Products from NEM ...

... for mobile hydraulic applications

Mechanical and Electrical Cartridge Valves

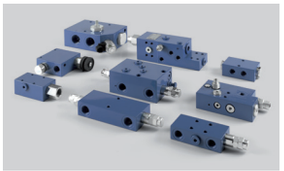
Pressure control valves
Counterbalance valves
Directional control valves
Flow control valves

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

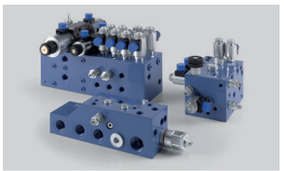
p_{max} 420 bar
Q_{max} 500 L/min
Ports up to $1^1/_4$SAE6000



Hydraulic Integrated Circuits

Weight lifting
Earth moving
Agricultural vehicles
Industrial vehicles

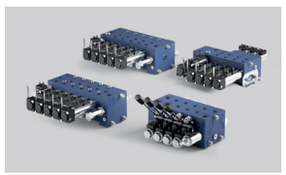
p_{max} 350 bar
Q_{max} 200 L/min



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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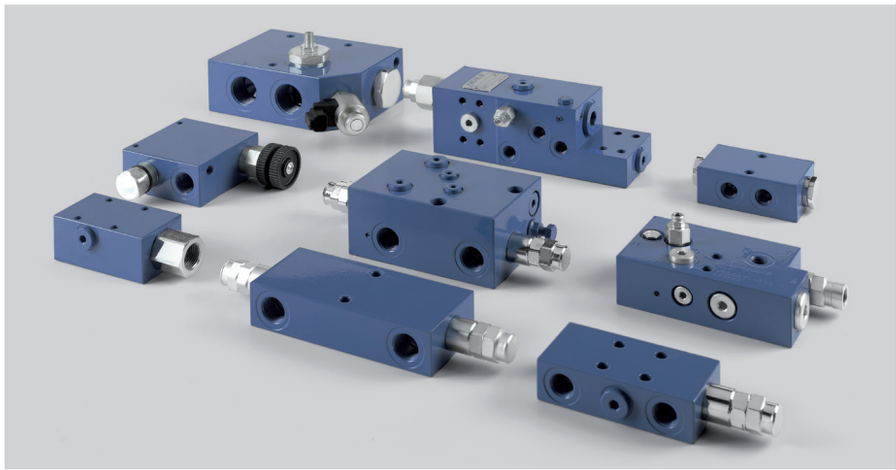
DT001GB002 IR2 - 10.2018

General catalogue, Vol. 2 Parts-in-Body Valves

General catalogue, Vol.2

Parts-in-Body 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.

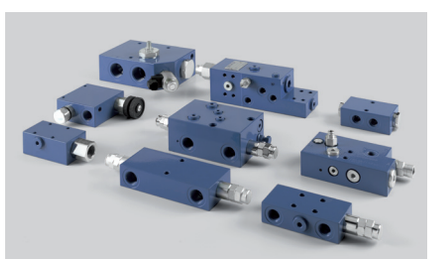
You are kindly invited to meet the people at NEM who listen and who deliver for the benefit of our customers.

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		

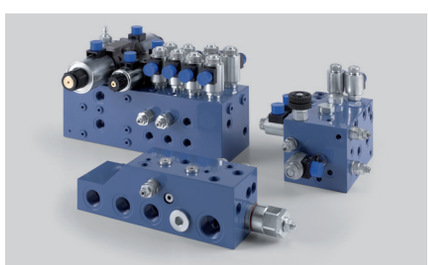
Parts-in-Body Valves

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		



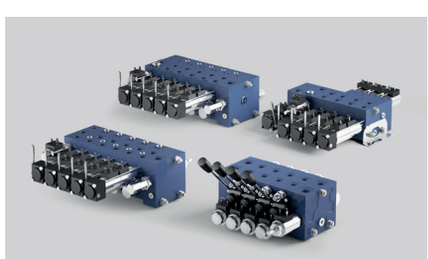
Hydraulic Integrated Circuits

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



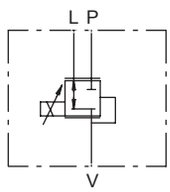
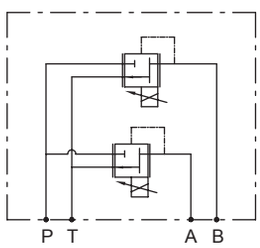
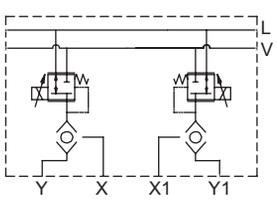
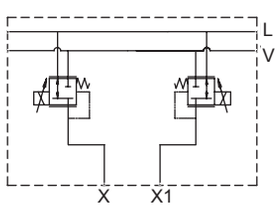
Directional Control Valves

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

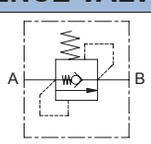
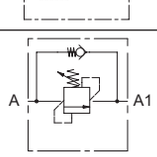
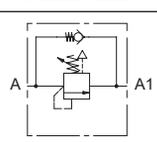
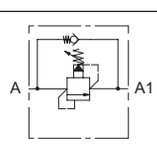


PRESSURE CONTROL VALVES

PROPORTIONAL PRESSURE REDUCING VALVES

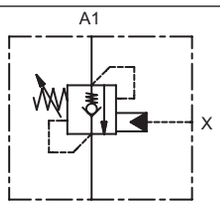
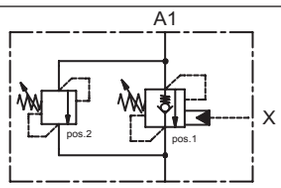
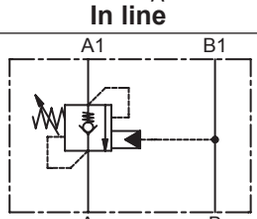
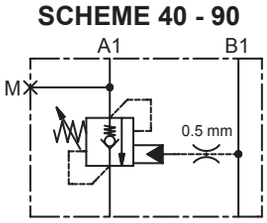
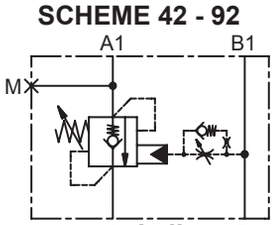
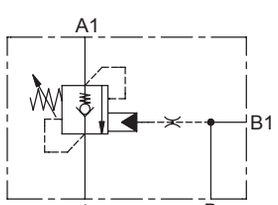
		Q l/min	P_{max} bar	PORTS	PAGE
	1027 - Flanged	2	50		29
	1044 - CETOP2	2	50	CETOP 2	30
	1043 - CETOP3	2	50	CETOP 3	31
 **Scheme 0**	1128 - line mounting	2	50	G 1/4”	32
 **Scheme 1**					

SEQUENCE VALVES

	6P091 - line mounting	60	350	G 3/8”	33
	6P061 - line mounting	80	350	G 1/2”	34
	6P010800.A02	20	210	G 1/4”	35
	6P010800.A	30	210	G 3/8” - G 1/2”	36
	6P01101	30	210	G 3/8” - G 1/2”	37
	6P01102	100	210	G 1/2” - G 3/4”	38

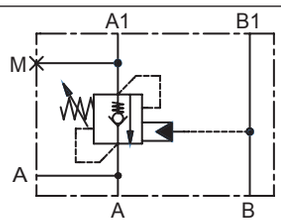
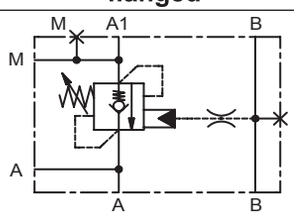
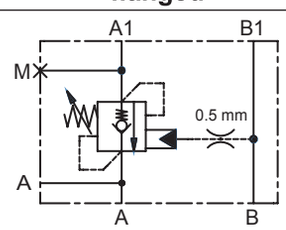
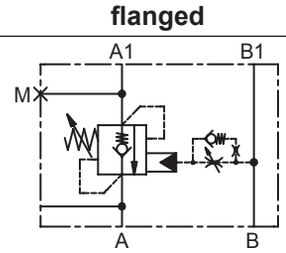
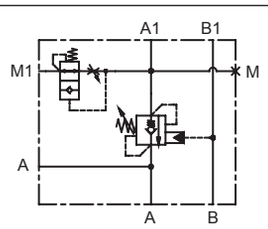
COUNTERBALANCE VALVES

NOT COMPENSATED

SINGLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 In line	H3001N	40	350	4 : 1	G 1/4” - G 3/8”	46
	H5001N	70	350	4 : 1 - 9 : 1	G 3/8” - G 1/2”	47
 In line	H3001N46	40	350	4 : 1	G 1/4” - G 3/8”	48
	H5001N46	70	350	4 : 1	G 3/8” - G 1/2”	49
 In line	H3004N	40	350	4 : 1	G 1/4” - G 3/8”	50
	H5004N	70	350	4 : 1	G 3/8” - G 1/2”	51
SCHEME 40 - 90  In line SCHEME 42 - 92  In line	H1004N	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	52
	H1504N	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	53
 In line	H3004N41	40	350	4 : 1	G 3/8”	54

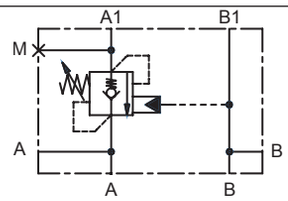
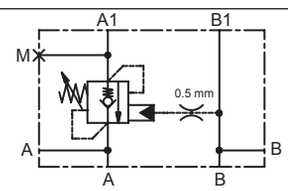
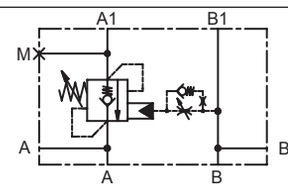
COUNTERBALANCE VALVES

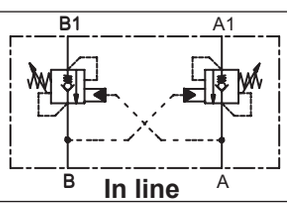
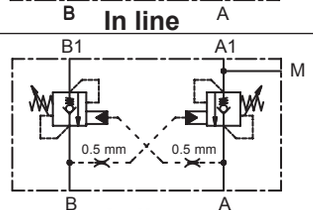
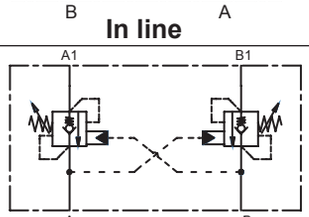
NOT COMPENSATED

SINGLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **A1 port flanged**	H3005N40	40	350	4 : 1	G 1/4" - G 3/8"	55
 **A1 port flanged**	H3007N	40	350	4 : 1	G 1/4" - G 3/8"	56
 **A1 port flanged**	H5005N	70	350	4 : 1	G 3/8" - G 1/2"	57
	H1005N	110	410	4 : 1 - 9 : 1	G 1/2"	58
	H1505N	180	410	4 : 1 - 8 : 1	G 1/2" - G 3/4"	59
 **A1 port flanged**	H1005N	110	410	4 : 1 - 9 : 1	G 1/2"	58
	H1505N	180	410	4 : 1 - 8 : 1	G 1/2" - G 3/4"	59
 **A1 port flanged**	H3005N43	40	350	4 : 1	G 1/4" - G 3/8"	60

COUNTERBALANCE VALVES

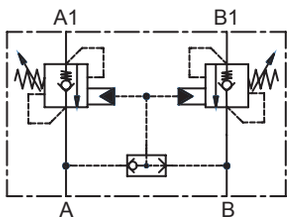
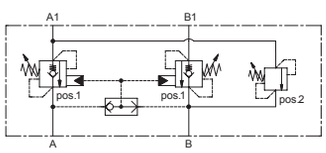
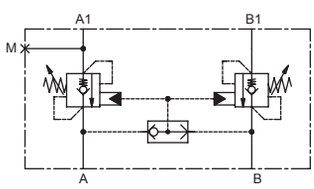
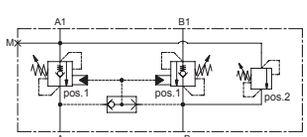
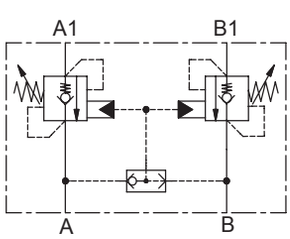
NOT COMPENSATED

SINGLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 A1/B1 port flanged	H3006N	40	350	4 : 1	G 1/4” - G 3/8”	61
	H3008N	40	350	4 : 1	G 1/4” - G 3/8”	62
 A1/B1 port flanged	H5006N	70	350	4 : 1	G 3/8” - G 1/2”	63
	H1006N	110	410	4 : 1 - 9 : 1	G 1/2”	64
	H1506N	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	65
 A1/B1 port flanged	H1006N	110	410	4 : 1 - 9 : 1	G 1/2”	64
	H1506N	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	65

DOUBLE ACTING		Q l/min	P bar	PILOT RATIO	PORTS	PAGE
 In line	H1030N	110	410	4 : 1	G 1/4”	70
	H1030N	110	410	4 : 1	G 3/4”	71
 In line	H1530N	180	410	4 : 1 - 8 : 1	G 3/4”	72
 A1/B1 port flanged	H5032N	70	350	4 : 1	G 3/8”	73
	H1532N	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	74

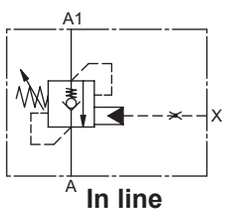
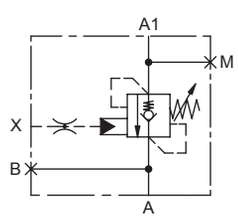
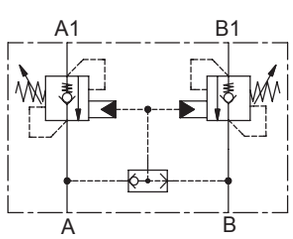
COUNTERBALANCE VALVES

NOT COMPENSATED

DOUBLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 In line	H3060N	40	350	4 : 1	G 1/4” - G 3/8”	75
	H5060N	70	350	4 : 1 - 9 : 1	G 3/8” - G 1/2”	76
	H5060N95	70	350	9 : 1	G 3/8” - G 1/2”	77
	H1060N	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	78
 In line	H5060N47	70	350	4 : 1	G 3/8” - G 1/2”	79
 A1 port flanged	H3061N	40	350	4 : 1	G 1/4” - G 3/8”	80
	H5061N	70	350	4 : 1	G 3/8” - G 1/2”	81
	H1061N	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	82
 A1 port flanged	H5061N47	70	350	4 : 1	G 3/8” - G 1/2”	83
 A1/B1 port flanged	H3062N	40	350	4 : 1	G 1/4” - G 3/8”	84
	H5062N	70	350	4 : 1 - 9 : 1	G 3/8” - G 1/2”	85
	H1062N	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	86

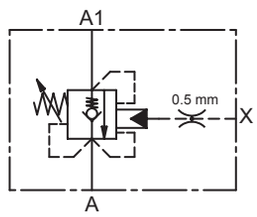
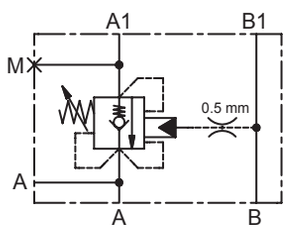
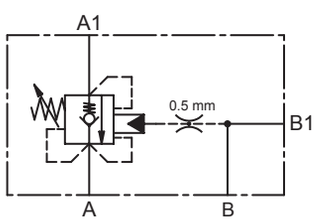
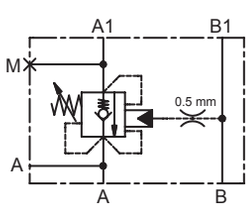
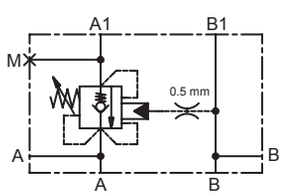
COUNTERBALANCE VALVES

NOT COMPENSATED WITH AXIAL DISCHARGE

SINGLE ACTING		Q l/min	Pmax bar	PILOT RATIO	PORTS	PAGE
 In line	H5200N	40	350	9 : 1	G 1/2” - G 1/4”	66
	H5201N	40	350	4 : 1	G 1/2” - G 1/4”	67
 A1 port flanged	H5202N	70	350	4 : 1	G 1/2” - G 1/4”	68
DOUBLE ACTING		**Q l/min**	**Pmax bar**	**PILOT RATIO**	**PORTS**	**PAGE**
 In line	H5230N	60	350	4 : 1	G 1/2”	69

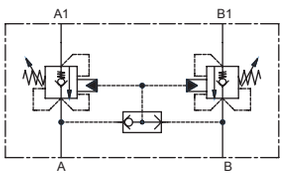
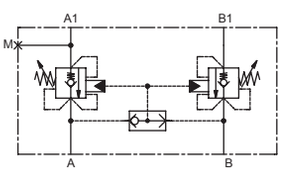
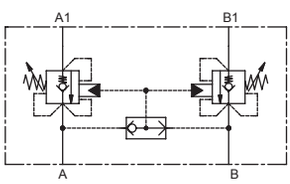
COUNTERBALANCE VALVES

RELIEF COMPENSATED

SINGLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **In line**	H5301S40	70	350	4 : 1	G 3/8”	87
 **In line**	H5304S40	70	350	4 : 1	G 3/8” - G 1/2”	88
 **In line**	H5304S41	70	350	4 : 1	G 3/8”	89
 **A1 port flanged**	H5305S40	70	350	4 : 1	G 3/8” - G 1/2”	90
 **A1/B1 port flanged**	H5306S40	70	350	4 : 1	G 3/8” - G 1/2”	91

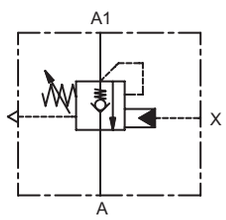
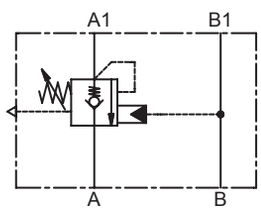
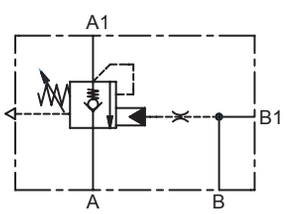
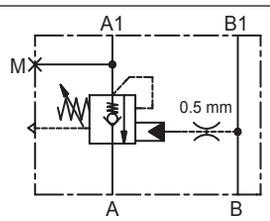
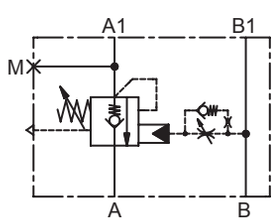
COUNTERBALANCE VALVES

RELIEF COMPENSATED

DOUBLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **In line**	H5360S40	70	350	4 : 1	G 3/8” - G 1/2”	92
 **A1 port flanged**	H5361S40	70	350	4 : 1	G 3/8” - G 1/2”	93
 **A1/B1 port flanged**	H5362S40	70	350	4 : 1	G 3/8” - G 1/2”	94

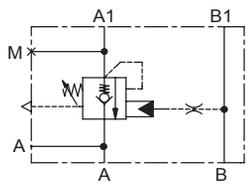
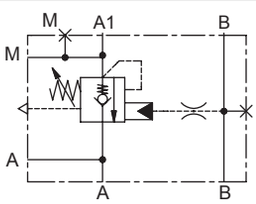
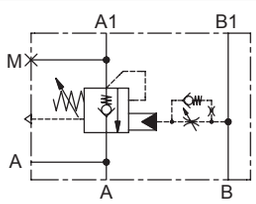
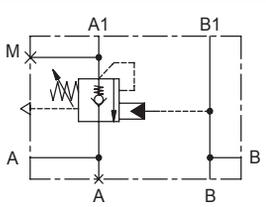
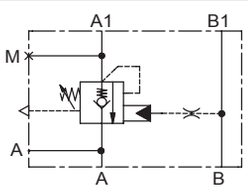
COUNTERBALANCE VALVES

FULLY COMPENSATED

SINGLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 In line	H3001C	40	350	4 : 1	G 1/4” - G 3/8”	95
	H5001C	70	350	4 : 1 - 9 : 1	G 3/8” - G 1/2”	96
 In line	H3004C	40	350	4 : 1	G 1/4” - G 3/8”	97
 In line	H3004C41	40	350	4 : 1	G 3/8”	98
 In line	H5004C	70	350	4 : 1	G 3/8” - G 1/2”	99
	H1004C	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	100
	H1504C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	101
 In line	H1004C	110	410	4 : 1 - 9 : 1	G 1/2” - G 3/4”	100
	H1504C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	101

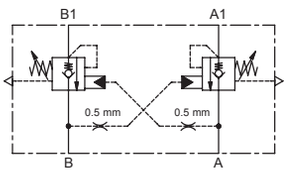
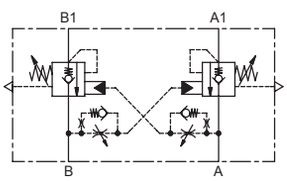
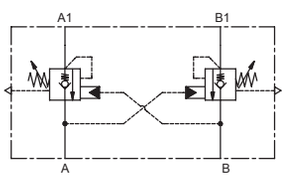
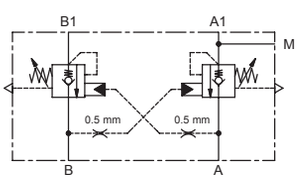
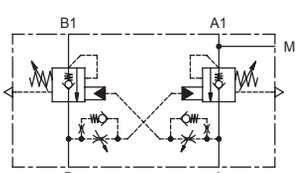
COUNTERBALANCE VALVES

FULLY COMPENSATED

		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **A1 port flanged**	H3005C	40	350	4 : 1	G 1/4” - G 3/8”	102
	H5005C	70	350	4 : 1	G 3/8” - G 1/2”	104
	H1005C	110	410	4 : 1 - 9 : 1	G 1/2”	105
	H1505C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	106
 **B1 port flanged**	H3007C	40	350	4 : 1	G 1/4” - G 3/8”	103
 **A1 port flanged**	H1005C	110	410	4 : 1 - 9 : 1	G 1/2”	105
	H1505C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	106
	H1502C	180	410	4 : 1 - 8 : 1	3/4”- SAE6000	107
 **A1/B1 port flanged**	H3006C	40	350	4 : 1	G 1/4” - G 3/8”	108
	H3008C	40	350	4 : 1	G 1/4” - G 3/8”	109
 **A1/B1 port flanged**	H5006C	70	350	4 : 1	G 3/8” - G 1/2”	110
	H1006C	110	410	4 : 1 - 9 : 1	G 1/2”	111
	H1506C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	112

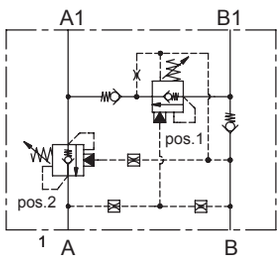
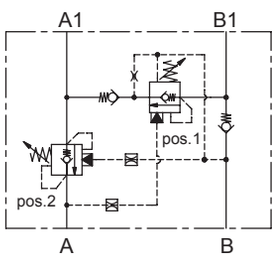
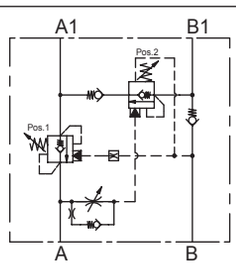
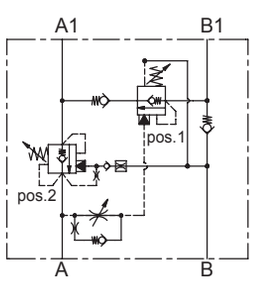
COUNTERBALANCE VALVES

FULLY COMPENSATED

DOUBLE ACTING		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 In line  In line	H1530C	180	410	4 : 1 - 8 : 1	G 3/4”	113
 A1/B1 port flanged	H5032C	70	350	4 : 1	G 3/8”	114
 A1/B1 port flanged  In line	H1532C	180	410	4 : 1 - 8 : 1	G 1/2” - G 3/4”	115

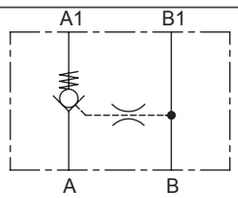
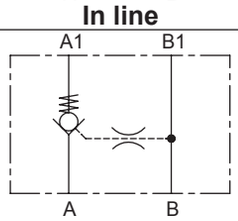
COUNTERBALANCE VALVES

REGENERATIVE CIRCUIT

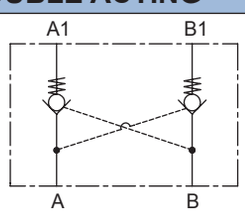
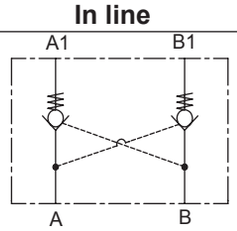
		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **In line**	H3080N41	40 / 70	350	4 : 1	G 3/8”	116
 **In line**	H3080N40	70	350	4 : 1	G 1/2”	117
 **A1/B1 port flanged**	H3080N42	70	350	4 : 1	G 3/8”	118
	H3081N42	40	350	4 : 1	G 3/8”	119
 **In line**	H1080N40	70	410	4 : 1	G 1/2”	120

PILOT OPERATED CHECK VALVES

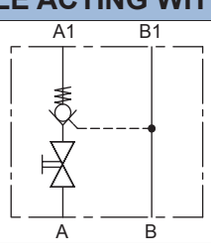
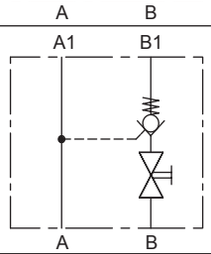
SINGLE ACTING

		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
 **In line**	6D10027	40	350	7 : 1	G 3/8”	123
	6D10025	60	350	5 : 1	G 1/2”	124
 **A1 port flanged**						
	6D11027	40	350	7 : 1	G 3/8”	125

DOUBLE ACTING

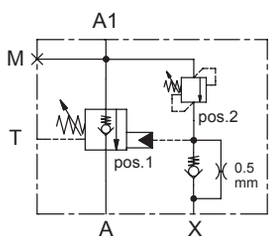
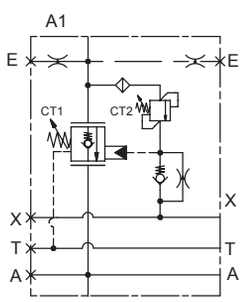
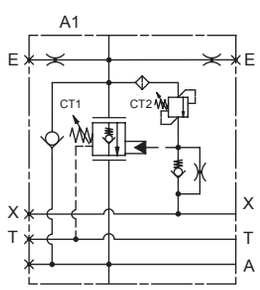
 **In line**	6D20027	40	350	7 : 1	G 3/8” - SAE 06	126
	6D20025	60	350	5 : 1	G 1/2”	127
	6D420C5	30	310	5 : 1	G 3/8”	128
 **A1/B1 port flanged**	6D21027	40	350	7 : 1	G 1/4” G 3/8”- SAE 06	129
	6D21025	60	350	5 : 1	G 1/2”	130

SINGLE ACTING WITH 2 POSITIONS MANUAL SHUT OFF

	6D...00B5	30	350	4,7 : 1	G 3/8”	131
	6D...10B5	30	350	4,7 : 1	G 3/8”	132

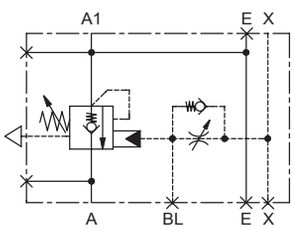
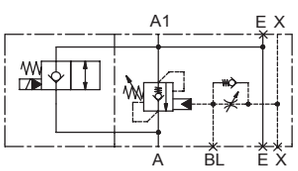
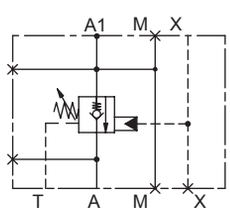
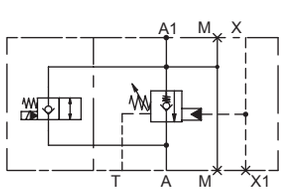
BOOM LOWERING CONTROL DEVICES

LOAD LOWERING VALVES FOR EXCAVATORS

IN LINE		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
	Y5001Y11	40	410	1 : 0	G 3/8” - SAE 08	140
	Y5002Y11	40	410	1 : 0	G 3/8” - SAE 08	141
	Y5001Y14	60	410	1 : 0	G 1/2” - SAE 10	142
	Y5002Y14	60	410	1 : 0	G 1/2” - SAE 10	143
	Y1001Y11	75	410	1 : 0	G 1/2” - SAE 10	144
	Y1002Y11	75	410	1 : 0	G 1/2” - SAE 10	145
	Y1501Y11	100	410	1 : 0	G 3/4” - SAE 12	146
	Y1502Y11	100	410	1 : 0	G 3/4” - SAE 12	147
FLANGED						
	Y1013Y11	75	410	1 : 0	1/2”- SAE 6000	148
	Y1513Y11...64	100	410	1 : 0	1/2”- SAE 6000	149
	Y1513Y11...65	250	410	1 : 0	3/4” SAE 6000	150
	Y2513Y11...65	350	410	1 : 0	3/4” SAE 6000	151
	Y2513Y11...66	400	410	1 : 0	1” SAE 6000	152
	Y2513Y11...67	400	410	1 : 0	1”-1/4 SAE 6000	153

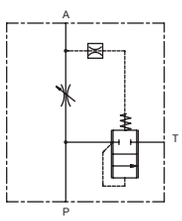
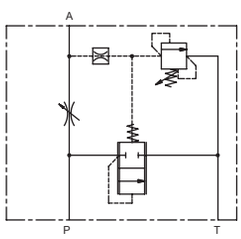
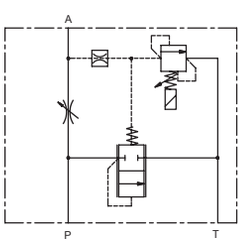
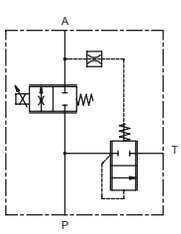
BOOM LOWERING CONTROL DEVICES

LOAD LOWERING VALVES FOR LOADERS

IN LINE		Q l/min	P_{max} bar	PILOT RATIO	PORTS	PAGE
	H1001C51	110	410	4 : 1	G 1/2” - SAE 10	154
	H1001N50	110	350	4 : 1	G 1/2” - SAE 10	155
	Y1023Y11	75	350	1 : 0	G 1/2” - SAE 10	156
	Y1023Y12	75	350	1 : 0	G 1/2” - SAE 10	157

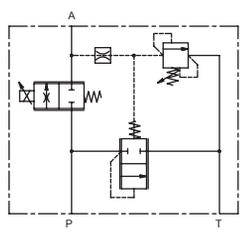
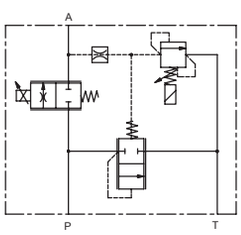
FLOW CONTROL VALVES

FLOW CONTROL VALVES

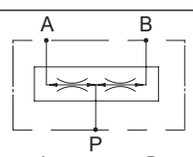
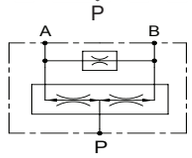
3 WAYS FLOW REGULATORS		Q_{max} l/min	Q_{reg} l/min	P_{max} bar	PORTS	PAGE
	6F300	90	50	350	G 3/8”- G 1/2”	162
	6F300...05	150	90	350	G 3/4”	163
	6F300...06	300	200	210	G 1”	164
	6F300...M	90	50	350	G 3/8”- G 1/2”	165
	6F300...M...05	150	90	350	G 3/4”	166
	6F300...P	90	50	350	G 3/8”- G 1/2”	167
	6F300...P...05	150	90	350	G 3/4”	168
	6F301	90	50	350	G 3/8”- G 1/2”	169
	6F301...05	150	75	350	G 3/4”	170

FLOW CONTROL VALVES

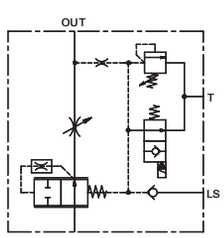
FLOW CONTROL VALVES

3 WAYS FLOW REGULATORS		Q_{max} l/min	Q_{reg} l/min	P_{max} bar	PORTS	PAGE
	6F301...M	90	50	350	G 3/8”- G 1/2”	171
	6F301...M...05	150	75	350	G 3/4”	172
	6F301...P	90	50	350	G 3/8”- G 1/2”	173
	6F301...P...05	150	75	350	G 3/4”	174

FLOW DIVIDER AND COMBINER VALVES

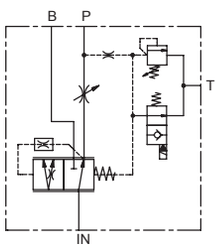
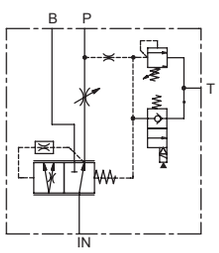
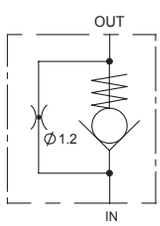
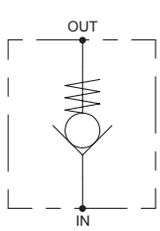
		Q_{Inlet} l/min	P_{max} bar	PORTS	PAGE
6D825.N 	6D825	150	250	G 3/4”- G 1/2”	175 - 176
	6D825	150	250	G 3/4”	175 - 176
6D825.G 	6D825	150	250	G 1” - G 3/4”	175 -176
	6D825	150	250	G 1”	175 -176

FLOW CONTROL VALVES FOR EARTH MOVING MACHINERY

2 WAYS FLOW REGULATORS		Q_{reg} std l/min	Q_{reg} max l/min	P_{max} bar	PORTS	PAGE
 SCHEME 2 - 3	6F2S	30	140	350	G 3/4” - SAE 12	177

FLOW CONTROL VALVES

FLOW CONTROL VALVES FOR EARTH MOVING MACHINERY

3 WAYS FLOW REGULATORS		Q_{reg} std l/min	Q_{reg} max l/min	P_{max} bar	PORTS	PAGE
 SCHEME 0	6F3S	30	85	350	G 1/2”	178
	6F3S...05	30	140	350	G 3/4”	179
	6F3S...06	30	220	350	G 1”	180
	6F3S...07	30	300	350	G 1”-1/4”	181
 SCHEME 1	6F3S	30	85	350	G 1/2”	178
	6F3S...05	30	140	350	G 3/4”	179
	6F3S...06	30	220	350	G 1”	180
	6F3S...07	30	300	350	G 1”-1/4”	181
ACCESSORIES FOR 6FS			Q_{max} l/min	P_{max} bar	PORTS	PAGE
	6D710	M/F	130	350	SAE 12	182
	6D720	F/F	70	350	G 1/2”	183
	6D720	F/F	110	350	G 3/4”	183
	6D720	F/F	160	350	G 1”	183
	6D720	F/F	250	300	G 1”-1/4”	183

PRESSURE CONTROL VALVES

PRESSURE CONTROL VALVES

INTRODUCTION

PROPORTIONAL IT PRESSURE REDUCING VALVES

The proportional IT pressure reducing valves, are made to remotely control directional control valves with hydraulic actuators or to control variable displacement pump regulator devices.

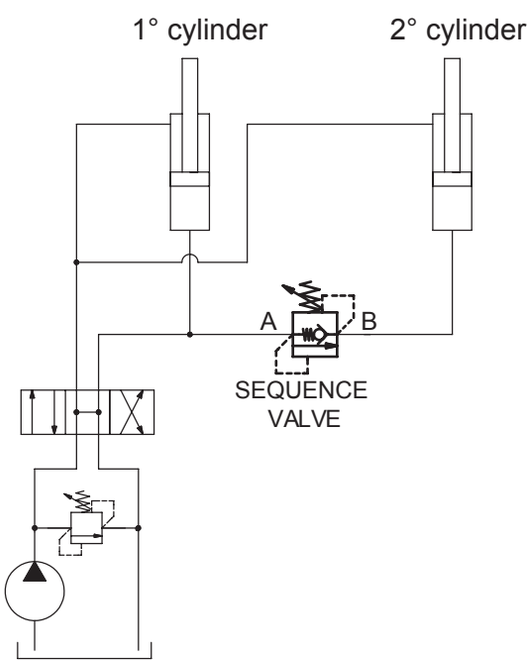
Thanks to the special architecture that enables all the components to be build into the electro-proportional coil, the IT pressure reducing valves are very compact having a flange mounting assembly, this solution does not require any machining of the cavity.

Feeding the coil with current (PWM 120Hz) from “0” to “I max” it is possible to create a proportional increase of the regulated pressure in the V port.

Besides the IT27 version, as a single components, we can offer solutions that are already assembled into a body with CETOP 2 and CETOP 3 flanging or for in-line assembly.

IN LINE SEQUENCE VALVES

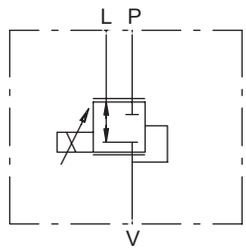
The sequence valves are used when it is necessary to hydraulically control the sequence of two or more movement using a single source of power, establishing the priority of a movement versus another one. As an example, we may allow the start of a cylinder only after the system reaches a specific pressure. Sequence valve are based on a relief valve combined with a check valve that allow the oil passage in reverse with a low pressure drop.



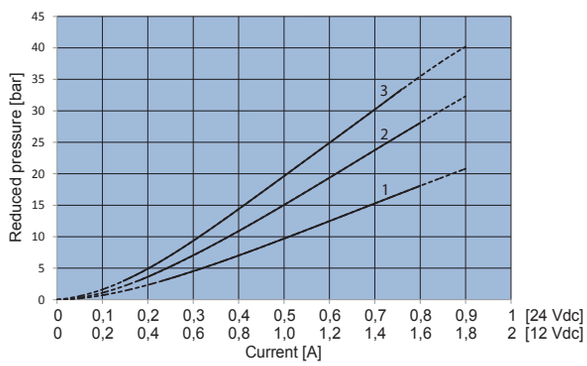
As per the relief valves, also the sequence valves can be produced as direct acting or pilot operated as well as fully balanced not sensitive to back pressure.

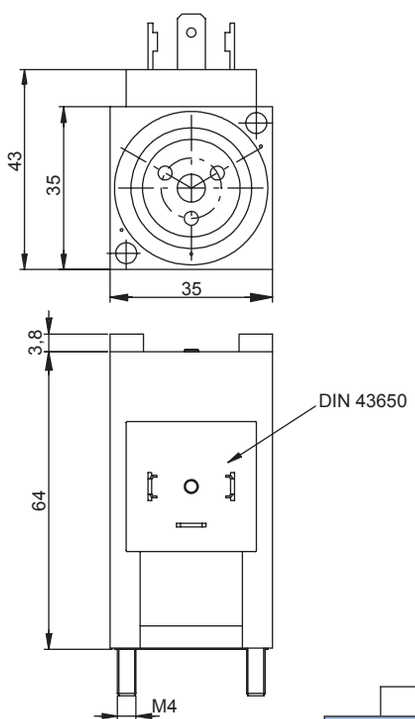
PROPORTIONAL PRESSURE REDUCING VALVE FLANGE MOUNTING

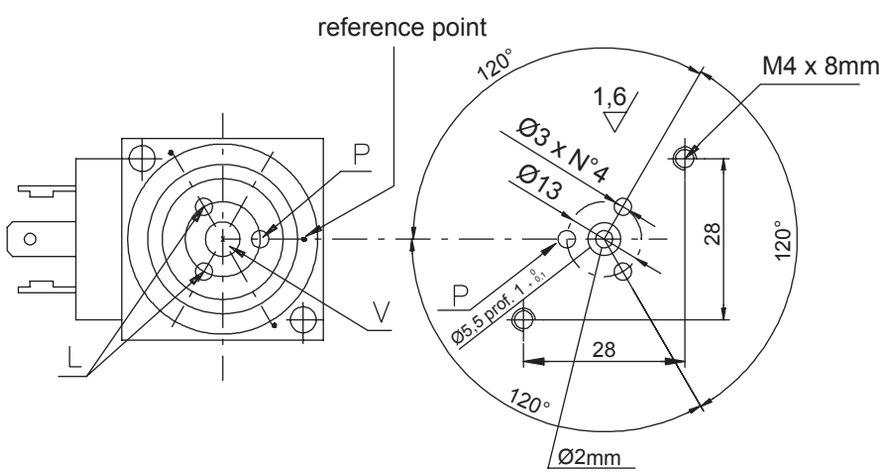
- Max working pressure in P. . . . . **50 bar**
- Max working pressure in L . . . . . **1 bar**
- Max working flow. . . . . **2 l/min**
- Leakage. . . . . **8 cc/min**
- Seals. . . . . **NBR**
- Max current at 12 Vcc . . . . . **1800 mA**
- Max current at 24 Vcc . . . . . **900 mA**
- Hysteresis.. . . . . **5%**
- PWM . . . . . **120 HZ**
- Protection index with standard connector. **IP-65**
- Screw tightening torque. . . . . **3 Nm**
- Weight . . . . . **0,44 Kg**



COIL RESISTANCE [Ω]		VOLTAGE 1 (12Vcc)	VOLTAGE 2 (24Vcc)
REDUCED PRESSURE	1 (3÷18 bar)	3,7	15,5
	2 (3÷28 bar)	3,7	15,5
	3 (3÷33 bar)	4,8	19,3







Ordering code

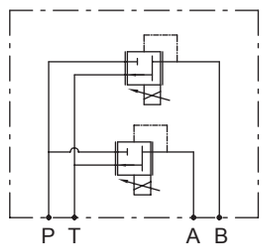
1 0 2 7 0 0 ☐ 0 ☐ 0

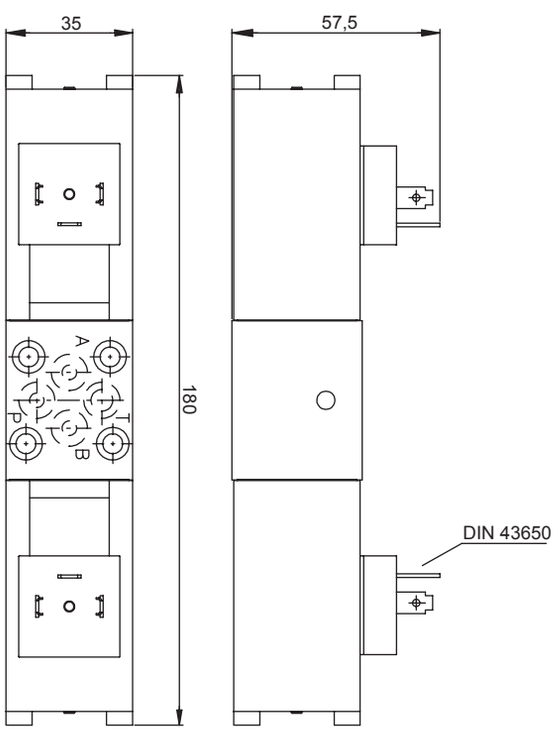
VOLTAGE	
1	2
12 Vcc	24Vcc

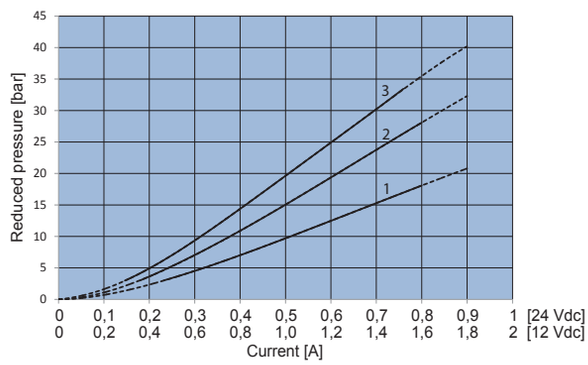
REDUCED PRESSURE		
1	2	3
3÷18 bar	3÷28 bar	3÷33 bar

DOUBLE PROPORTIONAL PRESSURE REDUCING VALVE

- Max working pressure in P. . . . . **50 bar**
- Max working pressure in T . . . . . **1 bar**
- Max working flow. . . . . **2 l/min**
- Leakage. . . . . **8 cc/min**
- Seals. . . . . **NBR**
- Max current at 12 Vcc . . . . . **1800 mA**
- Max current at 24 Vcc . . . . . **900 mA**
- Hysteresis.. . . . . **5%**
- PWM . . . . . **120 HZ**
- Protection index with standard connector. **IP-65**
- Weight . . . . . **1,42 Kg**







COIL RESISTANCE [Ω]		VOLTAGE 1 (12Vcc)	VOLTAGE 2 (24Vcc)
REDUCED PRESSURE	1 (3÷18 bar)	3,7	15,5
	2 (3÷28 bar)	3,7	15,5
	3 (3÷33 bar)	4,8	19,3

Ordering code

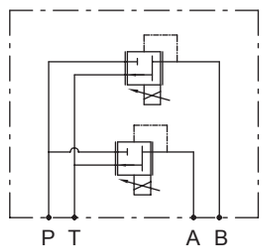
1 0 4 4 1 1 ☐ 0 ☐ 1

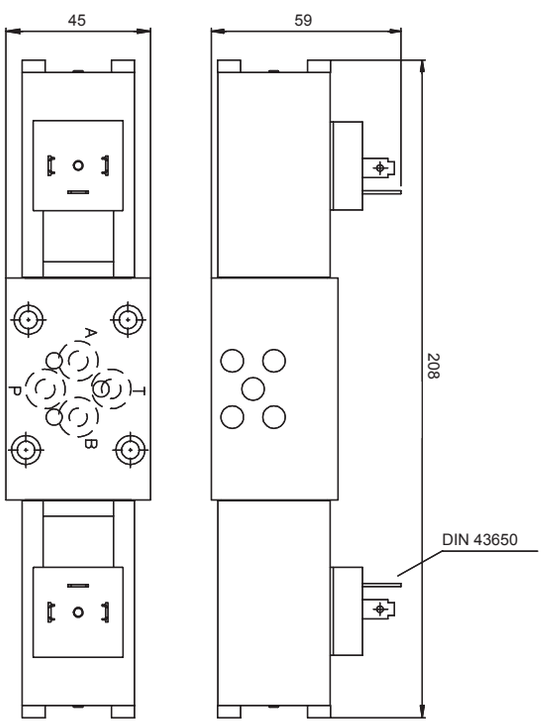
VOLTAGE	
1	2
12 Vcc	24Vcc

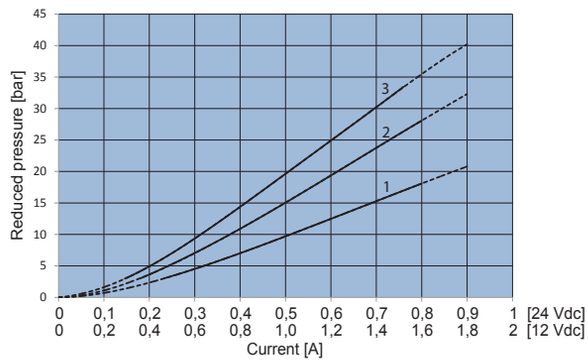
REDUCED PRESSURE		
1	2	3
3÷18 bar	3÷28 bar	3÷33 bar

DOUBLE PROPORTIONAL PRESSURE REDUCING VALVE

- Max working pressure in P. . . . . **50 bar**
- Max working pressure in T . . . . . **1 bar**
- Max working flow. . . . . **2 l/min**
- Leakage. . . . . **8 cc/min**
- Seals. . . . . **NBR**
- Max current at 12 Vcc . . . . . **1800 mA**
- Max current at 24 Vcc . . . . . **900 mA**
- Hysteresis.. . . . . **5%**
- PWM . . . . . **120 HZ**
- Protection index with standard connector. **IP-65**
- Weight . . . . . **1,42 Kg**







COIL RESISTANCE [Ω]		VOLTAGE 1 (12Vcc)	VOLTAGE 2 (24Vcc)
REDUCED PRESSURE	1 (3÷18 bar)	3,7	15,5
	2 (3÷28 bar)	3,7	15,5
	3 (3÷33 bar)	4,8	19,3

Ordering code

1 0 4 3 1 1 ☐ 0 ☐ 0

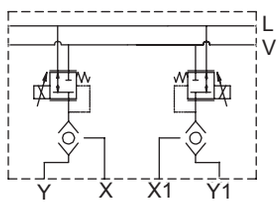
VOLTAGE	
1	2
12 Vcc	24Vcc

REDUCED PRESSURE		
1	2	3
3÷18 bar	3÷28 bar	3÷33 bar

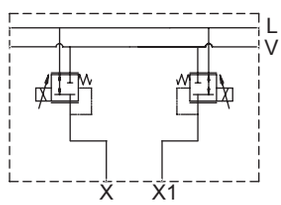
REMOTE CONTROL MANIFOLDS FOR HYDRAULIC

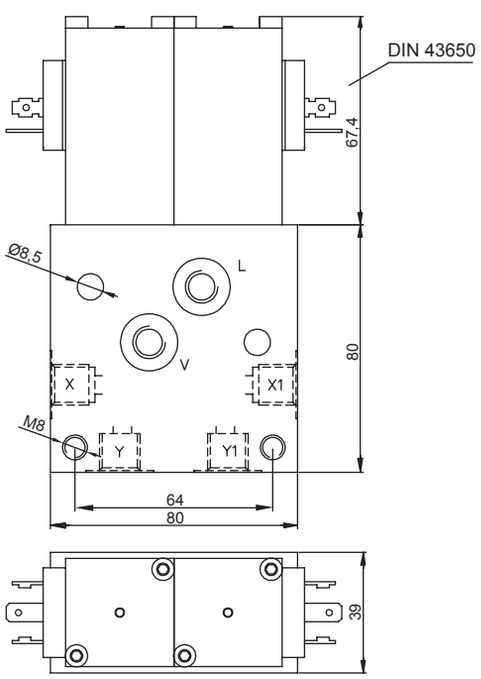
- Max working pressure in V. . . . . **50 bar**
- Max working pressure in X:X1:Y:Y1 . . . . . **28 bar**
- Max working pressure in L . . . . . **1 bar**
- Max working flow. . . . . **2 l/min**
- Leakage. . . . . **16 cc/min**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. . . . . **1800 mA**
- Max current at 24 Vcc. . . . . **900 mA**
- Hysteresis **5%**
- PWM . . . . . **120 HZ**
- Protection index with standard connector. **IP-65**
- Weight . . . . . **2,5 Kg**

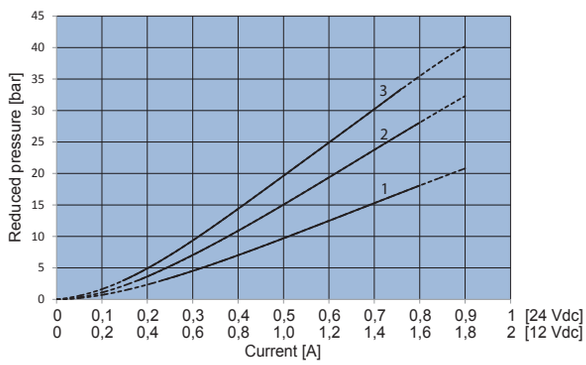
SCHEME 0



SCHEME 1







COIL RESISTANCE [Ω]		VOLTAGE 1 (12Vcc)	VOLTAGE 2 (24Vcc)
REDUCED PRESSURE	1 (3÷18 bar)	3,7	15,5
	2 (3÷28 bar)	3,7	15,5
	3 (3÷33 bar)	4,8	19,3

Ordering code

1 1 2 8 ☐ ☐ ☐ ☐ 0 0

HYDRAULIC SCHEME	
0	1

SECTIONS NUMBER
1
2
3
...

