 40° C temperature.

STORAGE

Keep valves away and protected from the sunlight and any other heat/ozone source. Make sure that an ideal storage temperature of -20 :+50°C is available.

TEMPERATURE LIMITS

Ambient temperature:
from -20° C to +40°C

Oil temperature:
from -20° C to +90°C

DESIGN AND INSTALLATION WORK

All NEM valves and manifolds are function tested after assembly. Technical features and operation limits are statistically tested. As for all components which are then to be mounted on other equipment, real working conditions may not be lab simulated at the manufacturer's. This means that the customer is always ultimately responsible for the choice and final use of the product. Valves and manifolds in this catalogue are very versatile. However they are strictly recommended for use on equipment complying with the European regulation no. 89/392 and following amendements. No installation should be done on equipment without above mentioned European approval.

DISPOSAL INDICATIONS

All the products, protections, plugs and packaging material at the end of their utilization have to be disposed in according with the regulations in force.

GENERAL CONDITIONS

1. GENERAL

1.1 These general conditions are applicable to all the supplies which NEM s.r.l. will carry out, on the base of purchasing orders forwarded from the Customer.

1.2 Terms like EXW, DDP and so on are referred to the so called Incotems published by the International Chamber of Commerce, current at the date of conclusion of these General Conditions.

2. PURCHASING ORDERS MANAGEMENT

2.1 Purchasing orders are binding for NEM s.r.l. only if confirmed in writing with order confirmations.

2.2 NEM s.r.l. engages itself to supply goods up to the order confirmations.

2.3 Any complaints regarding the content of the order confirmation must be notified in writing to NEM s.r.l. by 5 days and no later the forwarding of the order confirmation.

2.4 The Customer undertakes to pay the goods supplied by NEM s.r.l., according to the prices listed on the order confirmation.

3. PAYMENT CONDITIONS

3.1 The Parties agree upon the payment conditions at the beginning of the supply.

3.2 In case of delay of payment, NEM s.r.l. will have the right to request of moratory interests equal to the Euribor, increased by 2 points.

3.3 In case of delay of payment, NEM s.r.l. will have the right to not execute the eventual purchasing orders in progress, even if confirmed.

4. DELIVERY AND SHIPMENT

4.1 The supply of the goods will always be Ex-Works, even in the case that NEM s.r.l. had agreed with the Customer that NEM s.r.l. takes care of the shipment, or part of it.

4.2 In any case, the risks about perishment or damage of the goods will pass to the Customer, at latest, when the goods are delivered to the first carrier.

5. CHARACTERISTICS OF PRODUCTS

5.1 NEM s.r.l. engages itself to supply good quality products, up to the technical specifications contained in technical schedules or in the catalogue.

5.2 NEM s.r.l. reserves the exclusive right to make any change to the products, which, without altering their essential features, appear to be necessary or suitable.

6. COMPLAINTS

6.1 The complaints regarding the apparent defects of the Products (such as, for instance, the packing, quantity, number or exterior features of the Products) must be notified in writing to NEM s.r.l. by 7 days and no later upon the receipt of the goods. Failing such notification, the Customer's right to claim the above defects will be forfeited.

6.2 The hidden defects (defects which cannot be discovered by the Customer on the basis of a careful inspection upon the receipt) shall be notified in writing to NEM s.r.l. by 7 days and no later from the discovery of the defects, and in any case no later than 18 months from the delivery of the Goods. Failing such notification, the Customer's right to claim the above defects will be forfeited.

6.3 It's agreed that, even in case of any complaint or objection, the Customer will not have the right to suspend or delay the payments due to NEM s.r.l., as well as payment of any other supplies.

7. WARRANTY

7.1 In case of any defects, lack of quality or non-conformity of the supplied Products, NEM s.r.l., at its exclusive choice, engages itself to replace or repair the defective Products provided such defects or non-conformity have been timely notified in writing to NEM s.r.l., in accordance to point nr. 6, by 18 months from the delivery of the Goods and no later.

7.2 Products repaired or replaces under warranty as above described are submitted to the same guarantee, for a period of 18 months from the date of repair or replacement.

7.3 Except in case of fraud or gross negligence, in case of defects, lack of quality or non- conformity, NEM s.r.l. undertakes only to repair or replace the defective Products, in accordance to what above described.

7.4 This guarantee (i.e. the obligation of repairing or replacing the Products) is in lieu of any other legal guarantee or liability of the Supplier, with the exclusion of any other guarantee or liability – whether contractual or non-contractual – in connection with the Products supplied (i.e. compensation for damages, loss of profit, recall campaigns, …).

7.5 NEM s.r.l. is covered by appropriate policy of Product Legal Liability.

8. RETENTION OF TITLE

8.1 The Goods supplied by NEM s.r.l. remain property of NEM s.r.l. until the complete payment of the supply is received.

9. SECRECY BOND

9.1 NEM s.r.l. engages itself to treat as highly confidential all the technical or commercial information should learnt from the Customer, which are not already of public divulgence.

10. PATENTS

10.1 Except preventive written authorization of NEM s.r.l., the Customer cannot use the supplied Products, or part of them, or the descriptions or the drawings of them – whether registered patented or not – to project or make similar goods.

10.2 Even in case of preventive written authorization of NEM s.r.l., all the patents, labels and registered design, royalties and intellectual property rights related or in connection with Products supplied by NEM s.r.l., are and remain property of NEM s.r.l. The Customer undertakes to treat all of them as highly confidential.

11. APPLICABLE LAW AND JURISDICTION

11.1 The supplies carried out by NEM S.r.l. are governed by these present General Conditions and, for what here not expressly provided, by the Italian Law.

11.2 The competent Law Courts of Reggio Emilia have the exclusive jurisdiction in any controversies regarding the supplies of Products by NEM s.r.l., or from the supplies arising out or to the supplies connected, in which NEM s.r.l. is part.

NOTES