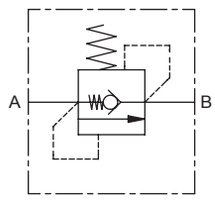
VOLTAGE	
1	2
12 Vcc	24Vcc

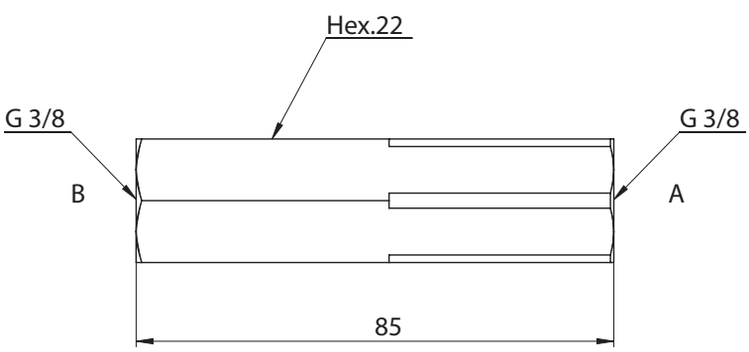
REDUCED PRESSURE		
1	2	3
3÷18 bar	3÷28 bar	3÷33 bar

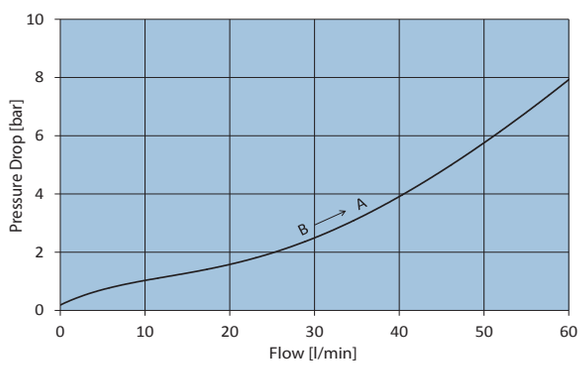
IN LINE SEQUENCE VALVE G3/8”

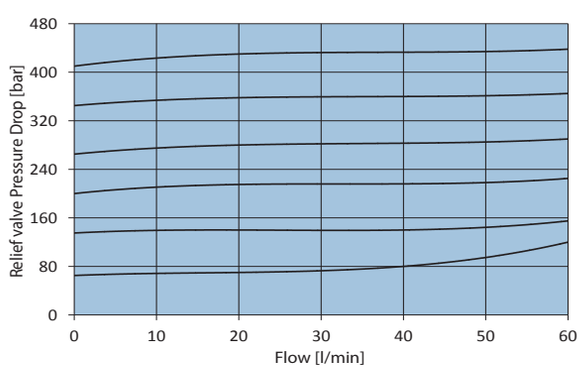
- Working flow. . . . . **60 l/min**
- Maximum working pressure. . . . . **350 bar**
- Check valve cracking pressure . . . . . **< 0,5 bar**
- Weight. . . . . **0,186 Kg**
- Fixed setting

For customized settings contact the Nem customer care service









Ordering code

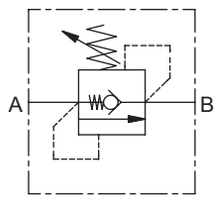
6 P 0 9 1 0 2 ☐ ☐ 0 0 0 0

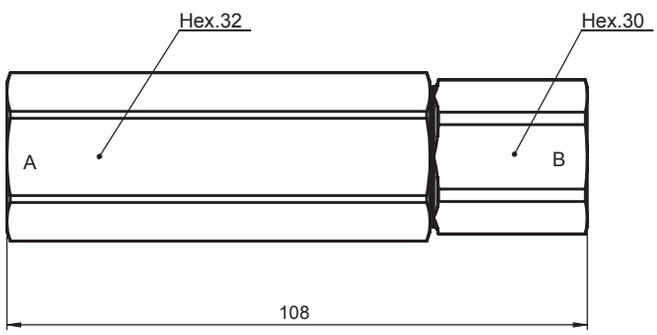
SPRINGS	1	2	3	4	5
Setting range min - max [bar]	20 - 70	70 - 130	130 - 210	210 - 280	280 - 350
Standard setting [bar] @ 10 l/min	50	100	180	250	300

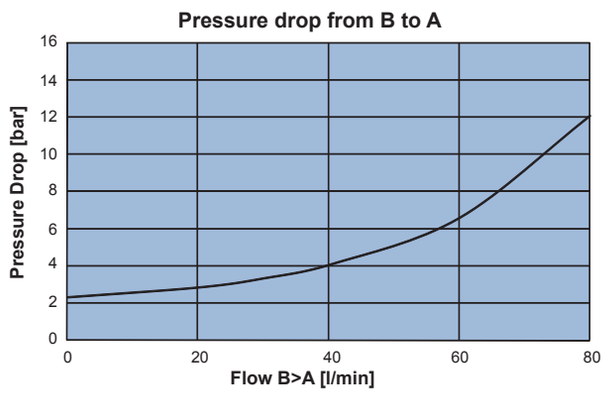
PORTS	03
A,B	G 3/8”

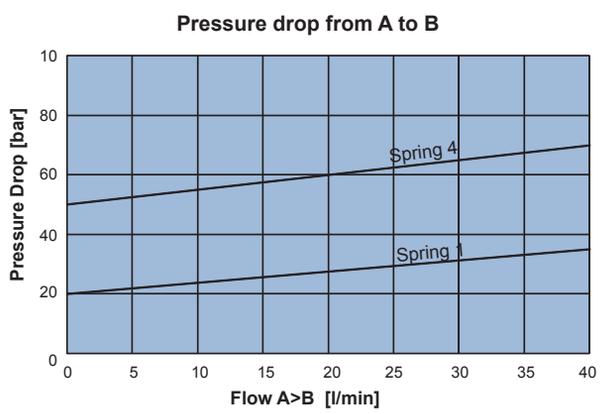
IN LINE SEQUENCE VALVE G1/2”

- Working flow. . . . . .**80 l/min**
- Maximum working pressure . . . . . .**350 bar**
- Weight. . . . . **0,6 Kg**









Ordering code

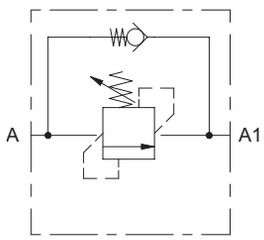
6 P 0 6 1 S 0 0 0 ☐ ☐ 0 0

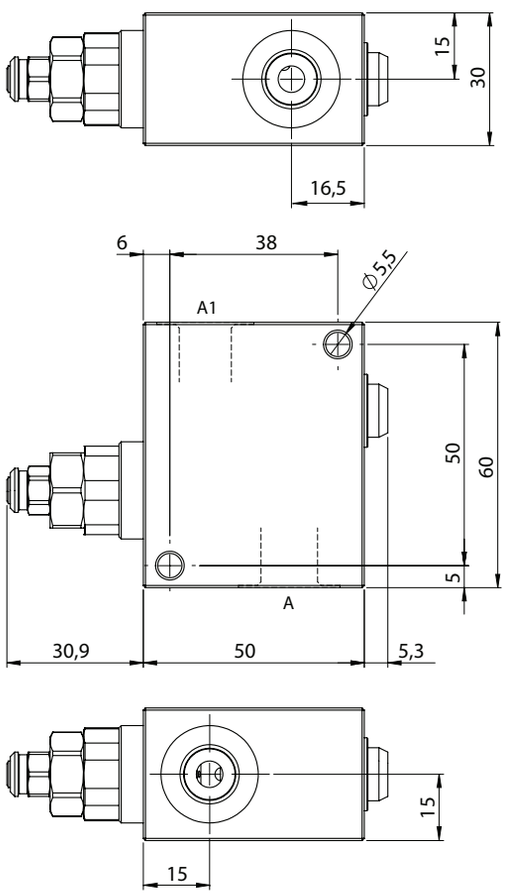
SPRINGS	1	4
Setting range min - max [bar]	10 - 30	25 - 90
bar/turn	9	28
Standard setting [bar] @ 4 l/min	20	50

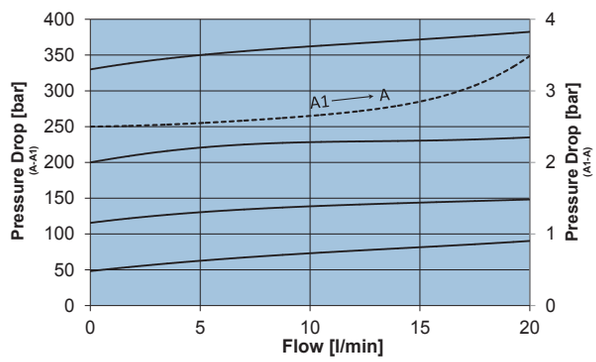
PORTS	04
A,B	G 1/2”

DIRECT ACTING SEQUENCE VALVE G1/4”, POPPET TYPE

- Flow. . . . . .**20 l/min**
- Maximum working pressure. . . . . .**210 bar**
- Check valve cracking pressure . . . . . **2,5 bar**
- Weight. . . . . .**0,31 Kg**
- Tamper proof cap. . . . . .**cod. 9021015101**







Ordering code

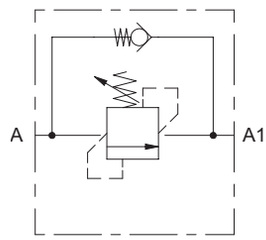
6 P 0 1 0 8 0 0 ☐ A ☐ 0 0

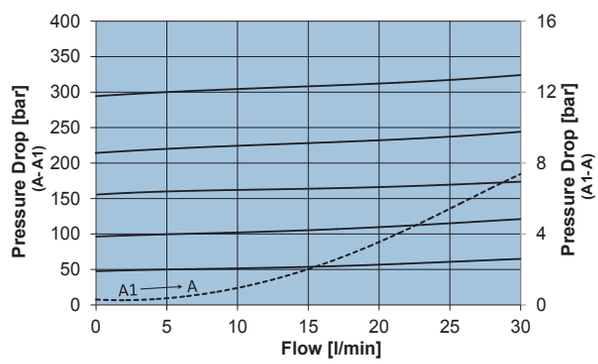
SPRINGS	1	2	3
Setting range min.-max. [bar]	5 - 160	40 - 220	50 - 350
Pressure Increase [bar/turn]	36	34	63
Standard setting 4 l/min [bar]	50	100	250

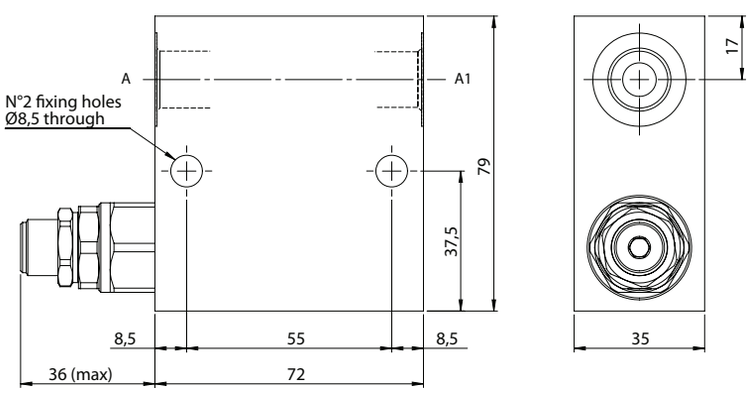
PORTS	02
A,A1	G 1/4”

DIRECT ACTING SEQUENCE VALVE, POPPET TYPE

- Flow. . . . . .**30 l/min**
- Maximum working pressure. . . . . .**210 bar**
- Check valve cracking pressure . . . . . **0,3 bar**
- Weight. . . . . .**0,64 Kg**







Ordering code

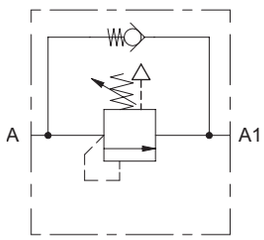
6 P 0 1 0 8 0 0 ☐ A ☐ 0 0

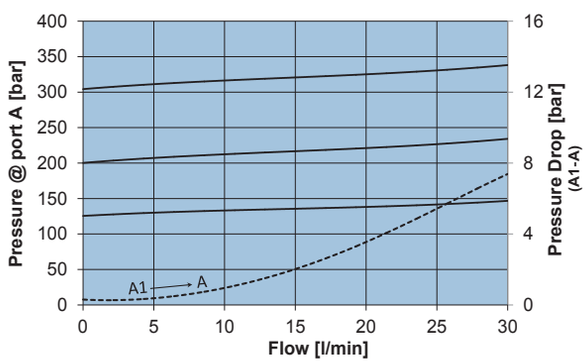
SPRINGS	0	1	2	3
Setting range [bar]	15-50	50-120	120-200	200-350
Pressure Increase [bar/turn]	8	20	33	59
Standard setting 4 l/min [bar]	25	100	150	250

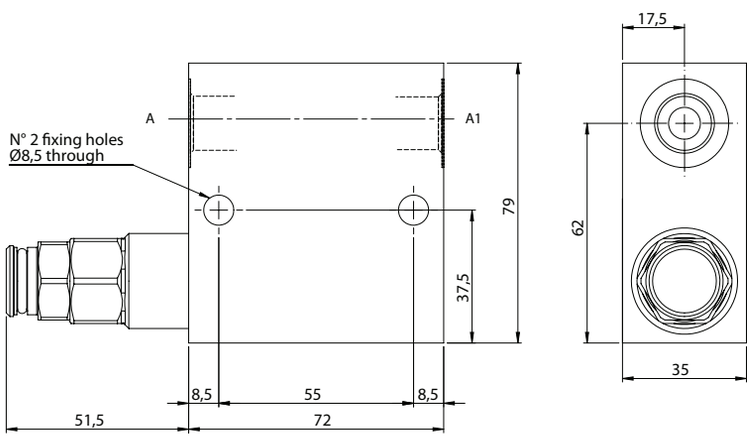
PORTS	03	04
A,A1	G 3/8”	G 1/2”

SEQUENCE VALVE, SPOOL TYPE - BACK PRESSURE COMPENSATED

- Flow. . . . . **30 l/min**
- Maximum working pressure. . . . . **210 bar**
- Check valve cracking pressure . . . . . **0,3 bar**
- Weight. . . . . **0,71 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Ordering code

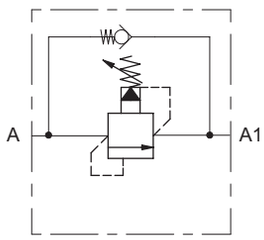
6 P 0 1 1 0 1 0 ☐ A ☐ 0 0

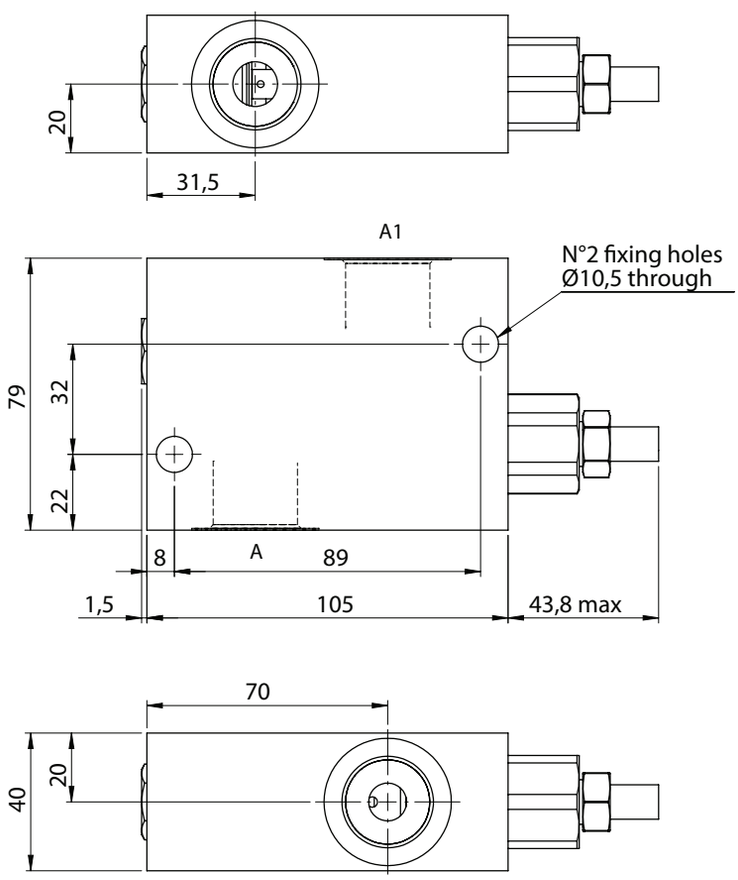
SPRINGS	2	3
Setting range min.-max. [bar]	120 - 250	220 - 410
Pressure Increase [bar/by turn]	31	53
Standard setting 4 l/min [bar]	150	250

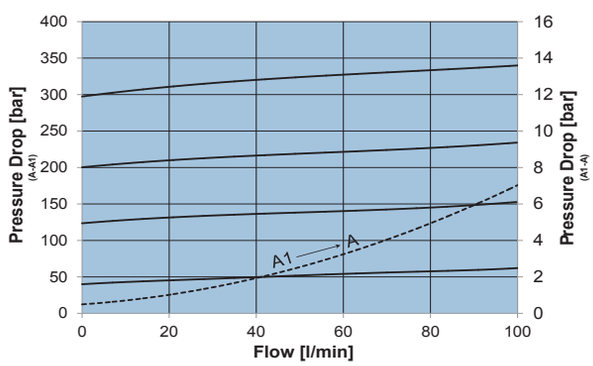
PORTS	03	04
A,A1	G 3/8”	G 1/2”

PILOT OPERATED SEQUENCE VALVE, SPOOL TYPE

- Flow. . . . . **100 l/min**
- Maximum working pressure. . . . . **210 bar**
- Check valve cracking pressure . . . . . **0,5 bar**
- Weight. . . . . **1,02 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**







6 P 0 1 1 0 2 ☐ ☐ A ☐ 0 0

0	Hex socket screw
1	Handknob

Adjustments

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

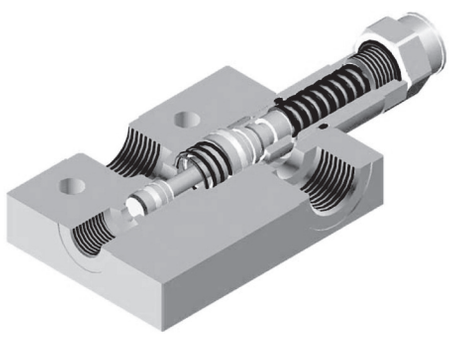
PORTS	**04**	**05**
A,A1	G 1/2”	G 3/4”

COUNTERBALANCE VALVES

COUNTERBALANCE VALVES

INTRODUCTION

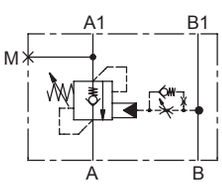
Counterbalance Valves of the Parts-in-Body line, are hydraulic valves designed specifically to hold and control negative and gravitational loads. They are meant to serve all those applications that involve the control of suspended loads, such as mechanical joints, lifting applications, winches, etc.
These valves are characterized by internal movable parts sliding directly inside the manifold, allowing direct installation onto the hydraulic actuators: line-mounting or flange-mounting.
Parts in body counterbalance valves are an alternative solution to the cartridge counterbalance valves as their design allows the direct mounting on the application.



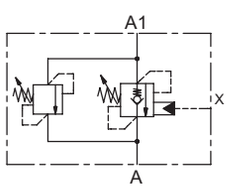
Parts-in-Body *valve section view*

Further on its simple installation, **Parts-in-Body** counterbalance valves allow to obtain specialized valves: valves which are able to optimize their functionality in particular situations/working conditions, since they are equipped with specific components.

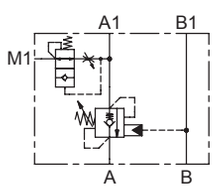
Examples of specialized valves:



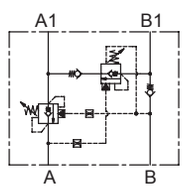
VALVE WITH PILOT DUMP



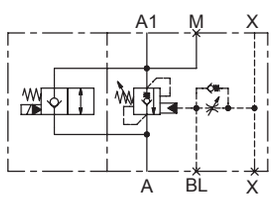
VALVE WITH INTEGRATED ANTI-SCHOCK



VALVE PRE-ARRANGED FOR LOAD LIMITING DEVICE CONNECTION PORT



VALVE WITH REGENERATIVE CIRCUIT



VALVE WITH ELECTRIC BY-PASS AND PILOT DUMP

COUNTERBALANCE VALVES

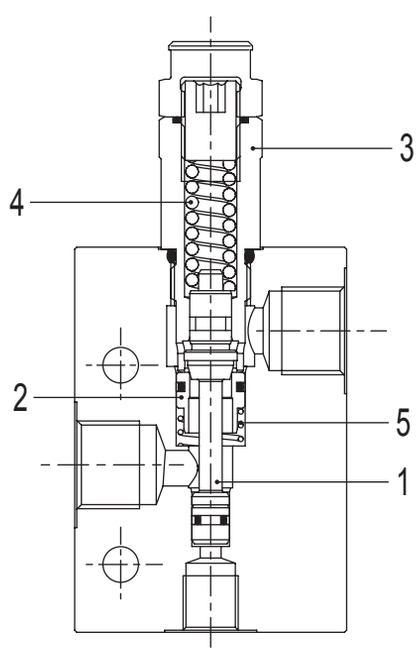
NEM'S RANGE

Nem's range of **Parts in body** counterbalance valves come in 4 series types, named LHD (acronym for Load Holding Devices)

	Qmax [lpm]	Pmax [bar]	Pilot Ratio	Compensation*	
LHD03X	40	350	4:1	N - C	***N - Not-Compensated** Version* ***C - Fully Compensated** Version* ***S - Relief Compensated** Version* *(See Compensation Paragraph)*
LHD05X	70	350	4:1 9:1	N - S - C	
LHD10X	110	410	4:1 8:1	N - C	
LHD15X	180	410	4:1 8:1	N - C	
LHD25X	350	500	4:10 6:1	N - C	

LHD_X valves are made up of different parts mounted inside a body made of either steel or aluminium.

LHD_X valves internal main parts are:
1. A sealing piston which bears both actuators and pilot pressure.
2. A unidirectional valve which also works as sealing seat for position n°1.
3. A spring-case cap, whose design determines the behaviour of the valve, in function of the back pressure.
4. An adjustable spring to regulate the pressure on piston n°1.
5. A non adjustable spring to bring the unidirectional valve 2 back to its initial position.



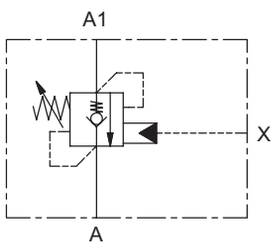
CIRCUITS

The type of movement required by the actuators determines the valve circuit design. For instance: if in a specific application where the external loads always move in the same direction, it's possible to choose **Single Acting** valves (circuit **A**). If instead, external loads will act alternatively on both sides of the hydraulic actuator, a **Double Acting** valve (circuits **AB1** – **AB2**) should be used.

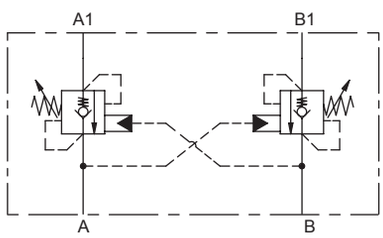
COUNTERBALANCE VALVES

LHD_X double acting valves, can be designed in 2 different ways: the choice between them depends on the installation or on the type of compensation required:

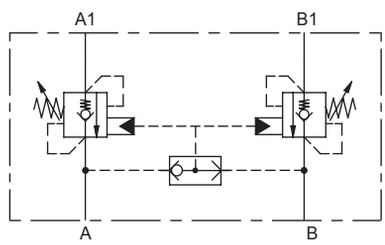
- When the cavities are independent (Circuit **AB1**) we will have a double acting valve in which the 2 sections (A/A1 e B/B1) are completely independent from each other (crossed pilot line). This characteristic allows to install either Compensated and Not-Compensated types.
- With coaxial cavities (Circuit **AB2**), we will have a double acting valve in which the 2 sections (A/A1 e B/B1) are designed on the same axis, sharing part of the pilot circuit. This characteristic makes it possible to install either Partially-Compensated and Not-Compensated types.



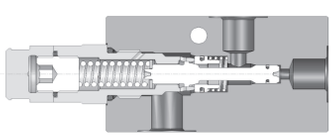
*Single Acting Circuit (**A**)*

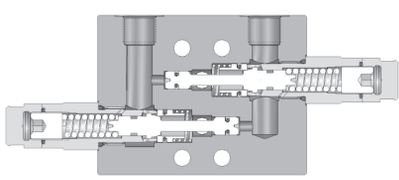


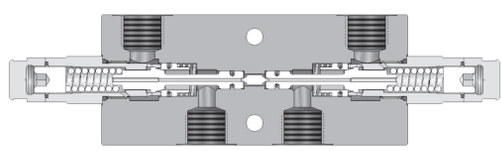
*Double Acting Circuit with indipendent cavities (**AB1**)*



*Double Acting Circuit with coaxial cavities (**AB2**)*

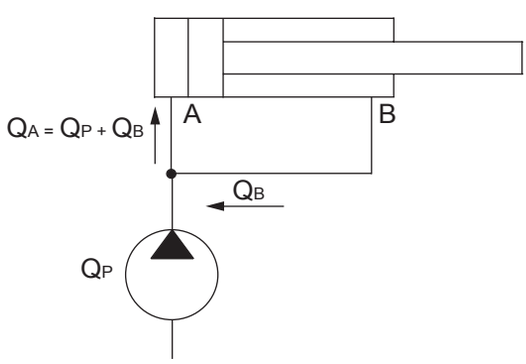






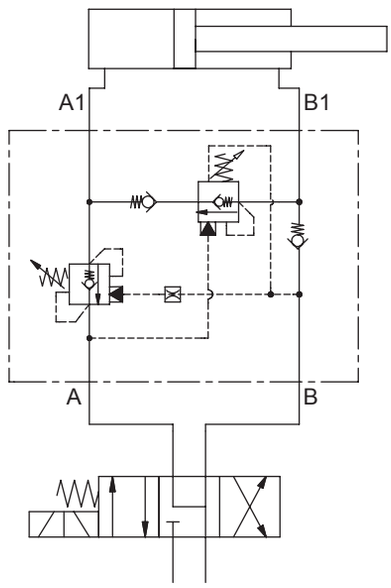
For applications on cylinders, it's possible to increase the actuators extension speed through a **Regen-Block** (**R** Circuit). This type of circuit is advisable for all those applications characterized by long stroke of the actuators with no loads or very small ones, for instance, truck mounted telescopic cranes, loaders, hook loaders, hydraulic presses, garbage trucks.

Regenerative circuits base their functioning on retrieving of the oil coming out of ring chamber during the differential-area cylinder extension. The oil coming from the ring chamber is driven into the cylinder cap to join with oil flow coming from the pump. In this way the cylinder outgoing speed corresponds to the pump flow related to the rod area, and not related to the cap area, creating a considerable speed increase.



More specifically, the **counterbalance valves for regenerative circuits** allow not only for the management of regenerated flow but also to control the speed and to lock the cylinders even in case of dragged loads.

COUNTERBALANCE VALVES

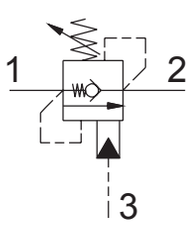


Example of counterbalance valve for regenerative circuit

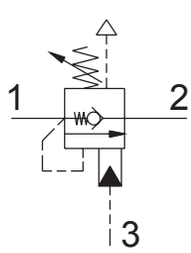
COMPENSATION

The coupling of counterbalance valves with directional control valves requires to determine the type of spools to be used. 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 the return line (A-2), their pressure setting will not change.
Two examples of compensated valves application are regenerative circuits and circuits in which the darining of the 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 applications, non-compensated valves are compulsory, in which the spring is connected to the return line (A-2).

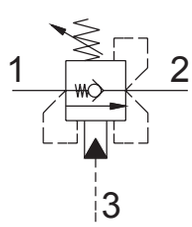
**Non Compensated Version (N)*



**Fully Compensated Version (C)*



**Relief Compensated Version (S)*



In **Non-Compensated (N)** type valves, back-pressure determines both the pressure setting and the pilot pressure. In these valves the return line is directly connected to the spring.
Main use: In combination with open centre spool applications.

COUNTERBALANCE VALVES

In **Fully compensated (C)** type valves, back-pressure does not influence neither pressure setting nor pilot pressure. This valve type belongs the family of valves in which the adjustable spring is separated from return line (A-2) and is connected to a draining line or air-vented.
In these valves, back-pressure (A-2) is balanced, so it will not find any area on which it can apply its force, so that both setting and pilot pressures are independent from pressure on return line (A).
Main use: In combination with closed-centre spool applications, regenerative circuits.

In **Relief-Compensated (S)** type valves, only the pressure setting is independent from back-pressure, while the pilot pressure is influenced by back-pressures, which sometimes can be helpful in stabilizing the system.
This valve type belongs to the family of valves in which only the areas subject to the load (A1-1) are balanced Vs the back pressure (A - 2).
Main use: In combination with closed-centre spool applications.

SETTINGS

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.

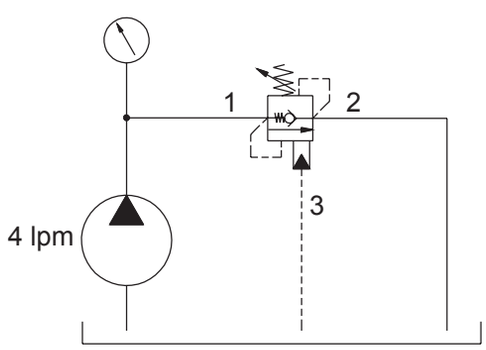


Fig.3

The **standard pressure setting (Pt)** of the counterbalance valves corresponds to pressure detected on port (1) while the valve is crossed by 4 l/min. (fig.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.

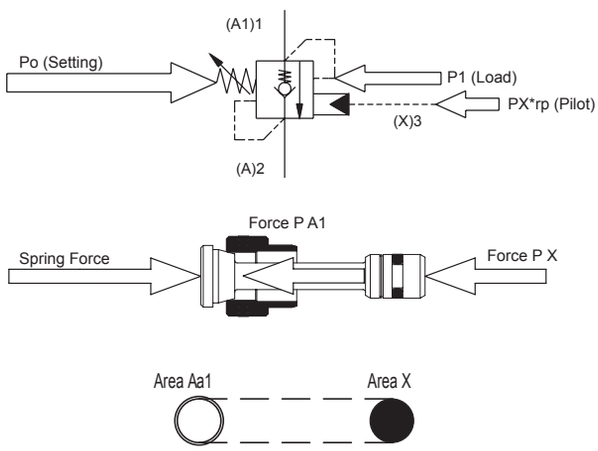
es. Pt: 350 bar @ 20 ml/min

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, opens the pilot piston, progressively contrasting the force generated by the setting spring.

COUNTERBALANCE VALVES

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):

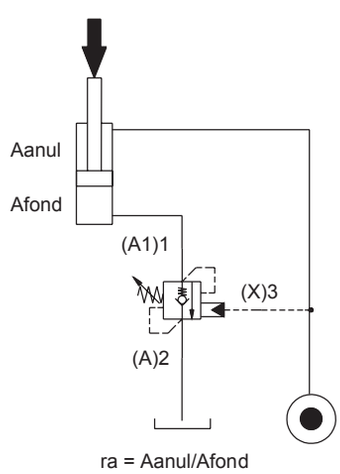


Px = (Pt - P1) / rp

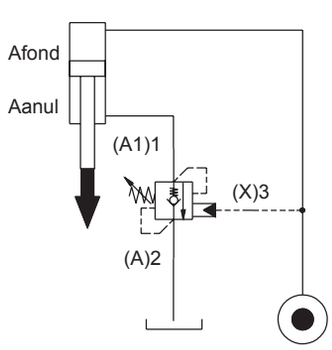
According the Pilot Ratio, counterbalance valves can be divided in 2 types:

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.

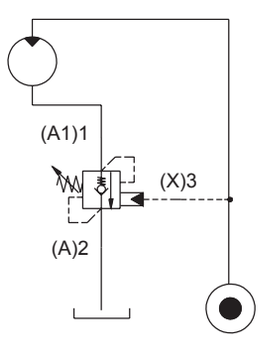
Px = (Pt - P1) / (rp+ra) **ra** = ratio between the areas of the hydraulic actuator



ra = Aanul/Afond



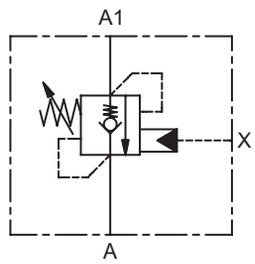
ra = Afond/Aanul

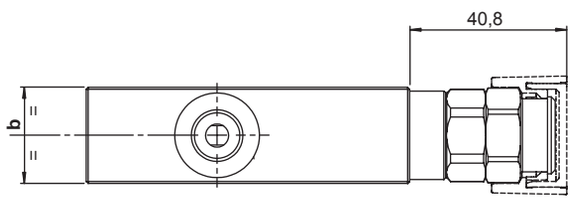


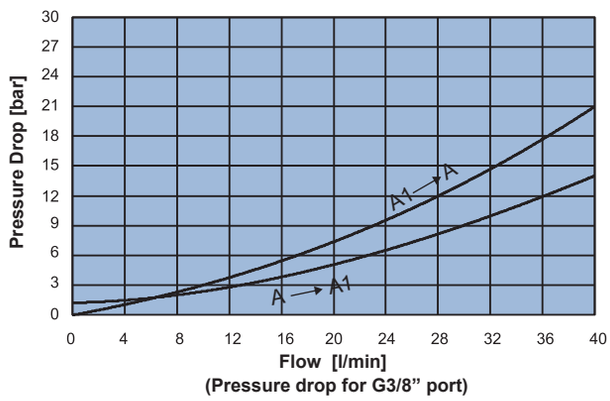
ra = 1

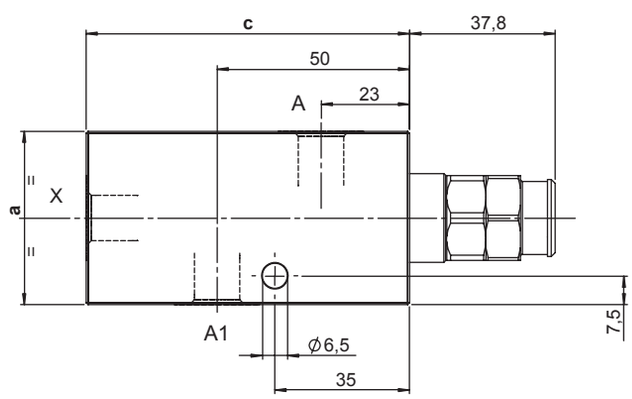
SINGLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,8 Kg**
- Weight G 3/8”. . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c
02	45	25	84
03	50	30	90

Ordering code

H 3 0 0 1 N ☐ ☐ S ☐ 0 0

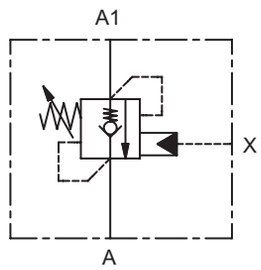
PILOT RATIO	
40	**4:1**

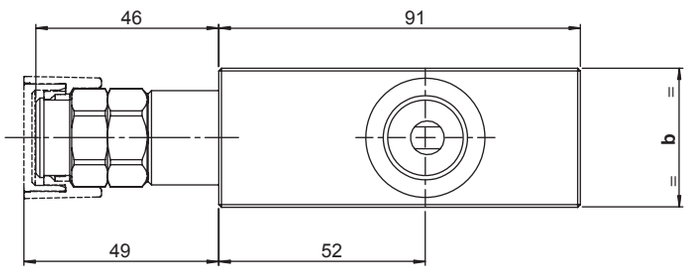
SPRINGS	**2**	**3**
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

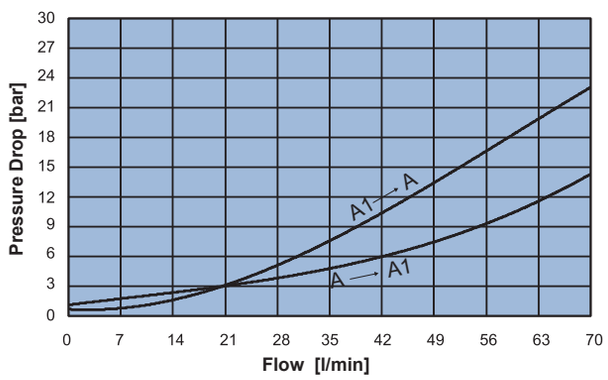
PORTS	**02**	**03**
A,A1,X	G 1/4”	G 3/8”

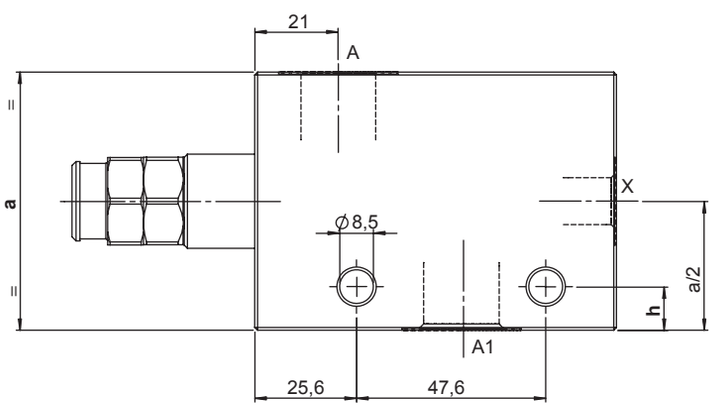
SINGLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **1,2 Kg**
- Weight G 1/2”. . . . . **1,5 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b	h
03	55	30	7
04	65	35	11

Ordering code

H 5 0 0 1 N ☐ ☐ S ☐ 0 0

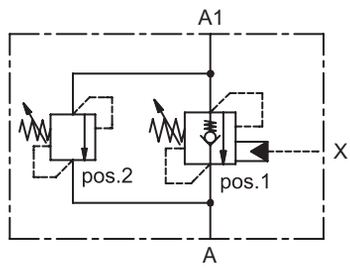
PILOT RATIO	
40	**4:1**
90	**9:1**

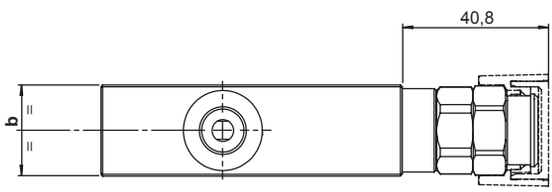
SPRINGS	rp 4:1		rp 9:1	
	2	**3**	**2**	**3**
Setting range min.-max. [bar]	60 - 210	120 - 350	80 - 250	190 - 350
Pressure Increase [bar/turn]	62	114	50	121
Standard setting 4 l/min [bar]	200	350	200	350

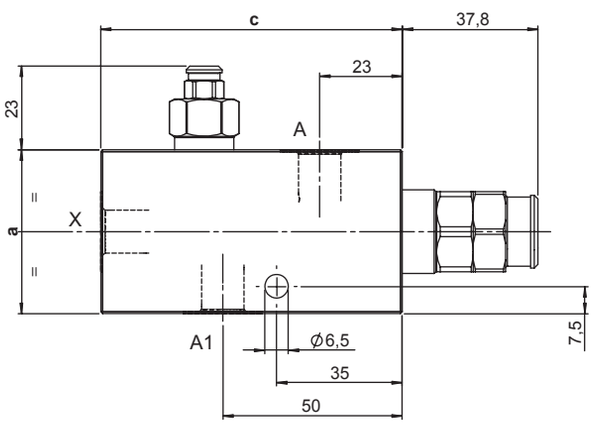
PORTS	03	04
A,A1	G 3/8”	G 1/2”
X	G 1/4”	G 1/4”

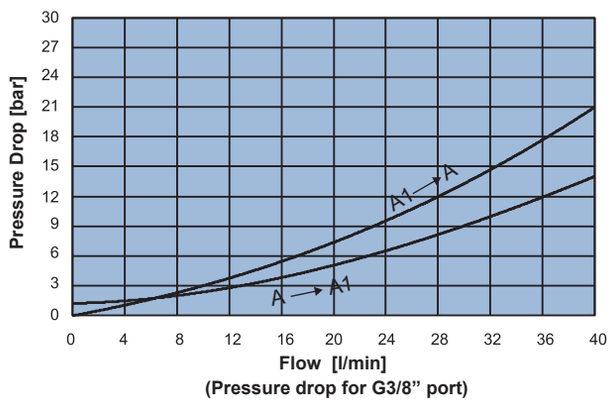
SINGLE ACTING COUNTERBALANCE VALVE WITH PRESSURE RELIEF

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,8 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Antishock valve pos.2 max flow 3 l/min
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c
02	45	25	84
03	50	30	90

Ordering code

H 3 0 0 1 N [ ] [ ] S [ ] 0 0

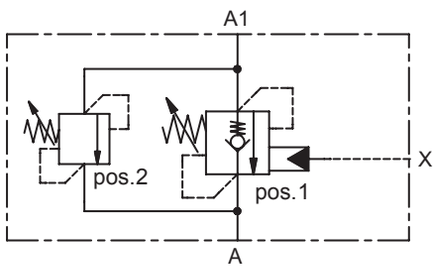
PILOT RATIO	
46	**4:1 + relief A1-A**

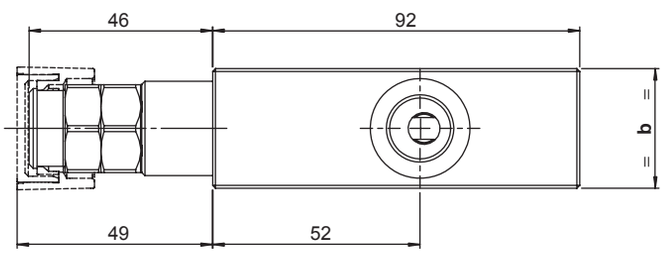
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	120 - 350	250 - 400
Pressure Increase [bar/turn]	100	250
Standard setting [bar]	350 @ 4 l/min	300 @ 20 cc/min

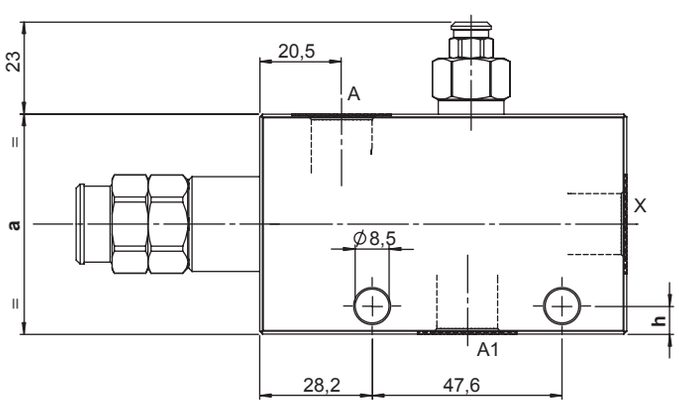
PORTS	02	03
A,A1,X	G 1/4”	G 3/8”

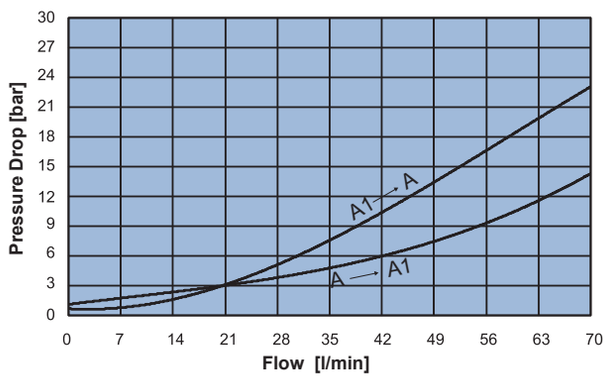
SINGLE ACTING COUNTERBALANCE VALVE WITH PRESSURE RELIEF

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **1,2 Kg**
- Weight G 1/2”. . . . . **1,4 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Antishock valve pos.2 max flow 3 l/min
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b	h
03	55	30	7
04	65	35	11

Ordering code

H 5 0 0 1 N ☐ ☐ S ☐ 0 0

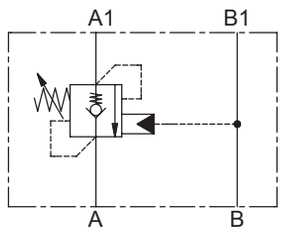
PILOT RATIO	
46	**4:1 + relief A1-A**

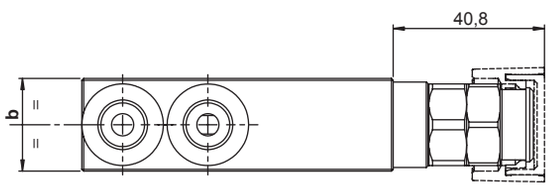
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	120 - 350	250 - 400
Pressure Increase [bar/turn]	114	250
Standard setting [bar]	350 @ 4 l/min	300 @ 20 cc/min

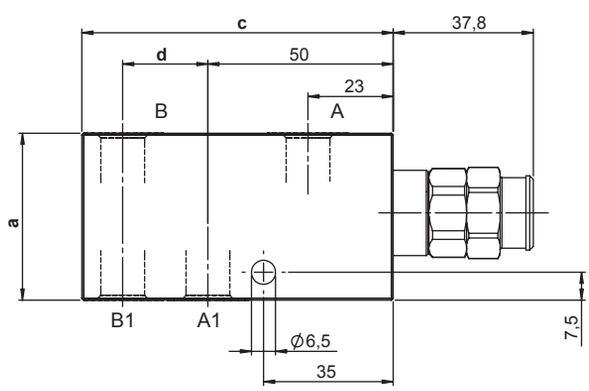
PORTS	03	04
A,A1	G 3/8”	G 1/2”
X	G 1/4”	G 1/4”

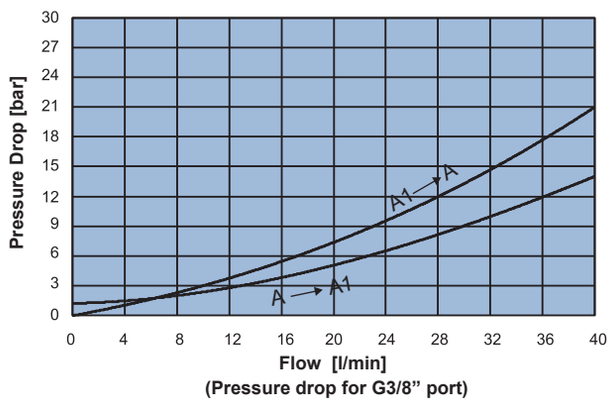
SINGLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,75 Kg**
- Weight G 3/8” . . . . . **1,1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









(Pressure drop for G3/8” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d
02	45	25	84	23
03	50	30	95	30

Ordering code

H 3 0 0 4 N ☐ ☐ S ☐ 0 0

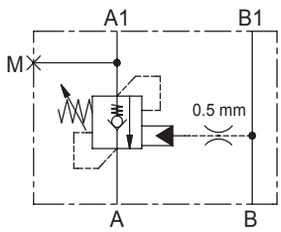
PILOT RATIO	
40	**4:1**

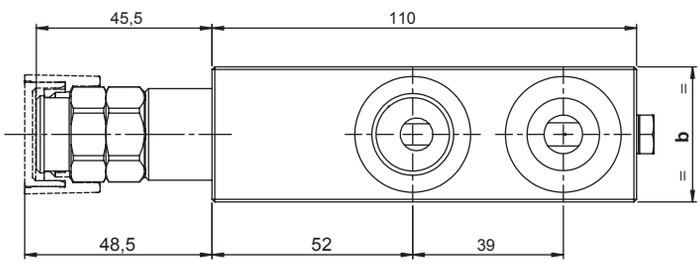
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

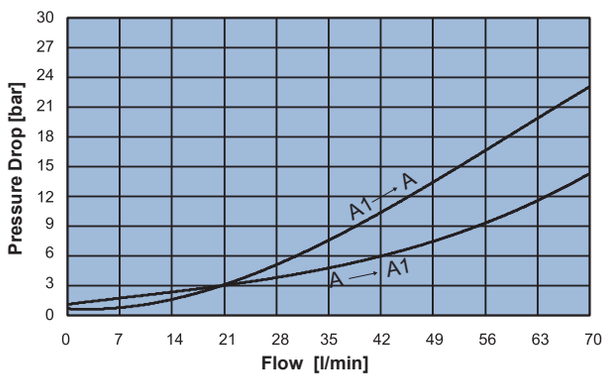
PORTS	02	03
A,B,A1,B1	G 1/4”	G 3/8”

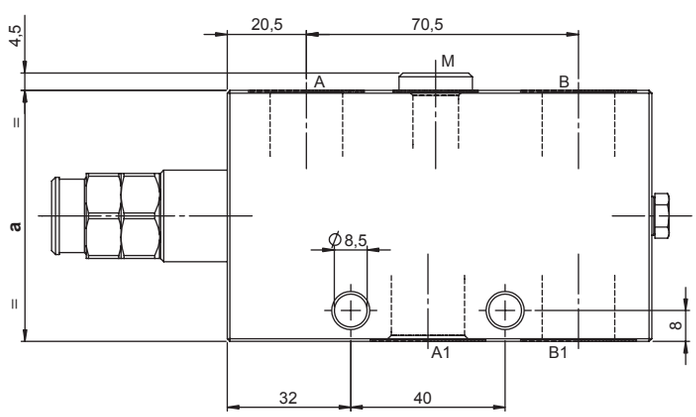
SINGLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **1,35 Kg**
- Weight G 1/2”. . . . . **1,8 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	30
04	65	35

Ordering code

H 5 0 0 4 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

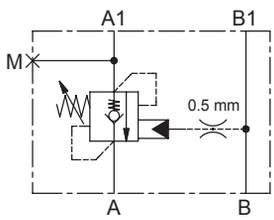
SPRINGS	4:1	
	2	**3**
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,A1,B,B1	G 3/8”	G 1/2”
M	G 1/4”	G 1/4”

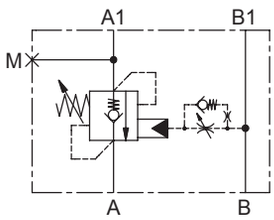
SINGLE ACTING COUNTERBALANCE VALVE

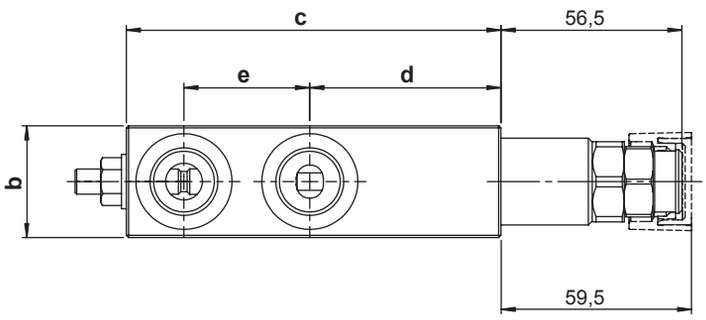
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **2 Kg**
- Weight G 3/4” . . . . . **2,5 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

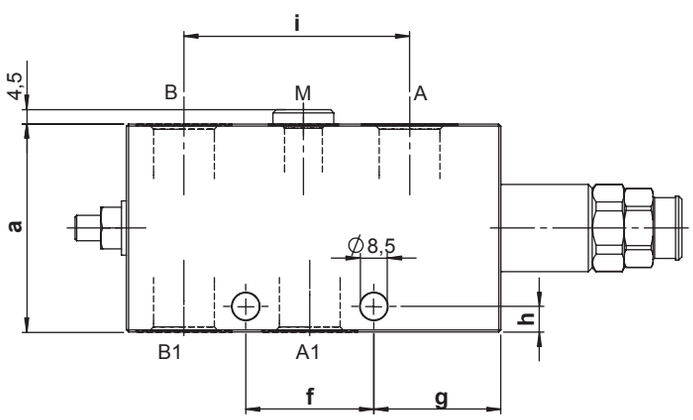
SCHEME 40 - 90

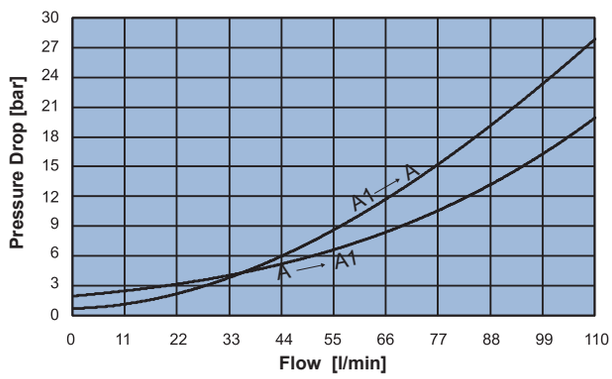


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b	c	d	e	f	g	h	i
04	65	35	117	59,7	39.3	40	39,7	8	70.5
05	70	40	130	60	47	47.6	36	11	78

Ordering code

H 1 0 0 4 N ☐ ☐ S ☐ 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

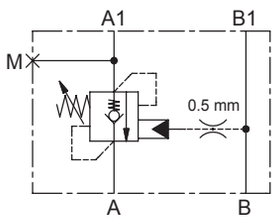
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	04	05
A,A1,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”

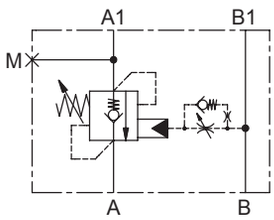
SINGLE ACTING COUNTERBALANCE VALVE

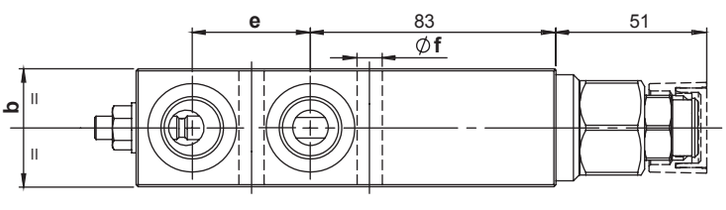
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **3 Kg**
- Weight G 3/4”. . . . . **3,4 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

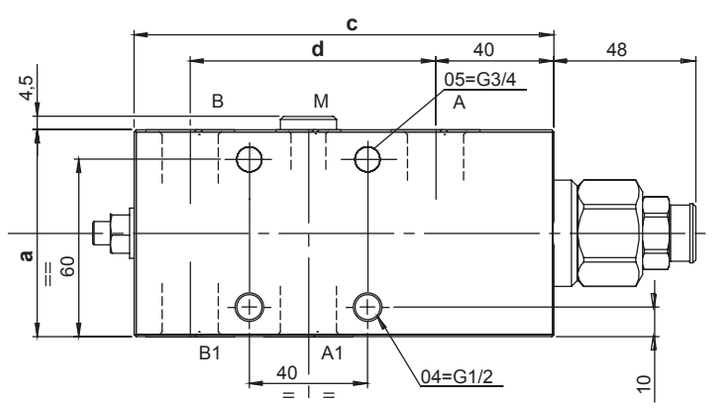
SCHEME 40 - 80

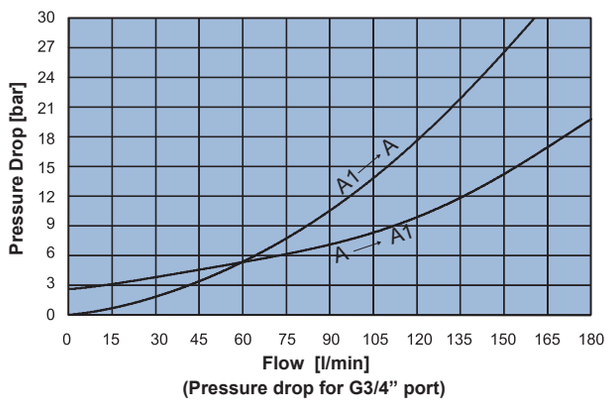


SCHEME 42 - 82









(Pressure drop for G3/4” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD15X-C is recommended for circuits with high back pressure)

	a	b	c	d	e	f
04	70	40	142	83	40	8,5
05	80	40	147	86	43	10,5

Ordering code

H 1 5 0 4 N ☐ ☐ S ☐ 0 0

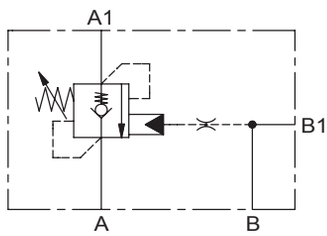
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

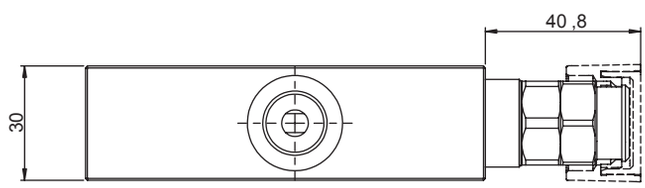
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

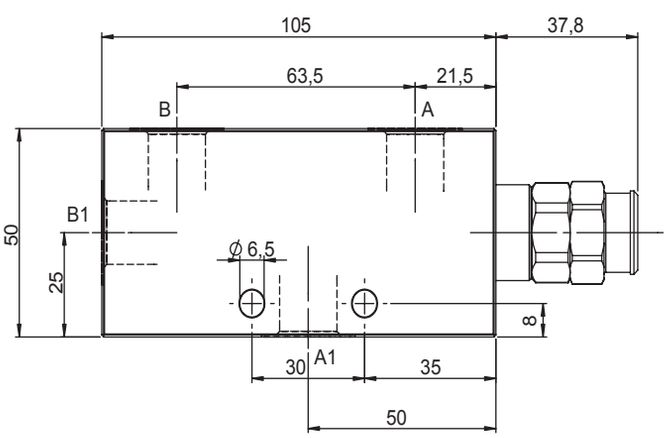
PORTS	04	05
A,A1,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”

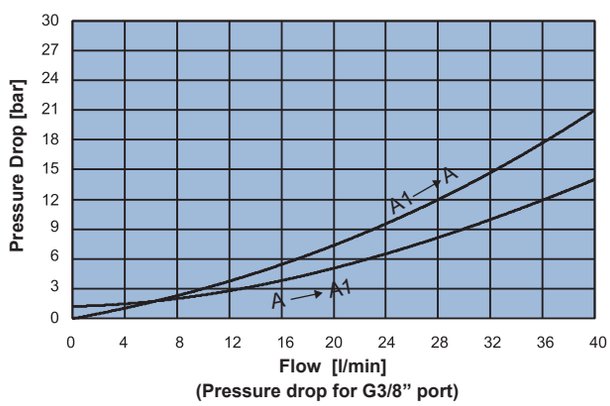
SINGLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **0,75 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

Ordering code

H 3 0 0 4 N ☐ ☐ S ☐ 0 0

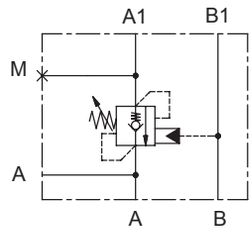
PILOT RATIO	
41	**4:1+dia.0,5mm**

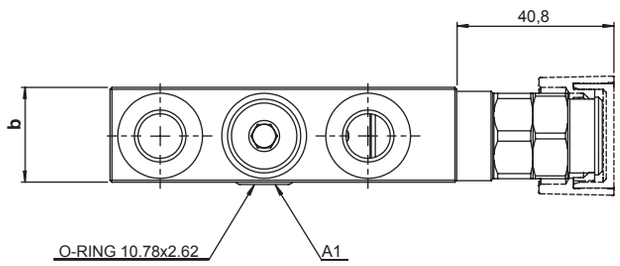
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

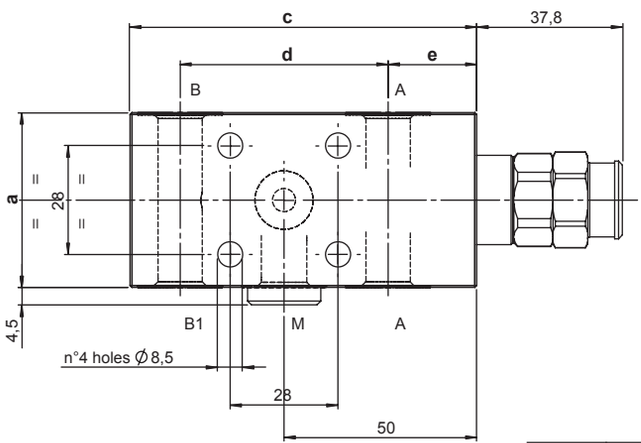
PORTS	03
A,B,A1,B1	G 3/8"

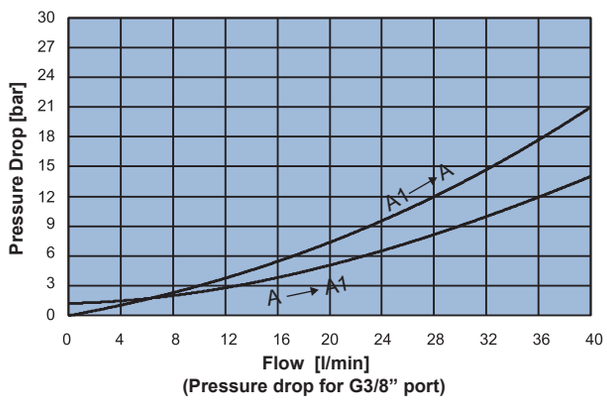
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,75 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	90	54	23
03	50	29,5	95	60	20

Ordering code

H 3 0 0 5 N ☐ ☐ S ☐ 0 0

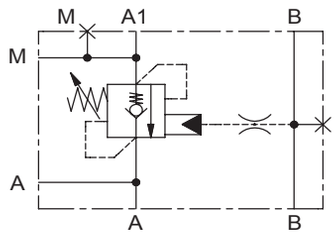
PILOT RATIO	
40	**4:1**

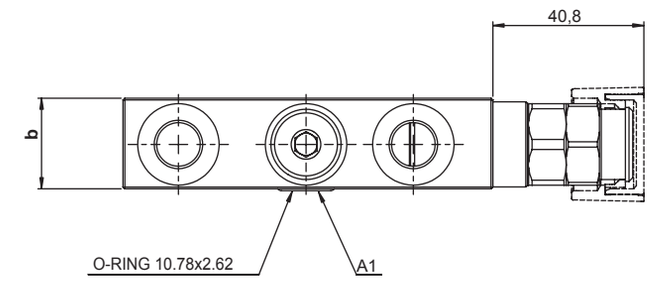
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

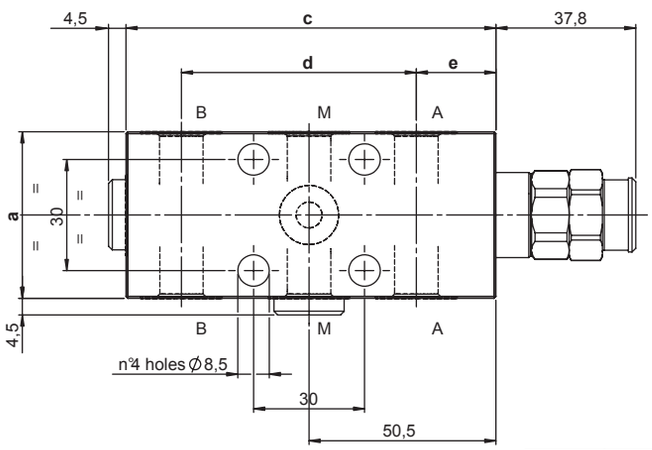
PORTS	02	03
A,B,B1	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

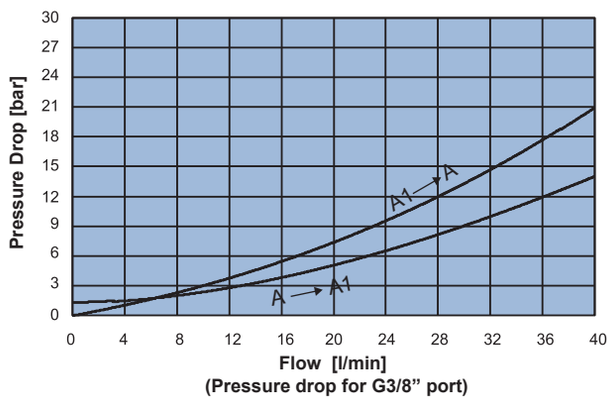
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 30x30

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,8 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	100	63,5	21,5
03	50	29,5	100	66	19,5

Ordering code

H 3 0 0 7 N ☐ ☐ S ☐ 0 0

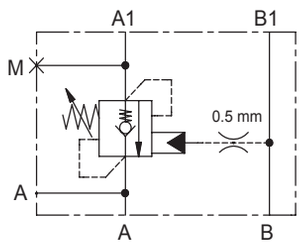
PILOT RATIO	
40	**4:1**

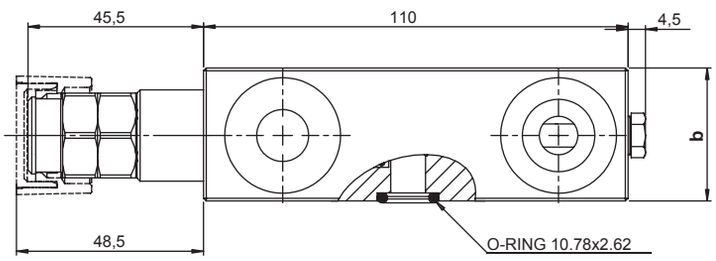
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

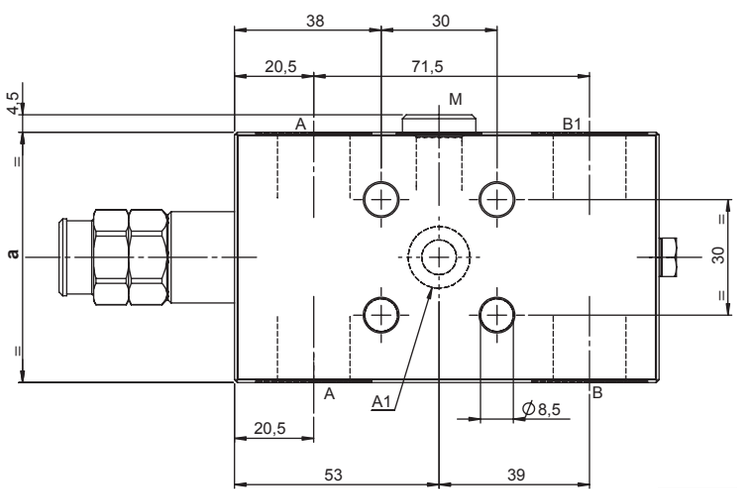
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

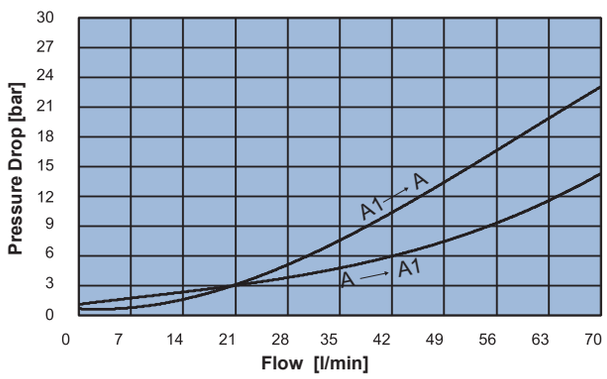
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 30x30

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **1,3 Kg**
- Weight G 1/2” . . . . . **1,75 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 0 5 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

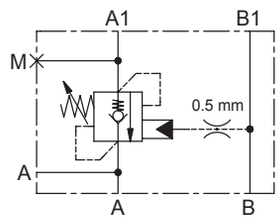
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

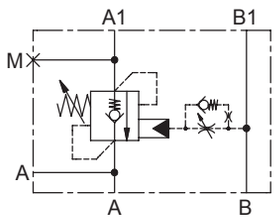
SINGLE ACTING COUNTERBALANCE VALVE FLANGED fxh

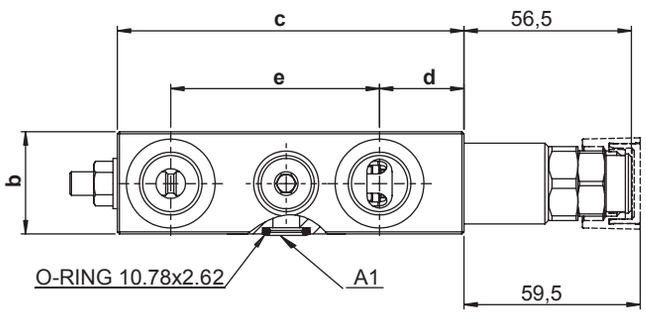
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **1,9 Kg**
- Weight G 3/4” . . . . . **2,2 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

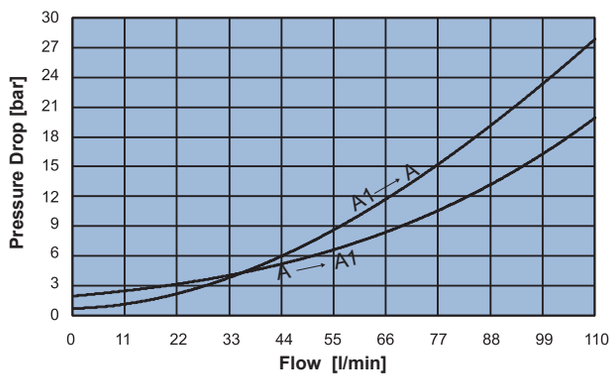
SCHEME 40 - 90

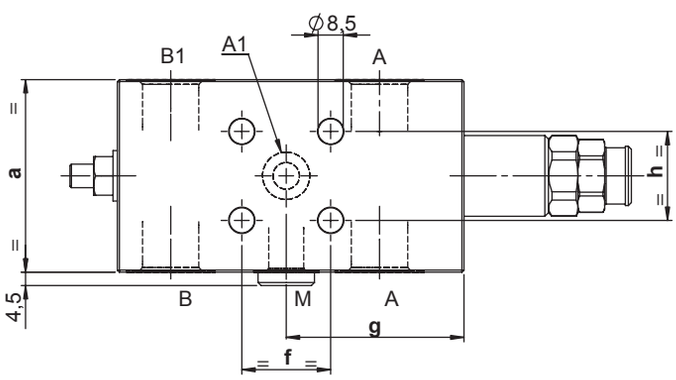


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b	c	d	e	f	g	h
04	65	34,5	117	26,5	72,5	30	60	30

Ordering code

H 1 0 0 5 N ☐ ☐ S ☐ 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

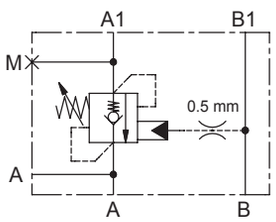
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	04
A,B,B1	G 1/2”
A1	Ø 9
M	G 1/4”

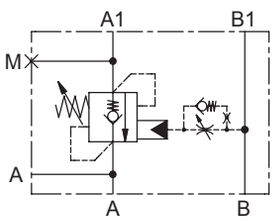
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 40x40

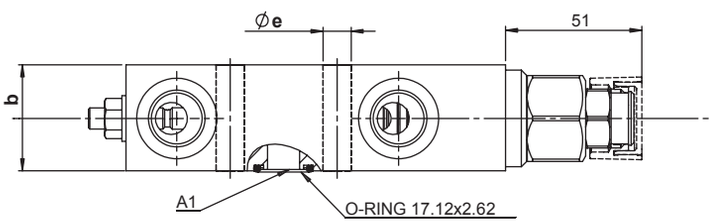
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **2,9 Kg**
- Weight G 3/4” . . . . . **3,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

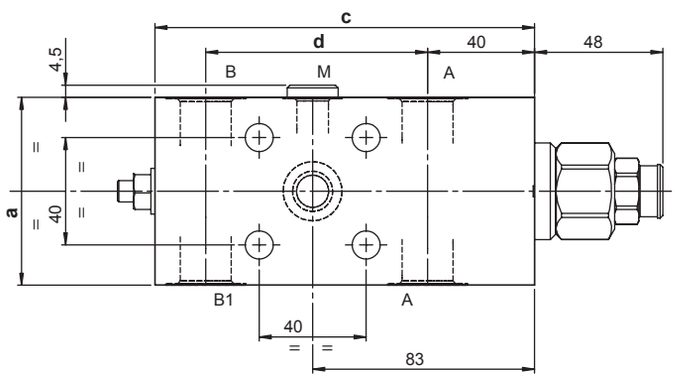
SCHEME 40 - 80

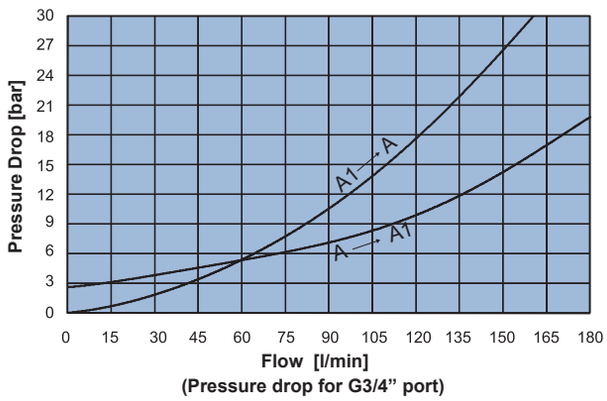


SCHEME 42 - 82









(Pressure drop for G3/4” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD15X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
04	70	39,5	142	83	10,5
05	80	39,5	147	86	10,5

Ordering code

H 1 5 0 5 N ☐ ☐ S ☐ 0 0

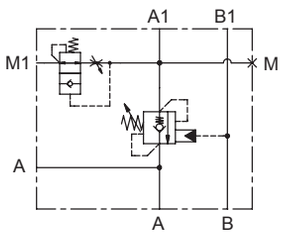
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

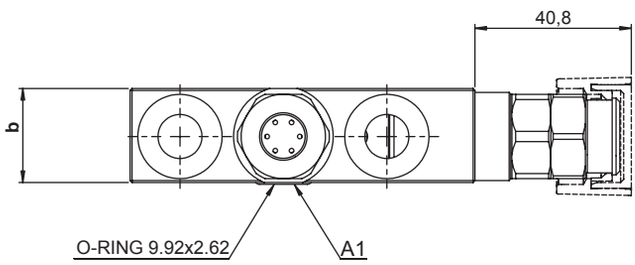
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

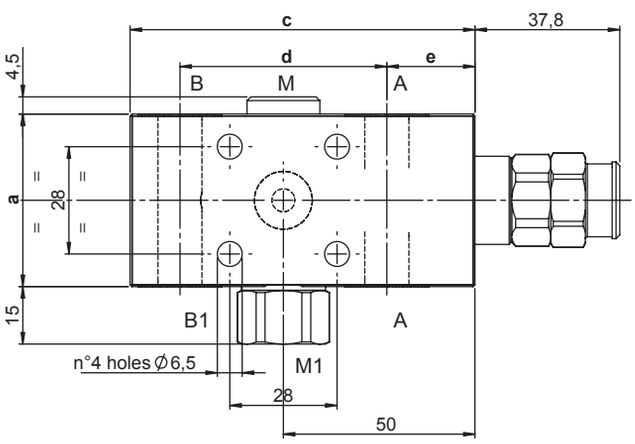
PORTS	04	05
A,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1	Ø 12	Ø 12

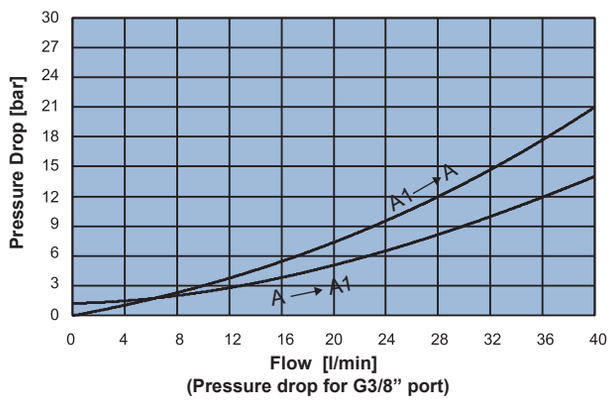
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,8 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	90	54	23
03	50	29,5	95	59	21

Ordering code

H 3 0 0 5 N ☐ ☐ S ☐ 0 0

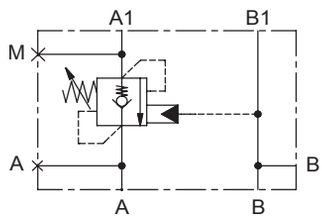
PILOT RATIO	
43	**4:1**

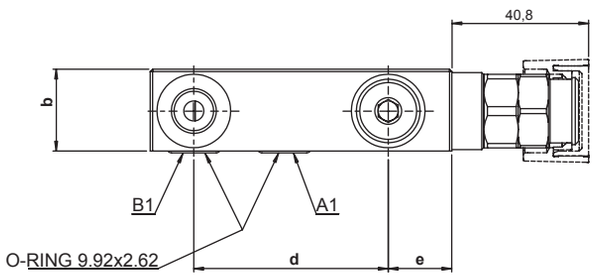
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

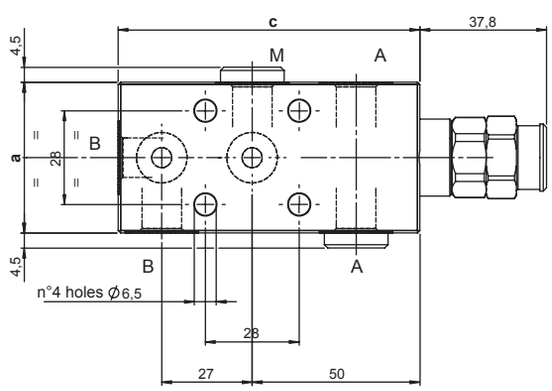
PORTS	02	03
A,B,B1	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

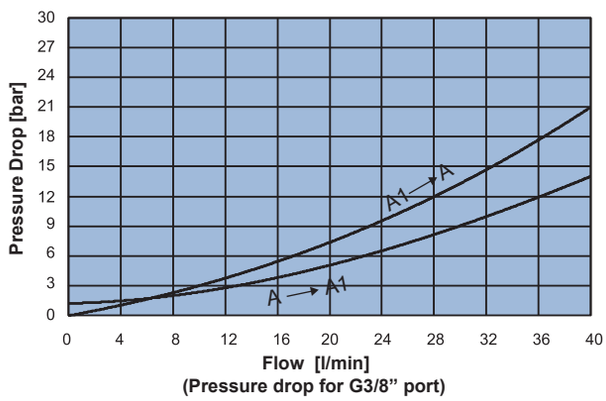
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 28x28

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . .**0,8 Kg**
- Weight G 3/8” . . . . . .**1 Kg**
- Tamper proof cap. . . . . .**cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	90	58	19
03	50	29,5	95	59	21

Ordering code

H 3 0 0 6 N ☐ ☐ S ☐ 0 0

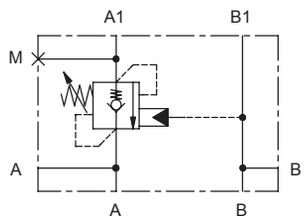
PILOT RATIO	
40	**4:1**

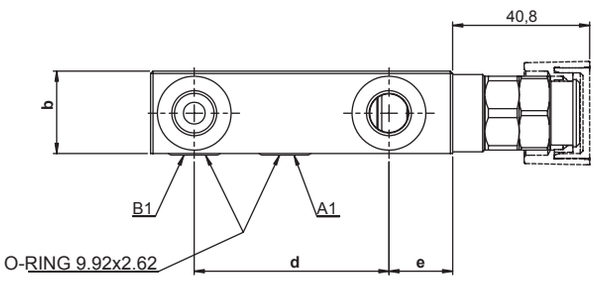
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

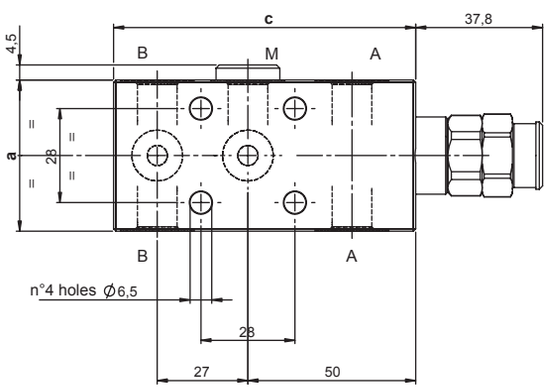
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

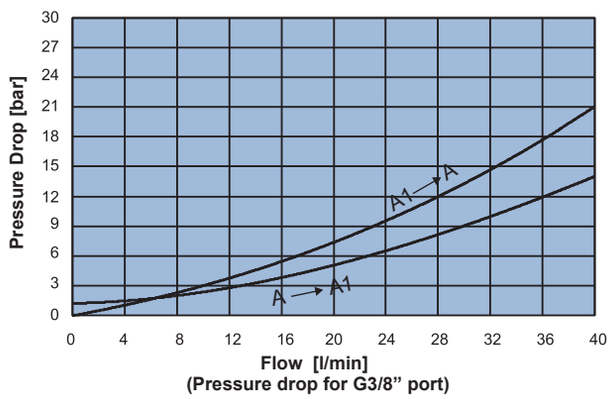
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **0,75 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	90	58	19
03	50	29,5	95	59	21

Ordering code

H 3 0 0 8 N [ ] [ ] S [ ] 0 0

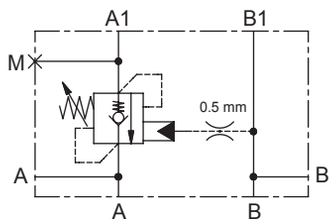
PILOT RATIO	
40	**4:1**

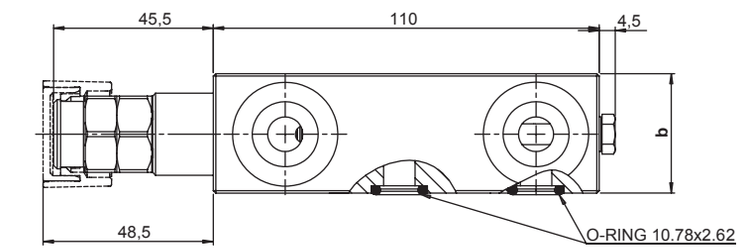
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

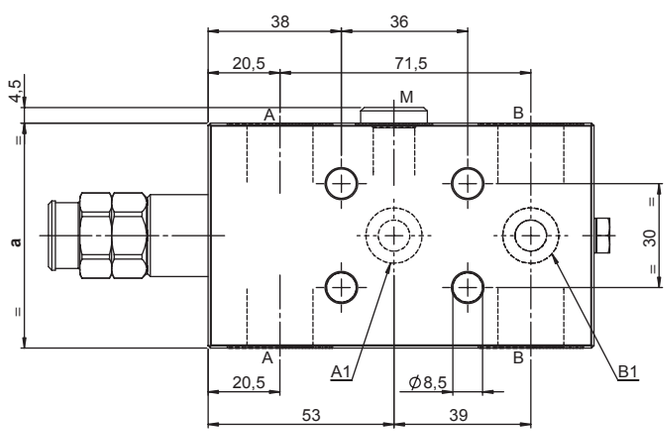
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

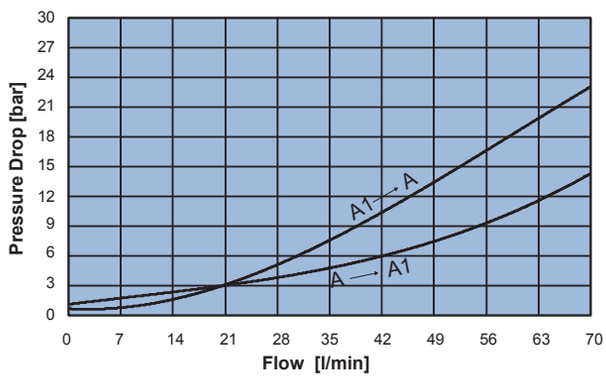
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 30x36

- Flow. . . . . .70 l/min
- Max working pressure. . . . . 350 bar
- Compensation. . . . . Not Compensated
- Weight G 3/8”. . . . . .1,3 Kg
- Weight G 1/2” . . . . . .1,7 Kg
- Tamper proof cap. . . . . .cod. 9021030190









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 0 6 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

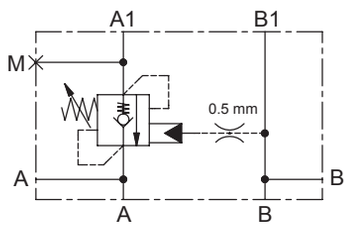
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

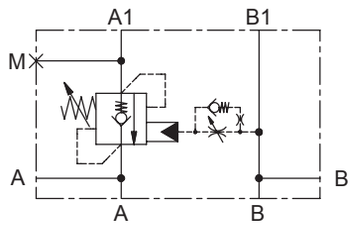
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 30x36

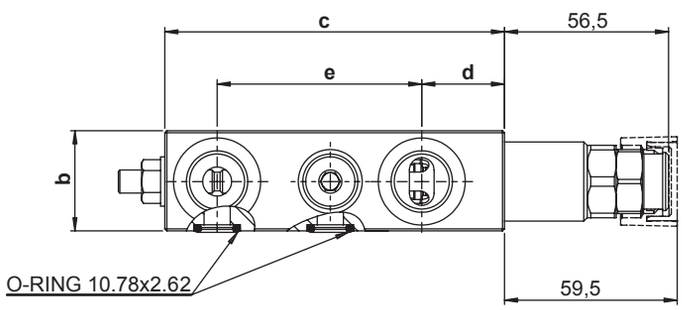
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **1,9 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

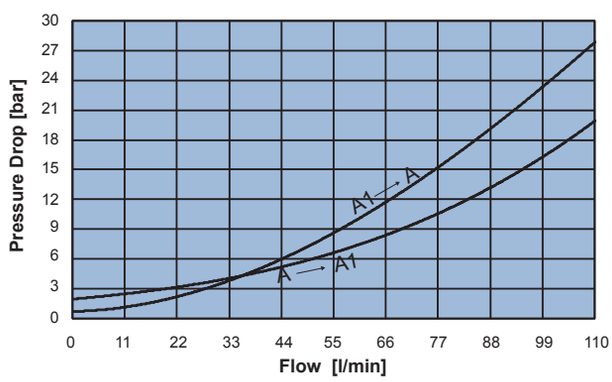
SCHEME 40 - 90

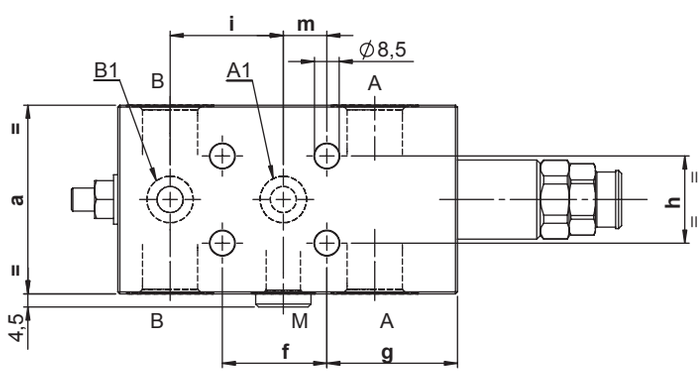


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b	c	d	e	f	g	h	i	m
04	65	34,5	117	28,5	70,5	36	45	30	39	15

Ordering code

H 1 0 0 6 N ☐ ☐ S ☐ 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

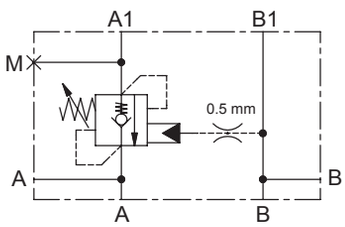
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	**04**
A,B,B1	G 1/2”
A1,B1	Ø 9
M	G 1/4”

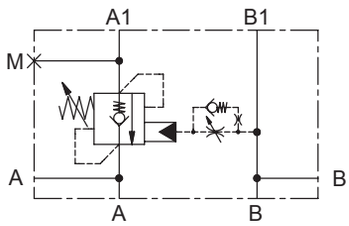
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 40x40

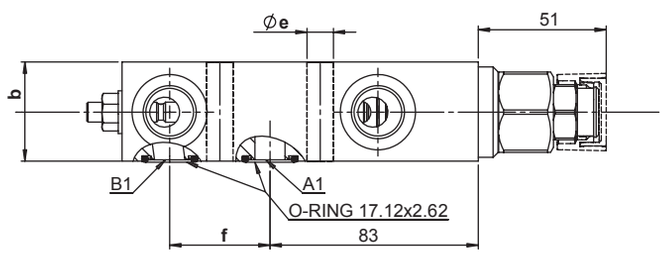
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **2,9 Kg**
- Weight G 3/4” . . . . . **3,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

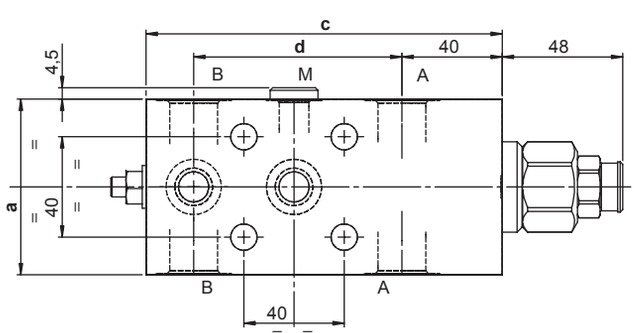
SCHEME 40 - 80

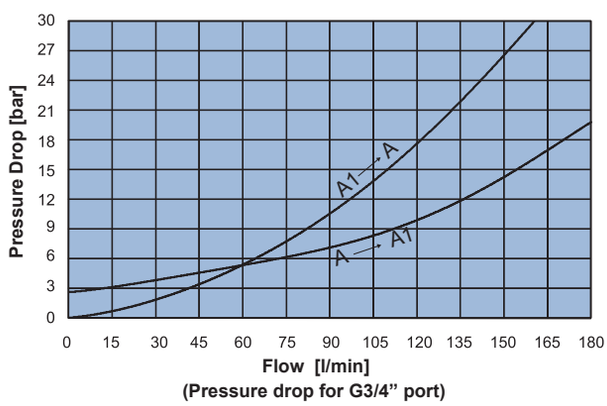


SCHEME 42 - 82









(Pressure drop for G3/4” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD15X-C is recommended for circuits with high back pressure)

	a	b	c	d	e	f
04	70	39,5	142	83	10,5	40
05	80	39,5	147	86	10,5	43

Ordering code

H 1 5 0 6 N ☐ ☐ S ☐ 0 0

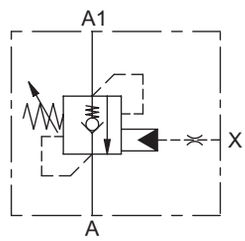
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

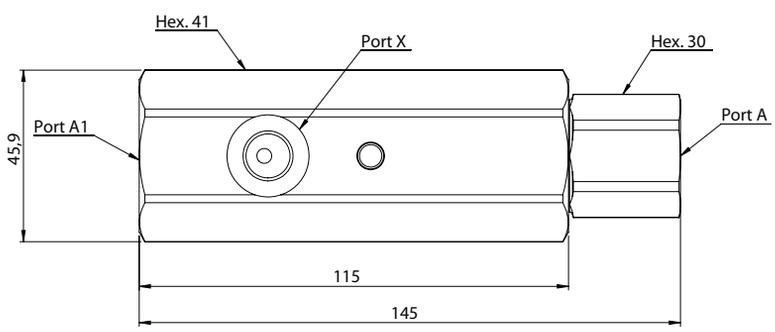
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

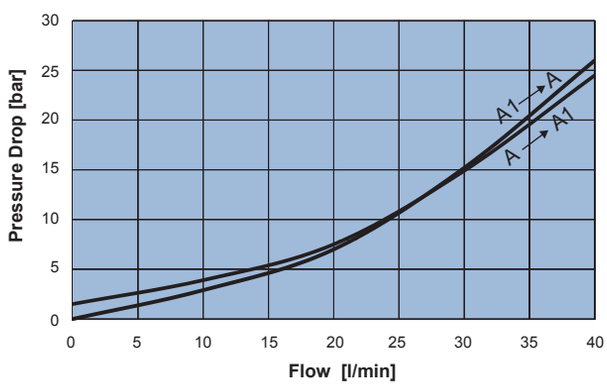
PORTS	04	05
A,B	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1,B1	Ø 12	Ø 12

SINGLE ACTING COUNTERBALANCE VALVE IN LINE WITH AXIAL DISCHARGE

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **1,3 Kg**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

Ordering code

H 5 2 0 0 N ☐ ☐ S ☐ 0 0

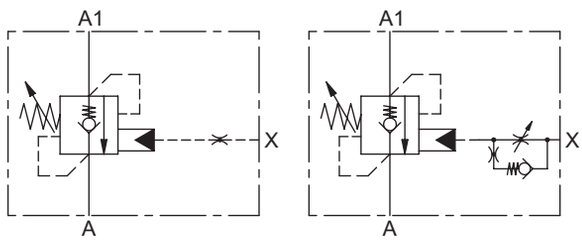
PILOT RATIO	
90	**9:1**

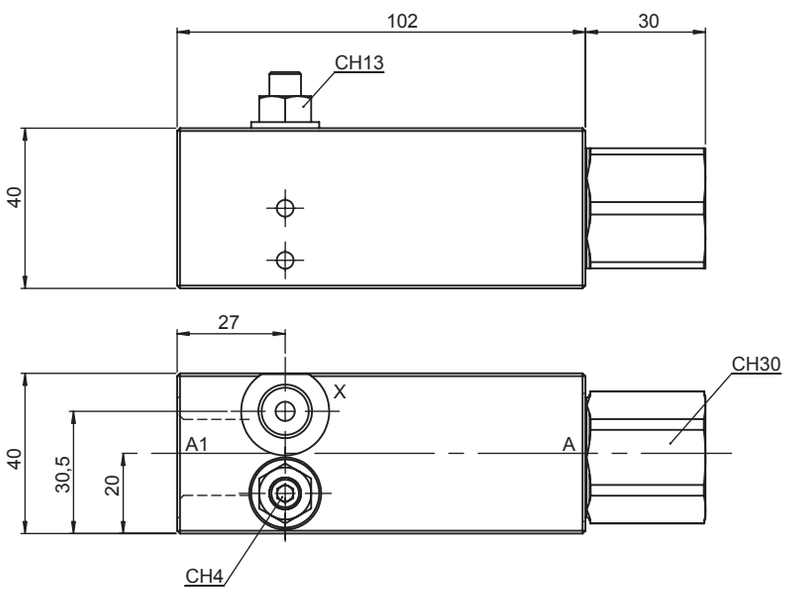
SPRINGS	4
Setting range min.-max. [bar]	130 - 450
Pressure Increase [bar/turn]	235
Standard setting 4 l/min [bar]	350

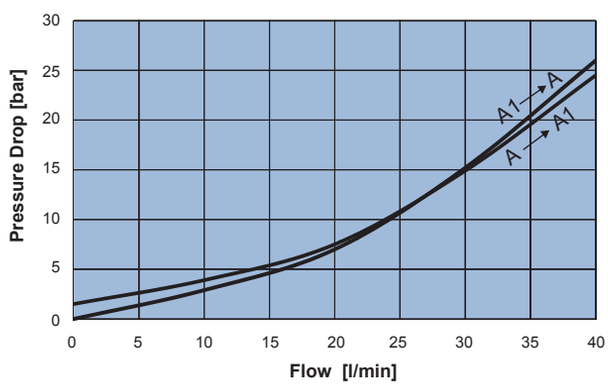
PORTS	04
A,A1	G 1/2”
X	G 1/4”

SINGLE ACTING COUNTERBALANCE VALVE IN LINE WITH AXIAL DISCHARGE

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **1,2 Kg**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

Ordering code

H 5 2 0 1 N ☐ ☐ S ☐ 0 0

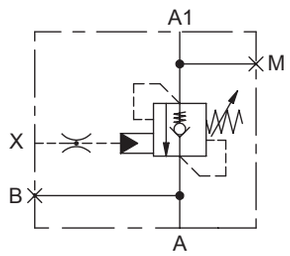
PILOT RATIO	
40	**4:1**
42	**4:1** + ADJUSTABLE DUMP SCREW

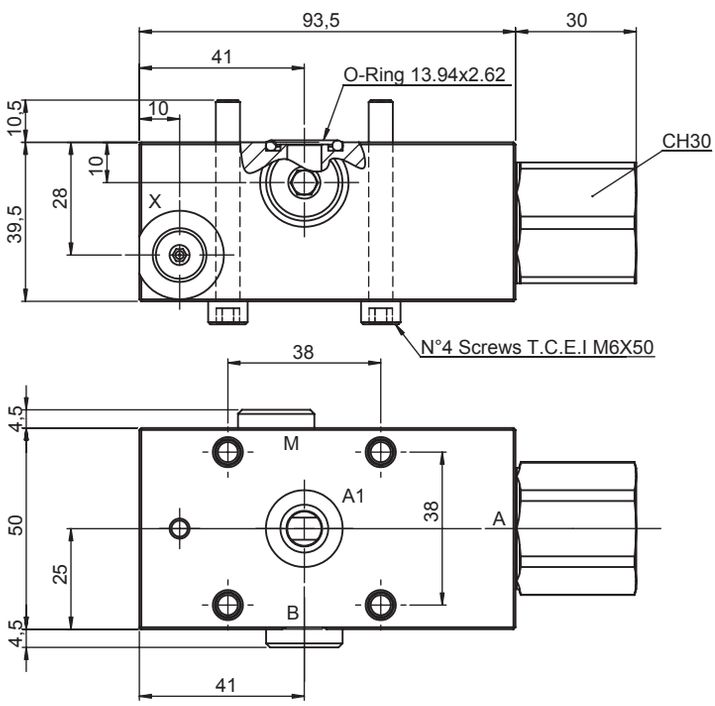
SPRINGS	3
Setting range min.-max. [bar]	211 - 350
Pressure Increase [bar/turn]	120
Standard setting 4 l/min [bar]	350

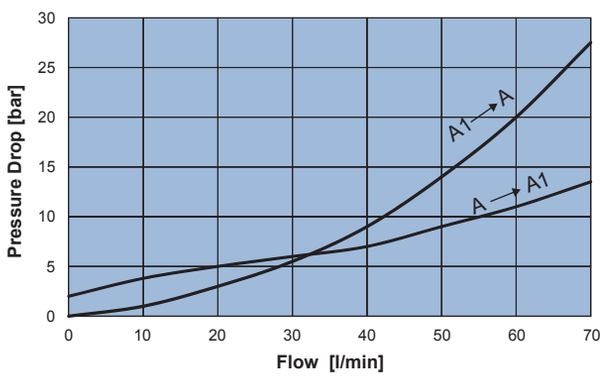
PORTS	04
A,A1	G 1/2”
X	G 1/4”

SINGLE ACTING COUNTERBALANCE VALVE FLANGED 38x38 WITH AXIAL DISCHARGE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **1,5 Kg**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

Ordering code

H 5 2 0 2 N ☐ ☐ S ☐ 0 0

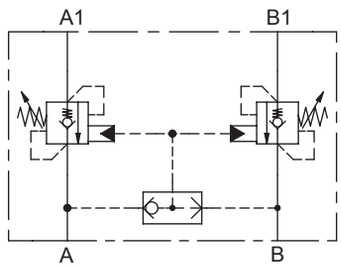
RAPPORTO DI PILOTAGGIO	
40	**4:1**

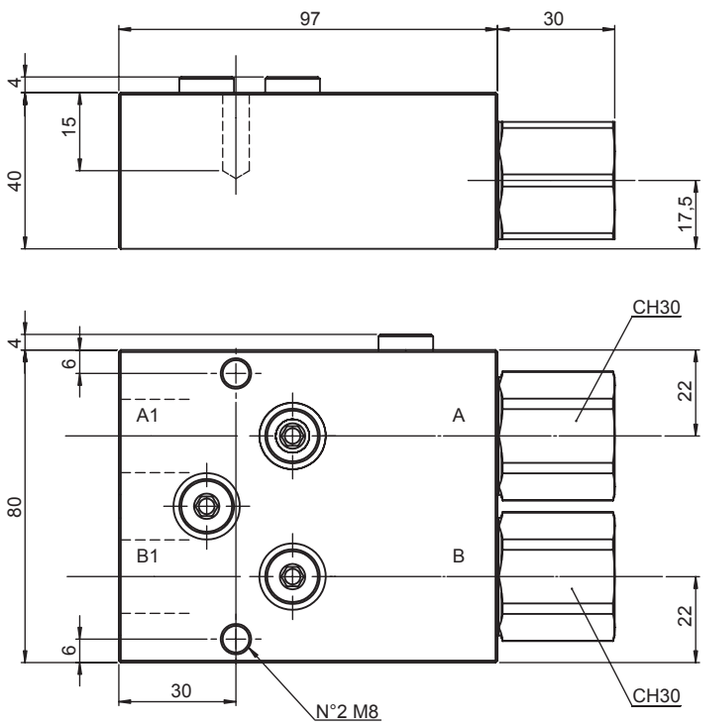
MOLLE	3
Setting range min.-max. [bar]	211 - 350
Pressure Increase [bar/turn]	120
Standard setting 4 l/min [bar]	350

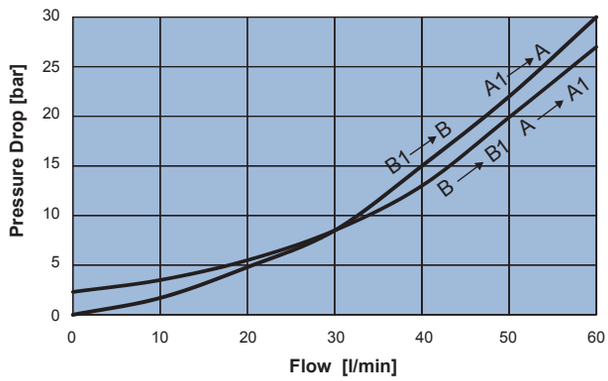
ATTACCHI	04
A	G 1/2”
B,X,M	G 1/4”
A1	Ø 8.5

DOUBLE ACTING COUNTERBALANCE VALVE IN LINE WITH AXIAL DISCHARGE

- Flow. . . . . **60 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **2,4 Kg**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

Ordering code

H 5 2 3 0 N ☐ ☐ S ☐ 0 0

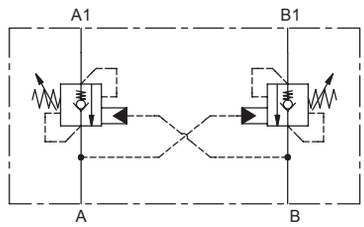
PILOT RATIO	
40	**4:1**

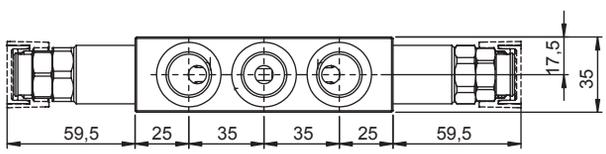
SPRINGS	3
Setting range min.-max. [bar]	211 - 350
Pressure Increase [bar/turn]	120
Standard setting 4 l/min [bar]	350

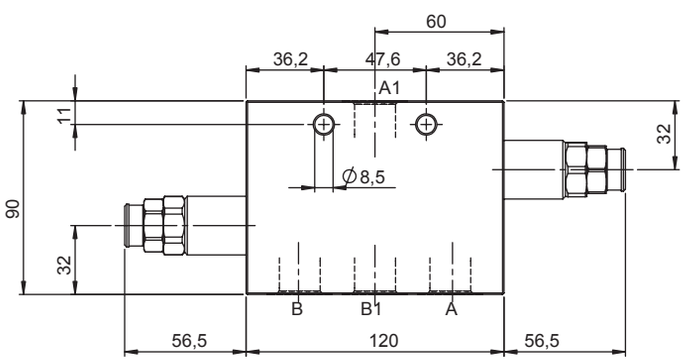
PORTS	04
A,B,A1,B1	G 1/2”

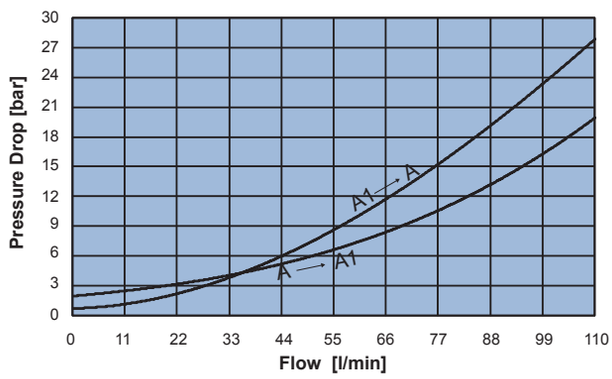
DOUBLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

Ordering code

H 1 0 3 0 N ☐ ☐ S ☐ 0 0

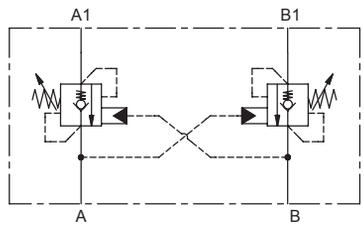
PILOT RATIO	
40	**4:1**

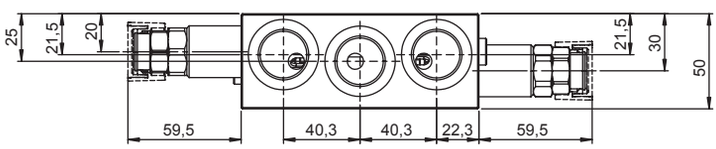
SPRINGS	2	4
Setting range min.-max. [bar]	60 - 210	120 - 410
Pressure Increase [bar/turn]	52	85
Standard setting 4 l/min [bar]	200	350

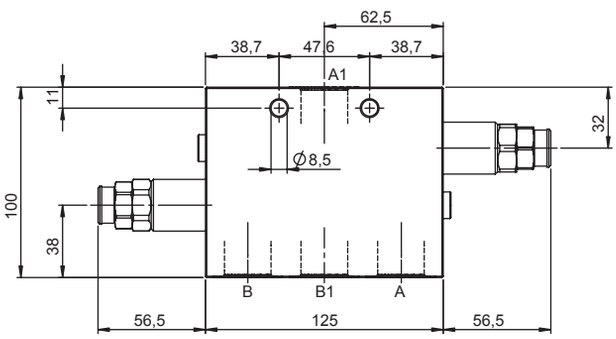
PORTS	04
A,A1,B,B1	G 1/2”

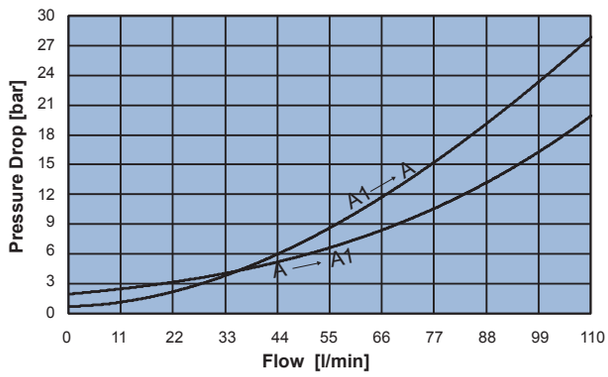
DOUBLE ACTING COUNTERBALANCE VALVE

- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **4,7 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

Ordering code

H 1 0 3 0 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

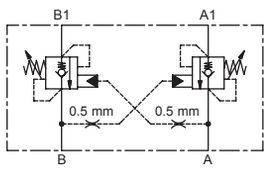
SPRINGS	2	4
Setting range min.-max. [bar]	60 - 210	120 - 410
Pressure Increase [bar/turn]	52	85
Standard setting 4 l/min [bar]	200	350

PORTS	05
A,A1,B,B1	G 3/4”

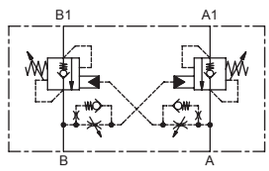
DOUBLE ACTING COUNTERBALANCE VALVE

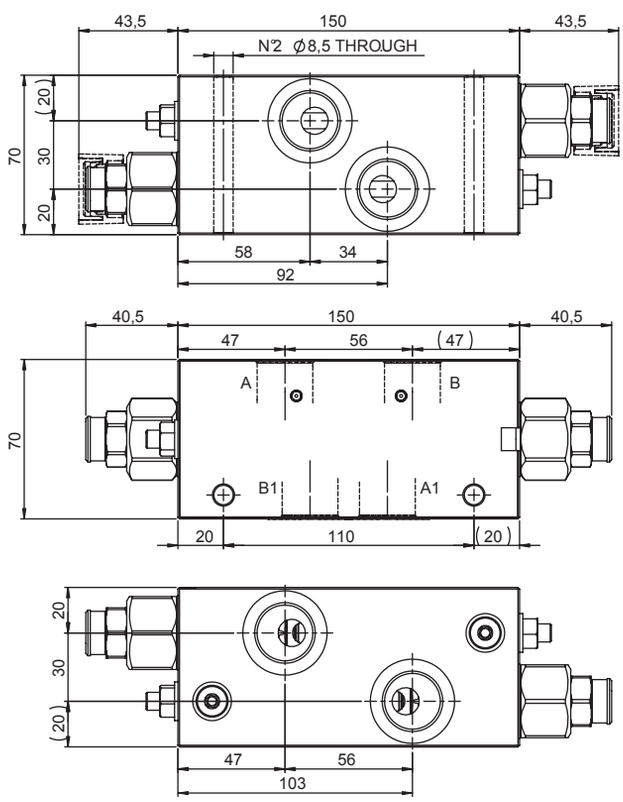
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **5,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

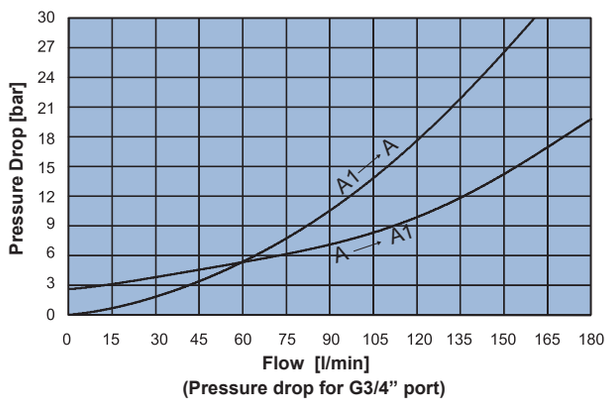
SCHEME 40 - 80



SCHEME 42 - 82







Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD15X-C is recommended for circuits with high back pressure)

Ordering code

H 1 5 3 0 N ☐ ☐ S ☐ 0 0

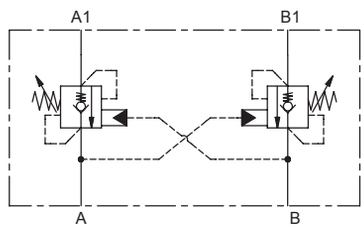
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

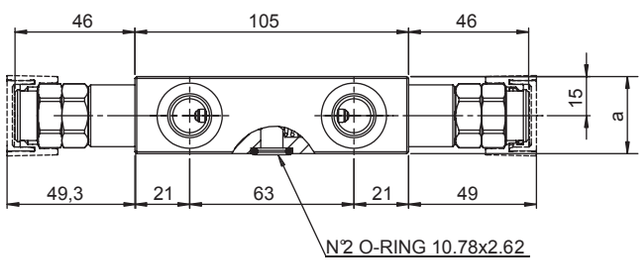
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

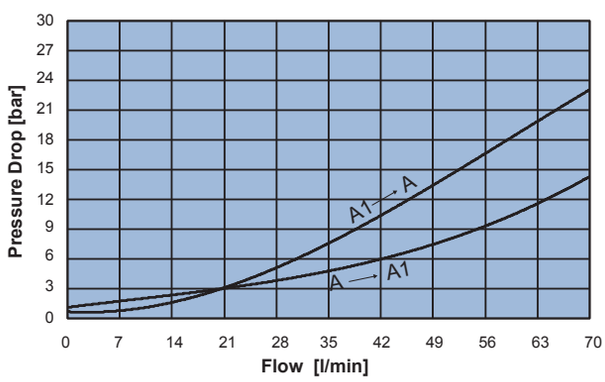
PORTS	05
A,A1,B,B1	G 3/4"

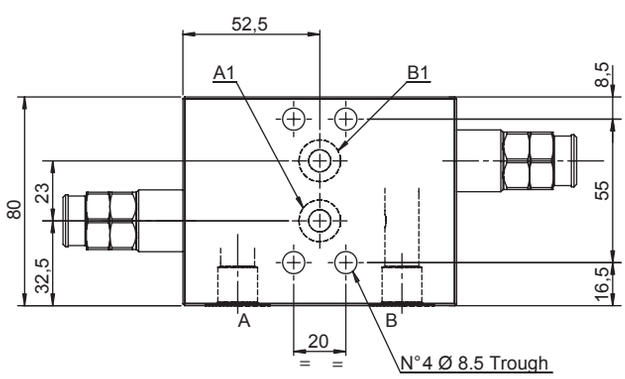
DOUBLE ACTING COUNTERBALANCE VALVE FLANGED 20x55

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **1,9 Kg**
- Weight G 1/2” . . . . . **2,2 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a
03	29.5
04	34.5

Ordering code

H 5 0 3 2 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

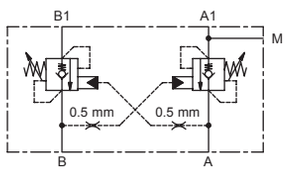
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 8.5	Ø 8.5

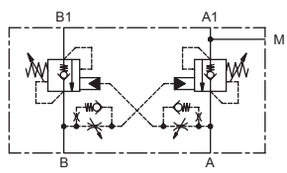
DOUBLE ACTING COUNTERBALANCE VALVE FLANGED 35x72

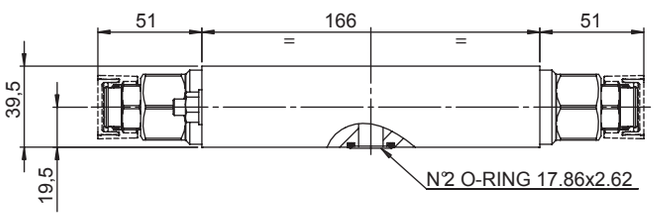
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **5 Kg**
- Weight G 3/4” . . . . . **5,1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

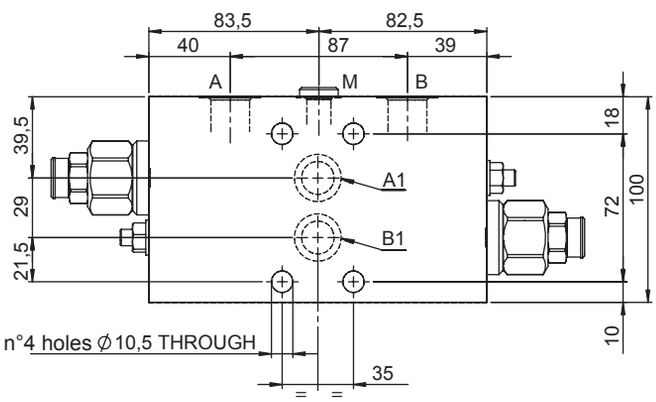
SCHEME 40 - 80

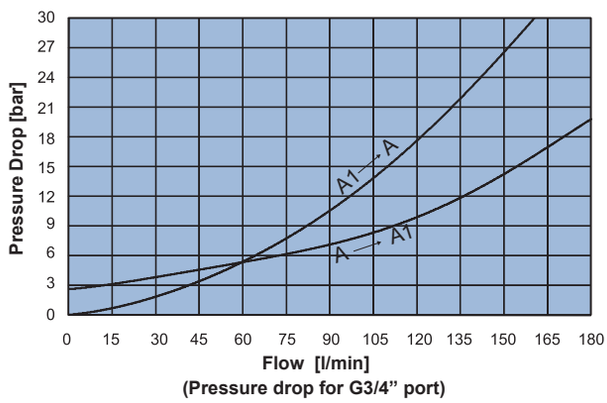


SCHEME 42 - 82









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD15X-C is recommended for circuits with high back pressure)

Ordering code

H 1 5 3 2 N ☐ ☐ S ☐ 0 0

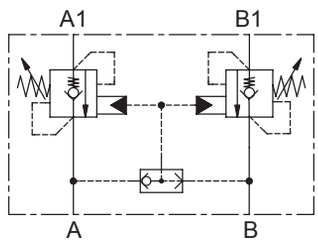
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

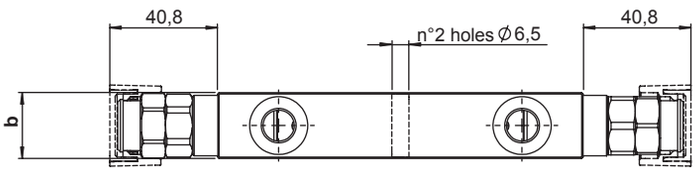
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

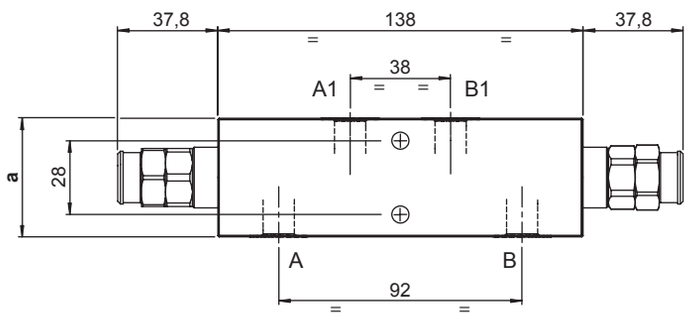
PORTS	04	05
A,B	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1,B1	Ø 12	Ø 12

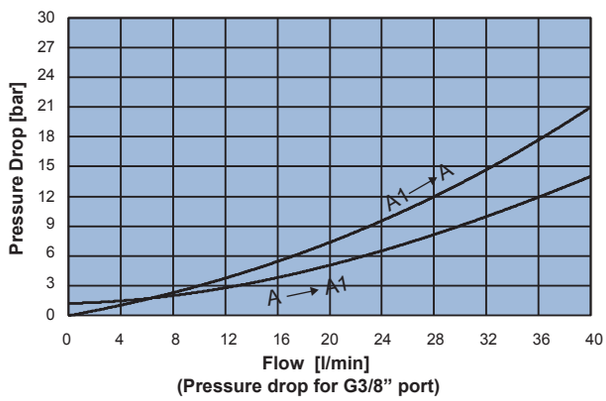
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **1,3 Kg**
- Weight G 3/8” . . . . . **1,6 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b
02	45	25
03	50	30

Ordering code

H 3 0 6 0 N ☐ ☐ S ☐ 0 0

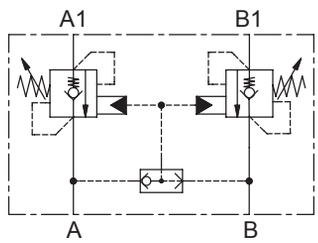
PILOT RATIO	
40	**4:1**

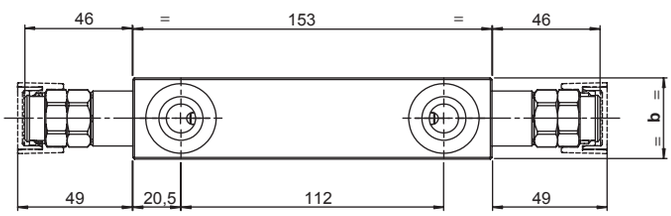
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

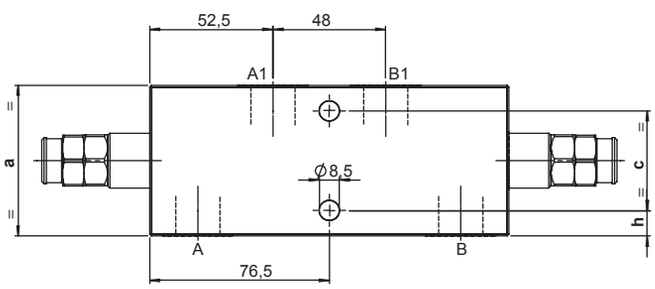
PORTS	02	03
A,B,A1,B1	G 1/4”	G 3/8”

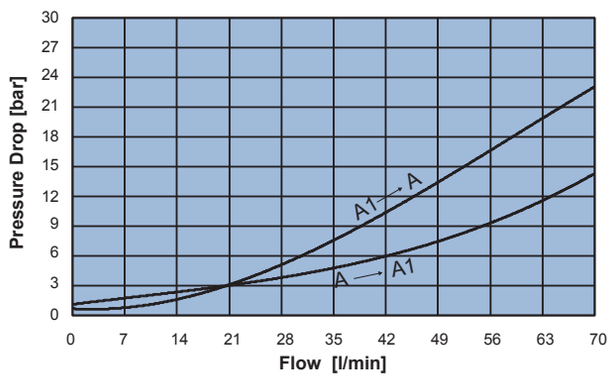
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **2 Kg**
- Weight G 1/2” . . . . . **2,65 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b	c	h
03	55	30	38	8,5
04	65	35	43	11

Ordering code

H 5 0 6 0 N ☐ ☐ S ☐ 0 0

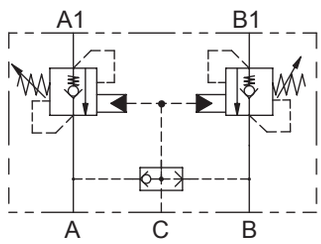
PILOT RATIO	
40	**4:1**
90	**9:1**

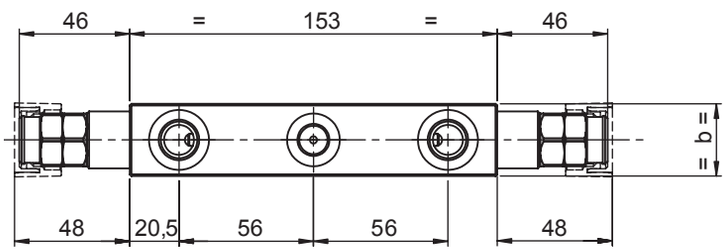
SPRINGS	rp 4:1		rp 9:1	
	2	**3**	**2**	**3**
Setting range min.-max. [bar]	60 - 210	120 - 350	80 - 250	190 - 350
Pressure Increase [bar/turn]	62	114	50	121
Standard setting 4 l/min [bar]	200	350	200	350

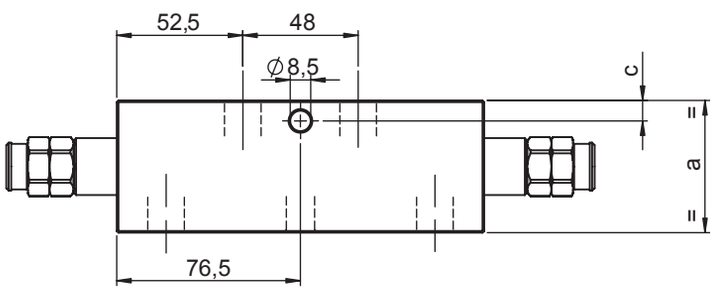
PORTS	03	04
A,B,A1,B1	G 3/8”	G 1/2”

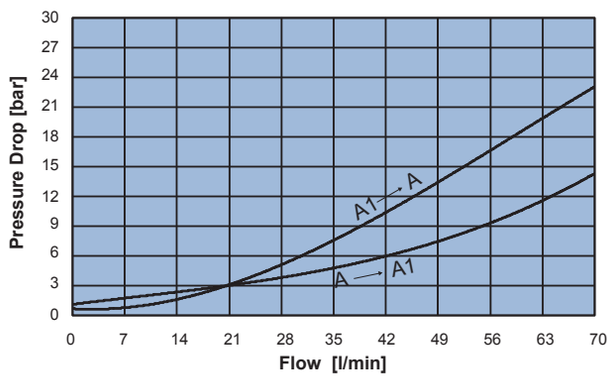
DOUBLE ACTING COUNTERBALANCE VALVE FOR HYDRAULIC MOTORS

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **2 Kg**
- Weight G 1/2” . . . . . **2,65 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Antishock valve pos.2 max flow 3 l/min
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b	c
03	55	30	8,5
04	65	35	11

Ordering code

H 5 0 6 0 N ☐ ☐ S ☐ 0 0

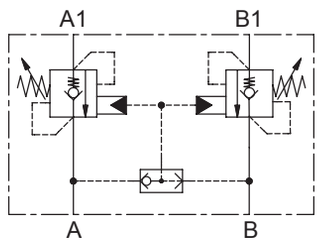
PILOT RATIO	
95	**9:1**

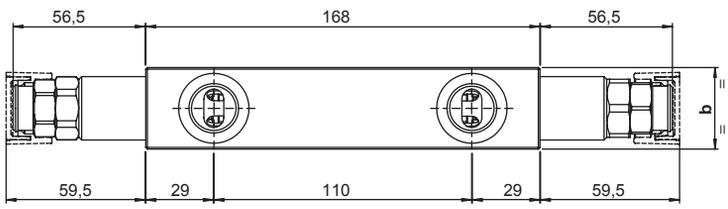
SPRINGS	rp 9:1
	2
Setting range min.-max. [bar]	80 - 250
Pressure Increase [bar/turn]	50
Standard setting 4 l/min [bar]	250

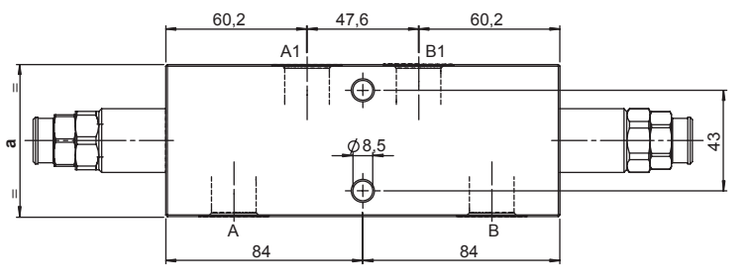
PORTS	03	04
A,B,A1,B1	G 3/8”	G 1/2”

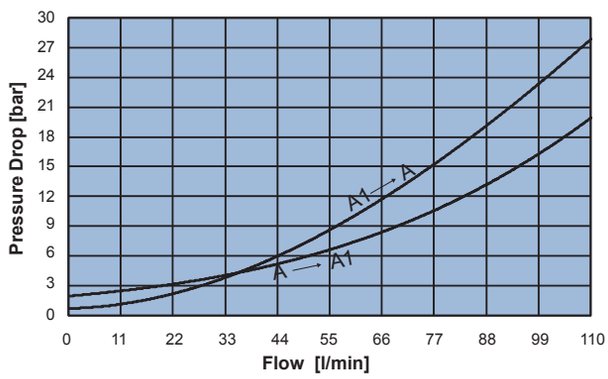
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY

- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **3 Kg**
- Weight G 3/4” . . . . . **3,55 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b
04	65	35
05	70	40

Ordering code

H 1 0 6 0 N ☐ ☐ S ☐ 0 0

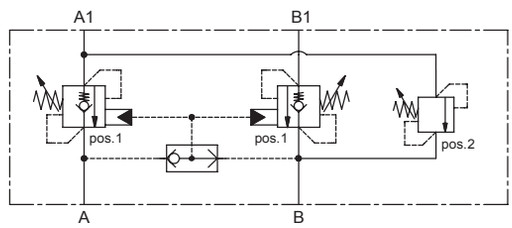
PILOT RATIO	
40	**4:1**
90	**9:1**

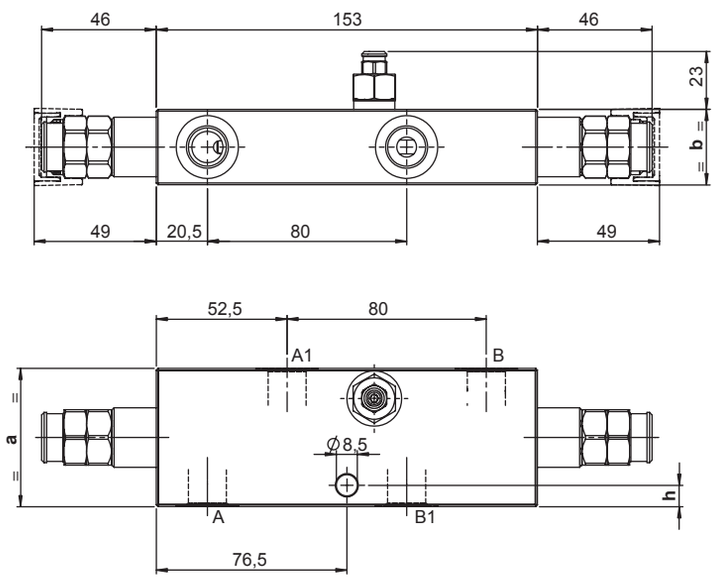
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

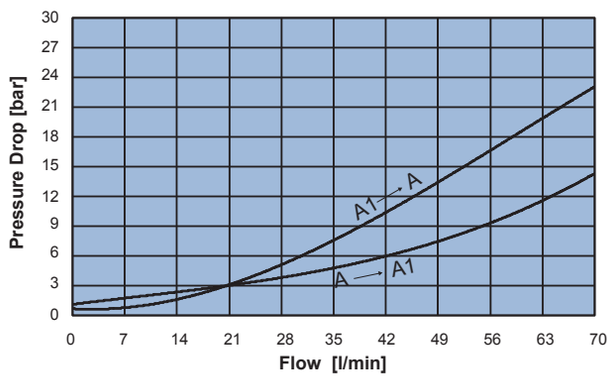
PORTS	04	05
A,A1,B,B1	G 1/2”	G 3/4”

DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 3/8”. . . . . **2 Kg**
- Weight G 1/2” . . . . . **2,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Note:
- Antishock valve pos.2 max flow 3 l/min
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b	c	h
03	55	30	38	8,5
04	65	35	43	11

Ordering code

H 5 0 6 0 N [ ] [ ] S [ ] 0 0

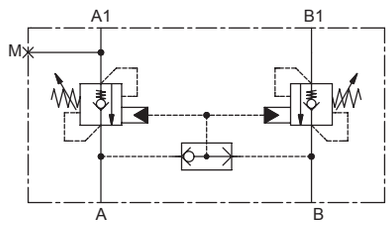
PILOT RATIO	
47	**4:1+ relief A1-B**

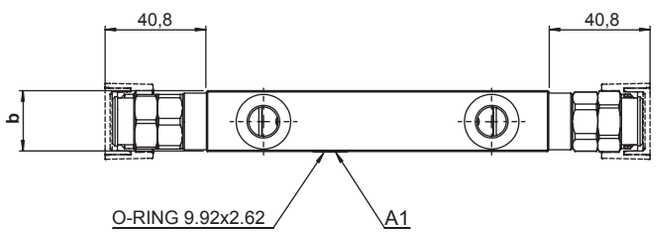
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	120 - 350	250 - 400
Pressure Increase [bar/turn]	114	250
Standard setting 4 l/min [bar]	350 bar or 4 l/min	300 bar or 20 cc/min

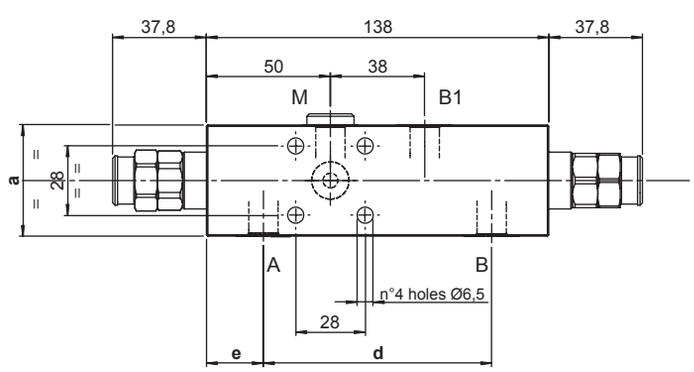
PORTS	03	04
A,B,A1,B1	G 3/8”	G 1/2”

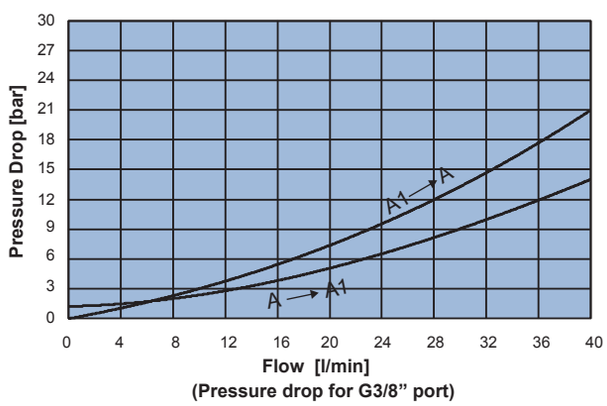
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1 FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **1,25 Kg**
- Weight G 3/8” . . . . . **1,6 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









(Pressure drop for G3/8” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b	c	d	e
02	45	24,5	12,5	92	23
03	50	29,5	15	96	21

Ordering code

H 3 0 6 1 N □ □ S □ 0 0

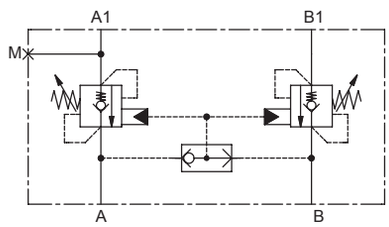
PILOT RATIO	
40	**4:1**

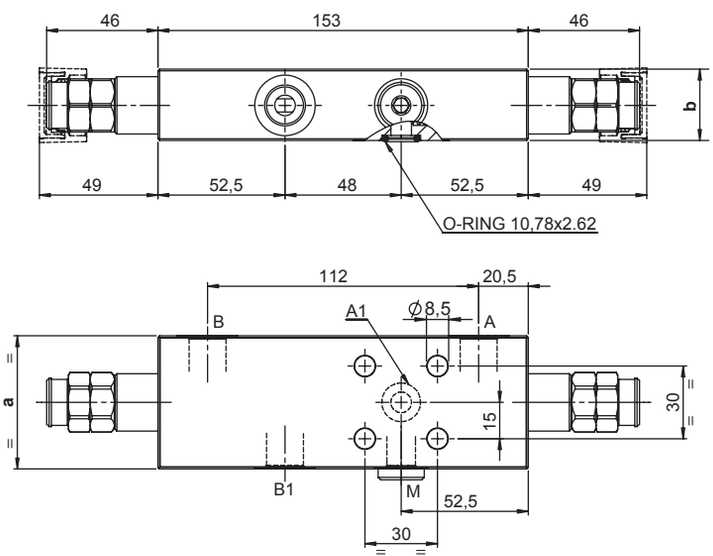
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

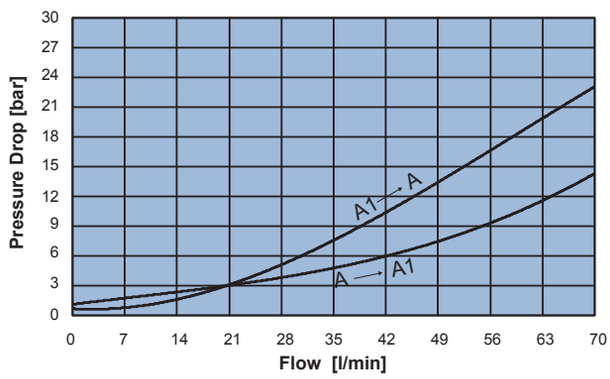
PORTS	02	03
A,B,B1	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1 FLANGED 30x30

- Flow. . . . . .70 l/min
- Max working pressure. . . . . 350 bar
- Compensation. . . . . Not Compensated
- Weight G 3/8”. . . . . .1,9 Kg
- Weight G 1/2” . . . . . 2,6 Kg
- Tamper proof cap. . . . . cod. 9021030190







Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 6 1 N ☐ ☐ S ☐ 0 0

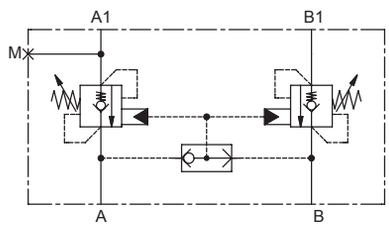
PILOT RATIO	
40	**4:1**

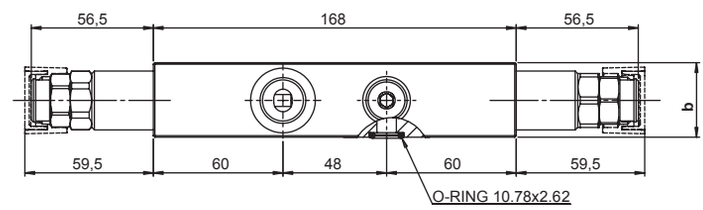
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

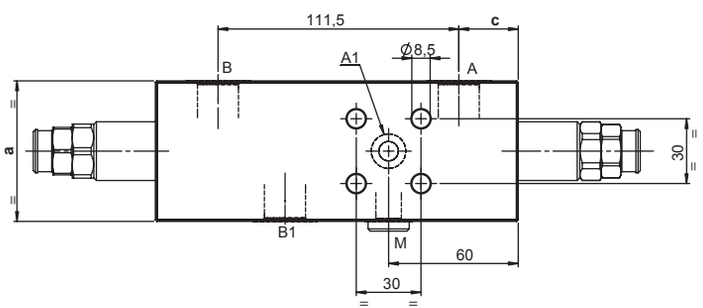
PORTS	03	04
A,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

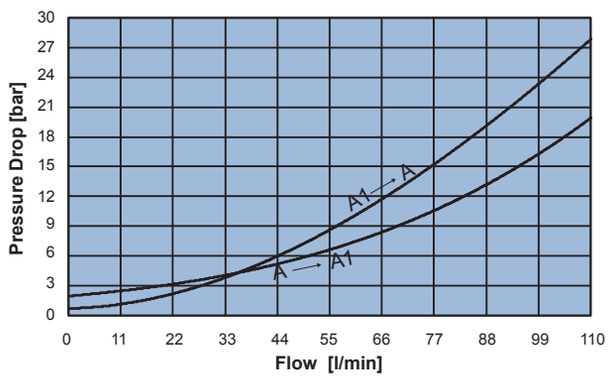
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1 FLANGED 30x30

- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **3 Kg**
- Weight G 3/4” **3,3Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b	c
04	65	34,5	27,5
05	70	39,5	24

Ordering code

H 1 0 6 1 N ☐ ☐ S ☐ 0 0

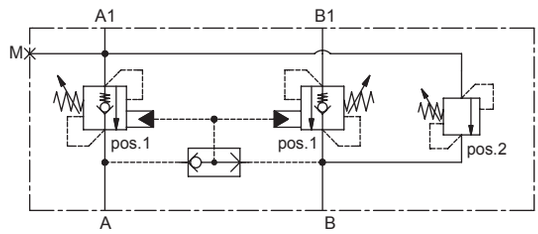
PILOT RATIO	
40	**4:1**
90	**9:1**

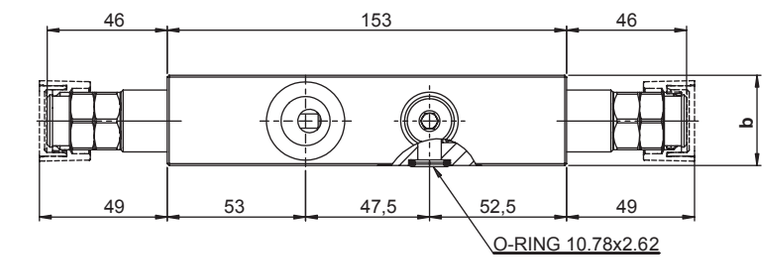
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

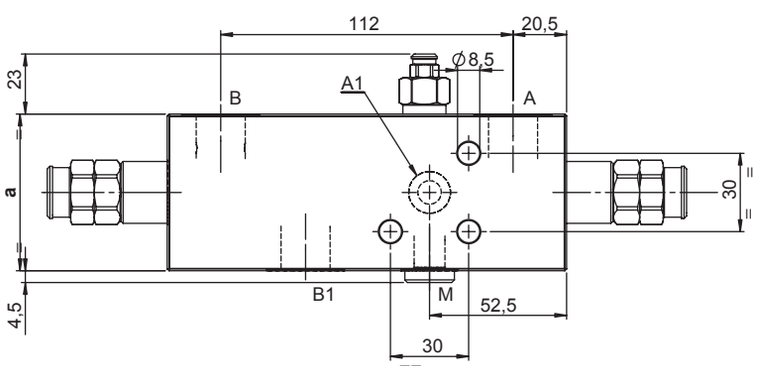
PORTS	04	05
A,B,B1	G 1/2”	G 3/4”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

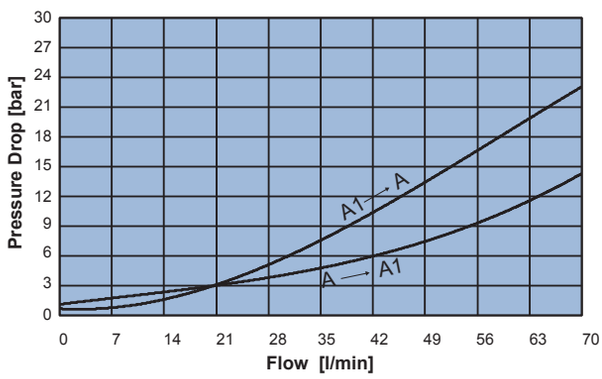
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1 FLANGED 30x30

- Flow. . . . . .70 l/min
- Max working pressure. . . . . 350 bar
- Compensation. . . . . Not Compensated
- Weight G 3/8”. . . . . .1,9 Kg
- Weight G 1/2” . . . . . 2,65 Kg
- Tamper proof cap. . . . . cod. 9021030190









Note:
- Antishock valve pos.2 max flow 3 l/min
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 6 1 N ☐ ☐ S ☐ 0 0

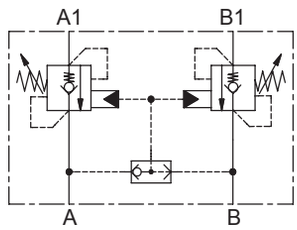
PILOT RATIO	
47	**4:1+ relief A1-B**

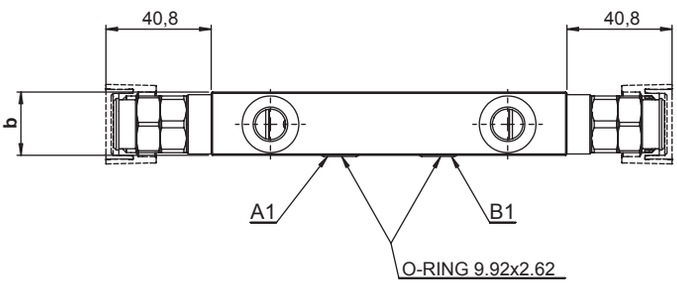
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	120 - 350	250 - 400
Pressure Increase [bar/turn]	114	250
Standard setting [bar]	350 @ 4 l/min	300 @ 20 cc/min

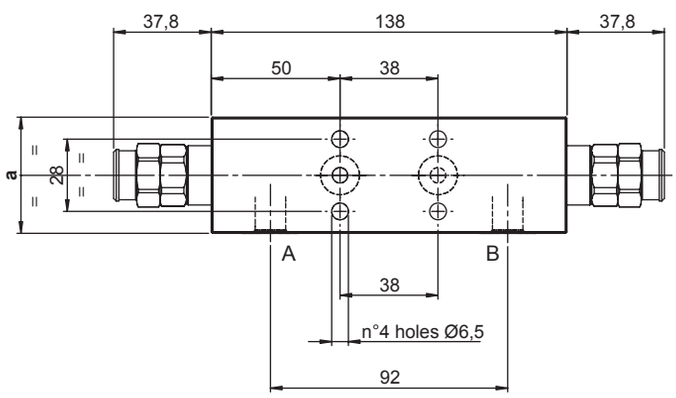
PORTS	03	04
A,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

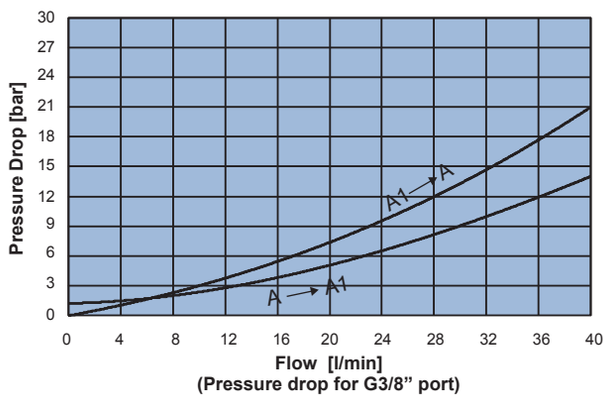
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1/B1 FLANGED 28x38

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/4”. . . . . **1,3 Kg**
- Weight G 3/8” . . . . . **1,6 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD03X-C is recommended for circuits with high back pressure)

	a	b
02	45	24,5
03	50	29,5

Ordering code

H 3 0 6 2 N ☐ ☐ S ☐ 0 0

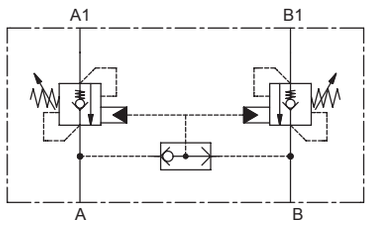
PILOT RATIO	
40	**4:1**

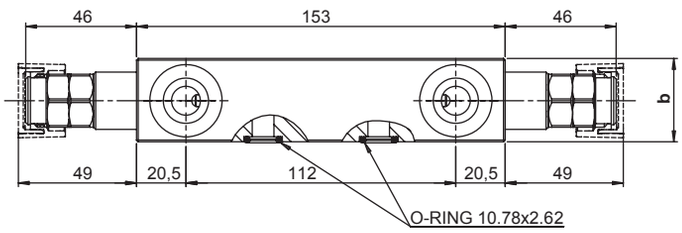
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

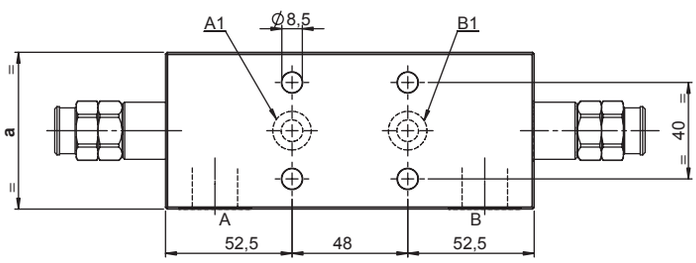
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 6	Ø 6

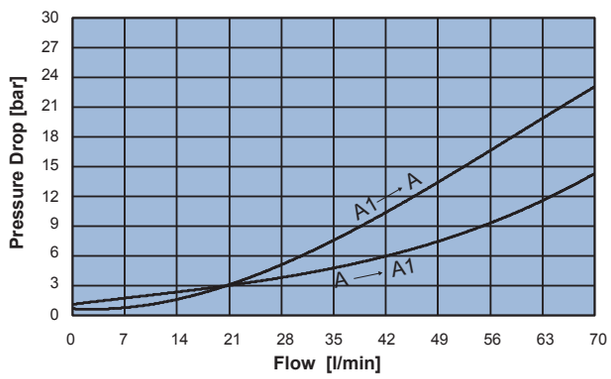
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1/B1 FLANGED 40x48

- Flow. . . . . .70 l/min
- Max working pressure. . . . . 350 bar
- Compensation. . . . . Not Compensated
- Weight G 3/8”. . . . . 2 Kg
- Weight G 1/2” . . . . . 2,65 Kg
- Tamper proof cap. . . . . cod. 9021030190









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD05X-C is recommended for circuits with high back pressure)

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 6 2 N ☐ ☐ S ☐ 0 0

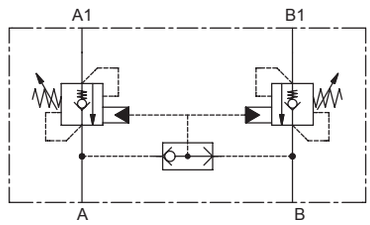
PILOT RATIO	
40	**4:1**
90	**9:1**

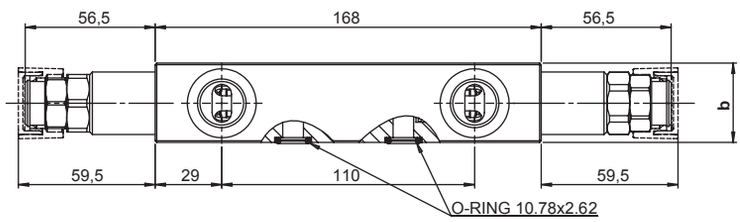
SPRINGS	rp 4:1		rp 9:1	
	2	**3**	**2**	**3**
Setting range min.-max. [bar]	60 - 210	120 - 350	80 - 250	190 - 350
Pressure Increase [bar/turn]	62	114	50	121
Standard setting 4 l/min [bar]	200	350	200	350

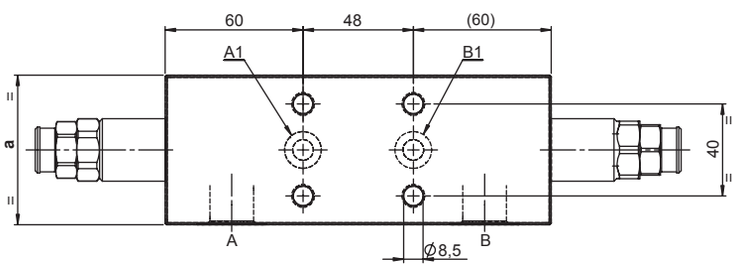
PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 9	Ø 9

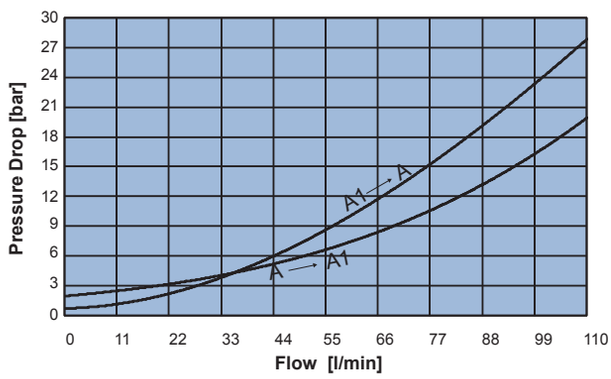
DOUBLE ACTING COUNTERBALANCE VALVE WITH COAXIAL CAVITY - A1/B1 FLANGED 40x48

- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Not Compensated**
- Weight G 1/2”. . . . . **3 Kg**
- Weight G 3/4” . . . . . **3,6 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

	a	b
04	65	34,5
05	70	39,5

Ordering code

H 1 0 6 2 N ☐ ☐ S ☐ 0 0

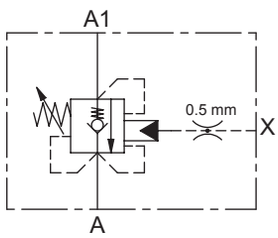
PILOT RATIO	
40	**4:1**
90	**9:1**

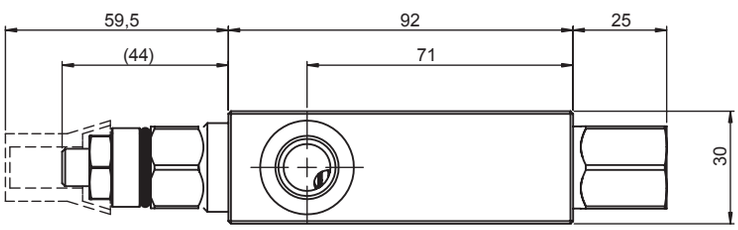
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

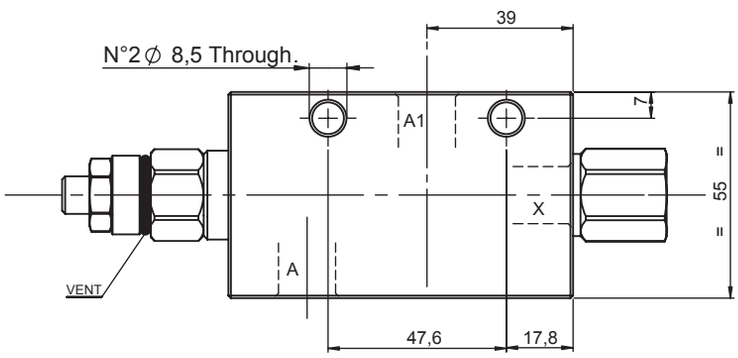
PORTS	04	05
A,B	G 1/2”	G 3/4”
A1,B1	Ø 9	Ø 9

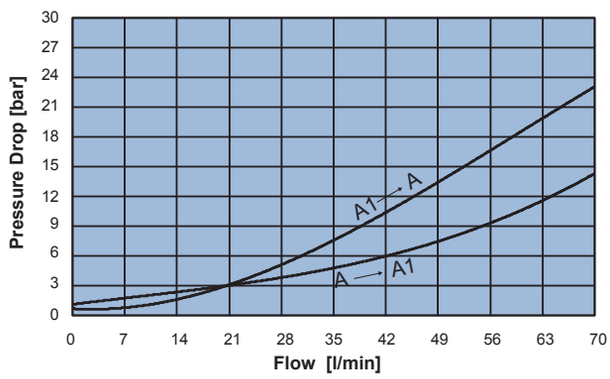
SINGLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . .**Relief Compensated**
- Weight. . . . . **1,2 Kg**
- Tamper proof cap. . . . . .**cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

Ordering code

H 5 3 0 1 S ☐ ☐ S ☐ 0 0

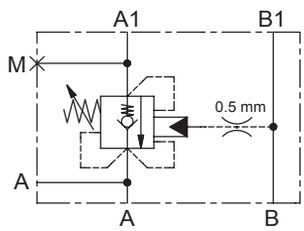
PILOT RATIO	
40	**4:1**

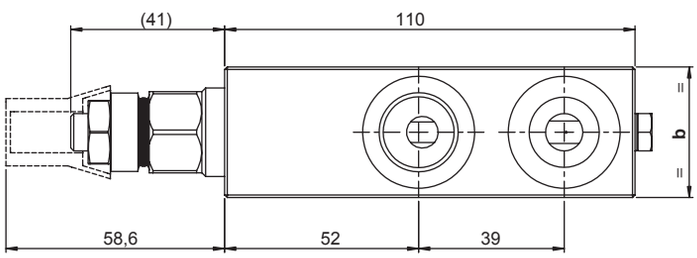
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

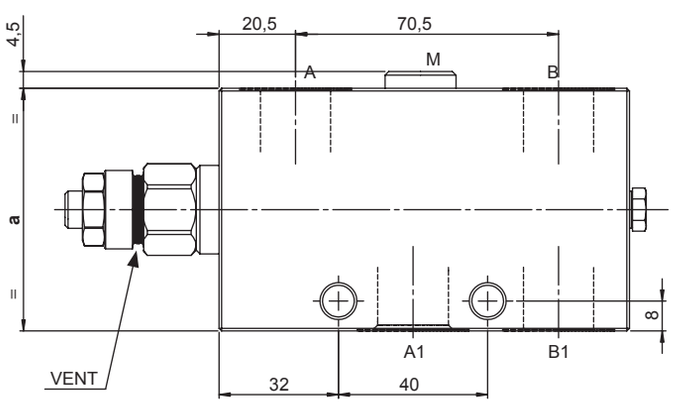
PORTS	03
A,A1,X	G 3/8”

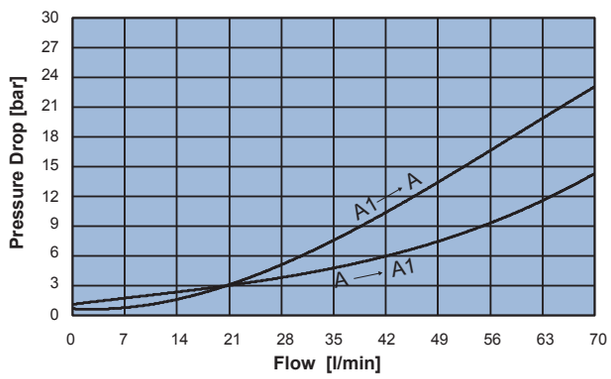
SINGLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . .**Relief Compensated**
- Weight G 3/8”. . . . . .**1,3 Kg**
- Weight G 1/2” . . . . . .**1,8 Kg**
- Tamper proof cap. . . . . .**cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b
03	55	30
04	65	35

Ordering code

H 5 3 0 4 S ☐ ☐ S ☐ 0 0

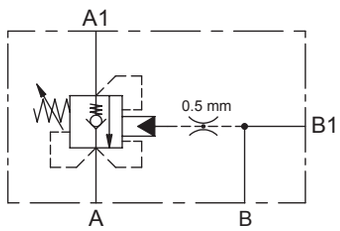
PILOT RATIO	
40	**4:1**

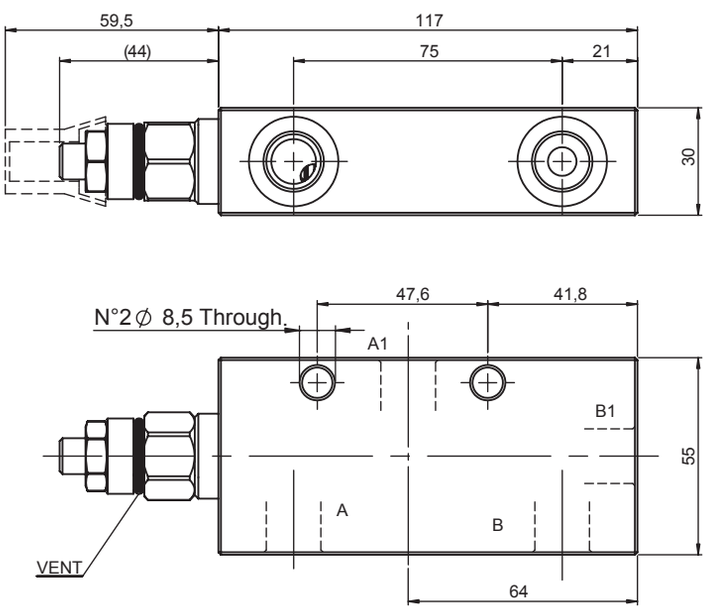
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

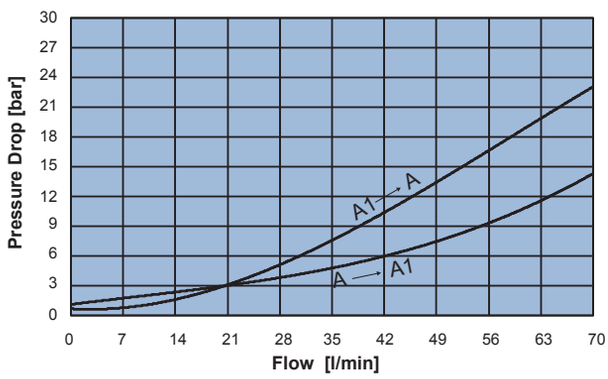
PORTS	03	04
A,A1,B,B1	G 3/8”	G 1/2”
M	G 1/4”	G 1/4”

SINGLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **210 bar**
- Compensation. . . . . **Relief Compensated**
- Weight. . . . . **1,8 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

Ordering code

H 5 3 0 4 S ☐ ☐ S ☐ 0 0

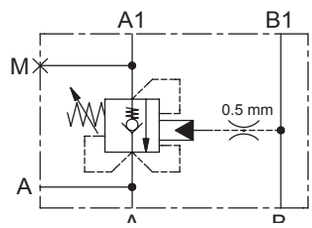
PILOT RATIO	
41	**4:1**

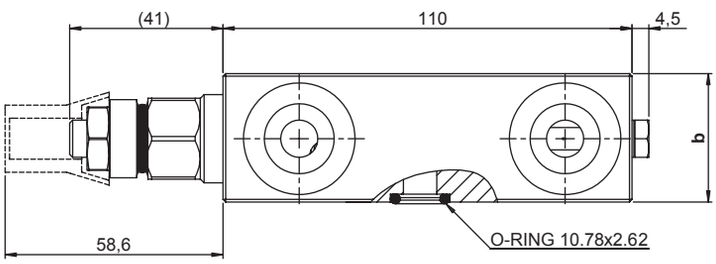
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

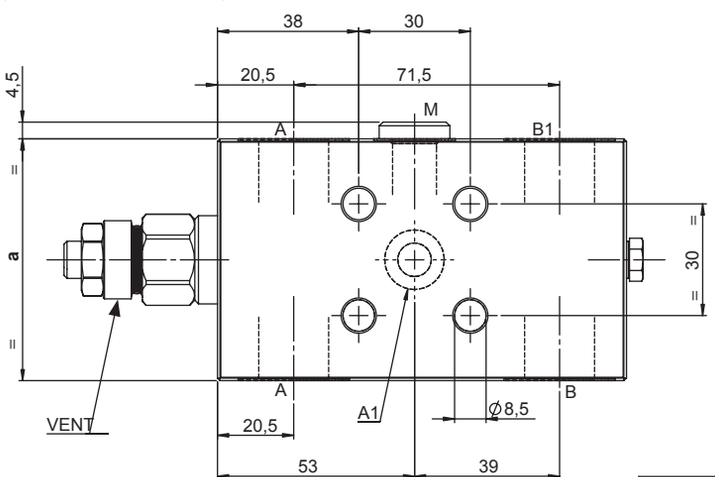
PORTS	03
A,A1,B,B1	G 3/8”

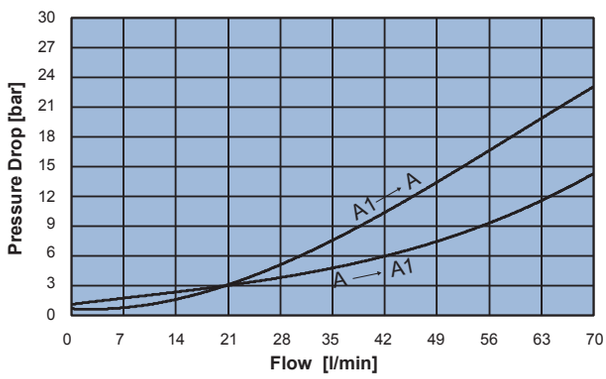
SINGLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 30x30

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief Compensated**
- Weight G 3/8”. . . . . **1,4 Kg**
- Weight G 1/2” . . . . . **1,7 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b
03	55	30
04	65	35

Ordering code

H 5 3 0 5 S ☐ ☐ S ☐ 0 0

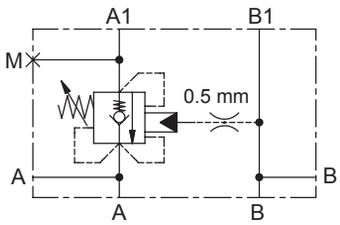
PILOT RATIO	
40	**4:1**

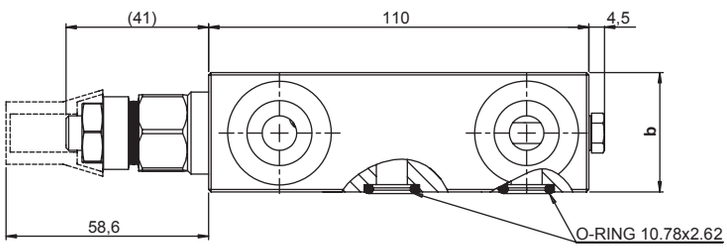
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

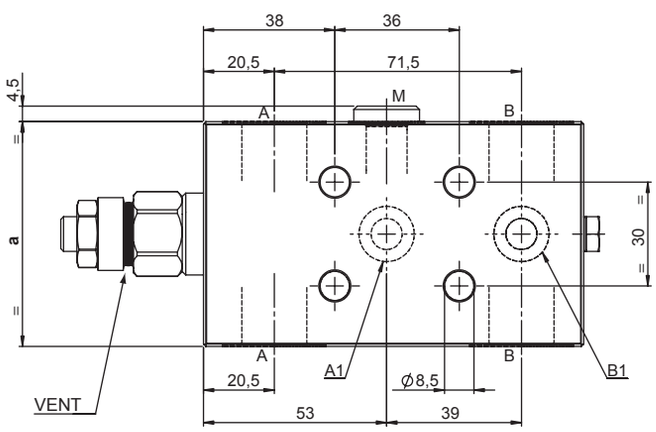
PORTS	03	04
A,A1,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

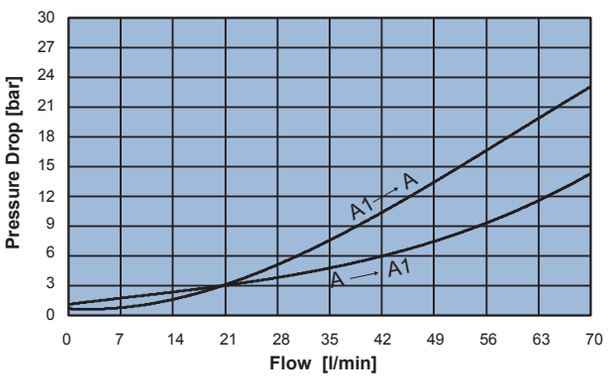
SINGLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 30x36

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . .**Relief Compensated**
- Weight G 3/8”. . . . . .**1,5 Kg**
- Weight G 1/2” . . . . . .**1,8 Kg**
- Tamper proof cap. . . . . .**cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 3 0 6 S ☐ ☐ S ☐ 0 0

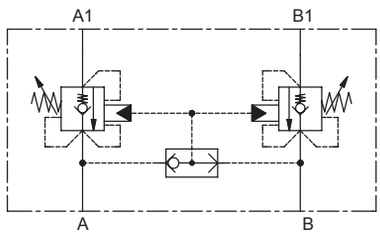
PILOT RATIO	
40	**4:1**

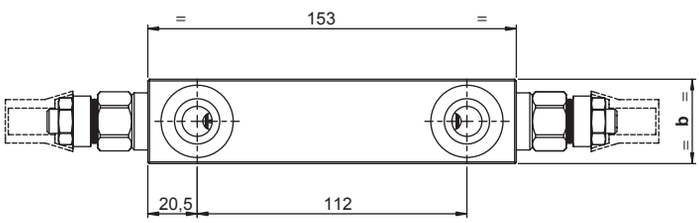
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

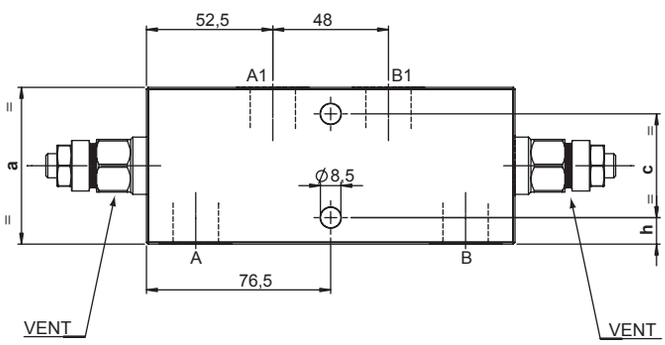
PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

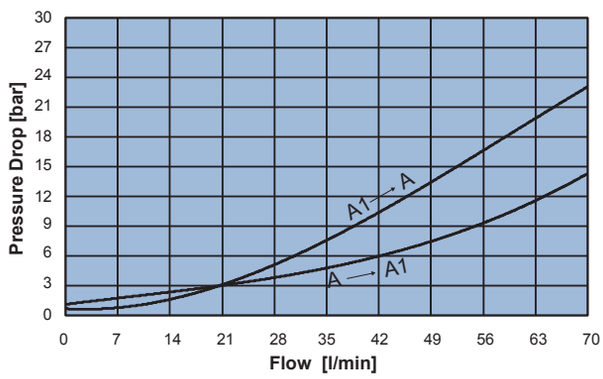
DOUBLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief Compensated**
- Weight G 3/8”. . . . . **1,9 Kg**
- Weight G 1/2” . . . . . **2,6 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b	c	h
03	55	30	38	8,5
04	65	35	43	11

Ordering code

H 5 3 6 0 S □ □ S □ 0 0

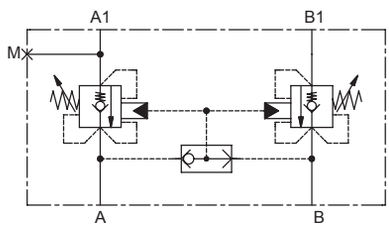
PILOT RATIO	
40	**4:1**

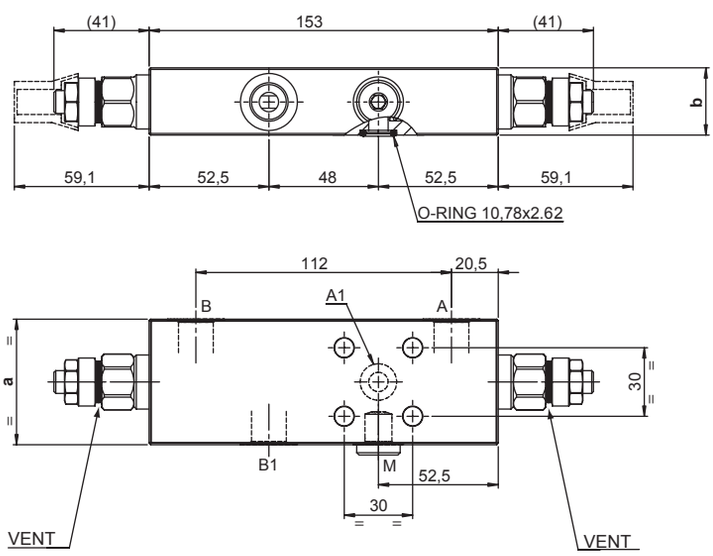
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

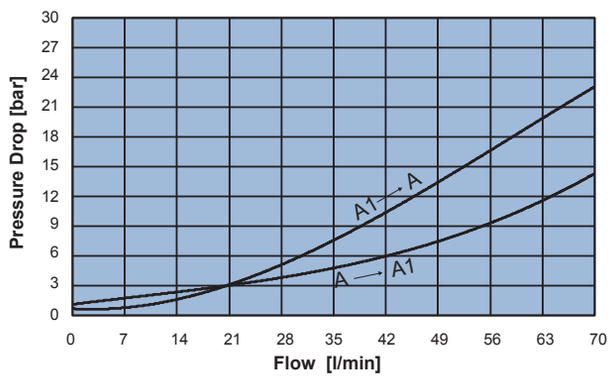
PORTS	03	04
A,B,A1,B1	G 3/8”	G 1/2”

DOUBLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 30x30

- Flow. . . . . .**70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief Compensated**
- Weight G 3/8”. . . . . .**1,9 Kg**
- Weight G 1/2” . . . . . **2,6 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 3 6 1 S ☐ ☐ S ☐ 0 0

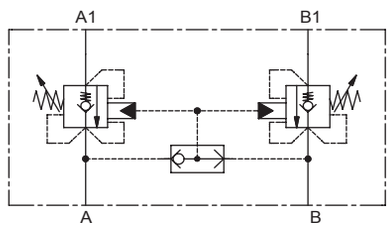
PILOT RATIO	
40	**4:1**

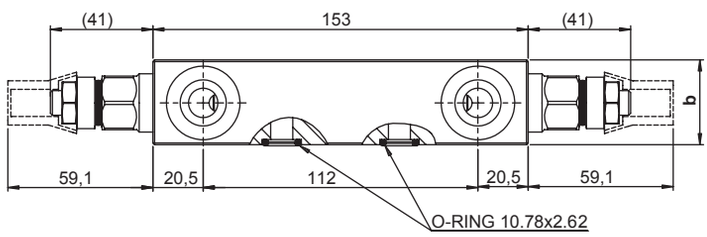
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

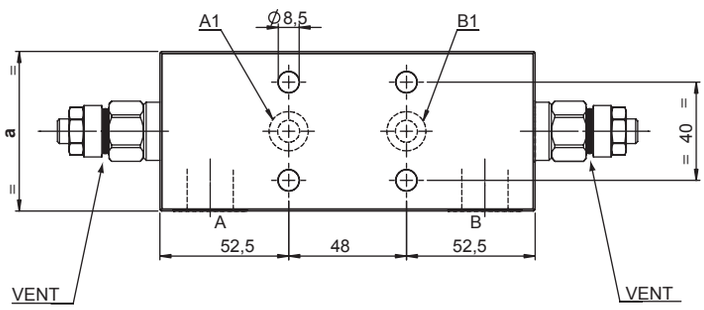
PORTS	03	04
A,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

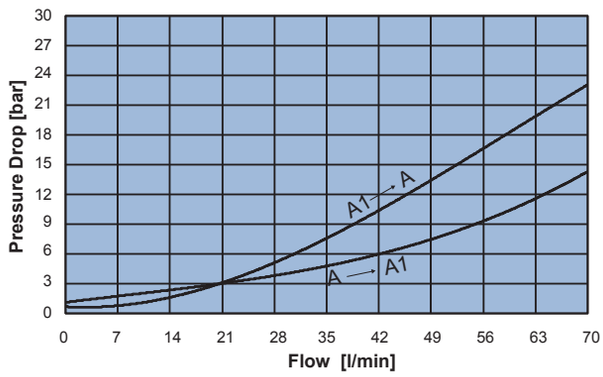
DOUBLE ACTING RELIEF COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 40x48

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Relief Compensated**
- Weight G 3/8”. . . . . **1,9 Kg**
- Weight G 1/2” . . . . . **2,6 Kg**
- Tamper proof cap. . . . . **cod. 4029250280**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 3 6 2 S ☐ ☐ S ☐ 0 0

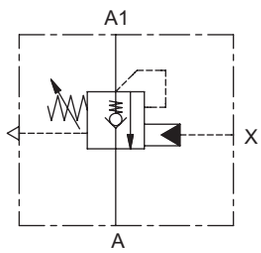
PILOT RATIO	
40	**4:1**

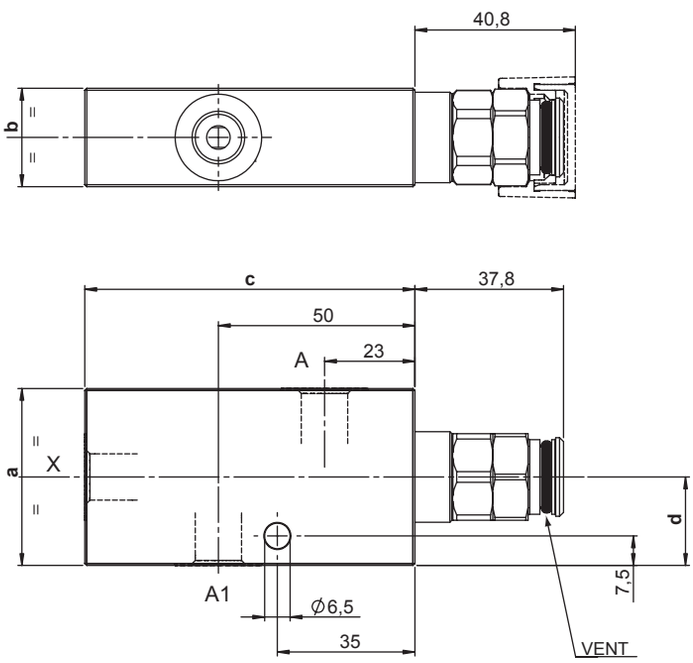
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	93	170
Standard setting 4 l/min [bar]	200	350

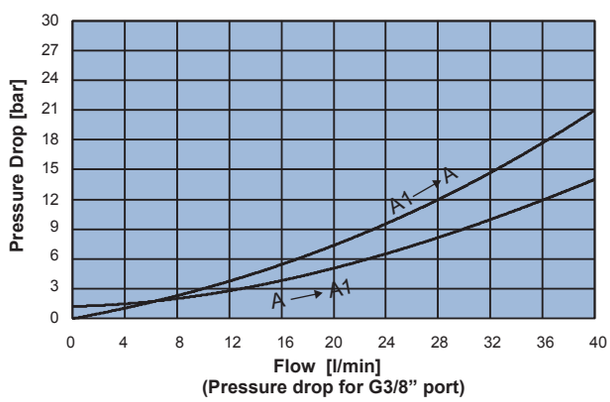
PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 9	Ø 9

SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/4”. . . . . .**0,75 Kg**
- Weight G 3/8” . . . . . .**1 Kg**
- Tamper proof cap. . . . . .**cod. 9021030190**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d
02	45	25	84	22,5
03	50	30	90	25

Ordering code

H 3 0 0 1 C ☐ ☐ S ☐ 0 0

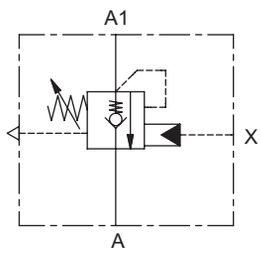
PILOT RATIO	
40	**4:1**

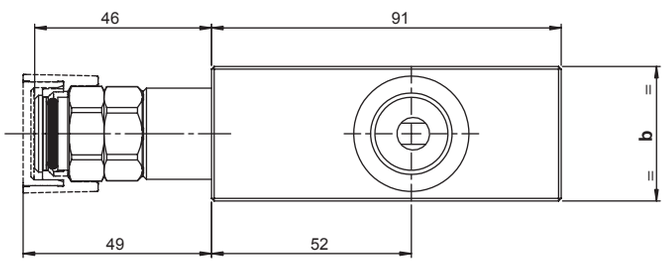
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

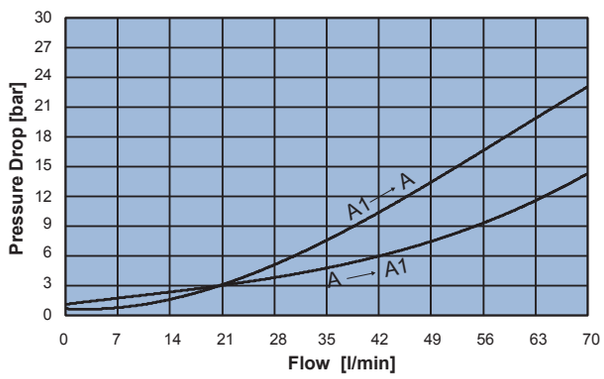
PORTS	02	03
A,A1,X	G 1/4”	G 3/8”

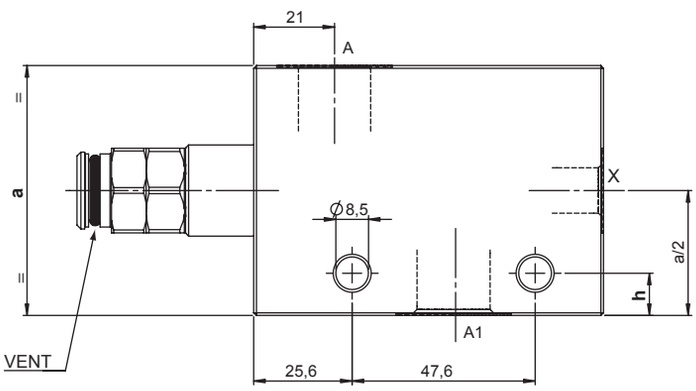
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 3/8”. . . . . **1,25 Kg**
- Weight G 1/2” . . . . . **1,55 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	h
03	55	30	7
04	65	35	11

Ordering code

H 5 0 0 1 C ☐ ☐ S ☐ 0 0

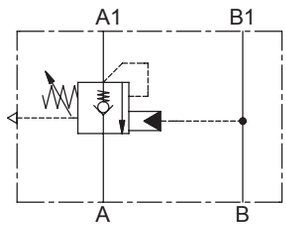
PILOT RATIO	
40	**4:1**
90	**9:1**

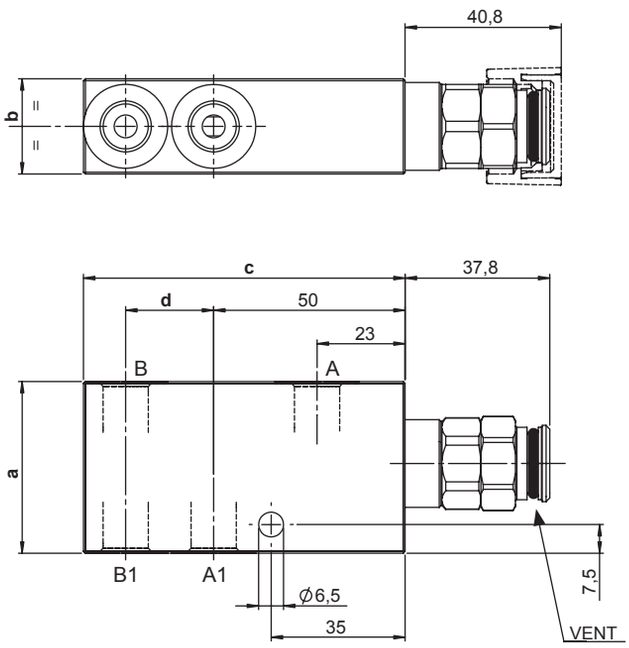
SPRINGS	rp 4:1		rp 9:1	
	2	**3**	**2**	**3**
Setting range min.-max. [bar]	60 - 210	120 - 350	80 - 250	190 - 350
Pressure Increase [bar/turn]	62	114	50	121
Standard setting 4 l/min [bar]	200	350	200	350

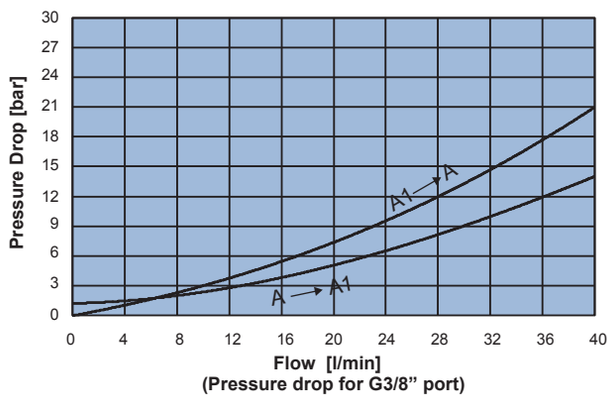
PORTS	03	04
A,A1	G 3/8”	G 1/2”
X	G 1/4”	G 1/4”

SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/4”. . . . . .**0,75 Kg**
- Weight G 3/8” . . . . . .**1 Kg**
- Tamper proof cap. . . . . .**cod. 9021030190**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d
02	45	25	84	23
03	50	30	95	30

Ordering code

H 3 0 0 4 C ☐ ☐ S ☐ 0 0

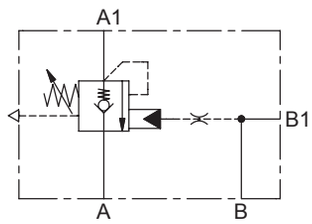
PILOT RATIO	
40	**4:1**

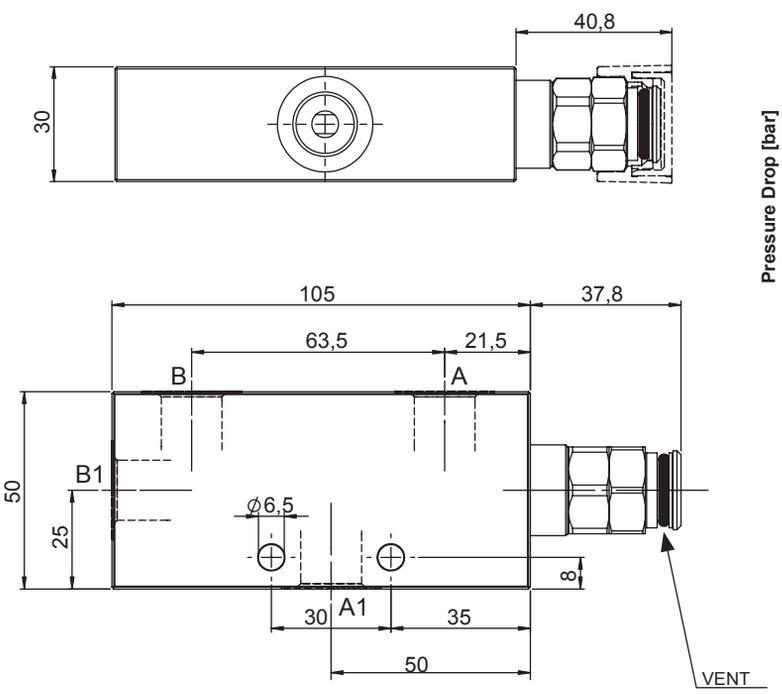
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

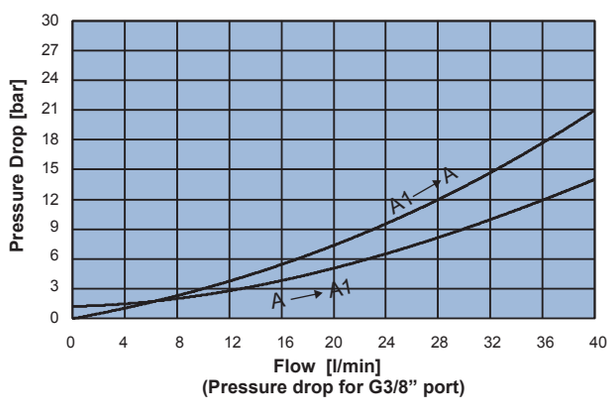
PORTS	02	03
A,B,A1,B1	G 1/4”	G 3/8”

SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight. . . . . .**0,75 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

Ordering code

H 3 0 0 4 C ☐ ☐ S ☐ 0 0

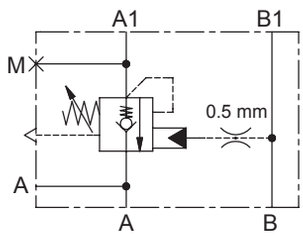
PILOT RATIO	
41	**4:1+dia.0,5mm**

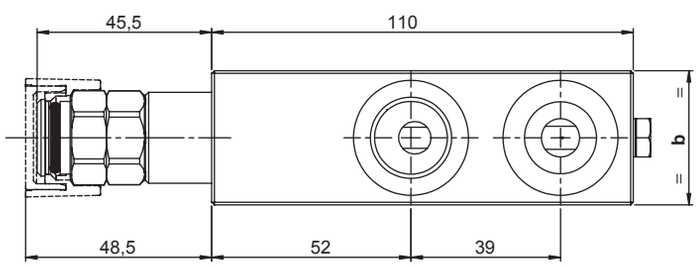
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

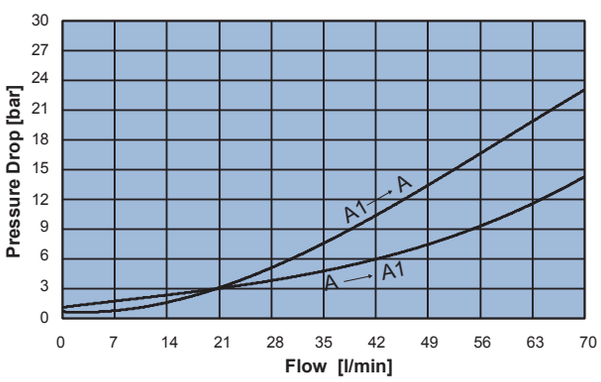
PORTS	03
A,B,A1,B1	G 3/8"

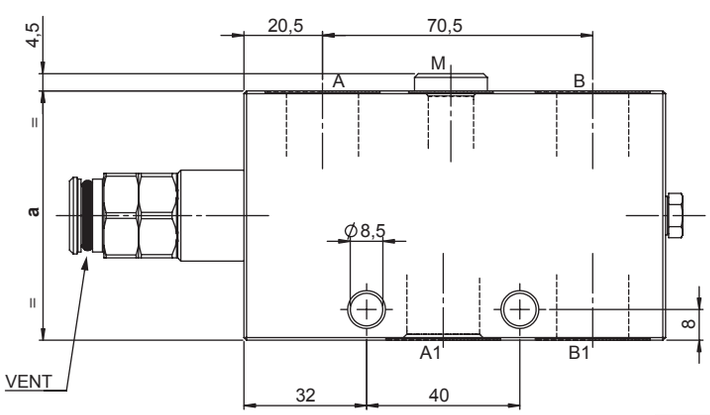
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 3/8”. . . . . **1,35 Kg**
- Weight G 1/2” . . . . . **1,8 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b
03	55	30
04	65	35

Ordering code

H 5 0 0 4 C [ ] [ ] S [ ] 0 0

PILOT RATIO	
40	**4:1**

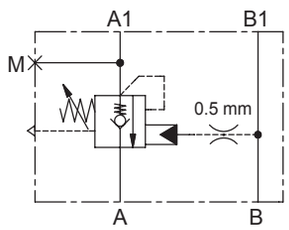
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,A1,B,B1	G 3/8”	G 1/2”
M	G 1/4”	G 1/4”

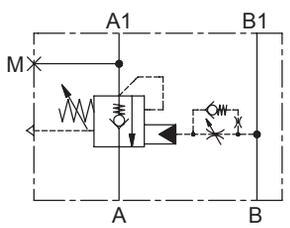
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

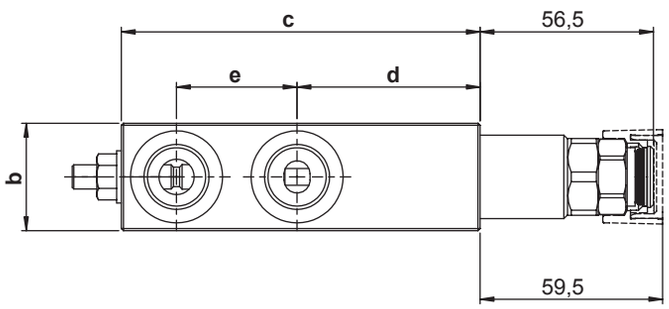
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **2 Kg**
- Weight G 3/4” . . . . . **2,6 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

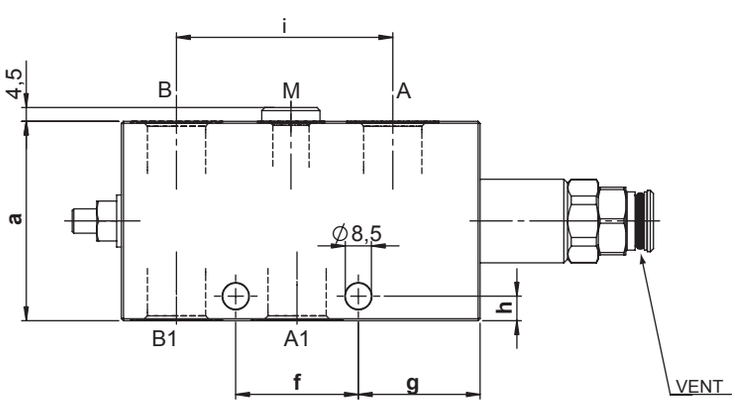
SCHEME 40 - 90

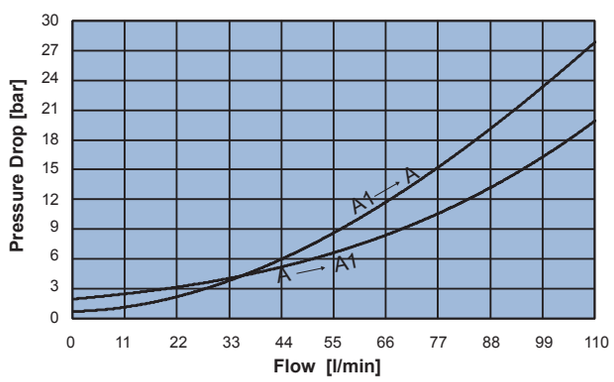


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e	f	g	h	i
04	65	35	117	59,7	39.3	40	39,7	8	70.5
05	70	40	130	60	47	47.6	36	11	78

Ordering code

H 1 0 0 4 C ☐ ☐ S ☐ 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

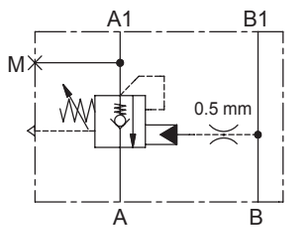
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	04	05
A,A1,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”

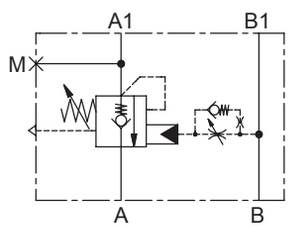
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

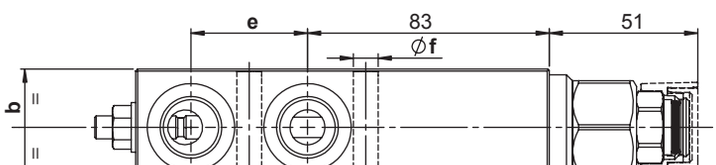
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **3 Kg**
- Weight G 3/4” . . . . . **3,4 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

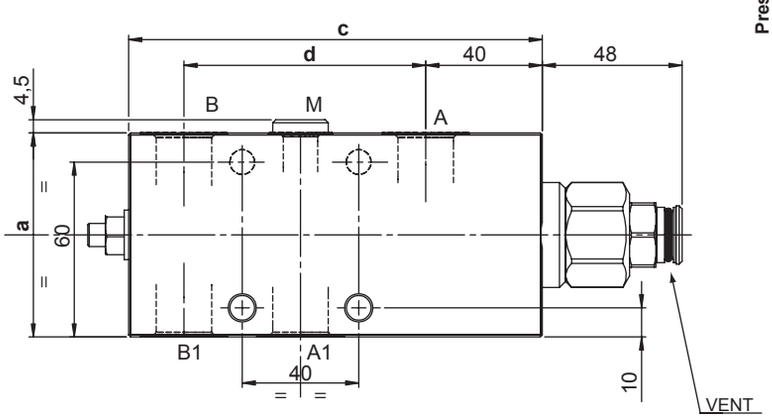
SCHEME 40 - 80

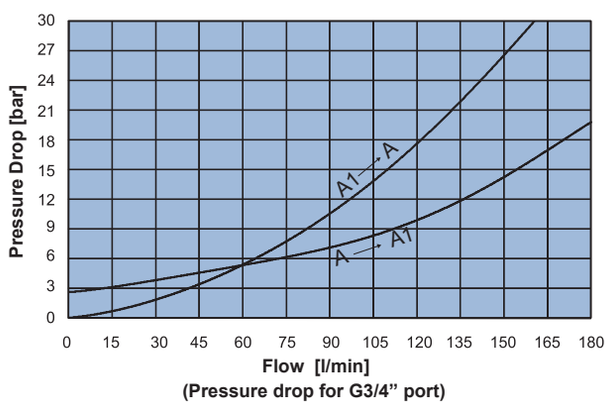


SCHEME 42 - 82









(Pressure drop for G3/4” port)

Note:

- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e	f
04	70	40	142	83	40	8,5
05	80	40	147	86	43	10,5

Ordering code

H 1 5 0 4 C ☐ ☐ S ☐ 0 0

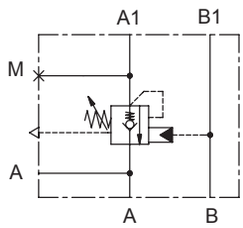
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

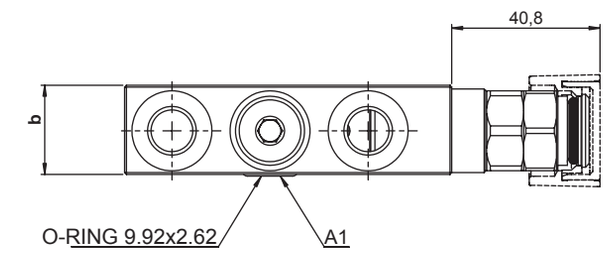
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

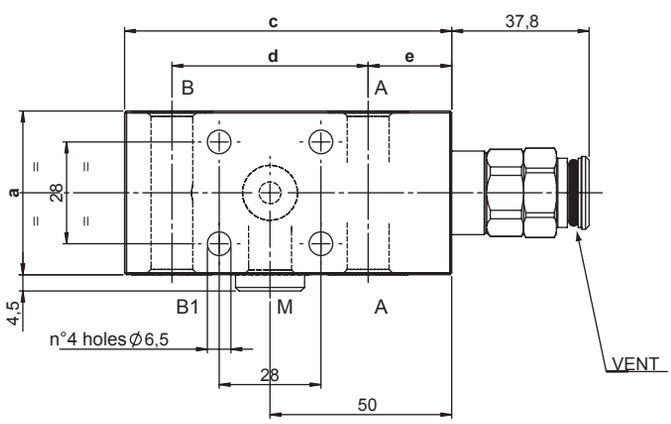
PORTS	04	05
A,A1,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”

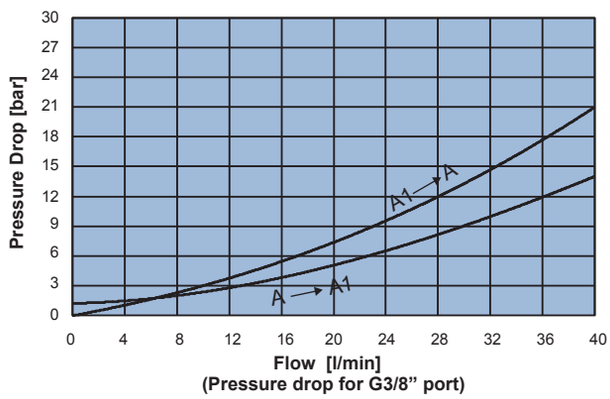
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/4”. . . . . **0,75 Kg**
- Weight G 3/8” . . . . . **0,9 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e
02	45	24,5	90	54	23
03	50	29,5	95	59	21

Ordering code

H 3 0 0 5 C ☐ ☐ S ☐ 0 0

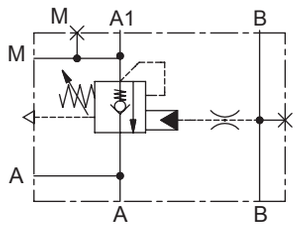
PILOT RATIO	
40	**4:1**

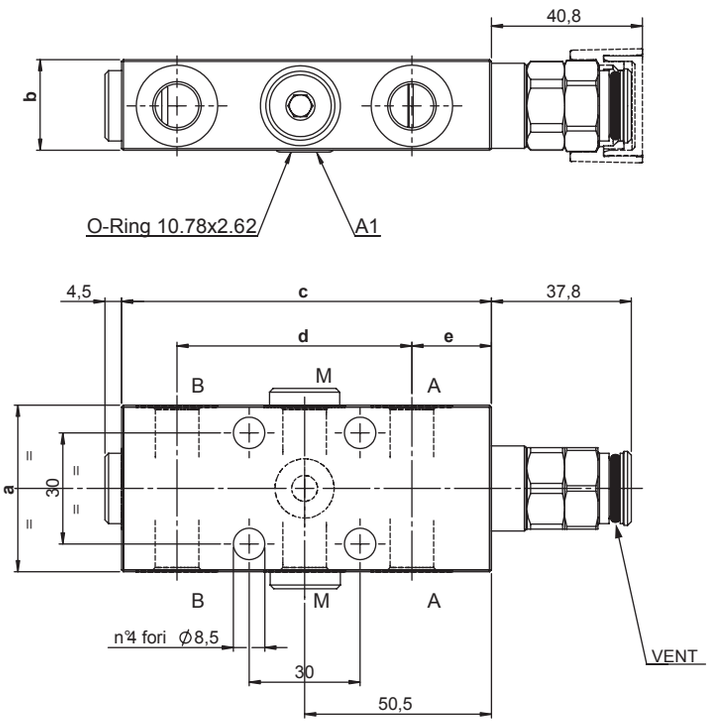
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

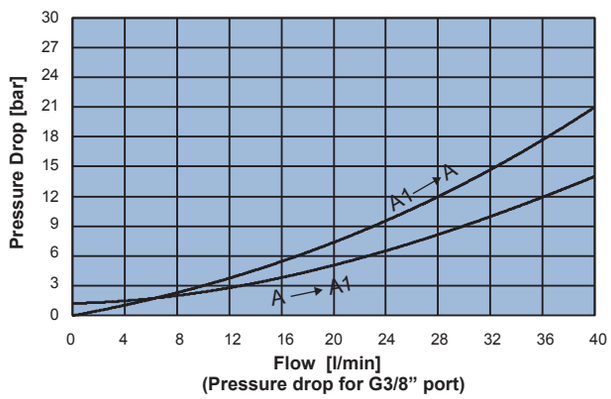
PORTS	02	03
A,B,B1	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 30x30

- Flow. . . . . .**40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/4”. . . . . .**0,8 Kg**
- Weight G 3/8” . . . . . **0,9 Kg**
- Tamper proof cap. . . . . .**cod. 9021030190**







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e
02	45	24,5	100	63,5	21,5
03	50	29,5	100	66	19,5

Ordering code

H 3 0 0 7 C ☐ ☐ S ☐ 0 0

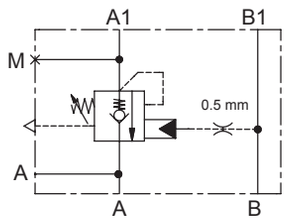
PILOT RATIO	
40	**4:1**

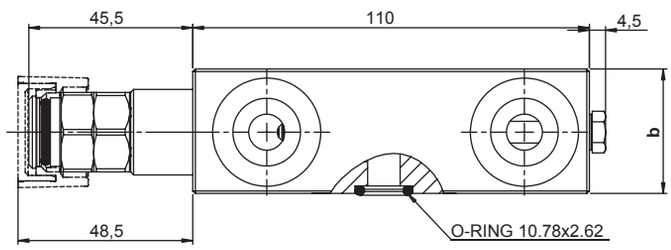
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

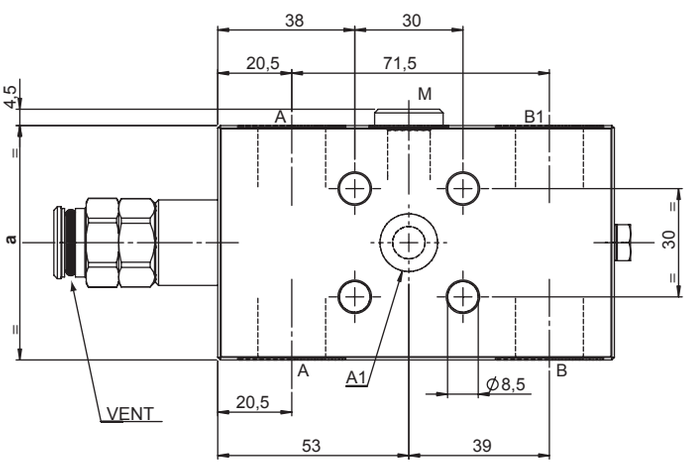
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

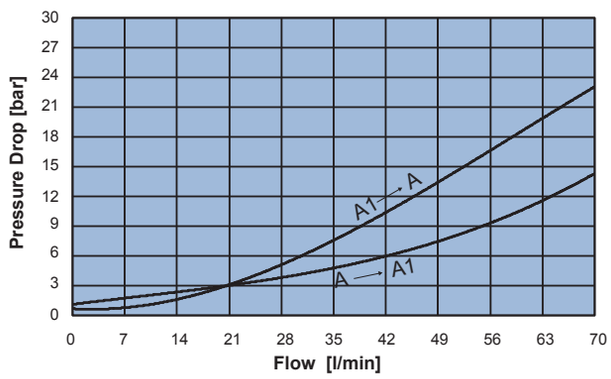
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 30x30

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 3/8”. . . . . **1,3 Kg**
- Weight G 1/2” . . . . . **1,75 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 0 5 C ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

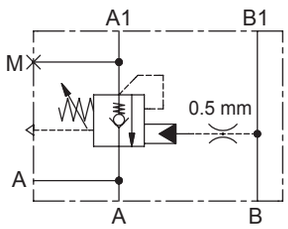
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B,B1	G 3/8”	G 1/2”
A1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

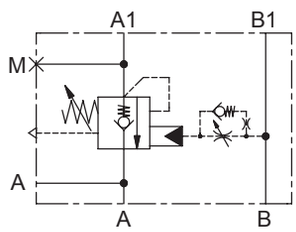
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED fxh

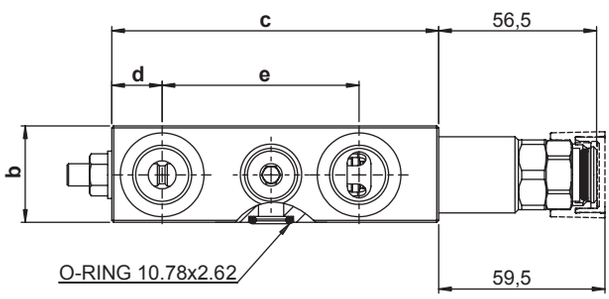
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **1,9 Kg**
- Weight G 3/4” . . . . . **2,85 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

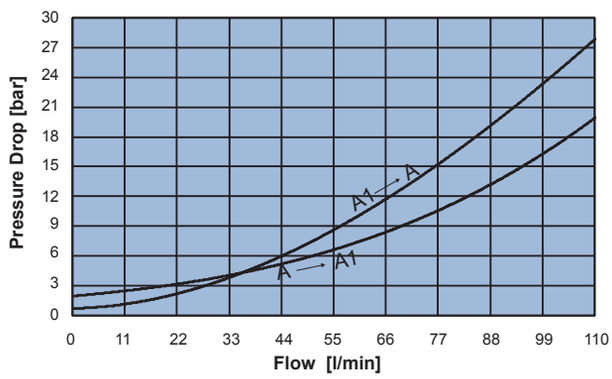
SCHEME 40 - 90

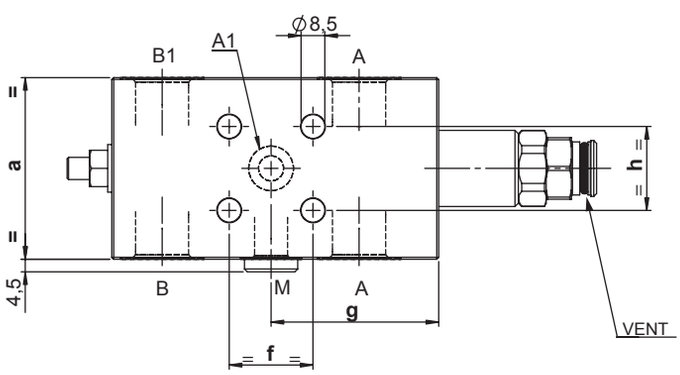


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e	f	g	h
04	65	34,5	117	26,5	72,5	30	45	30

Ordering code

H 1 0 0 5 C ☐ ☐ S ☐ 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

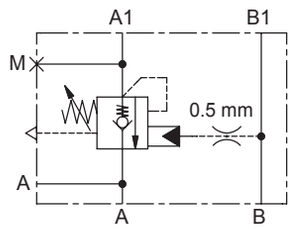
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	04
A,B,B1	G 1/2”
A1	Ø 9
M	G 1/4”

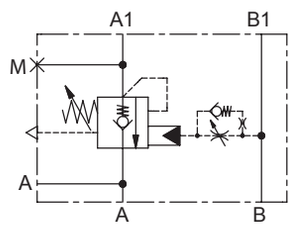
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED 40x40

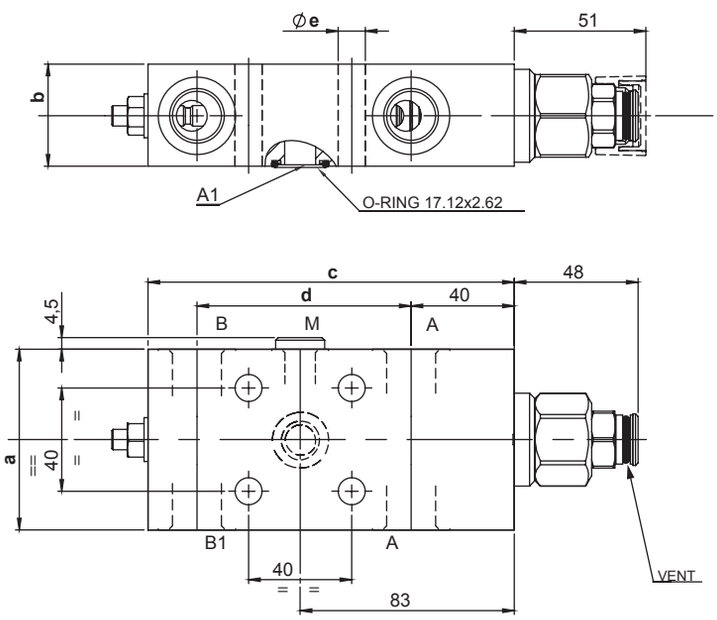
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **2,9 Kg**
- Weight G 3/4” . . . . . **3,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

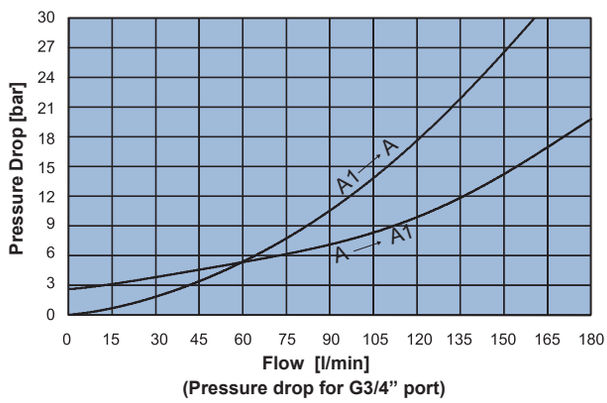
SCHEME 40 - 80



SCHEME 42 - 82







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e
04	70	39,5	142	83	10,5
05	80	39,5	147	86	10,5

Ordering code

H 1 5 0 5 C ☐ ☐ S ☐ 0 0

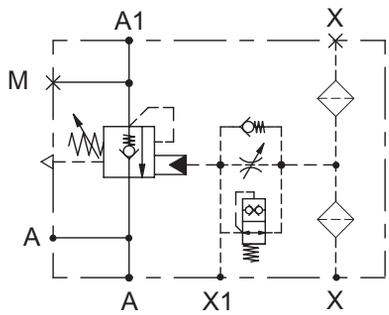
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

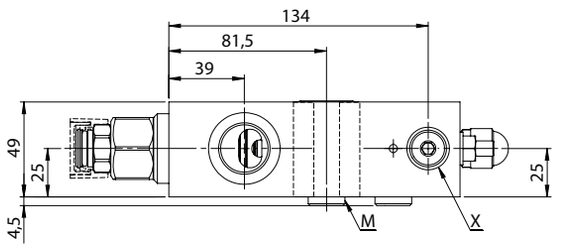
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

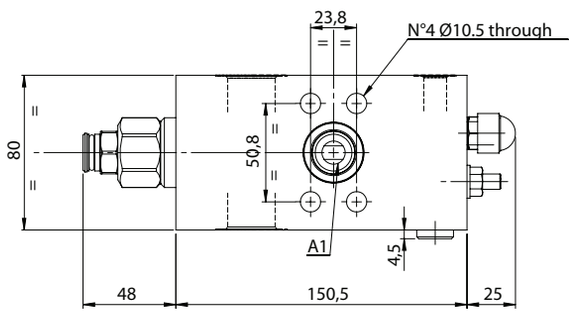
PORTS	04	05
A,B,B1	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1	Ø 12	Ø 12

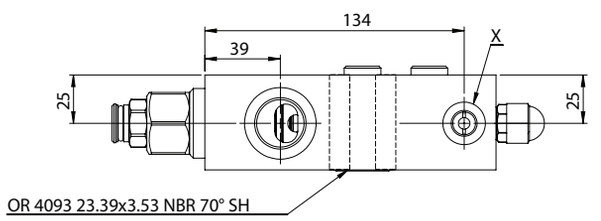
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1 FLANGED

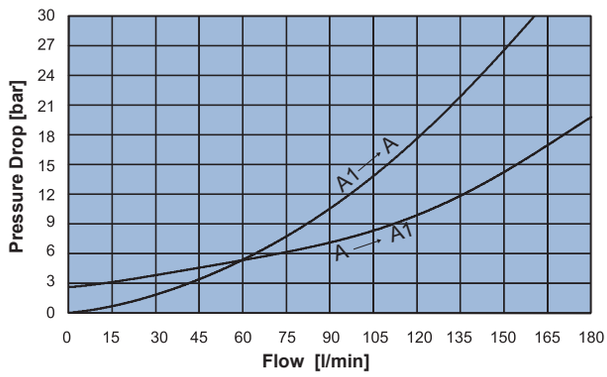
- Flow. . . . . 180 l/min
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight . . . . . **4,4 Kg**
- Tamper proof cap . . . . . **cod. 9021030190**











Note:

- Pressure setting must be 30% higher than pressure induced by the load.

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

- Damped pilot signal with by-pass to ensure stability and fast response time regarding oil viscosity.

PATENTED

Ordering code

H 1 5 0 2 C ☐ ☐ S ☐ 0 0

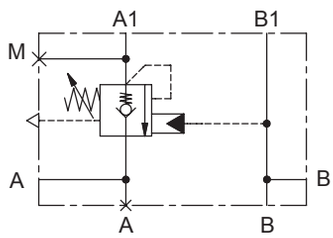
PILOT RATIO	
55	**4:1**
85	**8:1**

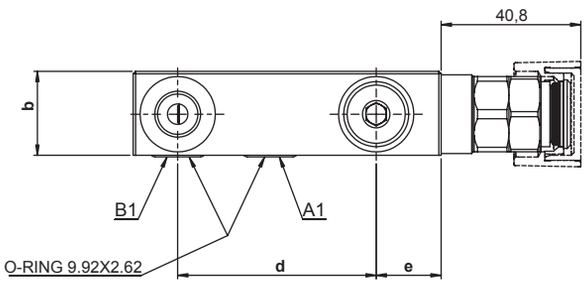
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

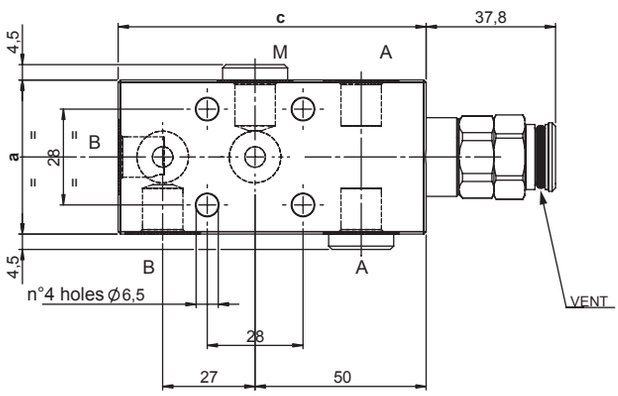
PORTS	65
A	G 3/4“
A1	3/4“ SAE 6000
X	G 1/4“

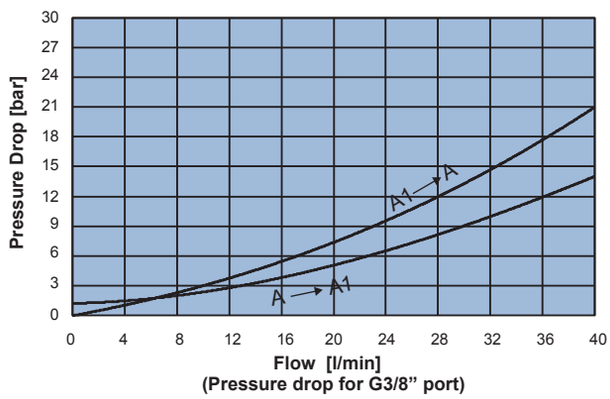
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/4”. . . . . **0,8 Kg**
- Weight G 3/8” . . . . . **1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e
02	45	24,5	90	58	19
03	50	29,5	95	59	21

Ordering code

H 3 0 0 6 C ☐ ☐ S ☐ 0 0

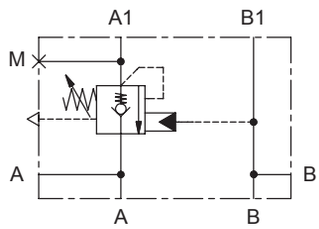
PILOT RATIO	
40	**4:1**

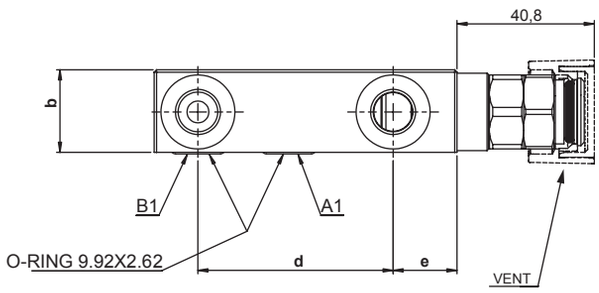
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

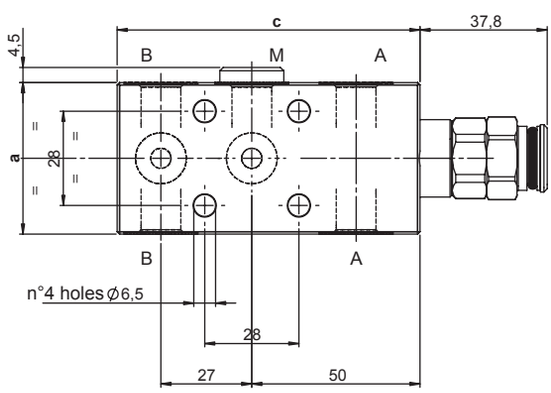
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

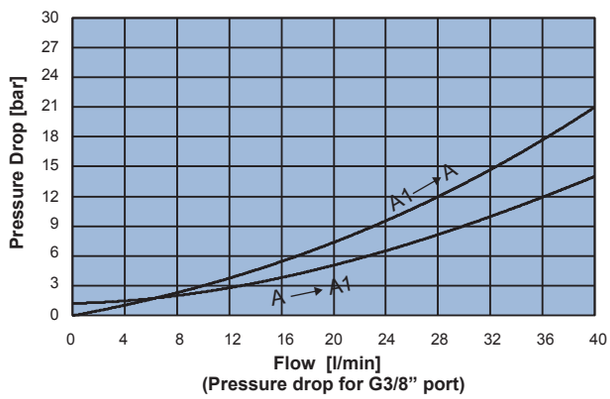
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 28x28

- Flow. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **0,75 Kg**
- Weight G 3/4” . . . . . **0,9 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e
02	45	24,5	90	58	19
03	50	29,5	95	59	21

Ordering code

H 3 0 0 8 C [ ] [ ] S [ ] 0 0

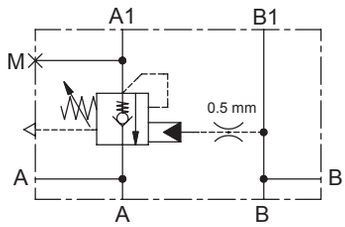
PILOT RATIO	
40	**4:1**

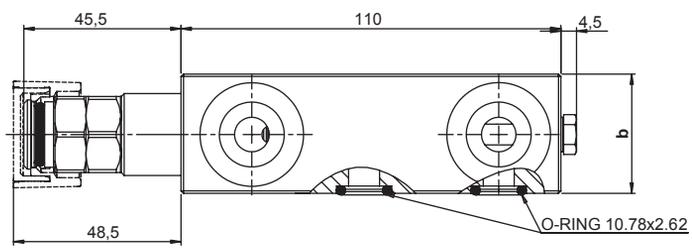
SPRINGS	2	3
Setting range min.-max. [bar]	80 - 210	150 - 350
Pressure Increase [bar/turn]	41	100
Standard setting 4 l/min [bar]	200	350

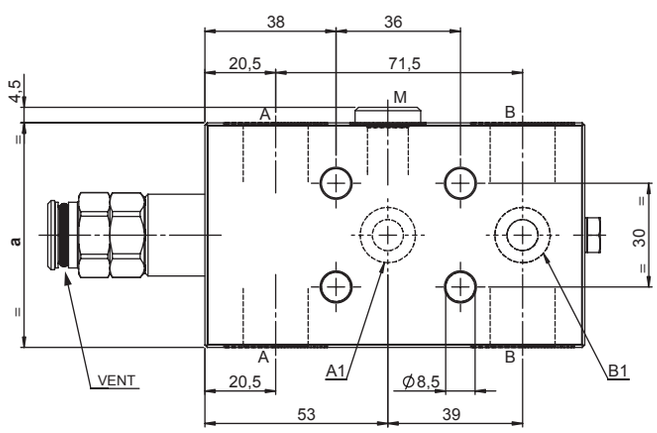
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 6	Ø 6
M	G 1/4”	G 1/4”

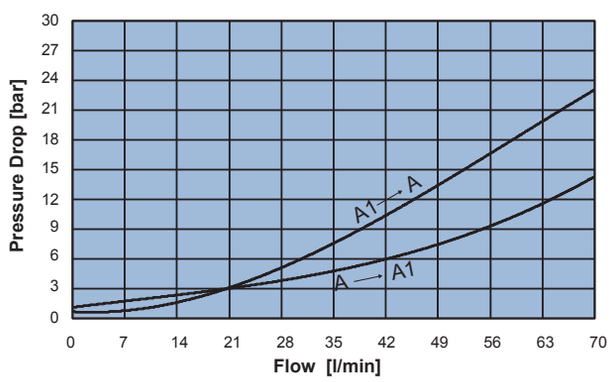
SINGLE ACTING COUNTERBALANCE VALVE FLANGED 30x36

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 3/8”. . . . . **1,5 Kg**
- Weight G 1/2” . . . . . **1,7 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b
03	55	29,5
04	65	34,5

Ordering code

H 5 0 0 6 C ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

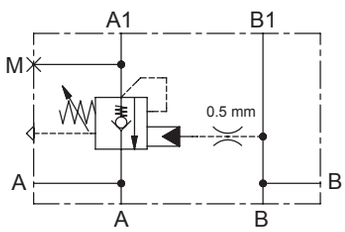
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 9	Ø 9
M	G 1/4”	G 1/4”

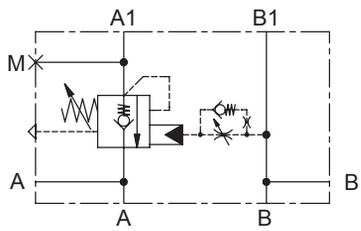
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED fxh

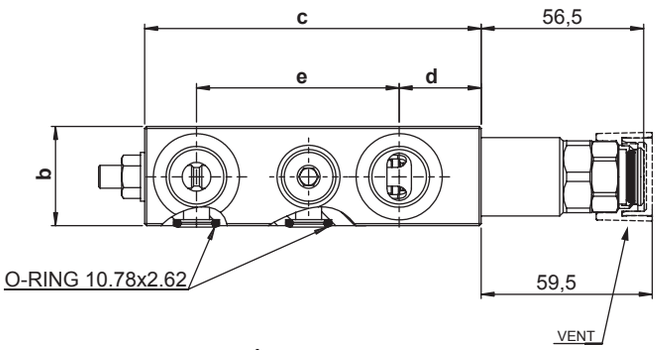
- Flow. . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **1,9 Kg**
- Weight G 3/4” . . . . . **2,2 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

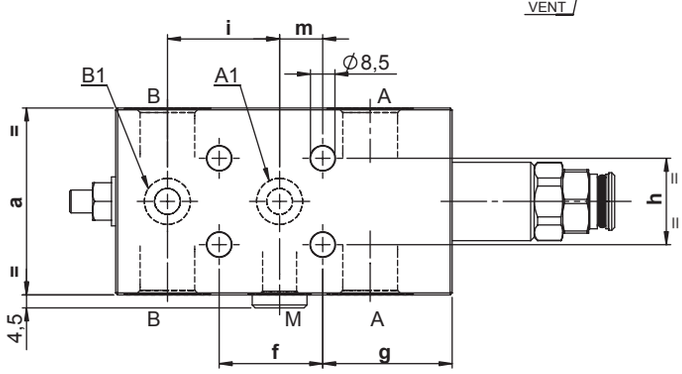
SCHEME 40 - 90

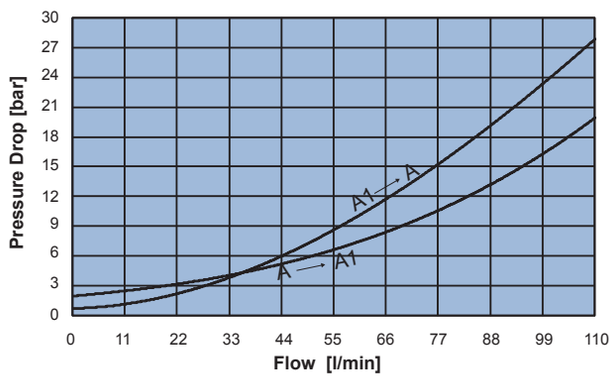


SCHEME 42 - 92









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e	f	g	h	i	m
04	65	34,5	117	28,5	70,5	36	45	30	39	15

Ordering code

H 1 0 0 6 C [ ] [ ] S [ ] 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
90	**9:1**	
92	**9:1**	ADJUSTABLE DUMP SCREW

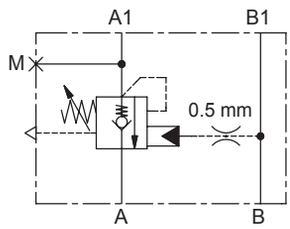
SPRINGS	rp 4:1		rp 9:1
	2	**4**	**4**
Setting range min.-max. [bar]	60 - 210	120 - 410	150 - 410
Pressure Increase [bar/turn]	52	85	100
Standard setting 4 l/min [bar]	200	350	350

PORTS	04
A,B	G 1/2”
A1,B1	Ø 9
M	G 1/4”

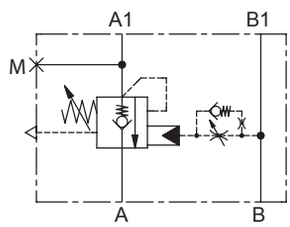
SINGLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 40x40

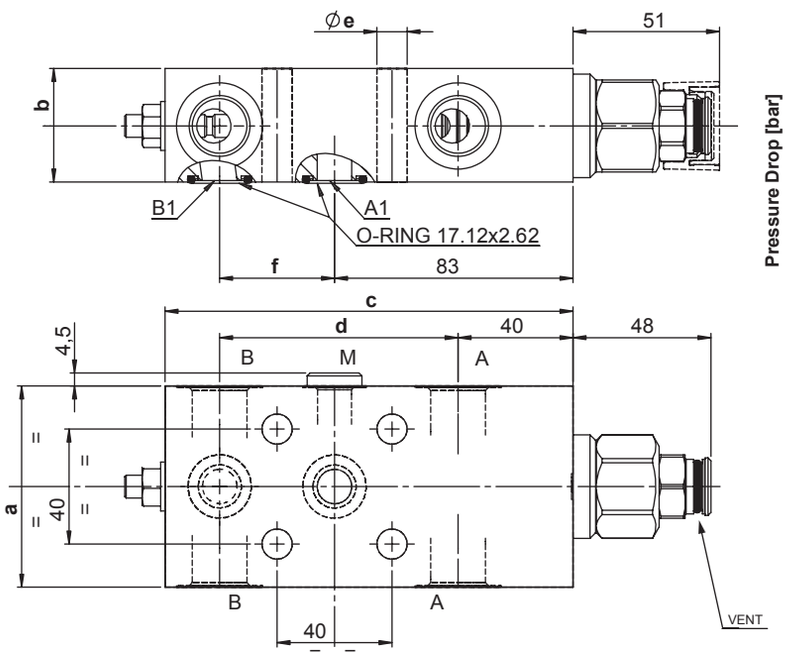
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **2,9 Kg**
- Weight G 3/4” . . . . . **3,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

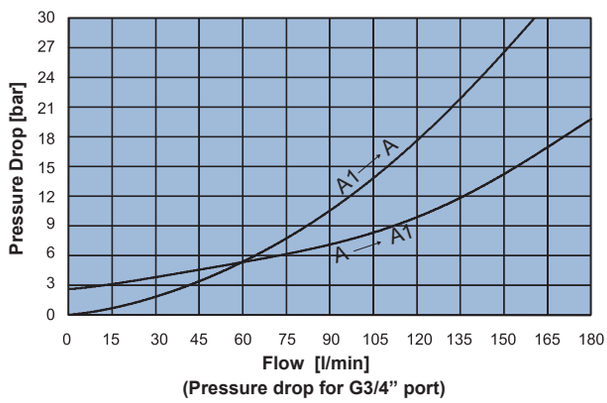
SCHEME 40 - 80



SCHEME 42 - 82







(Pressure drop for G3/4” port)

Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a	b	c	d	e	f
04	70	39,5	142	83	10,5	40
05	80	39,5	147	86	10,5	43

Ordering code

H 1 5 0 6 C [ ] [ ] S [ ] 0 0

PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

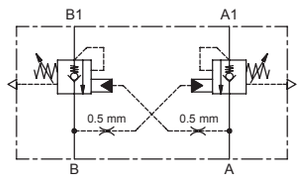
SPRINGS	4:1		8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

PORTS	04	05
A,B	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1,A2	Ø 12	Ø 12

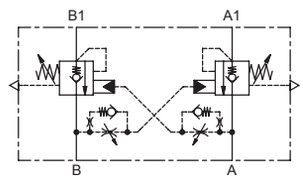
DOUBLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE

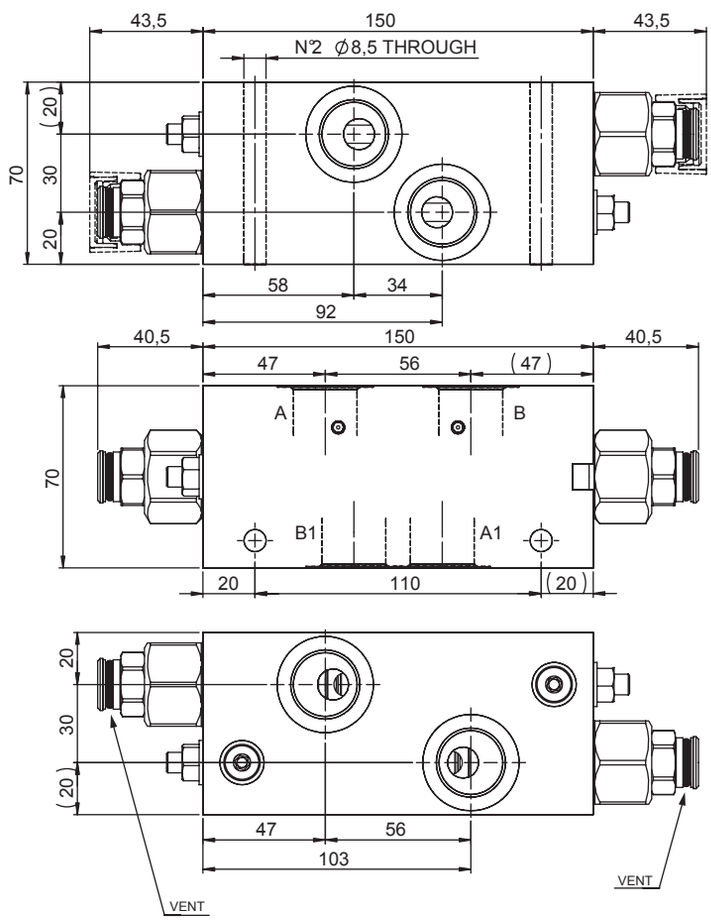
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight. . . . . **5,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

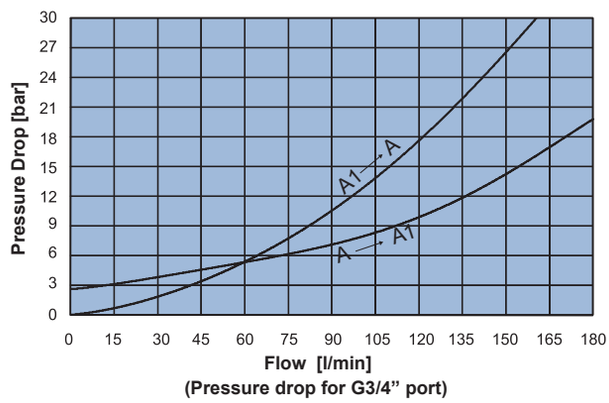
SCHEME 40 - 80



SCHEME 42 - 82







Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

Ordering code

H 1 5 3 0 C ☐ ☐ S ☐ 0 0

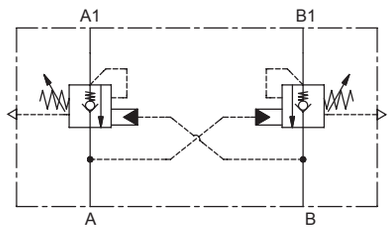
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

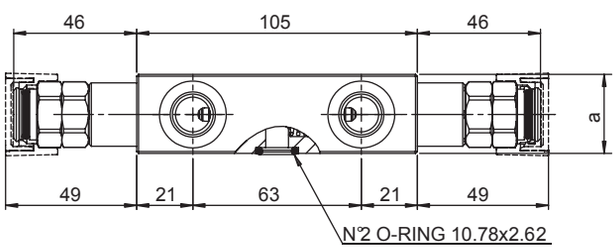
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

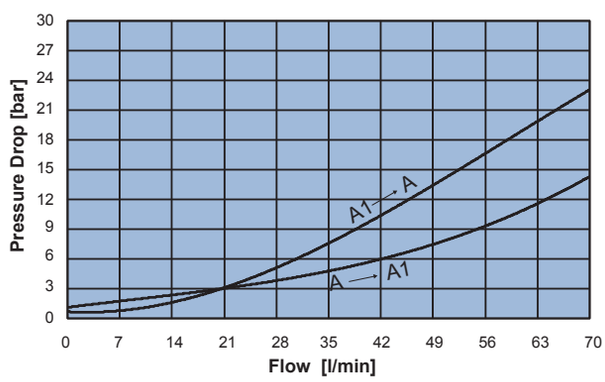
PORTS	05
A,A1,B,B1	G 3/4"

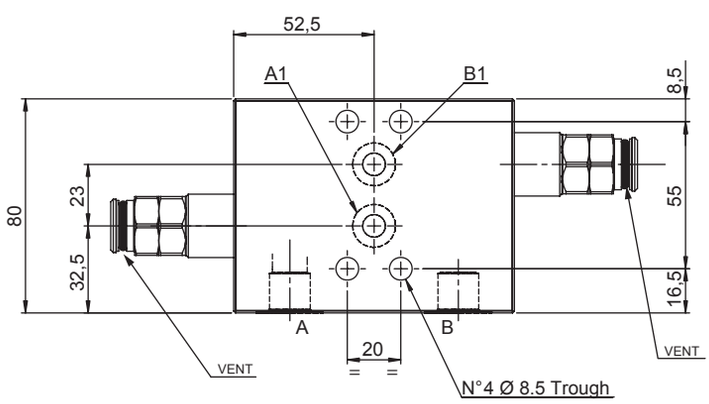
DOUBLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 20x55

- Flow. . . . . **70 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 3/8”. . . . . **1,9 Kg**
- Weight G 1/2” . . . . . **2,2 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Note:
- Pressure setting must be 30% higher than pressure induced by the load.

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

	a
03	29.5
04	34.5

Ordering code

H 5 0 3 2 C ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	**4:1**

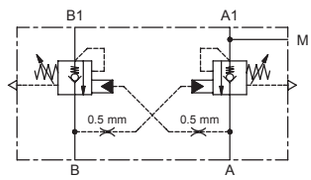
SPRINGS	2	3
Setting range min.-max. [bar]	60 - 210	120 - 350
Pressure Increase [bar/turn]	62	114
Standard setting 4 l/min [bar]	200	350

PORTS	03	04
A,B	G 3/8”	G 1/2”
A1,B1	Ø 8.5	Ø 8.5

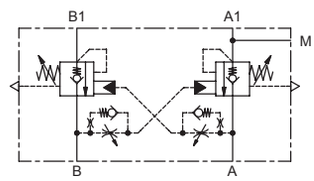
DOUBLE ACTING FULLY COMPENSATED COUNTERBALANCE VALVE - A1/B1 FLANGED 35x72

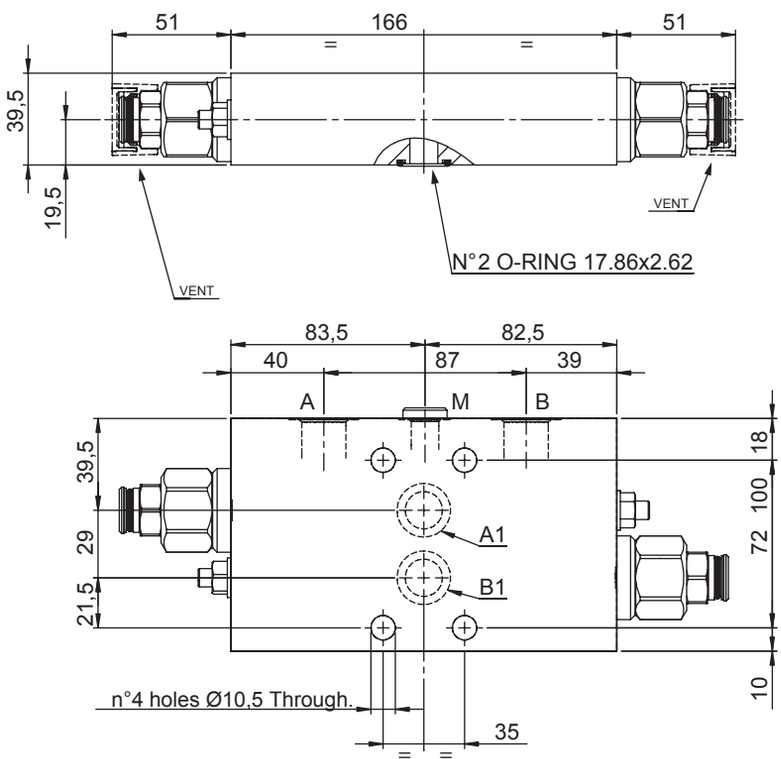
- Flow. . . . . **180 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight G 1/2”. . . . . **5,1 Kg**
- Weight G 3/4” . . . . . **5,1 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**

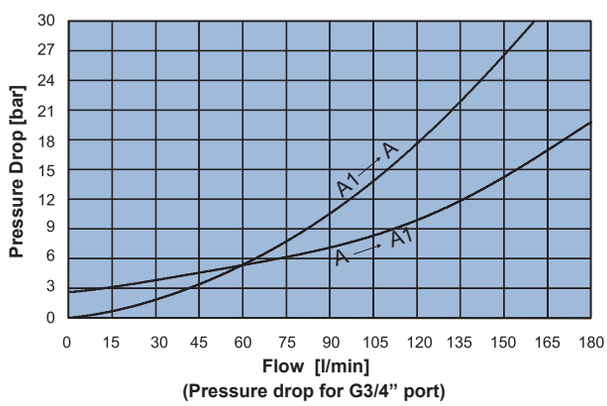
SCHEME 40 - 80



SCHEME 42 - 82







(Pressure drop for G3/4” port)

Note:

- Pressure setting must be 30% higher than pressure induced by the load.

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

Ordering code

H 1 5 3 2 C ☐ ☐ S ☐ 0 0

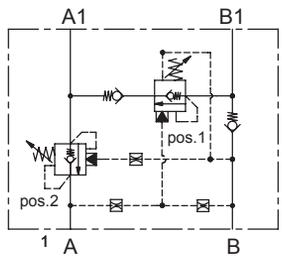
PILOT RATIO		
40	**4:1**	
42	**4:1**	ADJUSTABLE DUMP SCREW
80	**8:1**	
82	**8:1**	ADJUSTABLE DUMP SCREW

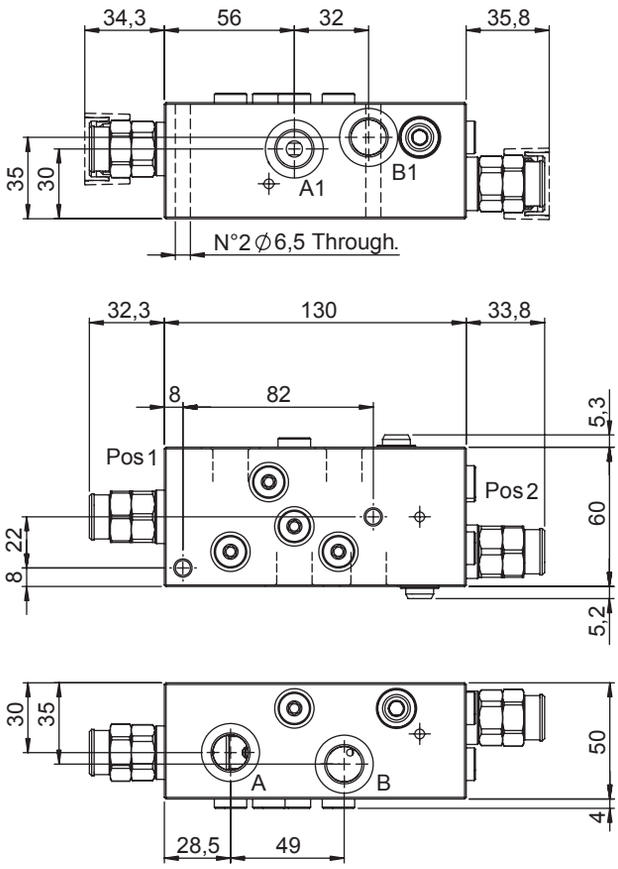
SPRINGS	rp 4:1		rp 8:1
	2	**4**	**4**
Setting range min.-max. [bar]	80 - 210	80 - 410	140 - 410
Pressure Increase [bar/turn]	40	72	72
Standard setting 4 l/min [bar]	200	350	350

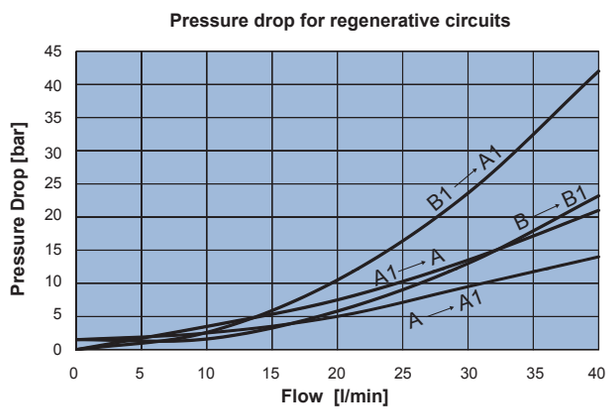
PORTS	04	05
A,B	G 1/2”	G 3/4”
M	G 1/4”	G 1/4”
A1,A2	Ø 12	Ø 12

DOUBLE ACTING COUNTERBALANCE VALVE FOR REGENERATIVE CIRCUITS

- Flow on Ports A/A1. . . . . **40 l/min**
- Flow on Ports B1/A1. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Weight. . . . . **2,9 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Ordering code

H 3 0 8 0 N ☐ ☐ S ☐ 0 0

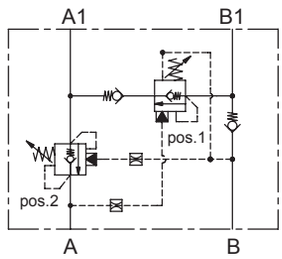
PILOT RATIO	
41	4:1+PBO dia 0.5

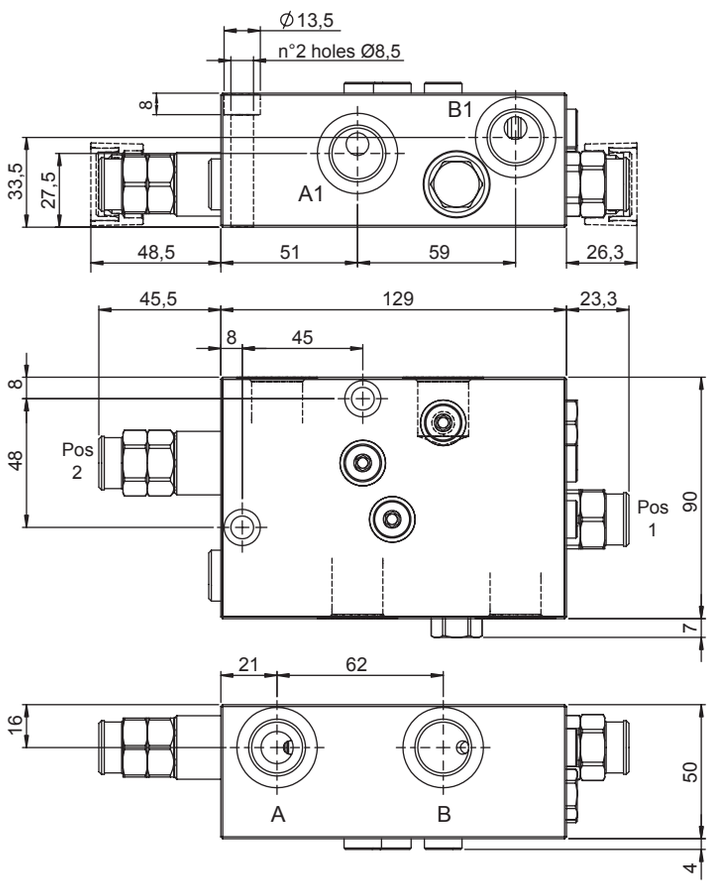
SPRINGS	3
	pos.1 pos.2
Setting range min.-max. [bar]	150 - 430
Pressure Increase [bar/turn]	100
Standard setting 4 l/min [bar]	350

PORTS	03
A,B,A1,B1	G 3/8”

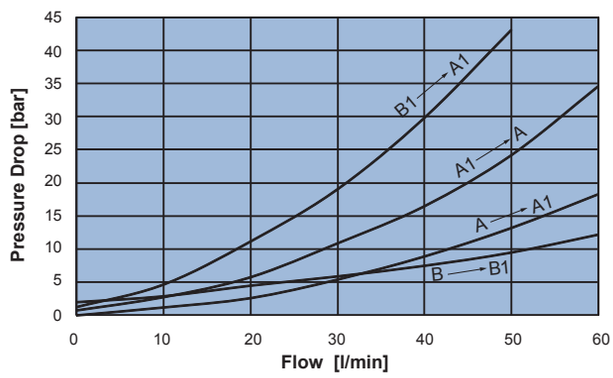
DOUBLE ACTING COUNTERBALANCE VALVE FOR REGENERATIVE CIRCUITS

- Flow on Ports A/A1. . . . . **70 l/min**
- Flow on Ports B1/A1. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Weight. . . . . **4,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**





Pressure drop for regenerative circuits



Note:
- *Available also G3/8" version with the damping screw for pos.1 (NEM code H3080N423S0300)*

Ordering code

H 3 0 8 0 N □ □ S □ 0 0

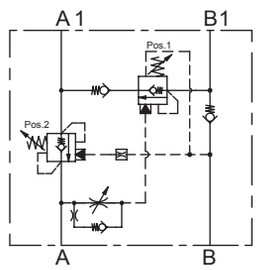
PILOT RATIO	
40	4:1 Pos 1
	4:1 Pos 2

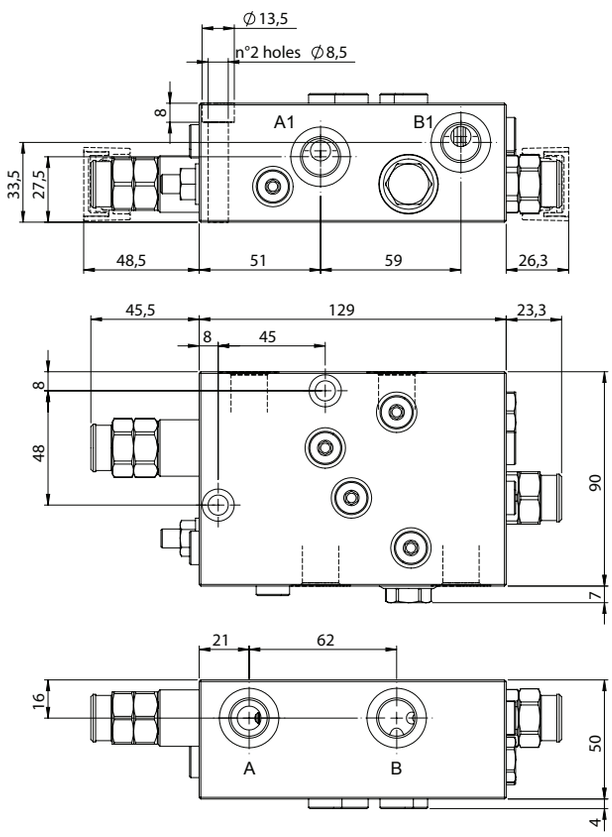
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	150 - 430	120 - 350
Pressure Increase [bar/turn]	100	114
Standard setting 4 l/min [bar]	430	210

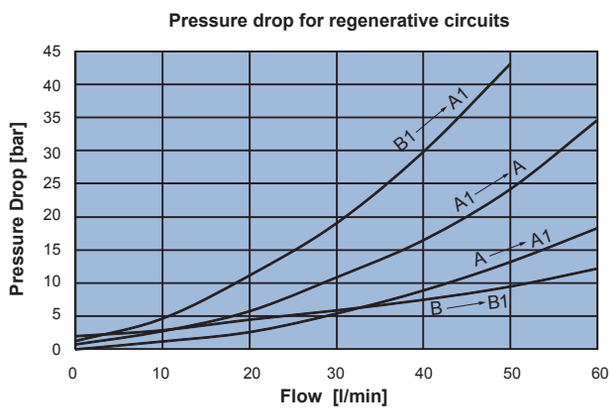
PORTS	04
A,B,A1,B1	G 1/2"

DOUBLE ACTING COUNTERBALANCE VALVE FOR REGENERATIVE CIRCUITS

- Flow on Ports A/A1. . . . . **70 l/min**
- Flow on Ports B1/A1. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Weight. . . . . **4,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Note:
- Available also G1/2" version without the damping screw for pos.1 (NEM code H3080N403S0400)

Ordering code

H 3 0 8 0 N ☐ ☐ S ☐ 0 0

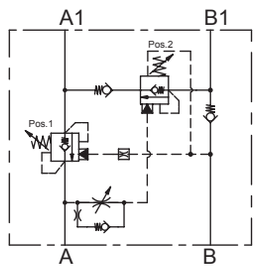
PILOT RATIO	
42	4:1 ADJUSTABLE DUMP SCREW

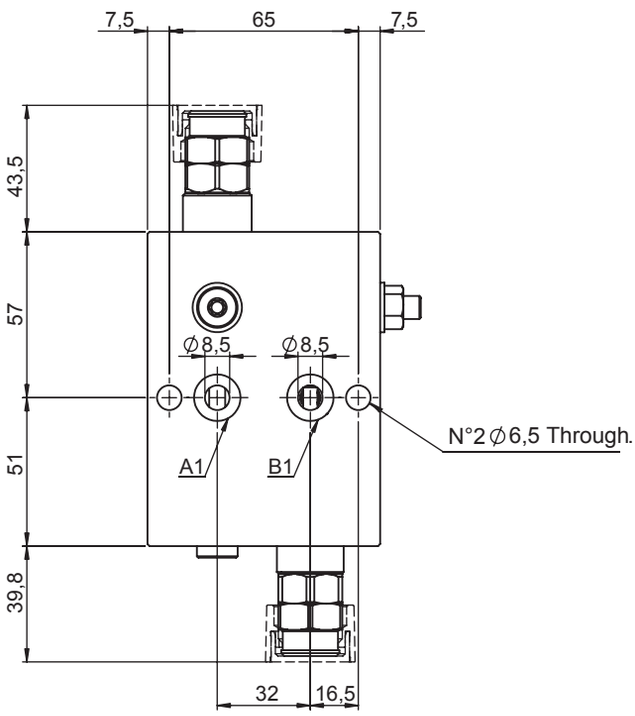
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	150 - 430	120 - 350
Pressure Increase [bar/turn]	100	114
Standard setting 4 l/min [bar]	430	210

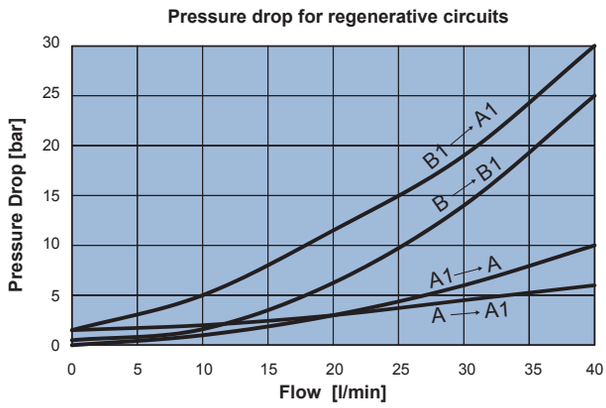
PORTS	03
A,B,A1,B1	G 3/8"

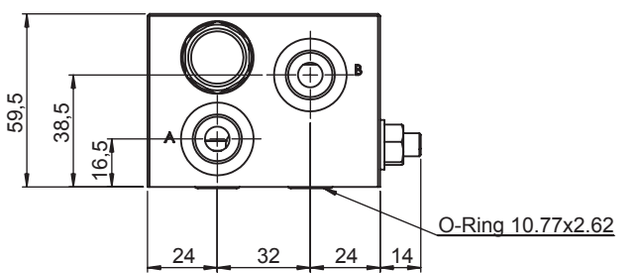
DOUBLE ACTING COUNTERBALANCE VALVE FOR REGENERATIVE CIRCUITS - A1/B1 FLANGED

- Flow on Ports A/A1. . . . . **40 l/min**
- Flow on Ports B1/A1. . . . . **40 l/min**
- Max working pressure. . . . . **350 bar**
- Weight. . . . . **3,9 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**









Ordering code

H 3 0 8 1 N ☐ ☐ S ☐ 0 0

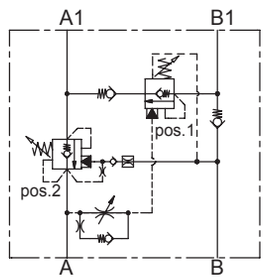
PILOT RATIO		
42	**4:1**	ADJUSTABLE DUMP SCREW

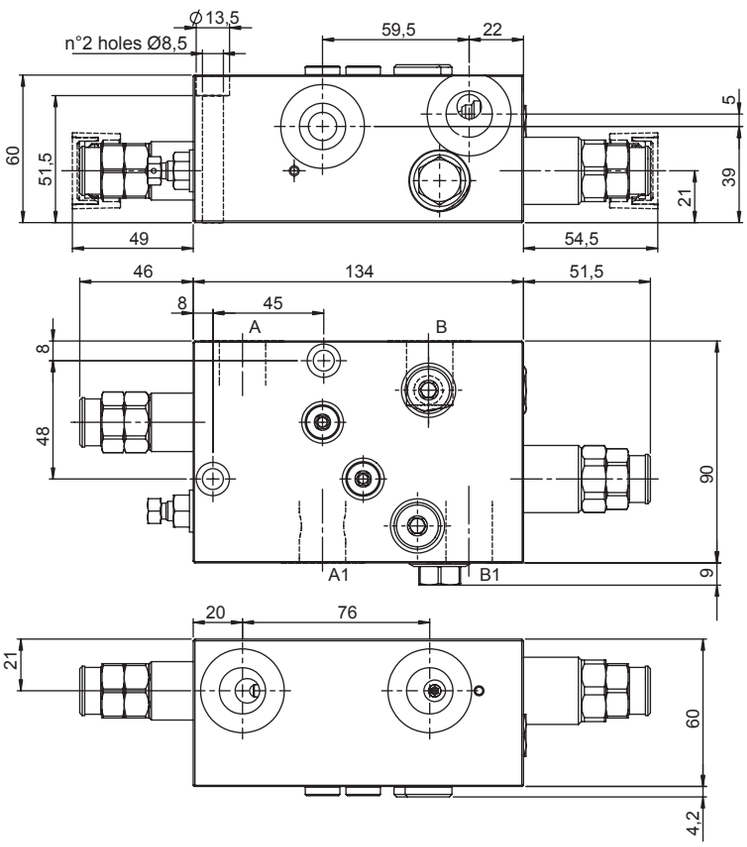
SPRINGS	3	
	pos.1	pos.2
Setting range min.-max. [bar]	120 - 350	120 - 350
Pressure Increase [bar/turn]	114	100
Standard setting 4 l/min [bar]	350	350

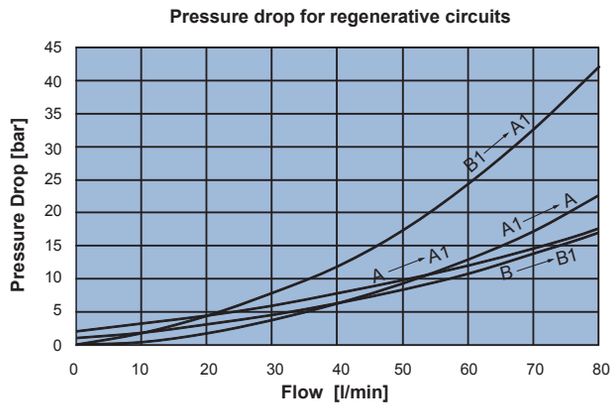
PORTS	03
A,B,	G 3/8”
A1,B1	Ø 8.5

DOUBLE ACTING COUNTERBALANCE VALVE FOR REGENERATIVE CIRCUITS

- Flow on Ports A/A1. . . . . **70 l/min**
- Flow on Ports B1/A1. . . . . **100 l/min**
- Max working pressure. . . . . **350 bar**
- Weight. . . . . **5,3 Kg**
- Tamper proof cap. . . . . **cod. 9021030190**







Ordering code

H 1 0 8 0 N ☐ ☐ S ☐ 0 0

PILOT RATIO	
40	4:1 Pos 1
	2:1 Pos 2

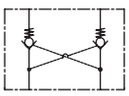
SPRINGS	4	
	pos.1	pos.2
Setting range min.-max. [bar]	250 - 430	114 - 370
Pressure Increase [bar/turn]	116	114
Standard setting 4 l/min [bar]	430	210

PORTS	04
A,B,A1,B1	G 1/2”

PILOT OPERATED CHECK VALVES

PILOT OPERATED CHECK VALVES

INTRODUCTION



PILOT OPERATED CHECK VALVES

They are non modular valves, arranged for in line or flanged mounting. They allow the feeding and locking of hydraulic cylinders.
As the cartridge valves, they are made of 1 or 2 unidirectional check valves, in which pilot pressure opens the sealing poppet.
This type of valve shows an excellent sealing function, while “free flow” is subject to the closing spring load. Cracking pressure is determined by intial opening pressure.
The opening of the sealing poppet by pilot pressure is on/off (from closed to totally open). So that its use is not adviced at all for the applications on which modulation and/or control of gravitational load lowering velocity is required. This type of applications requires load holding valves **LHD** series.
Check valves most important parameter is pilot ratio **rp**.
Generally, given a generic load **P**, pilot pressure required for opening the valve is calculated dividing load by pilot ratio:

$$Ppil = Pp / rp$$

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

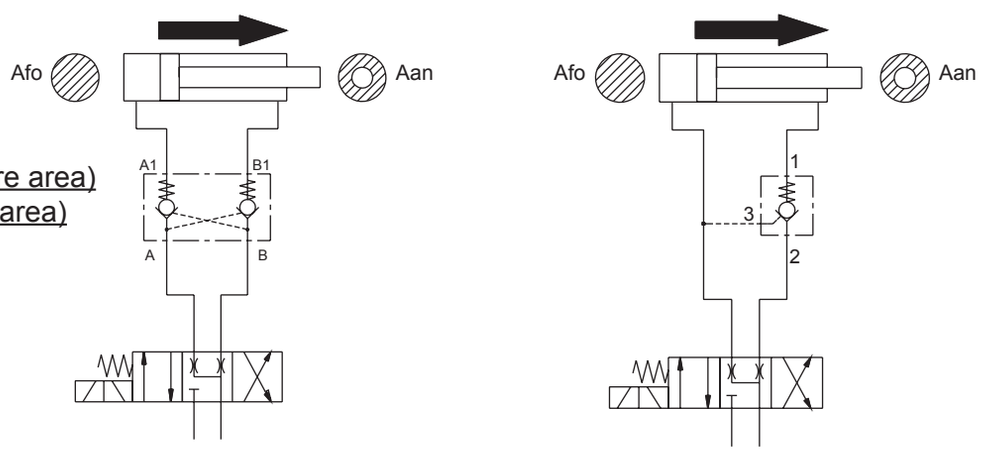
$$Ppil = Pp / (rp – ra)$$

On the hydraulic cylinders, the areas ratio “ra” is calculated with reference to the type of movements:

Cylinders Out (Extension)
ra = Afo / Aan (>1)

Cylinders In
ra = Aan / Afo (<1)

- Afo (Full bore area)
- Aan (Anular area)



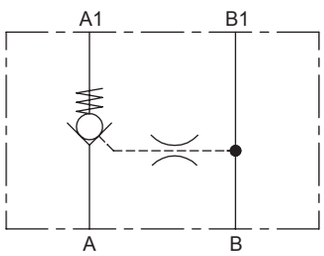
It’s very important to remember that, in case of double effect cylinders, pilot ratio must be always higher than areas ratio:

rp > ra

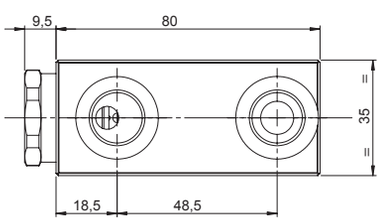
If this rule is not respected, then it is not possible to pilot the check valve during the cylinder extension.

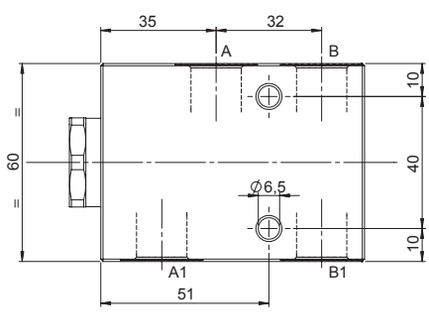
SINGLE ACTING PILOT OPERATED CHECK VALVE

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **210 bar**
- Weight. . . . . **0,5 Kg**

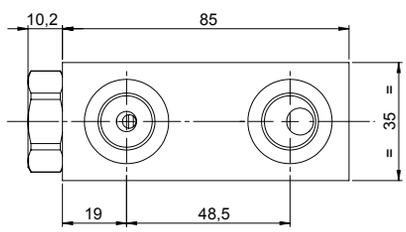


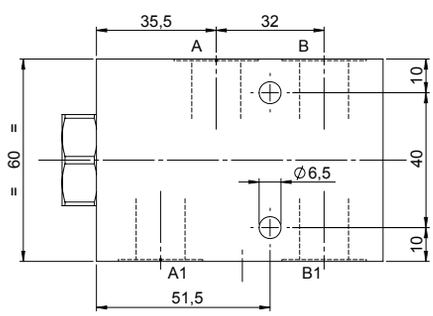
HEAVY DUTY VERSION (OPTION 0)

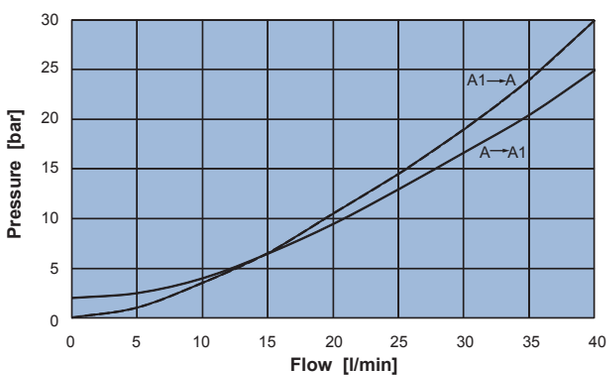




BASIC VERSION (OPTION 1)







NEM Pilot Operated check valves are supplied in two versions:

The basic version, which is characterized by a robust and simple design. The basic version is suitable for almost all applications.

The Heavy Duty version, which allows the most critical applications to be achieved thanks to its cartridges. On request, the Heavy Duty version can be supplied with hardened sealing seat also.

Ordering code

6 D 1 0 ☐ 2 ☐ ☐ A ☐ 0 0

VERSION	
0	Heavy Duty
1	Basic

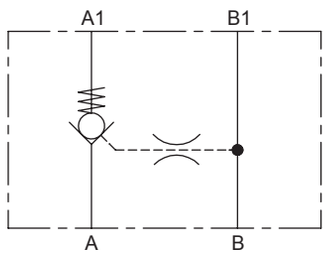
PILOT RATIO		
70	**7:1**	without seal
7A	**7:1**	with seal

SPRING	**1**	**2**
Setting	2,0 bar	5,0 bar

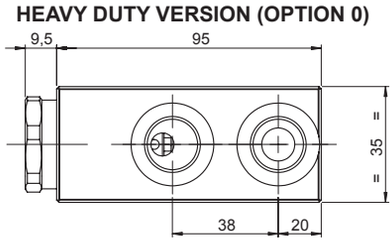
PORTS	**03**
A,A1,B,B1	G 3/8”

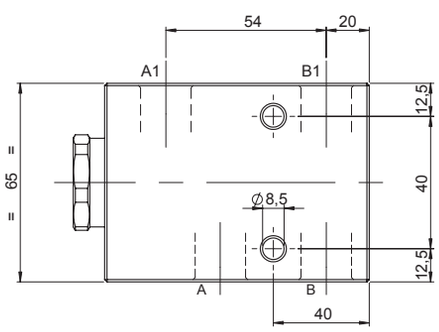
SINGLE ACTING PILOT OPERATED CHECK VALVE

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **210 bar**
- Weight . . . . . **0,5 Kg**

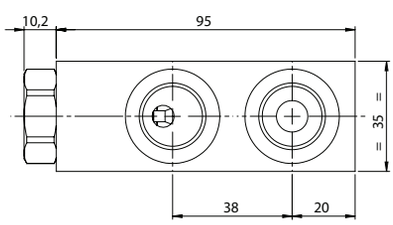


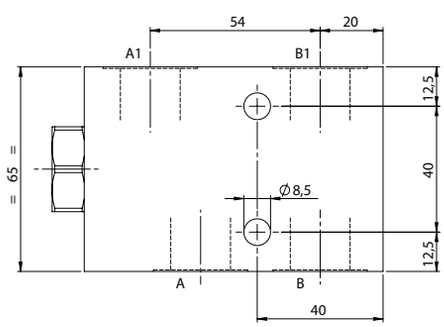
HEAVY DUTY VERSION (OPTION 0)

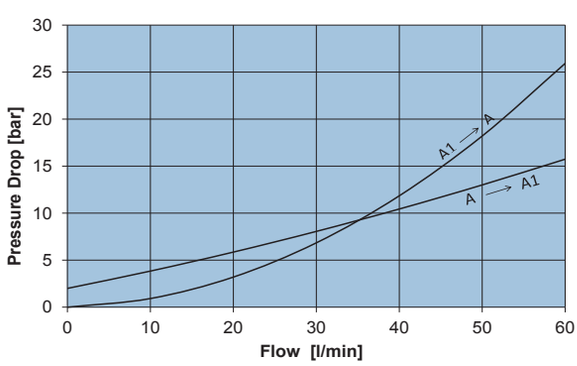




BASIC VERSION (OPTION 1)







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The Heavy Duty version, which allows the most critical applications to be achieved thanks to its cartridges. On request, the Heavy Duty version can be supplied with hardened sealing seat also.

Ordering code

6 D 1 0 □ 2 □ □ A □ 0 0

VERSION	
0	Heavy Duty
1	Basic

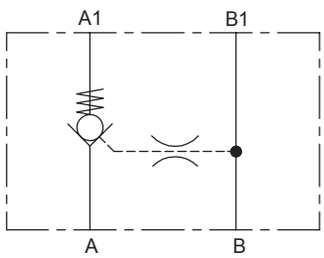
PILOT RATIO		
50	5:1	without seal
5A	5:1	with seal

SPRING	1	2
Setting	1,5 bar	3,5 bar

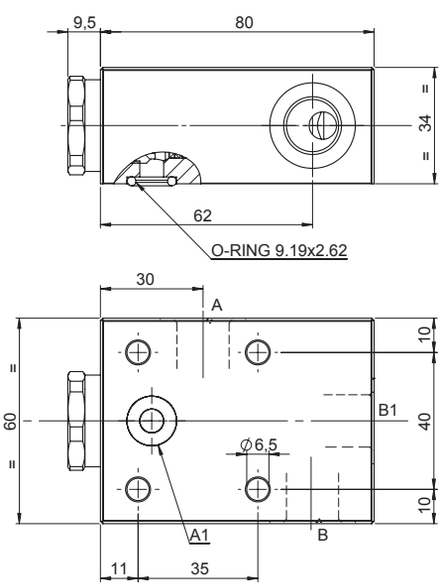
PORTS	04
A,A1,B,B1	G 1/2”

SINGLE ACTING PILOT OPERATED CHECK VALVE - A1 PORT FLANGED

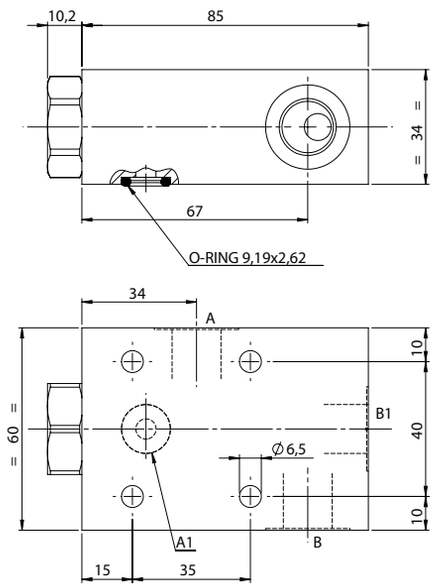
- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **210 bar**
- Weight. . . . . **0,5 Kg**

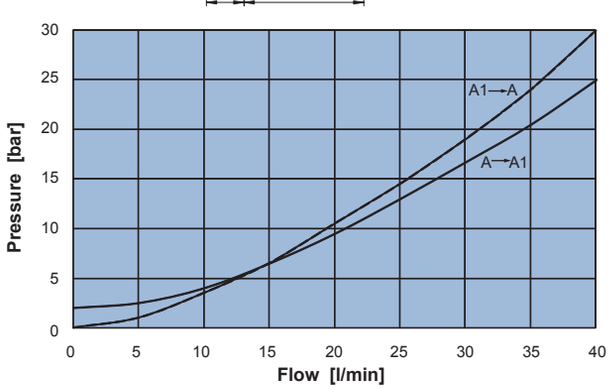


HEAVY DUTY VERSION (OPTION 0)



BASIC VERSION (OPTION 1)





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Ordering code

6 D 1 1 ☐ 2 ☐ ☐ A ☐ 0 0

VERSION	
0	Heavy Duty
1	Basic

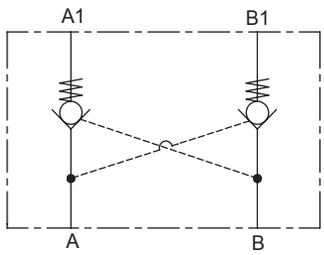
PILOT RATIO		
70	**7:1**	without seal
7A	**7:1**	with seal

SPRING	**1**	**2**
Setting	2,0 bar	5,0 bar

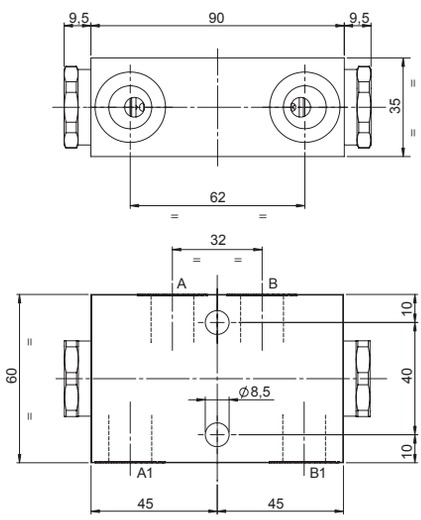
PORTS	**03**
A,B,B1	G 3/8”
A1	Ø 7

DOUBLE ACTING PILOT OPERATED CHECK VALVE

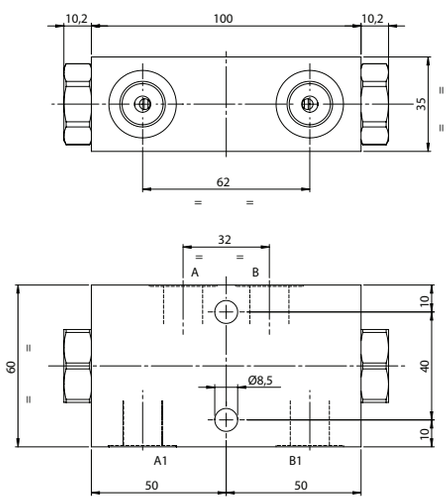
- Flow. . . . . .**40 l/min**
- Max working pressure . . . . . .**210 bar (Aluminium Body)**
- Max working pressure. . . . . **350 bar (Steel Body)**
- Weight in steel. . . . . **1,35 Kg**
- Weight in aluminium . . . . . .**0,64 Kg**

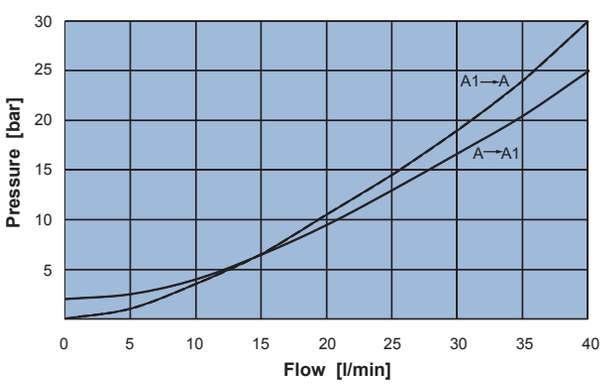


HEAVY DUTY VERSION (OPTION 0)



BASIC VERSION (OPTION 1)





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Ordering code

6 D 2 0 □ 2 □ □ □ □ 0 0

VERSION	
0	Heavy Duty
1	Basic

PILOT RATIO		
70	7:1	without seal
7A	7:1	with seal

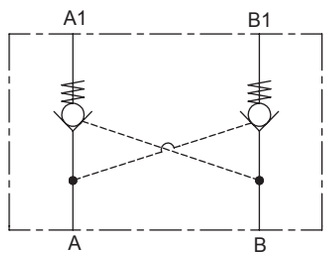
SPRING	1	2
Setting	2,0 bar	5,0 bar

MANIFOLD	
A	Alluminium
S	Steel

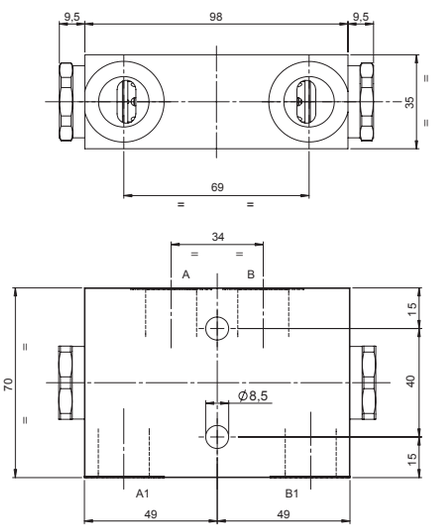
PORTS	03
A,B,A1,B1	G 3/8"

DOUBLE ACTING PILOT OPERATED CHECK VALVE

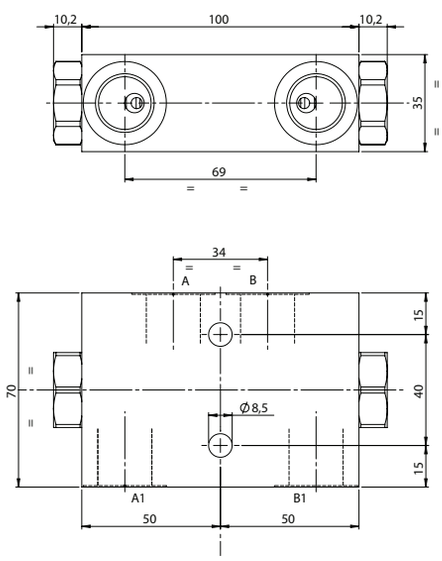
- Flow. . . . . .**60 l/min**
- Max working pressure . . . . . .**210 bar (Aluminium Body)**
- Max working pressure. . . . . **350 bar (Steel Body)**
- Weight in steel. . . . . **1,66 Kg**
- Weight in aluminium . . . . . .**0,75 Kg**

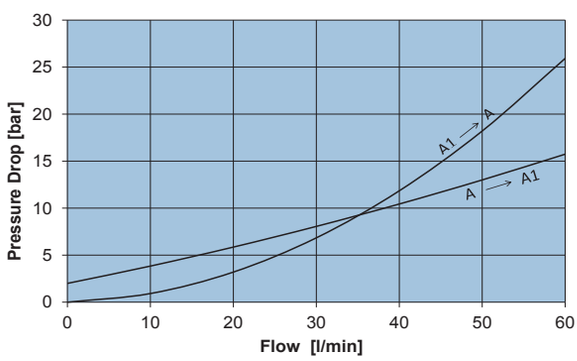


HEAVY DUTY VERSION (OPTION 0)



BASIC VERSION (OPTION 1)





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Ordering code

6 D 2 0 □ 2 □ □ □ □ 0 0

VERSION	
0	Heavy Duty
1	Basic

PILOT RATIO		
50	**5:1**	without seal
5A	**5:1**	with seal

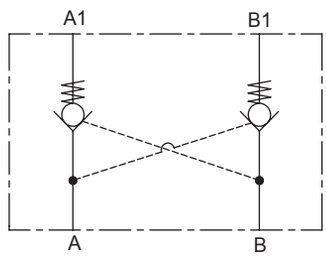
SPRING	**1**	**2**
Setting	1,5 bar	3,5 bar

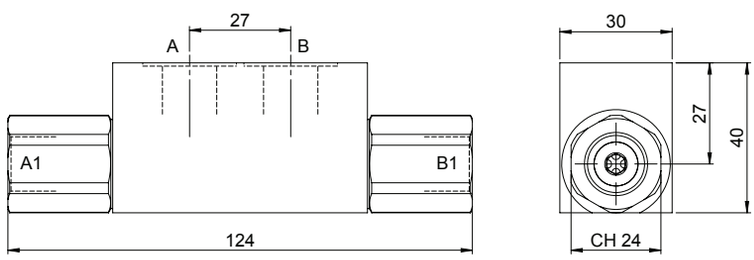
MANIFOLD	
A	Alluminium
S	Steel

PORTS	**04**
A,B,A1,B1	G 1/2”

DOUBLE ACTING PILOT OPERATED CHECK VALVE

- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **310 bar**
- Weight. . . . . **0,65 Kg**





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Ordering code

6 D 4 2 ☐ C ☐ ☐ S ☐ 0 0

VERSION	
0	Heavy Duty
1	Basic

PILOT RATIO		
50	5:1	without seal

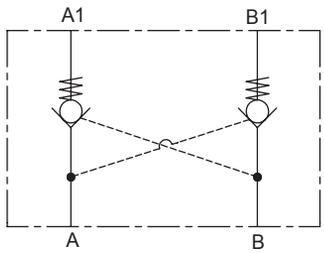
SPRING	1
Setting	0,5 bar

PORTS	03
A,A1,B,B1	G 3/8”

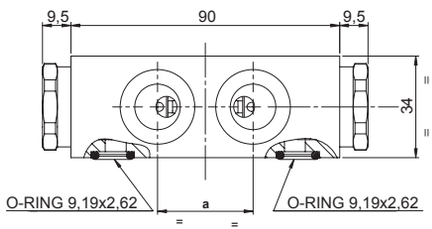
N.B.
Availables also G 1/4“ and G 1/2” ports. Please, contact the Nem customer care for more details.

DOUBLE ACTING PILOT OPERATED CHECK VALVE - A1/B1 FLANGED PORT

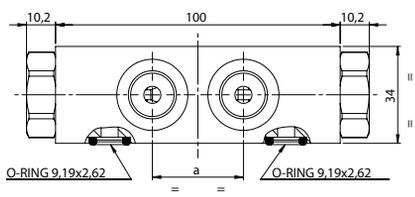
- Flow. . . . . .**40 l/min**
- Max working pressure . . . . . .**210 bar (Aluminium Body)**
- Working pressure. . . . . .**350 bar (Steel Body)**
- Weight in steel. . . . . **1,35 Kg**
- Weight in aluminium . . . . . .**0,64 Kg**

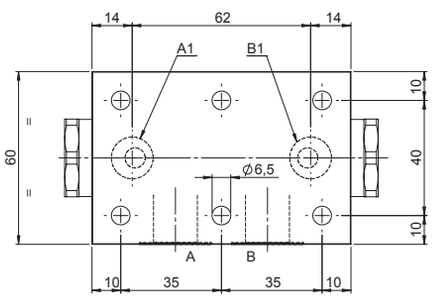


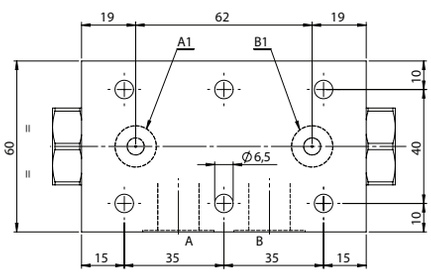
HEAVY DUTY VERSION (OPTION 0)

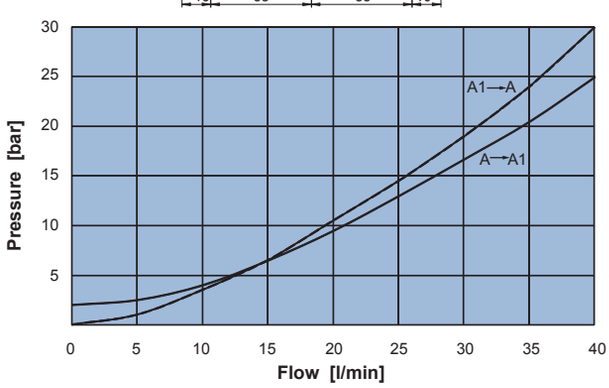


BASIC VERSION (OPTION 1)









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Ordering code

6 D 2 1 □ 2 □ □ □ □ 0 0

VERSION	
0	Heavy Duty
1	Basic

PILOT RATIO		
70	**7:1**	without seal
7A	**7:1**	with seal

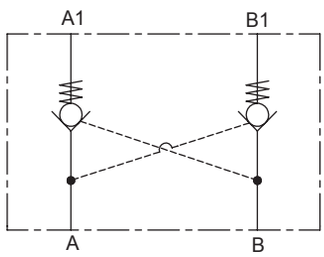
SPRING	1	2
Setting	2,0 bar	5,0 bar

MANIFOLD	
A	Aluminium
S	Steel

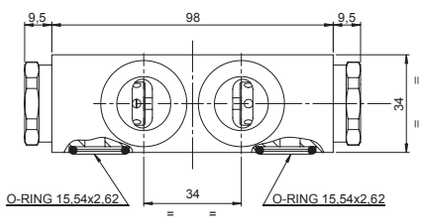
PORTS	02	03
A,B	G 1/4”	G 3/8”
A1,B1	Ø 7	Ø 7
a	32	32

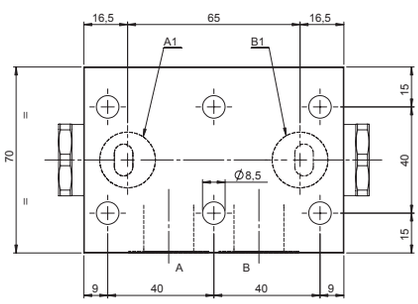
DOUBLE ACTING PILOT OPERATED CHECK VALVE - A1/B1 FLANGED PORT

- Flow. . . . . .**60 l/min**
- Max working pressure . . . . . .**210 bar (Aluminium Body)**
- Working pressure. . . . . .**350 bar (Steel Body)**
- Weight in steel. . . . . **1,63 Kg**
- Weight in aluminium . . . . . .**0,64 Kg**

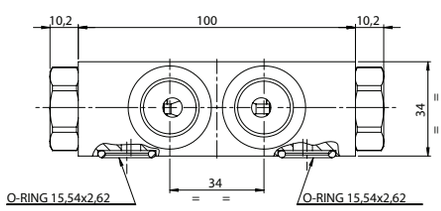


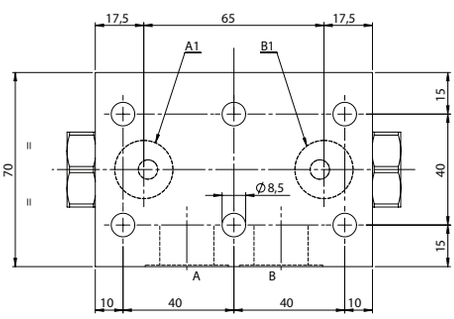
HEAVY DUTY VERSION (OPTION 0)

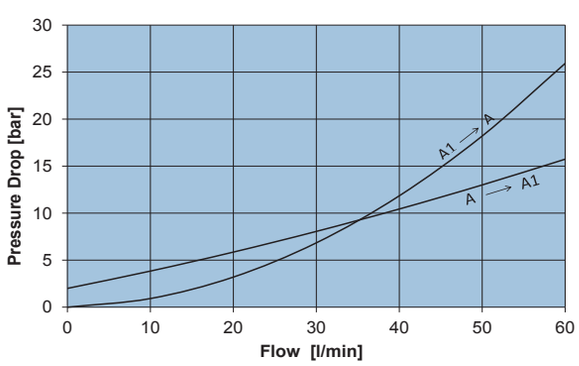




BASIC VERSION (OPTION 1)







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Ordering code

6 D 2 1 □ 2 □ □ □ □ 0 0

VERSION	
0	Heavy Duty
1	Basic

PILOT RATIO		
50	5:1	without seal
5A	5:1	with seal

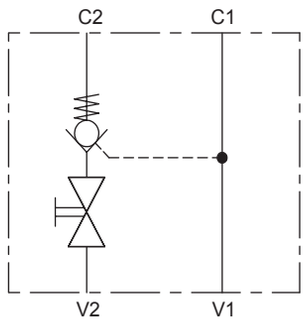
SPRING	1	2
Setting	1,5 bar	3,5 bar

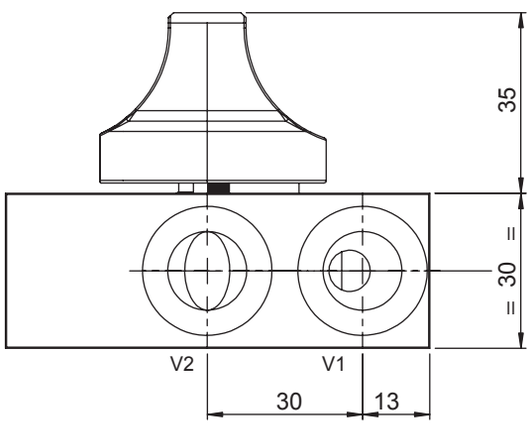
MANIFOLD	
A	Alluminium
S	Steel

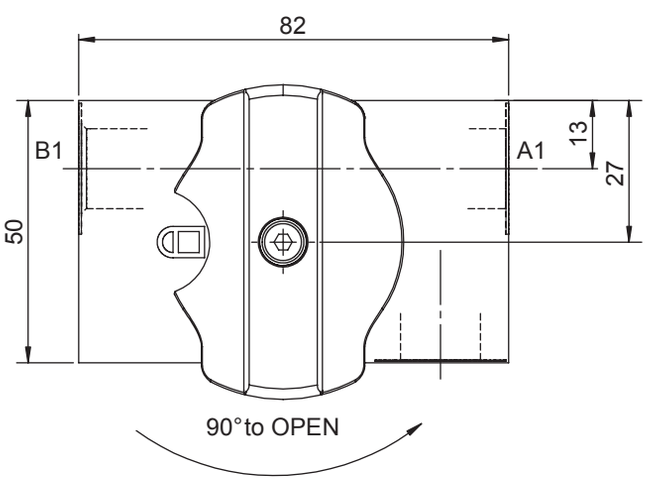
PORTS	04
A,B	G 1/2"
A1,B1	Ø 8

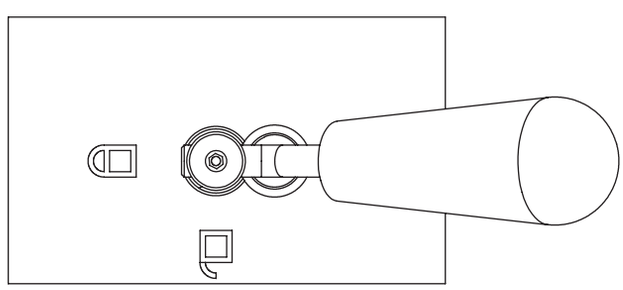
SINGLE ACTING PILOT OPERATED CHECK VALVE WITH 2 POSITIONS MANUAL SHUT OFF - LEFT

- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **210 bar (Aluminium Body)**
- Weight. . . . . **0,5 Kg**
- Lever . . . . . **Lever/Handknob**





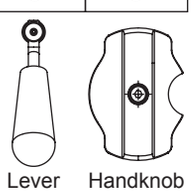




Ordering code

6 D ☐ 0 0 B ☐ ☐ A ☐ 0 0

LEVER	
3	5



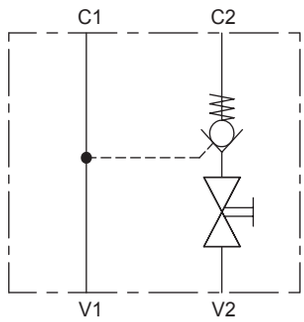
PILOT RATIO	
5A	4,7:1 with seal

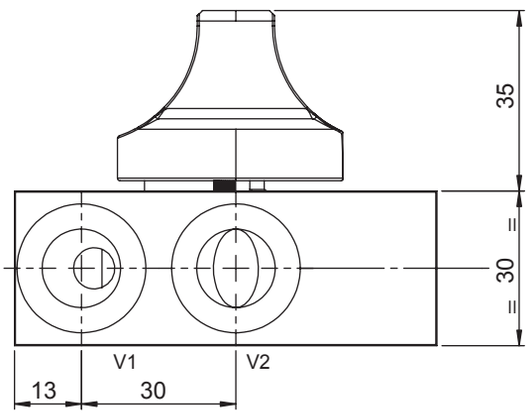
SPRING	1
Setting	2,7 bar

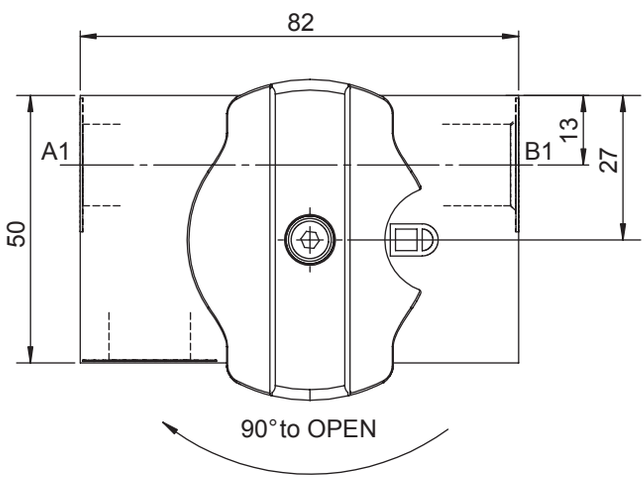
PORTS	03
A,A1,B,B1	G 3/8"

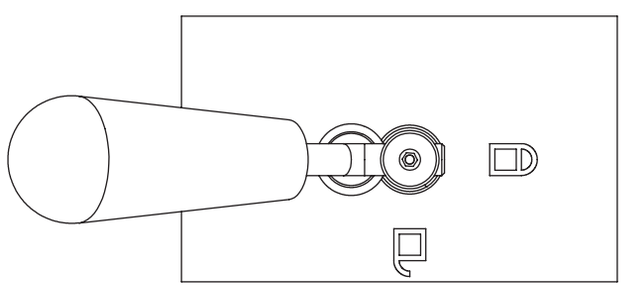
SINGLE ACTING PILOT OPERATED CHECK VALVE WITH 2 POSITIONS MANUAL SHUT OFF - RIGHT

- Flow . . . . . **30 l/min**
- Max working pressure . . . . . **210 bar (Aluminium Body)**
- Weight. . . . . **0,5 Kg**
- Lever. . . . . **Lever/Handknob**









Ordering code

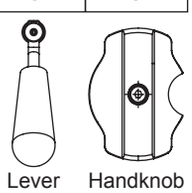
6 D ☐ 1 0 B ☐ ☐ A ☐ 0 0

LEVER	
3	5

PILOT RATIO	
5A	4,7:1 with seal

SPRING	1
Setting	2,7 bar

PORTS	03
A,A1,B,B1	G 3/8"



BOOM LOWERING CONTROL DEVICES

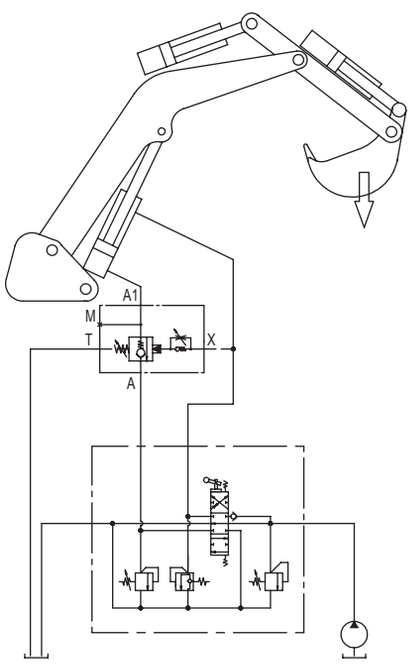
BOOM LOWERING CONTROL DEVICES

INTRODUCTION

According the European Standard for Earth moving machinery - Safety requirements (EN 474), when an excavator or a backhoe loader is used to handle loads with a mass bigger than 1000 Kg, or with a momentum force above 40.000 Nm, the carrying cylinders have to be equipped with control devices able to prevent the effects of a possible hose failure.
When excavators and backhoes are used to lift heavy weights, in fact, any carrying circuit malfunction or breakdown could be a threat for the operator and generally other people around the machine. This risk can be reduced by installing in the hydraulic circuit boom lowering control devices, these are able to prevent an uncontrolled descent of the load in case of hose failure on carrying circuits.

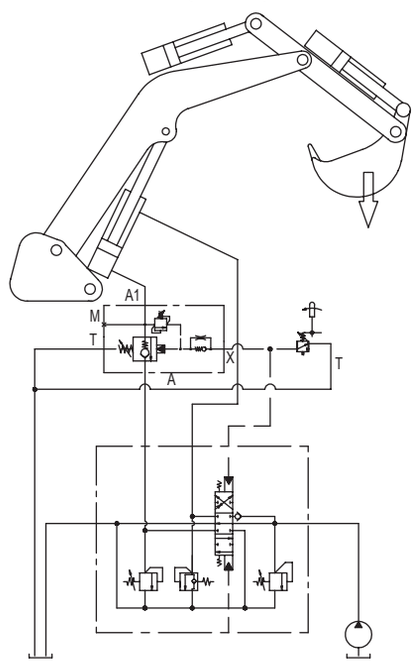
COUNTERBALANCE VALVES
*INSTALLATION **(MANUAL OPERATED D.C.V.)***

(LHD..X)



BOOM LOWERING VALVES
*INSTALLATION **(JOYSTICK OPERATED D.C.V.)***

(LHD..Y)

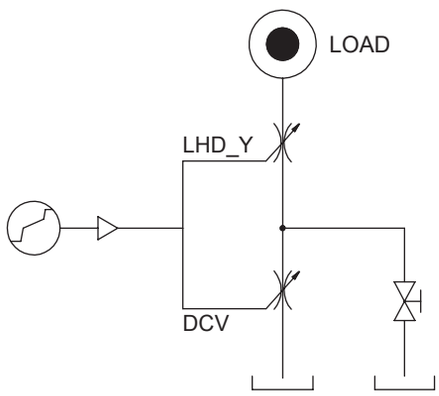


For this kind of application, the suitable valves must be able to withstand the requirements indicated by the international standard **ISO 8643** (Earth-Moving Machinery - Hydraulic Excavator and Backhoe Loader Boom-Lowering Control Device - Requirements and Tests), which states the testing procedures and the evaluation criteria for both excavators and backhoes mounting boom lowering valves.

ISO8643

The international standard ISO 8643 describes a series of tests, consisting in simulating the failure of the flexible hoses during the control of a test load.
The failure simulating device consists in a 2 way- 2 position valve, installed in parallel to any connecting line whose failure could cause the boom to lower. In this way it will be possible to reproduce the consequences of a suddenly failure on flexible hoses.

BOOM LOWERING CONTROL DEVICES



The main tests described by ISO 8643 standard are 3:

Holding position Test: The test is aimed to verify the static load holding capacity of load lowering control valves. It consists of simulating the hose failure after rising approximately the test load 1 m above the ground level, and having set the directional control valve in its neutral position.
The Standard requirement fix a maximum total drop of the load, that shall not exceed the **100 mm** in the first 10 seconds following the opening of the 2 way- 2 position valve installed in the flexible hose.
Thanks to his “poppet style” design, **LHD** valves are able to maintain the actuator still in its position.

Lifting Movement Test: in this test the hose failure simulation shall be operated while rising the test load smoothly and continuously to a maximum speed of 200 mm/s. Even in this case the Standard requirement fix a maximum total drop of the load, that shall not exceed the **100 mm** in the first 10 seconds following the opening of the 2 way- 2 position valve installed in the flexible hose.
As well as in the previous case, thanks to its “poppet style” design, **LHD** valves do not consider any possible lowering of the load.

Lowering movements test: in this case the hose failure simulation shall be operated while lowering the test load smoothly and continuously to a maximum speed of 200 mm/s.
The increase in the lowering speed following the opening of the failure simulation device shall be less than 100% of the initial speed (eg. V1=200mm/s , V2max=400 mm/s).
After having set the directional control valve in its neutral position, the maximum total drop of the load shall not exceed the **100 mm** in the first 10 seconds of test.

Lowering movement test with counterbalance valves

Thanks to the connection that characterizes the installation of the **LHD..X** counterbalance valves, the load lowering velocity depends exclusively on the flow rate of the directional control valves (meter-in), consequently it will result independent from the back-pressure generated from the control of the flow in its return line. In these conditions, an hose failure does not generate any effect on the load lowering speed.

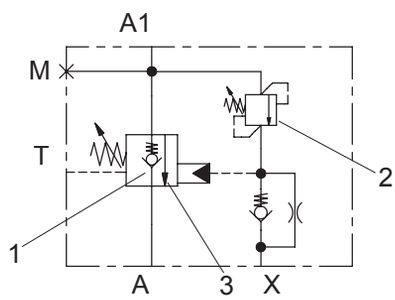
Lowering movement test with boom lowering control valves

In the case of the boom lowering control valves **LHD..Y**, due to the pilot signal coming from an external source (remote control), the opening of the valve and of the directional control valve must be synchronized. In these conditions, controlling the lowering speed, the ISO8643 Standard specification tends to verify the distribution of the pressure drops. The Standard requirement is satisfied if in the first phase of the lowering speed control the load is withstand mainly by the **LHD..Y** valve.
The above considerations put in evidence the strong relationship between the boom lowering valve design and the main control valve spool metering characteristics. A correct matching of the two opening

characteristics will allow to satisfy the ISO 8643 safety requirements and enhance the performances in terms of stability, speed and pump pressurisation.

BOOM LOWERING CONTROL VALVES LHD_Y

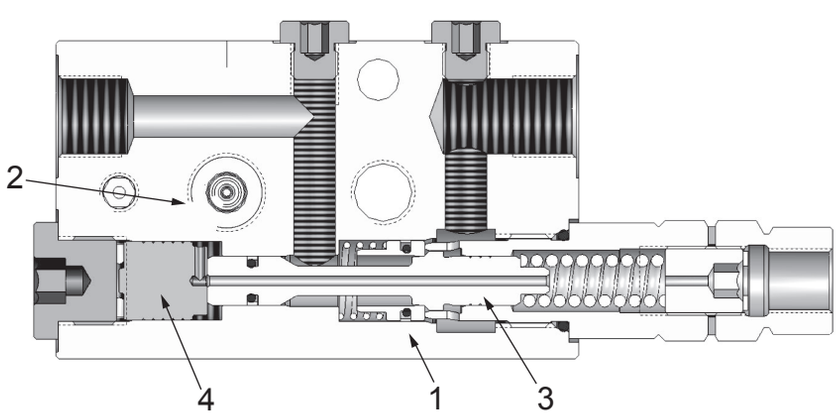
The hydraulic symbol of **LHD_Y** valves is similar to a micro integrated circuit which includes different components characterizing their structure.



1. Uni-directional check valve guarantees a free feeding to the hydraulic actuator, and the load's block in the desired position.
2. Pressure relief valve, thanks to its specific configuration, can hold external loads, and can limit the actuator's maximum pressure, allowing a control of the pressure bursts, where demanded.
3. The conical poppet guarantees a precise control of the flow during lowering movements, satisfying the ISO8643 requirements and reducing its impact on the machine's capacities during standard excavating movements.
4. The pilot piston, that allows to open the conical poppet using the pilot pressure coming from the joysticks.

The LHD_Y valves are designed by inserting a main subgroup composed of single different elements inside a steel manifold, plus other components.

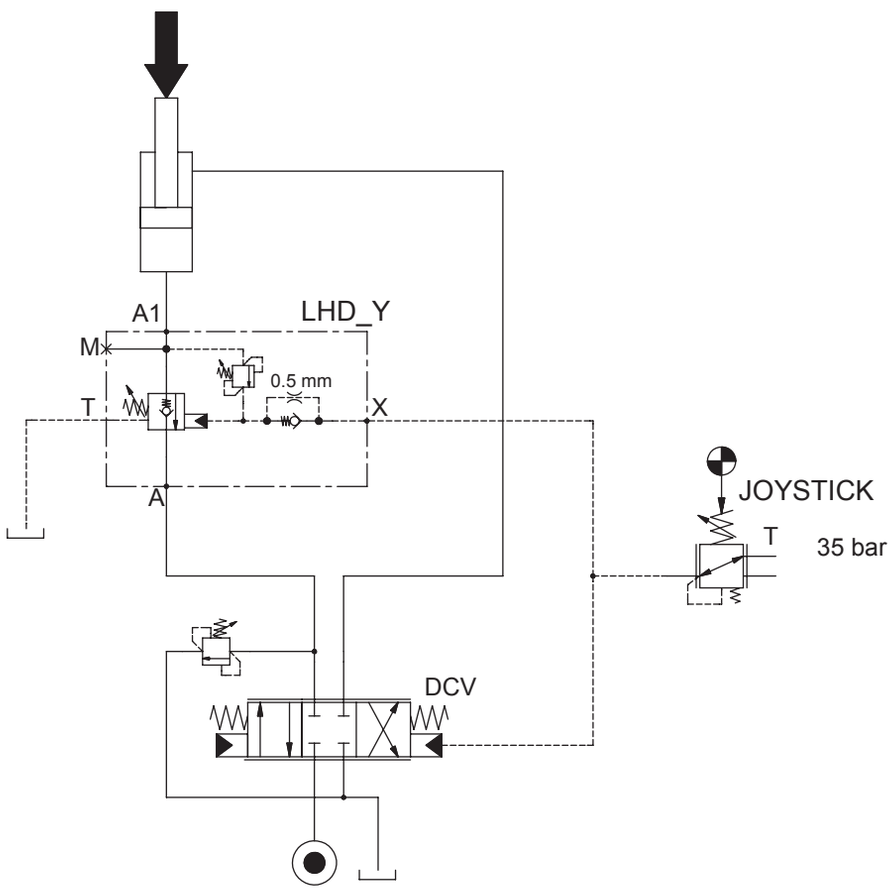
Fig.



BOOM LOWERING CONTROL DEVICES

INSTALLATION

LHD_Y boom lowering valves are installed directly on the cylinders which they must control through a SAE flange or rigid jointed pipes.
Having to work together with Closed-Centre directional control valves, **LHD_Y** boom lowering valves are designed to be insensitive to the back-pressure, both during load lowering movements control and draining pressure peaks generated by bumps, or by sudden interruptions of the lowering movements.



The above hydraulic scheme shows an example of typical application involving **LHD_Y**.

Ports on standard applications:

- Port **A1** to the cylinder
- Port **A** to the flexible hose which connects the cylinder to the directional control valve
- Port **X** to the joystick pilot line of the which controls the lowering movement (connection in parallel)
- Port **T** direct to the tank or to a draining collecting line, like servocontrol line T. Eventual back-pressures on line T would add to setting pressure with factor 1:1.

BOOM LOWERING CONTROL DEVICES

WORKING PRINCIPLE

The above LHD_Y hydraulic schematic shows how the operator is able to move a load, avoiding some risks which are characteristic of these types of movements. Thanks to their design, NEM boom lowering control valves grant to earth moving machinery the following advantages:

The **lifting** of a load or it's joint is made through an unidirectional valve (1), which allows the oil flow – regulated by the directional control valve – to enter in the cylinder with less resistance as possible.

Load Holding must be guaranteed, when the directional valve spool is in the neutral position. Thanks to spring (6), the unidirectional valve touches the sealing poppet, hermetically closing the connection between the hydraulic actuator and the directional control valve.
Thanks to fine-grinding of the sealing areas between the check valve and the conical poppet, the valve is perfectly closed, avoiding internal leakage in the directional control valve.

Load lowering takes place by opening the conical poppet, and thus using the pressure usually used to pilot the directional control valve's spool. The pilot pressure acting on the pilot piston area (4) generates sufficient pressure to win the force of the adjustable spring (5). Adjusting pilot pressure intensity, the conical poppet between the pilot piston and the adjustable spring will move, thus opening an area section proportional to the intensity of the pilot pressure itself. Pilot pressure modulation through the hydraulic joysticks allows the operator to adjust boom lowering speed.

Boom lowering speed through the **LHD_Y** valves allow to reach a compromise between two requirements which are apparently in conflict:

1. To full fill the requirements of the international standard ISO8643, which establishes how machines must work in case of hose failure, when the booms are used for handling loads at reduced speed (V< 200 mm/s).
2. To minimize the impact on the machine with regards to system's pressures, speeds and metering when machines are used for regular earth moving operations.

SETTINGS

The **LHD__Y** boom lowering control valve's settings are characterized by 2 different values:

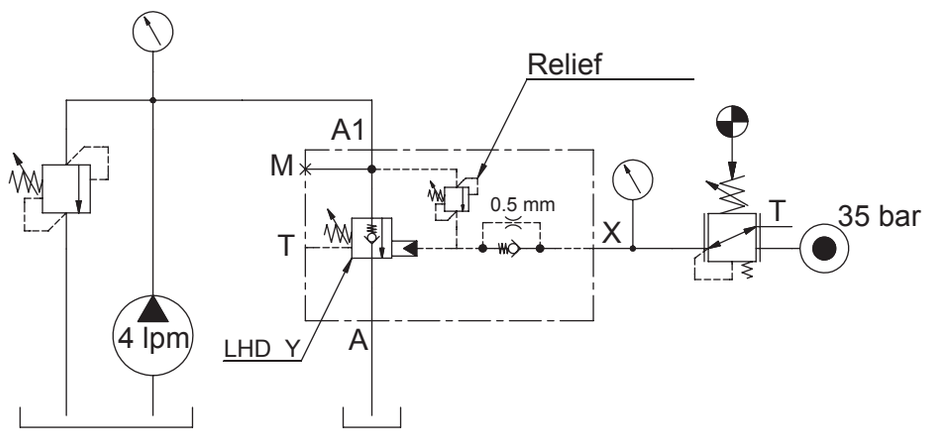
1. The main poppet setting, which will controls oil flow during boom lowering movements.
2. Relief function pressure setting, which will limit the cyilinder pressurisation due by external loads.

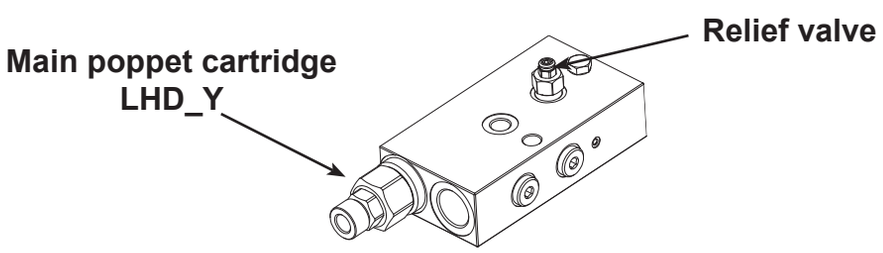
Main poppet setting corresponds to the pilot pressure (Px) at the initial opening, i.e. pressure on port X, which determines the detachment of conical poppet from its seating.
The setting is verified by putting on port A1, 100 Bar of steady pressure. The pilot pressure is increased progressively up to obtaining 20cc/min leakage through port A.

Relief pressure setting determines the maximum limit of pressure inside the cylinder, with external forces. This value is regulated working on the relief valve installed above the pilot chamber.

Standard setting is obtained regulating the pressure on port A1, with 5 l/min flow.

BOOM LOWERING CONTROL DEVICES



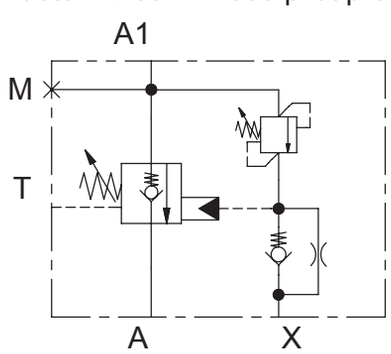


Usually the setting of the main relief valve function must consider the re-closing value. Generally the setting value must be at least 1.3 times the pressure given by the heaviest load:

$$Pt = 1,3 \times P\ max$$

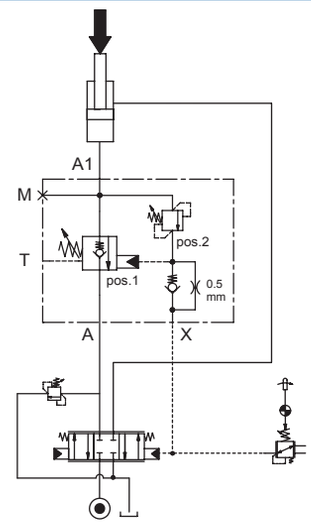
COMPENSATION

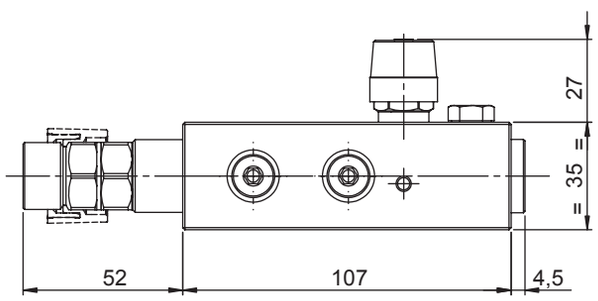
LHD_Y boom lowering control valves belong to compensated type valves, that means they are insensitive to backpressure on port A.
This characteristic is a precondition relating boom lowering control valves, because they are usually coupled with centre-close directional spools.
Conpensation takes place thanks to an independent **LHD_Y** spring-housing chamber drained directly to tank through port (Y).
An eventual back-pressure on port Y determines 1:1 ratio pilot pressure increasing.

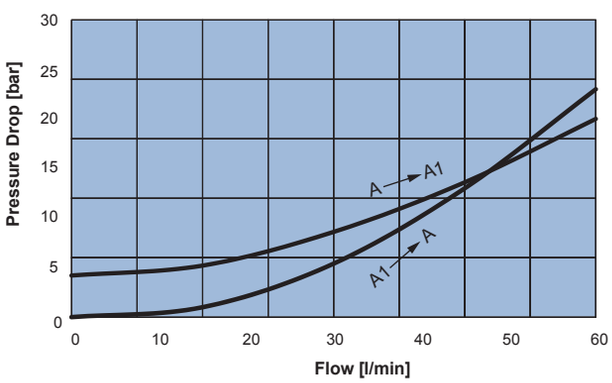


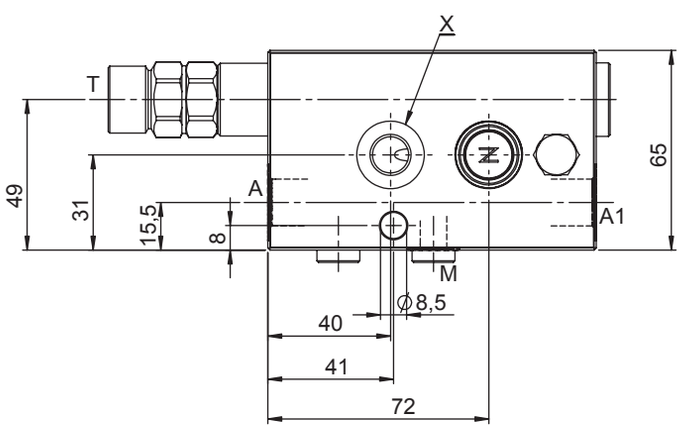
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / RIGHT HAND

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **1,9 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 5 0 0 1 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

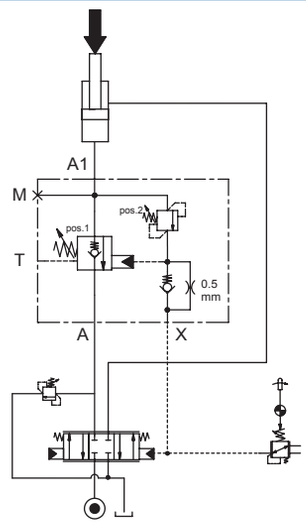
PORTS	03	53
A,A1	G 3/8”	SAE 08
X,T	G 1/4”	SAE 06

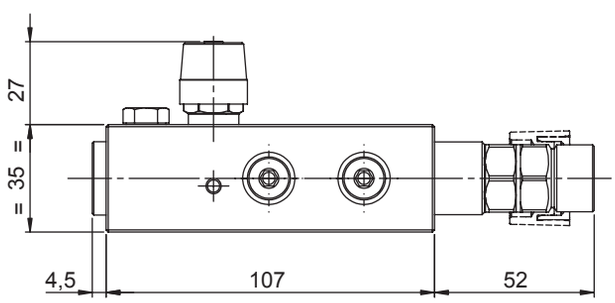
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	4,7	7,5

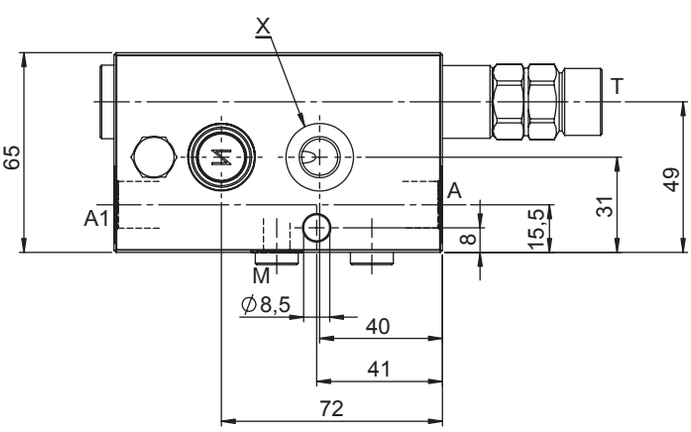
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

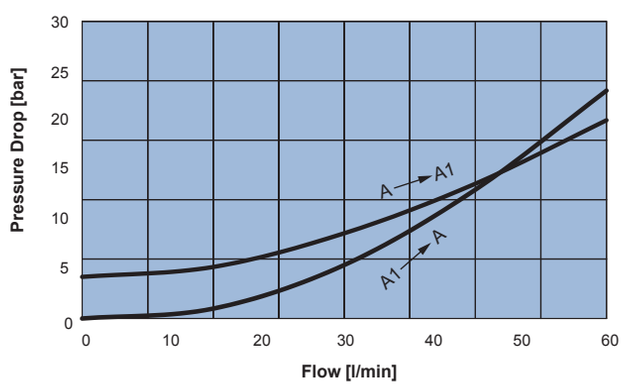
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / LEFT HAND

- Flow . . . . . **40 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **1,9 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 5 0 0 2 Y □ □ □ □ **0 0**

PILOT RATIO	
11	1:0 FINE METERING

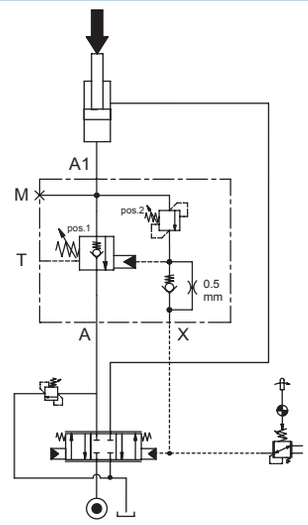
PORTS	03	53
A,A1	G 3/8”	SAE 08
X,T	G 1/4”	SAE 06

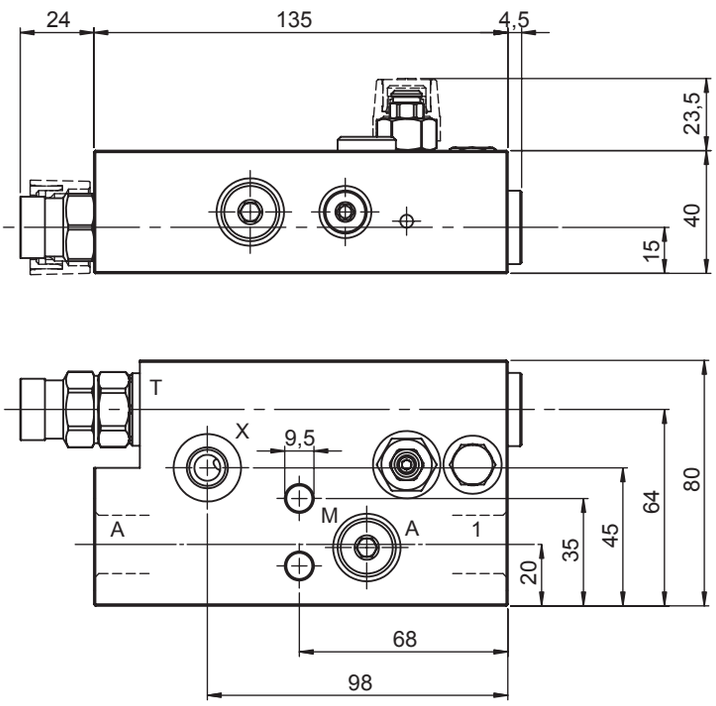
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	4,7	7,5

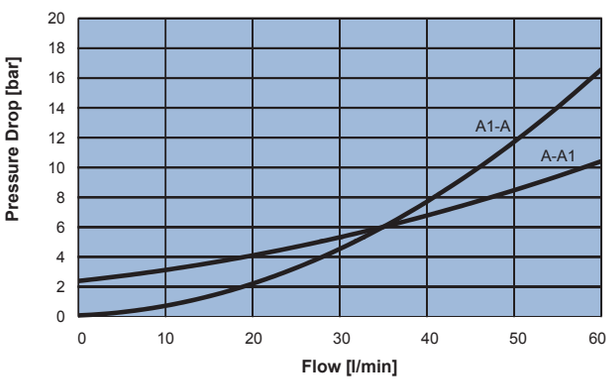
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

LOAD LOWERING CONTROL VALVE - LINE MOUNTED / RIGHT HAND

- Flow . . . . . **60 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight . .. . **2,6 Kg**
- Tamper proof cap **cod.9021030191**
  cod.9021015101







Ordering code

Y 5 0 0 1 Y ☐ ☐ ☐ ☐ **0 1**

PILOT RATIO	
14	1:0 - FINE METERING

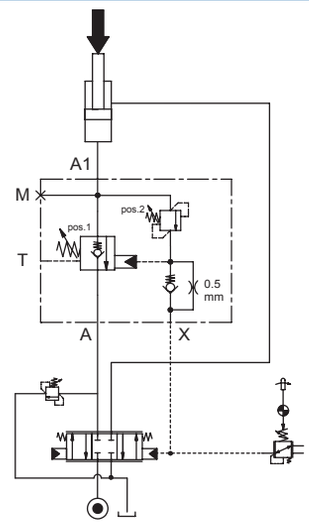
PORTS	04	54
A,A1	G 1/2”	SAE 10
X,T	G 1/4”	SAE 06

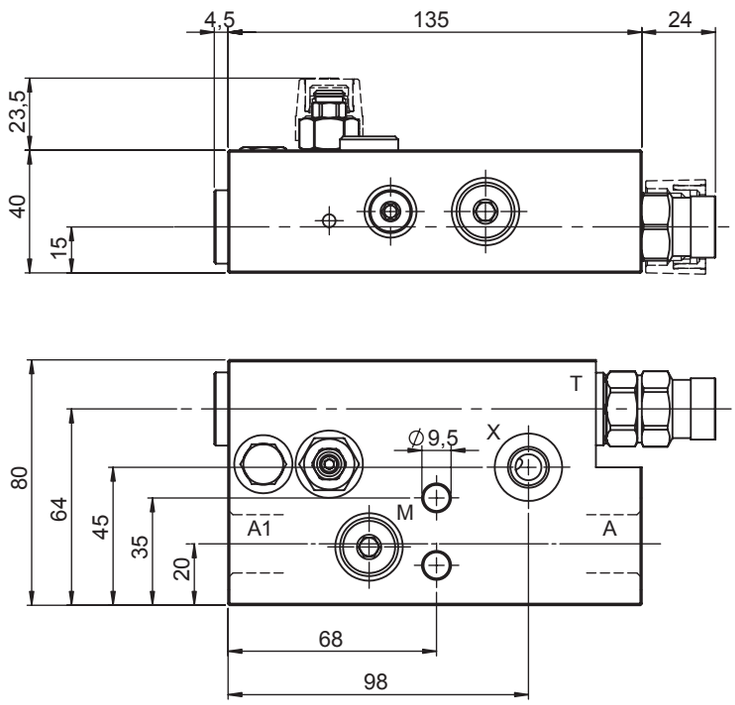
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

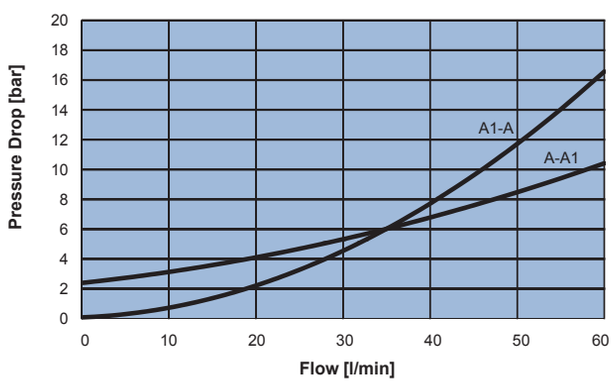
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

LOAD LOWERING CONTROL VALVE - LINE MOUNTED / LEFT HAND

- Flow. . . . . **60 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **2,6 Kg**
- Tamper proof cap **cod.9021030191**
  cod.9021015101







Ordering code

Y 5 0 0 2 Y ☐ ☐ ☐ ☐ **0 1**

PILOT RATIO	
14	1:0 FINE METERING

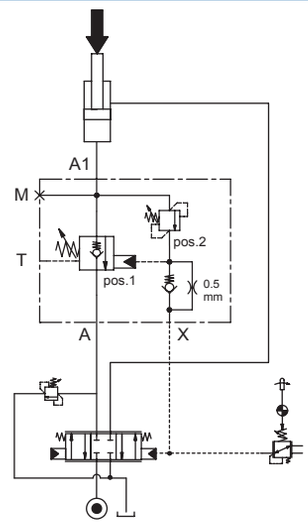
PORTS	04	54
A,A1	G 1/2”	SAE 10
X,T	G 1/4”	SAE 06

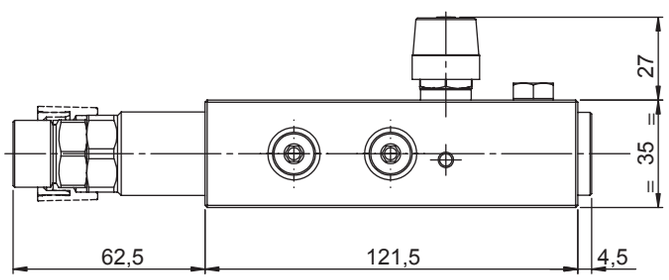
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

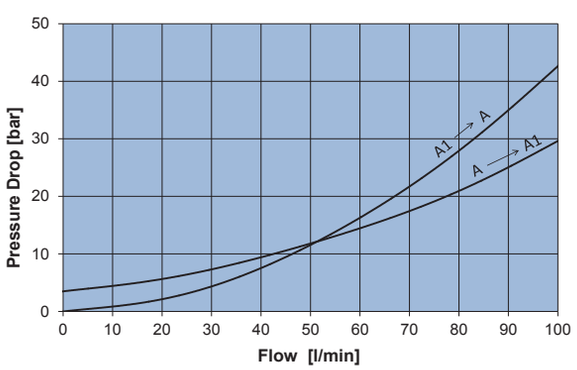
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

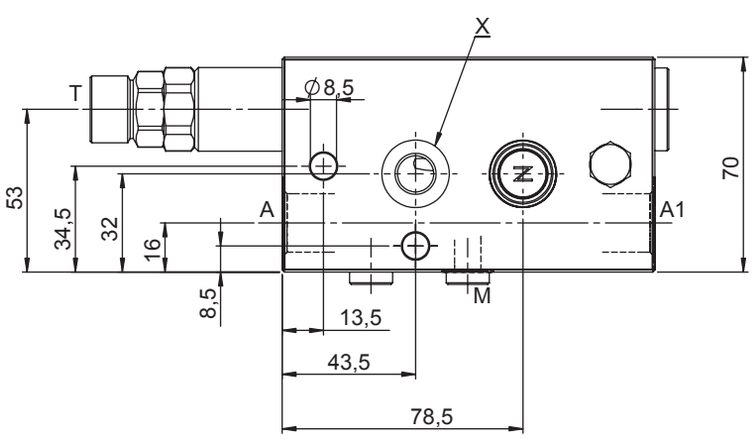
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / RIGHT HAND

- Flow . . . . . **75 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **2,3 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 1 0 0 1 Y [ ] [ ] [ ] [ ] **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

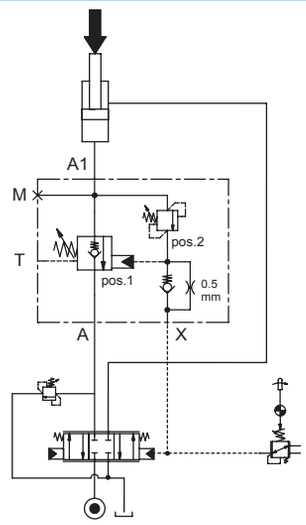
PORTS	04	54
A,A1	G 1/2”	SAE 10
X,T	G 1/4”	SAE 06

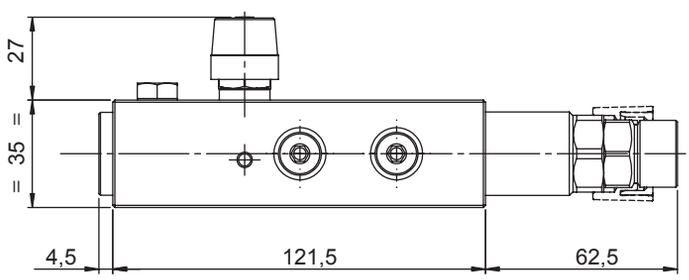
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

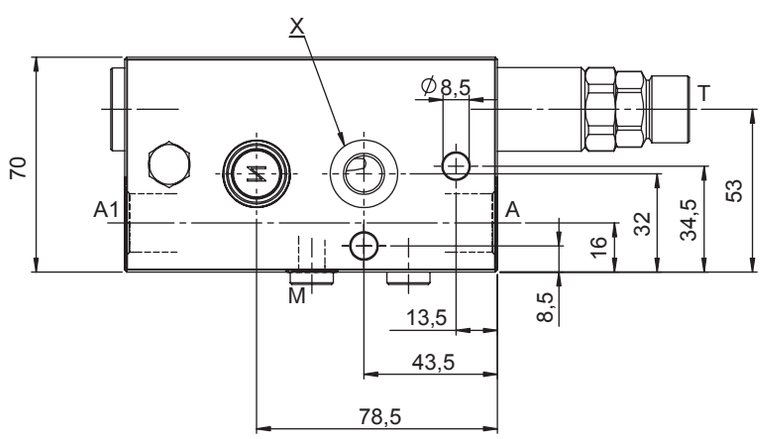
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

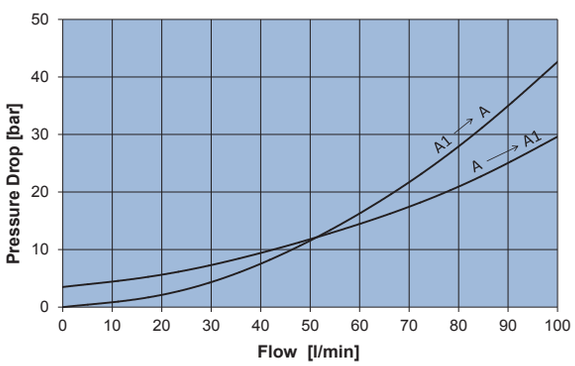
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / LEFT HAND

- Flow . . . . . **75 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **2,3 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 1 0 0 2 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 FINE METERING

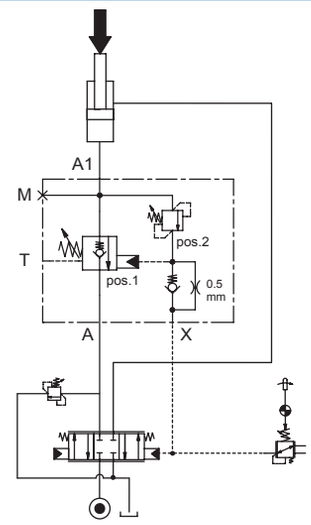
PORTS	04	54
A,A1	G 1/2”	SAE 10
X,T	G 1/4”	SAE 06

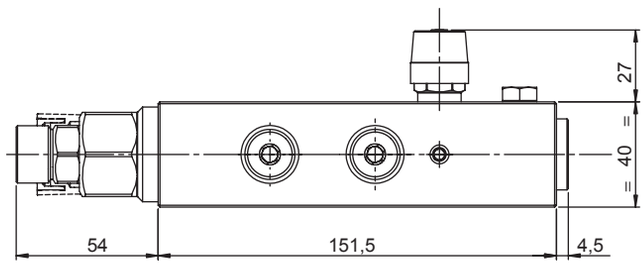
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

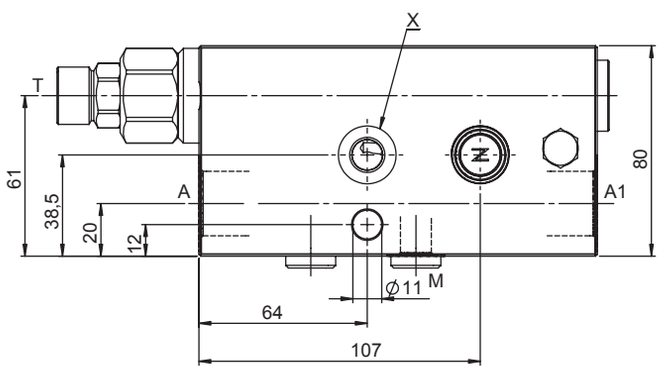
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

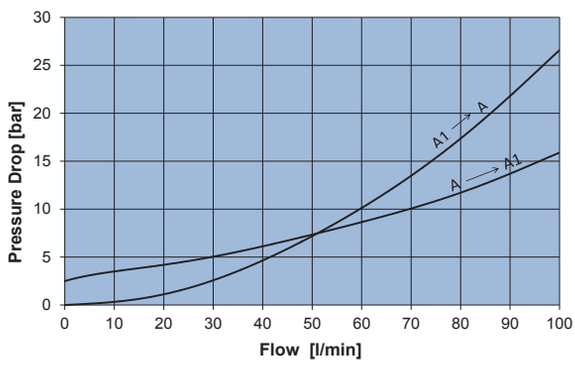
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / RIGHT HAND

- Flow . . . . . **100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **3,6 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 1 5 0 1 Y [ ] [ ] [ ] [ ] **0 0**

PILOT RATIO	
11	1:0 FINE METERING

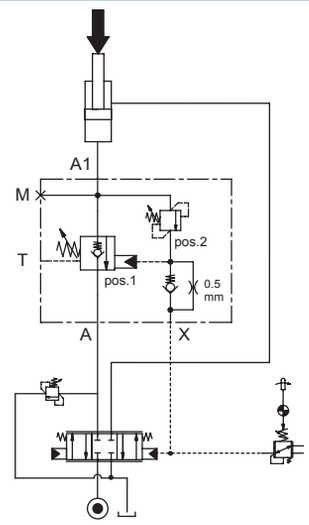
PORTS	05	55
A,A1	G 3/4”	SAE 12
X,T	G 1/4”	SAE 06

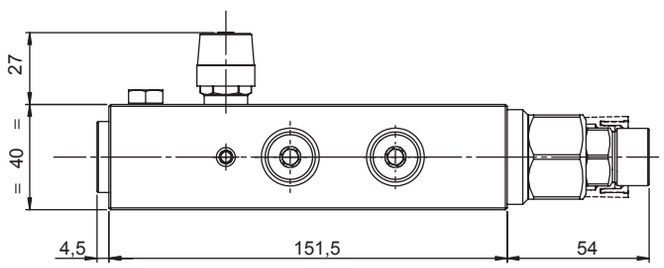
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

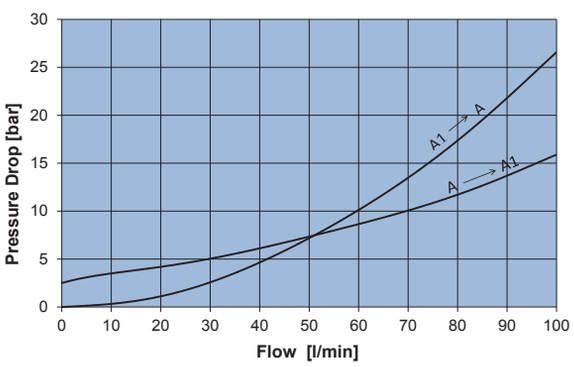
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

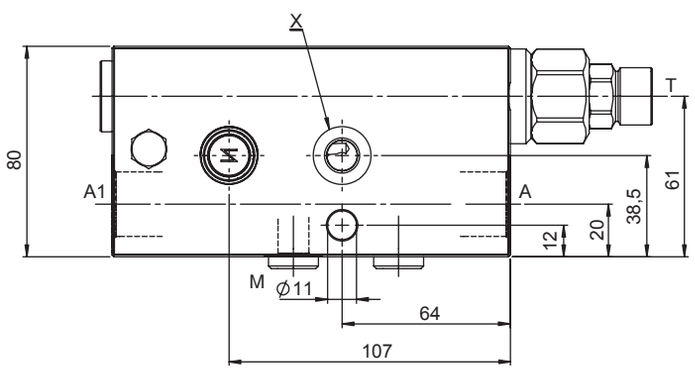
LOAD LOWERING CONTROL VALVE - LINE MOUNTED / LEFT HAND

- Flow . . . . . **100 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight. . . . . **3,6 Kg**
- Tamper proof cap. **cod.9021030191**









Ordering code

Y 1 5 0 2 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

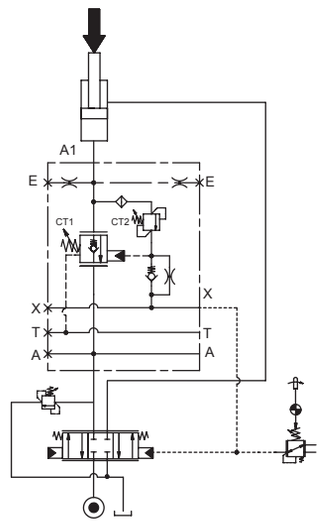
PORTS	05	55
A,A1	G 3/4”	SAE 12
X,T,M	G 1/4”	SAE 06

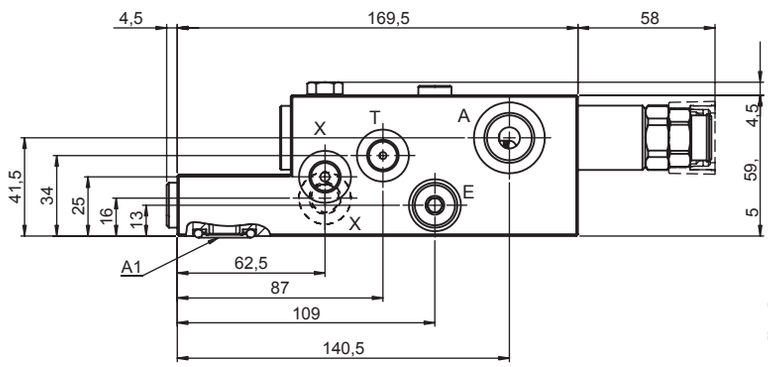
SPRING pos.1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5

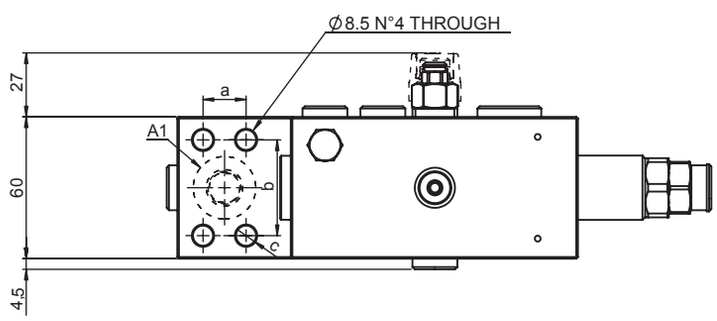
SPRING pos.2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
3	200 - 400	250	350

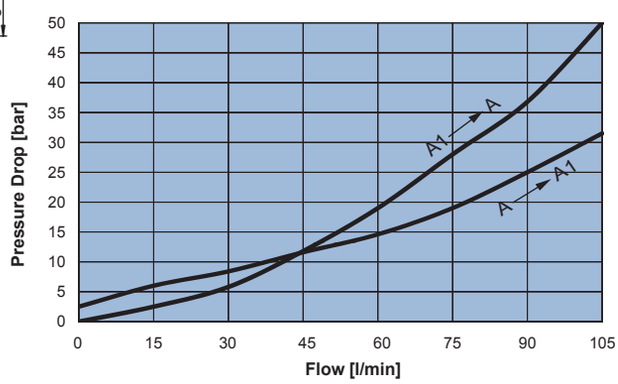
LOAD LOWERING CONTROL VALVE - SAE FLANGED 1/2”-SAE6000

- Max flow. . . . . .**75 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation . . . . . .**Fully Compensated with drain line**
- Weight. . . . . .**3.9 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . **cod.9021015101**









Flange	a	b	c	O-Ring
1/2”- SAE 6000	18.2	40.5	8.5	18.64x3.53 NBR 70°SH

Ordering code

Y 1 0 1 3 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 FINE METERING

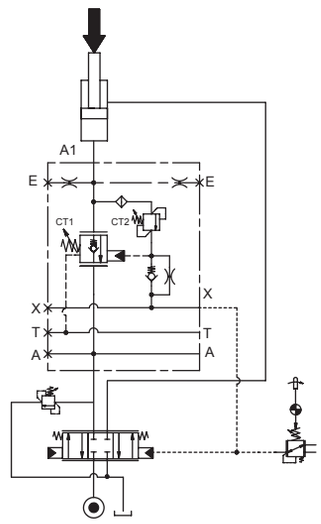
PORTS	**64**
A1	1/2 ”- SAE 6000
A	G 1/2”
T-E-X	G 1/4”

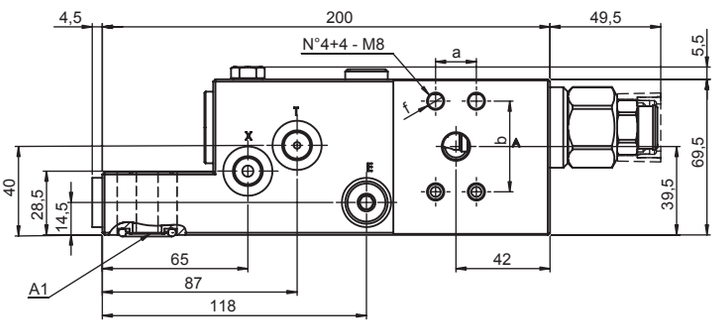
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
2	5 - 14	2,5	7,5
4	7 - 19	4,5	7,5

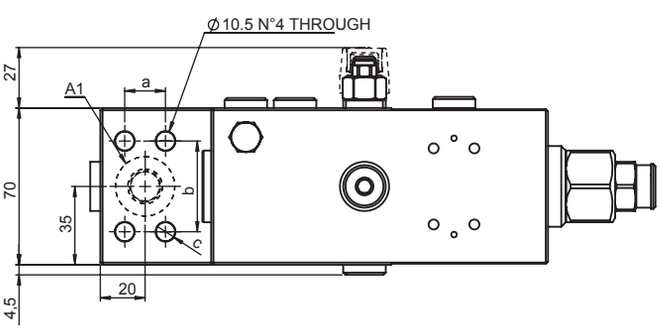
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	250 - 410	250	350

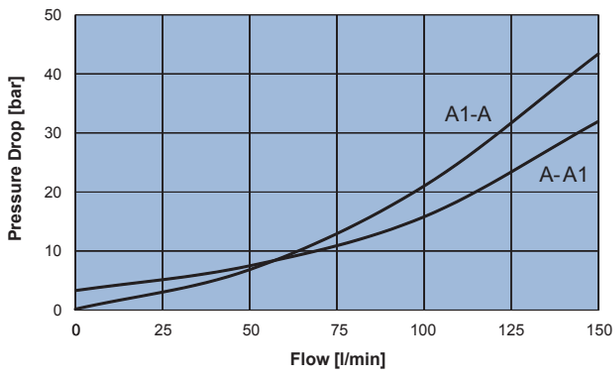
LOAD LOWERING CONTROL VALVE - SAE FLANGED 1/2”-SAE6000

- Max flow . . . . . .**150 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . .**Fully Compensated with drain line**
- Weight . . . . . **6.2 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . **cod.9021015101**









Flange	a	b	c	f	O-Ring
1/2”- SAE 6000	18.2	40.5	8.5	M 8	18.64x3.53 NBR 70°SH

Ordering code

Y 1 5 1 3 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

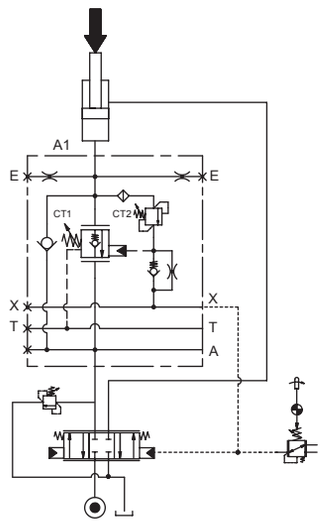
PORTS	**64**
A,A1	1/2 ”- SAE 6000
T-E-X	G 1/4”

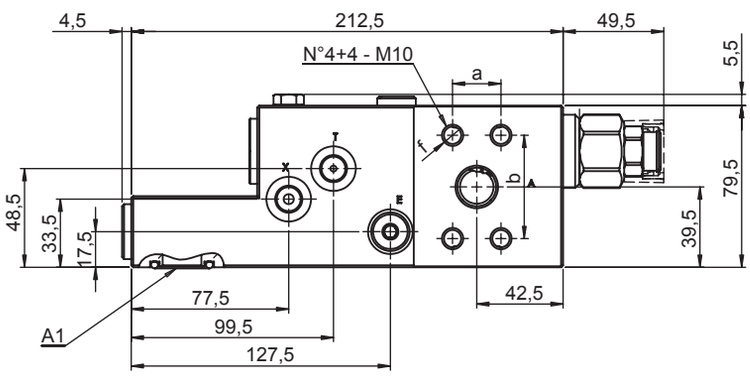
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
4	5 - 16	4.5	7.5

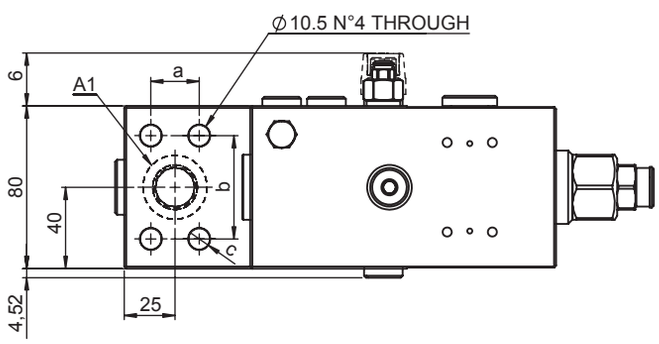
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	200 - 410	250	350

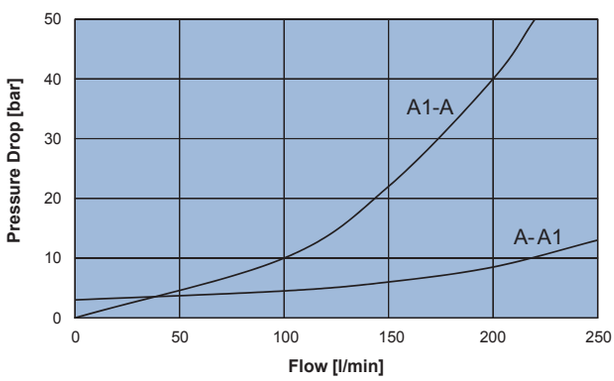
LOAD LOWERING CONTROL VALVE - SAE FLANGED 3/4”-SAE6000

- Max flow. . . . . **250 l/min**
- Max working pressure . . . . . **410 bar**
- Compensation. . . . . **Fully Compensated with drain line**
- Weight . . . . . **8 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . . **cod.9021015101**









Flange	a	b	c	f	O-Ring
3/4”- SAE 6000	23.8	50.8	10.5	M 10	23.39x3.53 NBR 70°SH

Ordering code

Y 1 5 1 3 Y □ □ □ □ **0 0**

PILOT RATIO	
11	1:0 FINE METERING

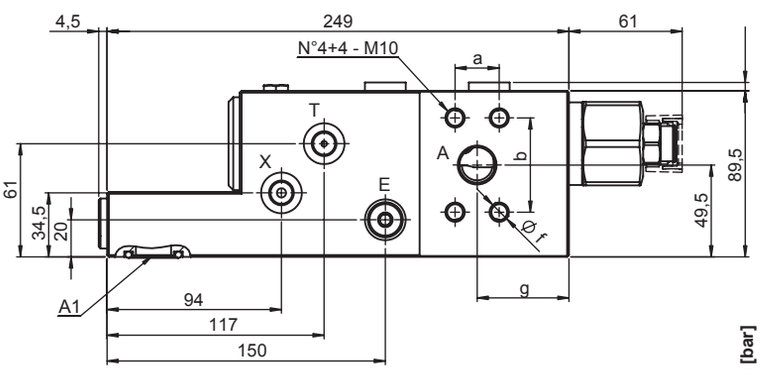
PORTS	**65**
A,A1	3/4 ”- SAE 6000
T-E-X	G 1/4”

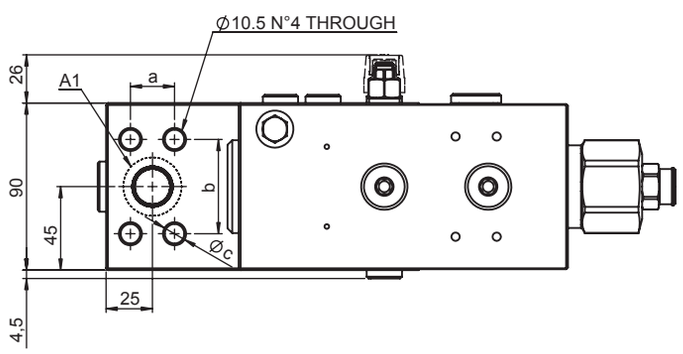
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
4	5 - 16	4,5	7,5

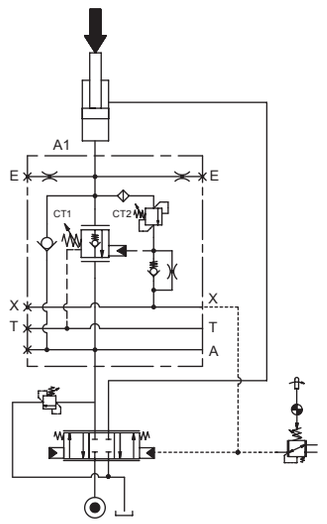
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	200 - 410	250	350

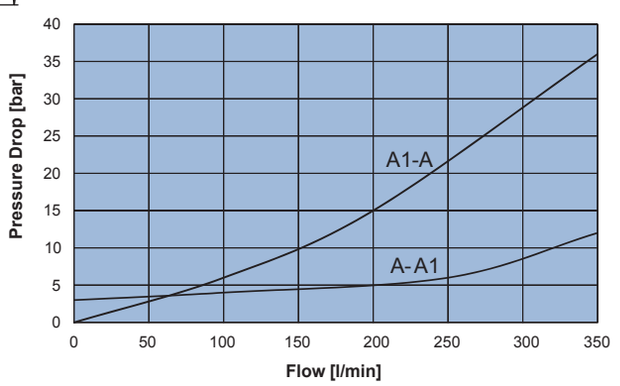
LOAD LOWERING CONTROL VALVE - SAE FLANGED 3/4”-SAE6000

- Max flow Y2513Y11446500 . . . . . **350 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . .**Fully Compensated with drain line**
- Weight . . . . . .**12 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . **cod.9021015101**









Flange	a	b	c	f	O-Ring
3/4”- SAE 6000	23.8	50.8	10.5	M 10	24.99x3.53 NBR 70°SH

Ordering code

Y 2 5 1 3 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

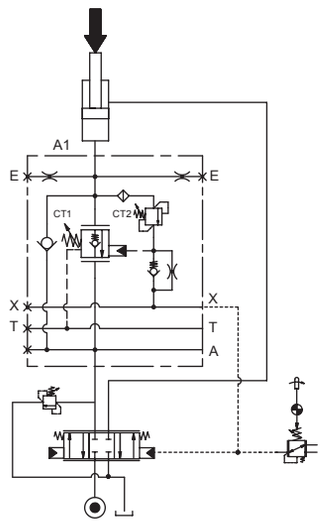
PORTS	**65**
A,A1	3/4 ”- SAE 6000
T,E,X	G 1/4”

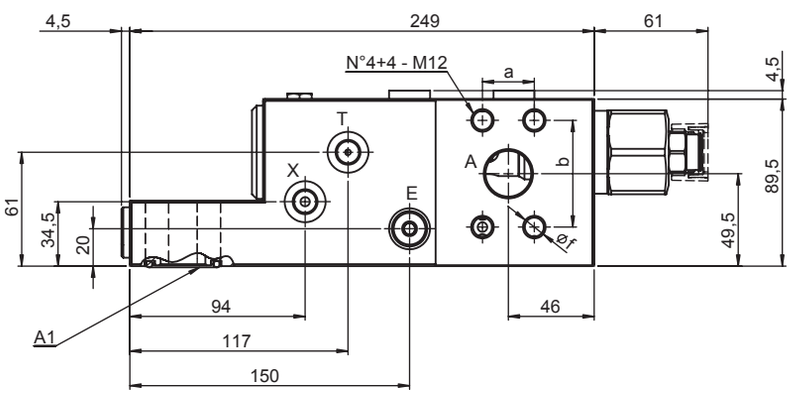
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
4	5 - 14	2.3	7.5

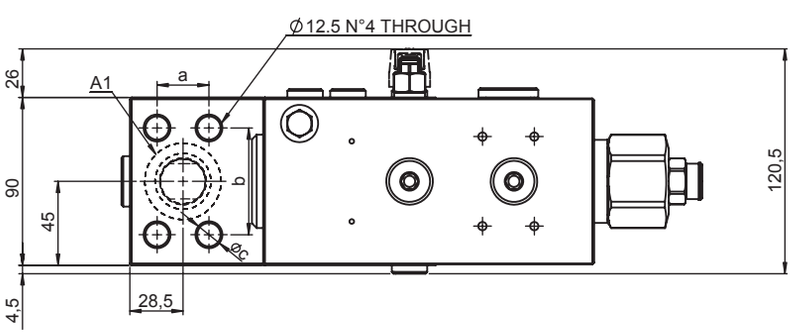
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	200 - 410	250	350

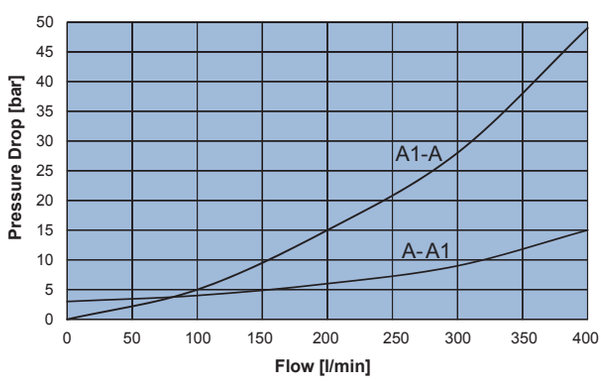
LOAD LOWERING CONTROL VALVE - SAE FLANGED 1”-SAE6000

- Max flow Y2513Y11446600 . . . . . **400 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . .**Fully Compensated with drain line**
- Weight . . . . . .**12 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . **cod.9021015101**









Flange	a	b	c	f	O-Ring
1”- SAE 6000	27.8	57.2	12.5	M 12	32.92x3.53 NBR 70°SH

Ordering code

Y 2 5 1 3 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

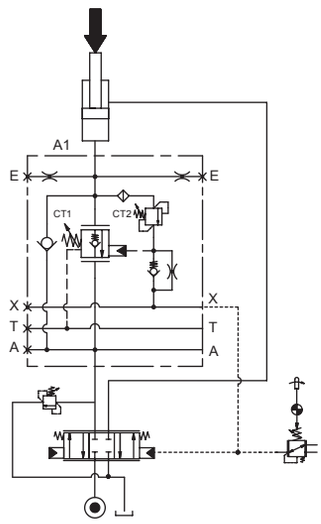
PORTS	**66**
A,A1	1”- SAE 6000
T,E,X	G 1/4”

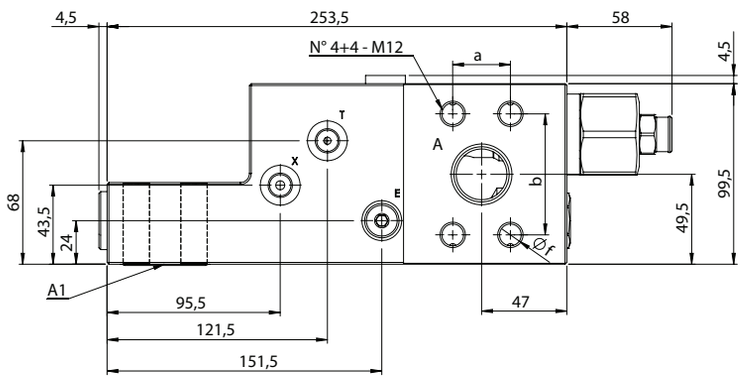
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
4	5 - 14	2.3	7.5

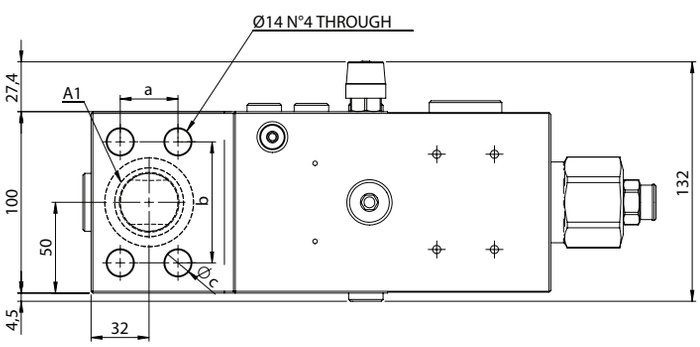
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	200 - 420	250	350

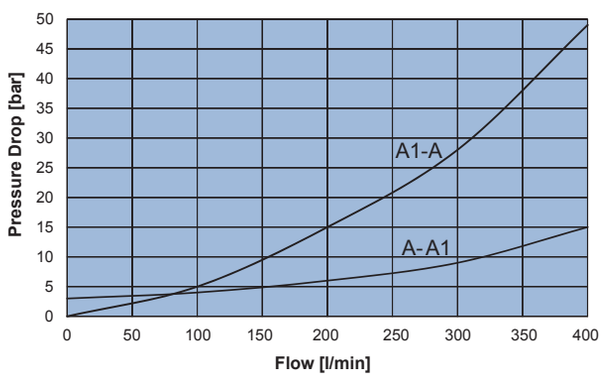
LOAD LOWERING CONTROL VALVE - SAE FLANGED 1”-1/4 - SAE6000

- Max flow Y2513Y11446700 . . . . . **400 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . .**Fully Compensated with drain line**
- Weight . . . . . .**15 Kg**
- Tamper proof cap CT1. . . . . **cod.9021030191**
- Tamper proof cap CT2 . . . . **cod.9021015101**









Flange	a	b	c	f	O-Ring
1”-1/4 SAE 6000	31.8	66.7	14.5	M 14	40.87x3.53 NBR 70°SH

Ordering code

Y 2 5 1 3 Y ☐ ☐ ☐ ☐ **0 0**

PILOT RATIO	
11	1:0 - FINE METERING

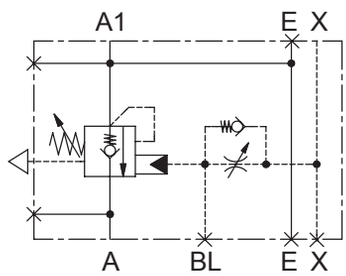
PORTS	**67**
A,A1	1”-1/4 - SAE 6000
T,E,X	G 1/4”

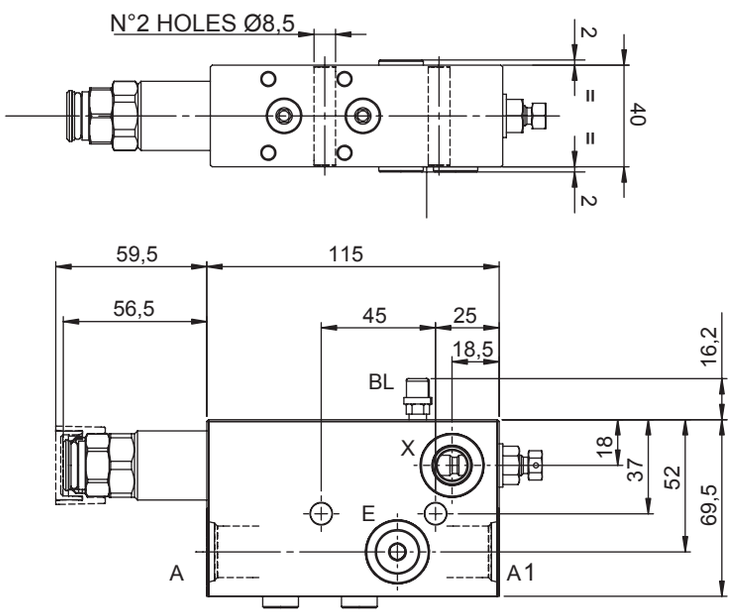
SPRING CT1			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @20 cc/min [bar]
4	5 - 14	2.3	7.5

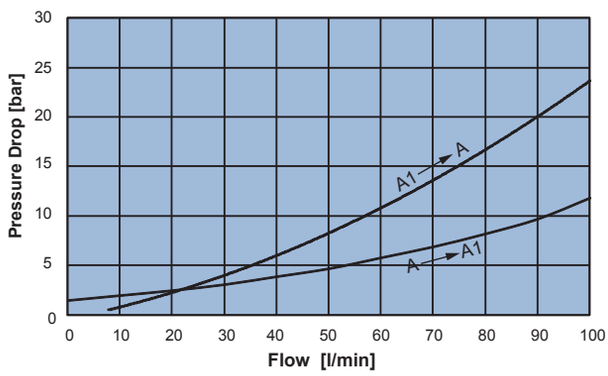
SPRING CT2			
	Setting Range min.-max. [bar]	Pressure Increase [bar/turn]	Standard Setting @4 l/min [bar]
4	200 - 420	250	350

SINGLE ACTING COUNTERBALANCE VALVE - BACK-PRESSURE COMPENSATED

- Flow . . . . . **110 l/min**
- Max working pressure. . . . . **410 bar**
- Compensation. . . . . **Fully Compensated**
- Weight. . . . . **3,5 Kg**
- Tamper proof cap. **cod.9021030190**







Note:
- Pressure setting must be 30% higher than pressure induced by load.
- Valve pre-arranged for electric bypass assembly

Ordering code

H 1 0 0 1 C ☐ ☐ S ☐ 0 0

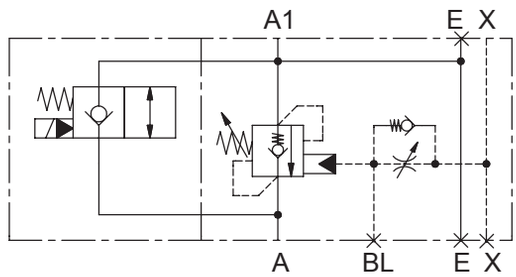
PILOT RATIO	
51	**4:1**

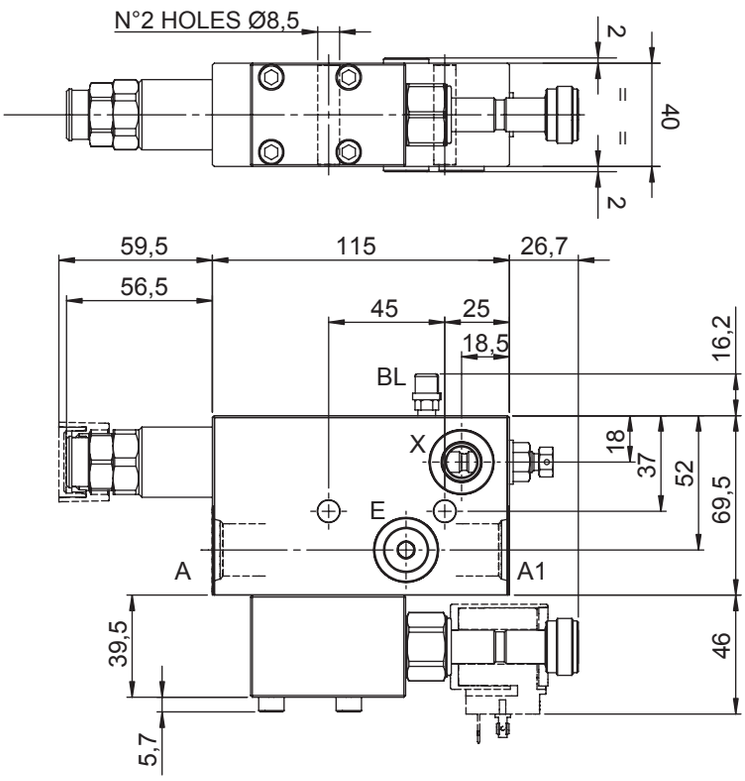
SPRINGS	**4**
Setting Range min.-max. [bar]	120 - 410
Pressure Increase [bar/turn]	85
Standard Setting 4 l/min [bar]	290

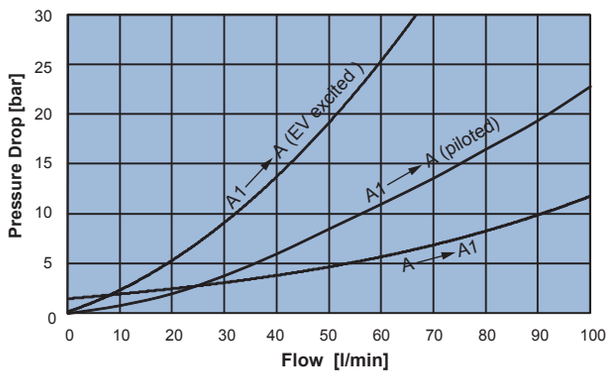
PORTS	**04**	**54**
A,A1	G 1/2”	SAE 10
X,E	G 1/4”	SAE 06

SINGLE ACTING COUNTERBALANCE VALVE WITH ELECTRIC BYPASS

- Flow . . . . . **110 l/min**
- Max working pressure. . . . . **350 bar**
- Compensation. . . . . **Not Compensated**
- Weight. . . . . **3,6 Kg**
- Tamper proof cap. **cod.9021030190**
- Coil **09400** to be ordered separately (page **189**)







Note:
- Pressure setting must be 30% higher than pressure induced by load.
- Back pressure can influence the opening pressure (LHD10X-C is recommended for circuits with high back pressure)

Ordering code

H 1 0 0 1 N ☐ ☐ S ☐ 0 0

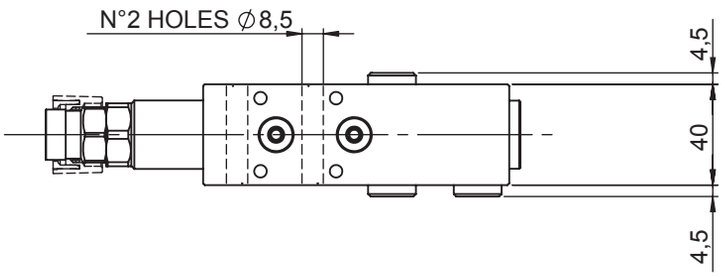
PILOT RATIO	
50	**4:1 + BPE**

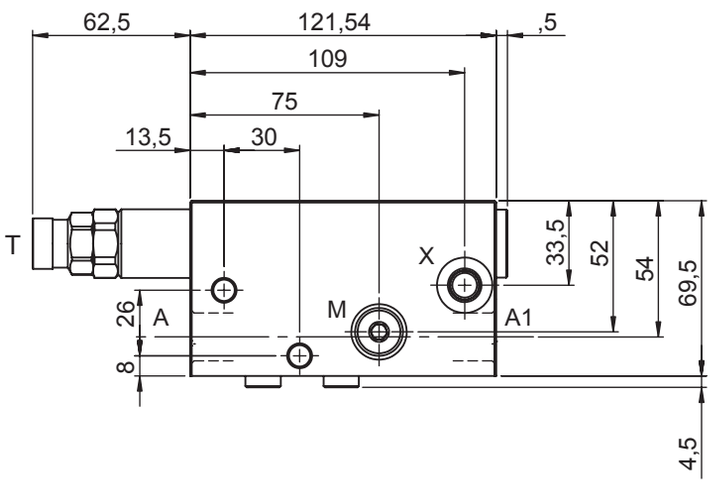
SPRINGS	4
Setting Range min.-max. [bar]	120 - 410
Pressure Increase [bar/turn]	85
Standard Setting 4 l/min [bar]	260

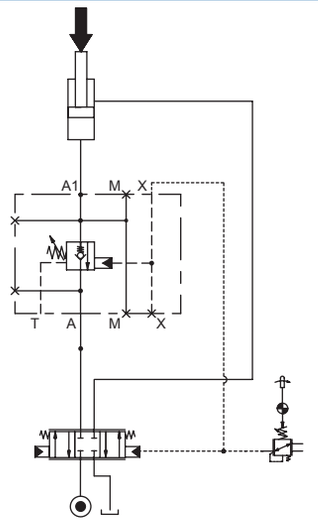
PORTS	04	54
A,A1	G 1/2”	SAE 10
X,E	G 1/4”	SAE 06

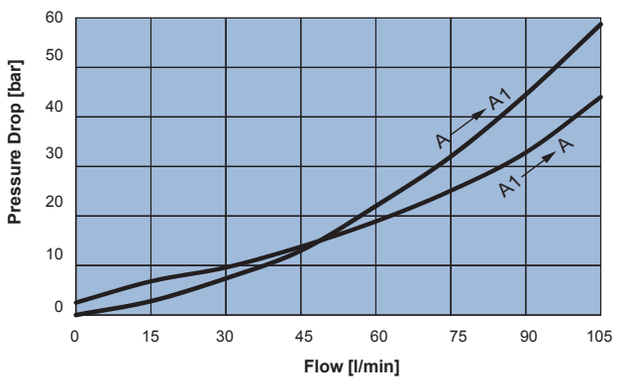
BOOM LOWERING CONTROL VALVE FOR FRONT LOADER

- Flow. . . . . **75 l/min**
- Max working pressure . . . . . **350 bar**
- Compensation . . . . . **Fully Compensated with drain line**
- Weight. . . . . **2.6 Kg**
- Tamper proof cap. **cod.9021030191**









Note:
- Hydraulic joystick operated valve for front loaders.
- Connect T port direct to tank by a drain line.
- The valve does not operate for pressure relief.

Ordering code

Y 1 0 2 3 Y ☐ ☐ 0 ☐ 0 0

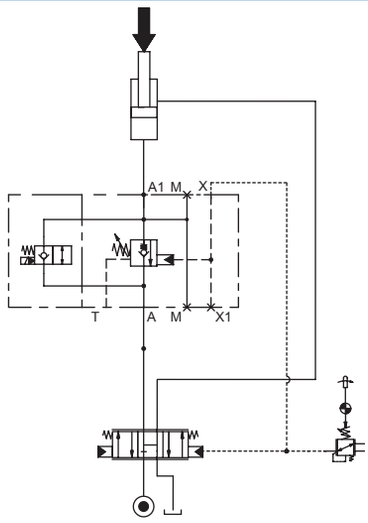
PILOT RATIO	
11	1:0 FINE METERING

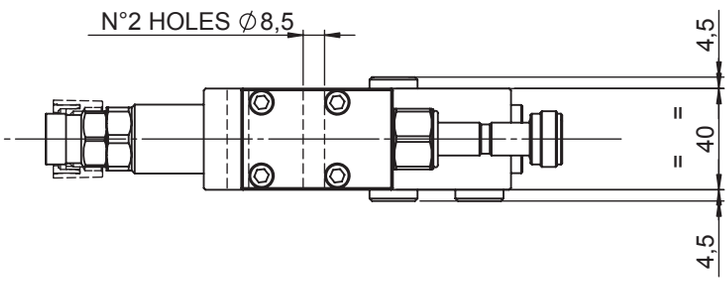
SPRING	2
Setting Range min.-max. [bar]	5 - 14
Pressure Increase [bar/turn]	2.5
Standard Setting 4 l/min [bar]	7,5/+0,5

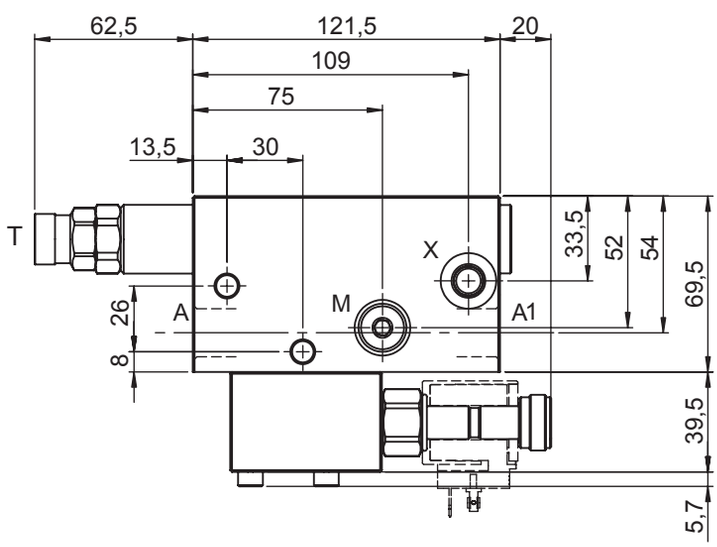
PORTS	04	54
A,A1	G 1/2”	SAE 10
T,X,X1,M	G 1/4”	SAE 06

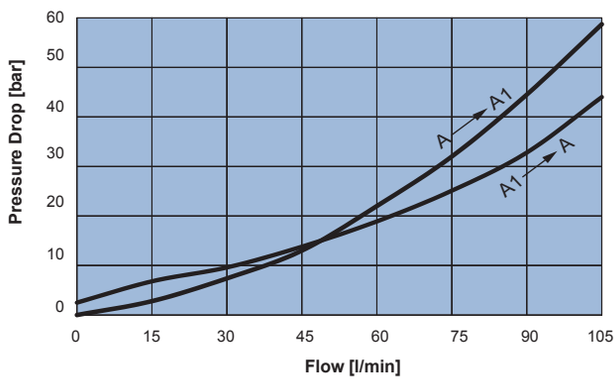
BOOM LOWERING CONTROL VALVE FOR FRONT LOADER WITH BY PASS

- Flow. . . . . **75 l/min**
- Max working pressure . . . . . **350 bar**
- Compensation . . . . . **Fully Compensated with drain line**
- Weight. . . . . **3.6 Kg**
- Tamper proof cap. **cod.9021030191**
- Coil **09400** to be ordered separately (page **189**)









Note:

- Hydraiulic joystick operated valve for front loaders equipped with solenoid operated bay-pass for floating function.
- Connect T port direct to tank by a drain line.
- The valve does not operate for pressure relief.

Ordering code

Y 1 0 2 3 Y ☐ ☐ S ☐ 0 1

PILOT RATIO	
12	1:0 FINE METERING + BPE

SPRING	2
Setting Range min.-max. [bar]	5 - 14
Pressure Increase [bar/turn]	2.5
Standard Setting 4 l/min [bar]	7,5/+0,5

PORTS	04	54
A,A1	G 1/2”	SAE 10
T,X,X1	G 1/4”	SAE 06

FLOW CONTROL VALVES

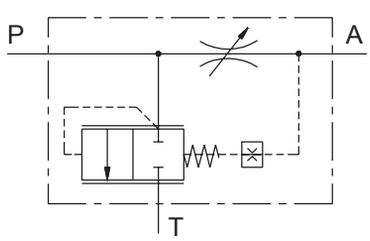
The main characteristic of Flow control valves described in this chapter is that compensator and flow regulator are mounted directly inside the manifold, so that this type of valve is directly installed in the hydraulic circuit.

There are 2 different types of flow control valves, according to the type of adjuster:

- Electro-proportional flow regulators
- Manual flow regulators

3 WAYS IN LINE MOUNTED FLOW REGULATORS

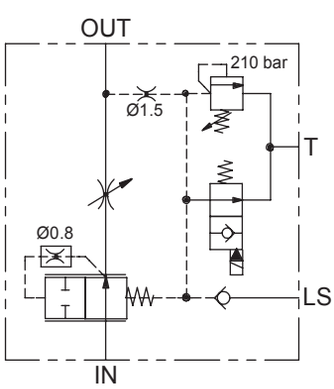
Whatever working pressure is, 3-way flow regulators grant a constant adjustment of oil flow inside an hydraulic line (A), draining excess flow through a third line (T).
Main components are: an flow regulator device and a 2-way NC compensator.
To have an efficient functionality, pressure on third line (T) must be lower than pressure on regulated line (A).



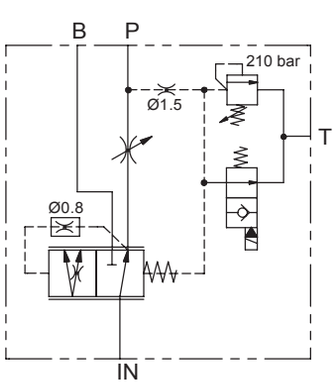
FLOW REGULATORS FOR EARTH MOVING MACHINES

Flow regulators for Earth movement machines are hydraulic valves designed to allow the installation of hydraulic hammers, trenchers and/or other hydraulic tools on excavators, backhoes and/or other machines.

Flow regulators for earth moving machines are designed in two different types: 2 way or 3 way valves. They are equipped with: (1) relief valves, to reduce pressure on regulated line; (2) dump electric valves.



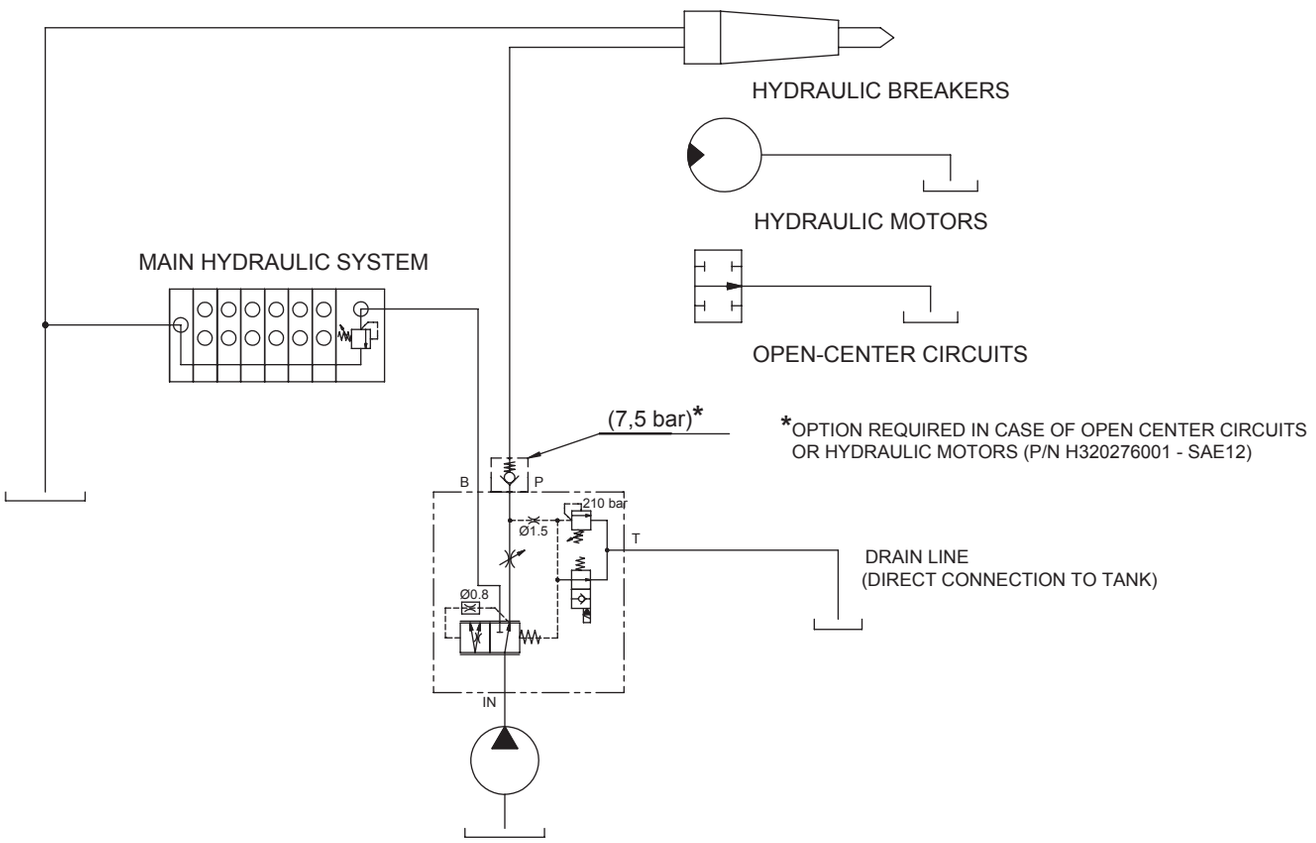
2 way LS Regulator



3 way priority Regulator

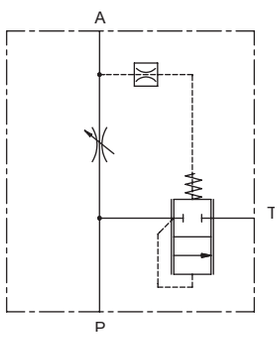
FLOW CONTROL VALVES

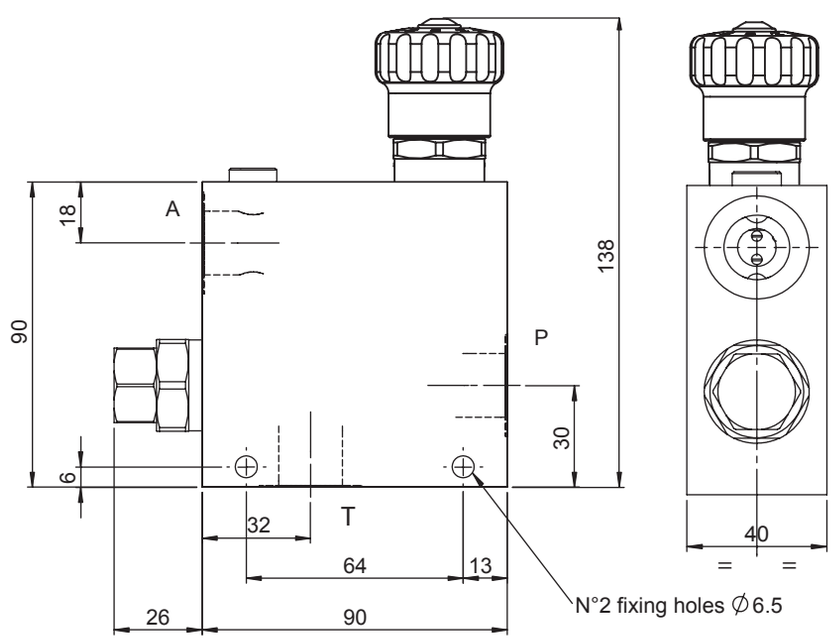
To have an efficient functionality, when flow control valve is not operating, it is necessary to assure at least 7.5 bar pressure on the regulated port (OUT or P). For applications linked to hydraulic motors or open-centre direct control valves, the installation of a 7.5 bar-pre-loaded uni-directional valve is required.



3 WAY FLOW CONTROL VALVE, MANUAL CONTROL

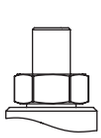
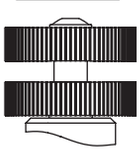
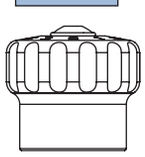
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Weight . . . . . **1,8 Kg**





Ordering code

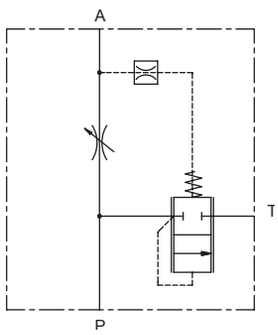
6 F 3 0 0 ☐ 0 0 S ☐ 0 0 0

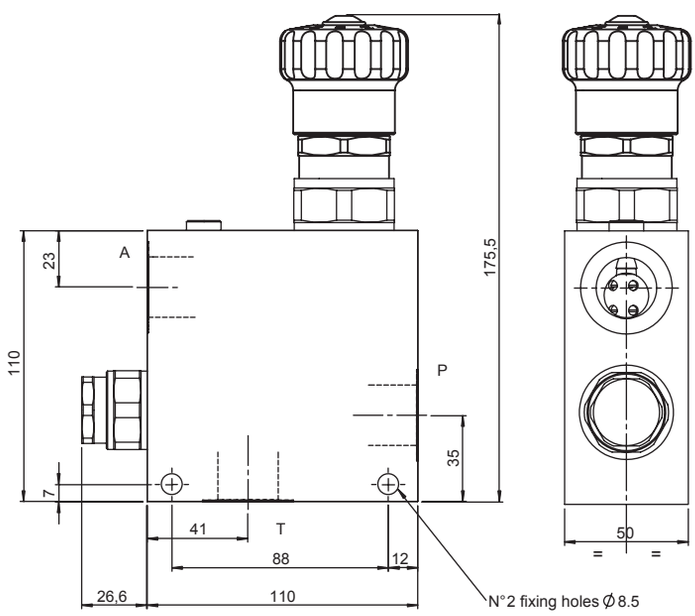
0	4	5
		
Screw	**Handknob**	**Friction lock hand knob**

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

3 WAY FLOW CONTROL VALVE, MANUAL CONTROL

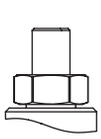
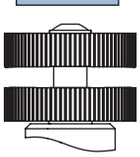
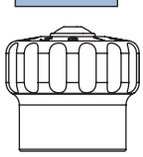
- Max regulated flow . . . . . **90 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Weight . . . . . **2 Kg**





Ordering code

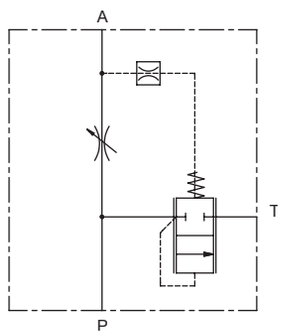
6 F 3 0 0 ☐ 0 0 S ☐ 0 0 0

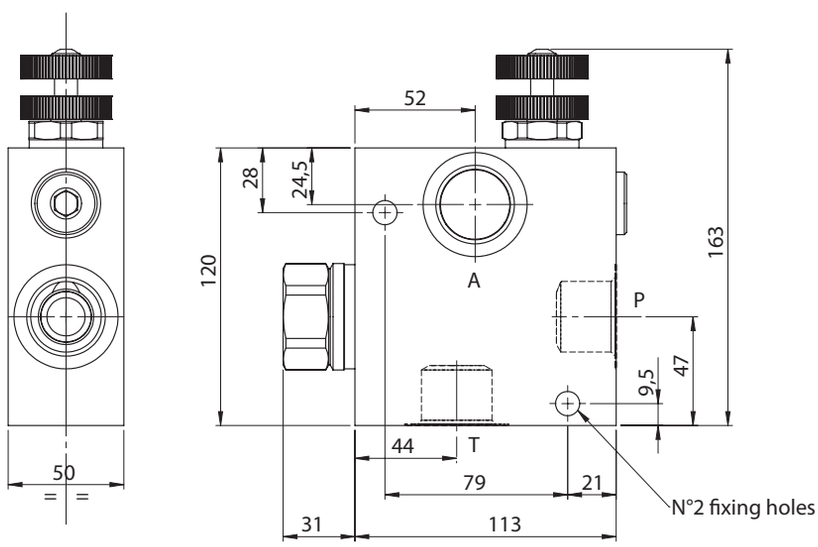
0	4	5
		
Screw	Handknob	Friction lock hand knob

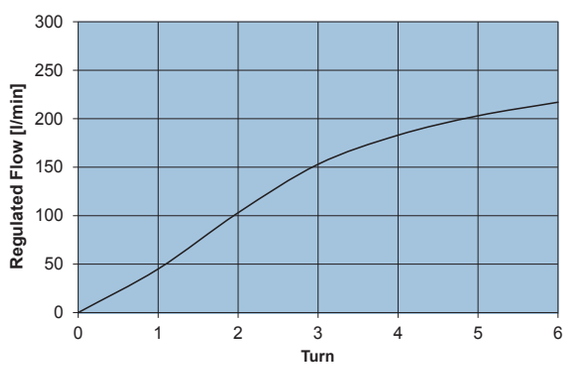
PORTS	05
A,P,T	G 3/4”

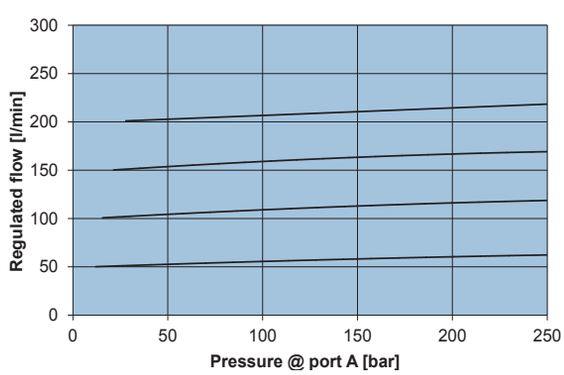
3 WAY FLOW CONTROL VALVE, MANUAL CONTROL

- Max regulated flow . . . . . **200 l/min**
- Maximum flow. . . . . **300 l/min**
- Max pressure P:A. . . . . **210 bar**
- Seals. . . . . **NBR and PTFE**
- Weight . . . . . **2,3 Kg**



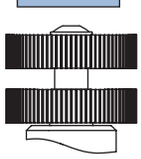






Ordering code

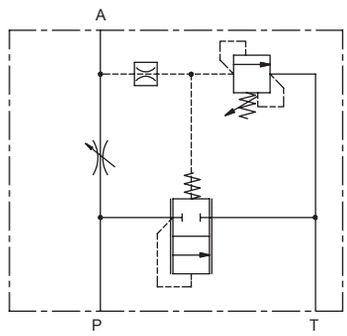
6 F 3 0 0 ☐ 0 0 A ☐ 0 0 0

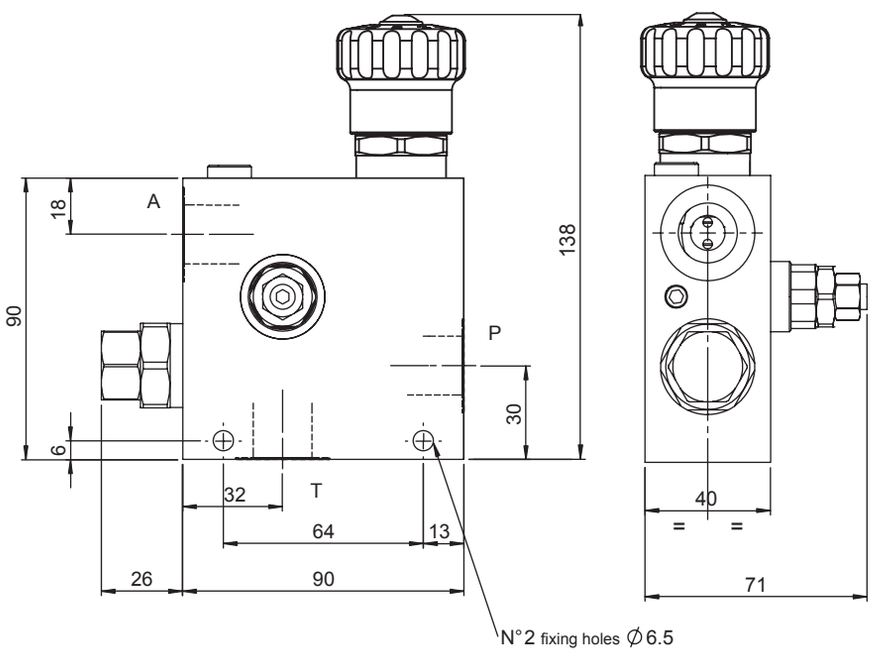
0	4
	
Screw	Handknob

PORTS	06
A,P,T	G 1”

3 WAY FLOW CONTROL VALVE, MANUAL CONTROL AND PRESSURE RELIEF VALVE

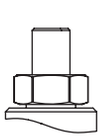
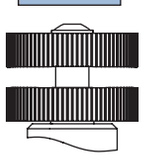
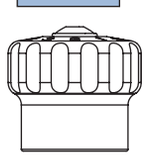
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Weight . . . . . **2 Kg**





Ordering code

6 F 3 0 0 ☐ ☐ S ☐ 0 0 0

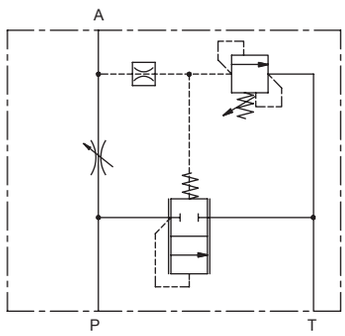
0	4	5
		
Screw	**Handknob**	**Friction lock hand knob**

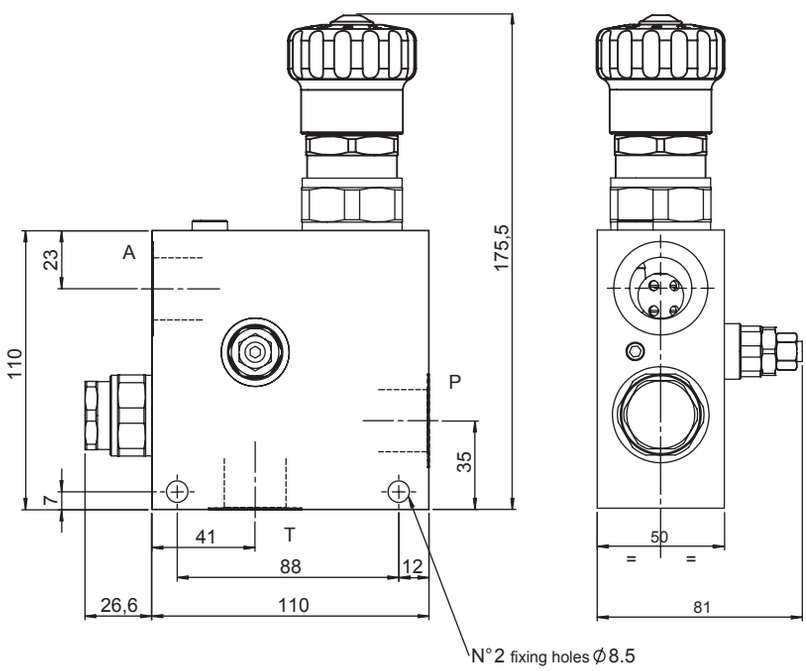
RELIEF VALVE	M2	M3
Setting range [bar]	40 - 220	50 - 350
Pressure increase [bar/turn]	34	63
Standard Setting 4 l/min [bar]	100	200

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

3 WAY FLOW CONTROL VALVE, MANUAL CONTROL AND PRESSURE RELIEF VALVE

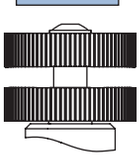
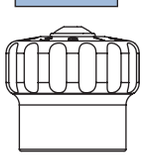
- Max regulated flow . . . . . **90 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Weight . . . . . **2,2 Kg**





Ordering code

6 F 3 0 0 ☐ ☐ S ☐ 0 0 0

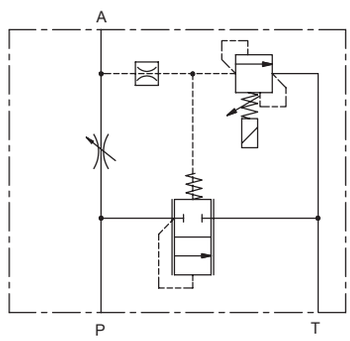
0	4	5
		
Screw	**Handknob**	**Friction lock hand knob**

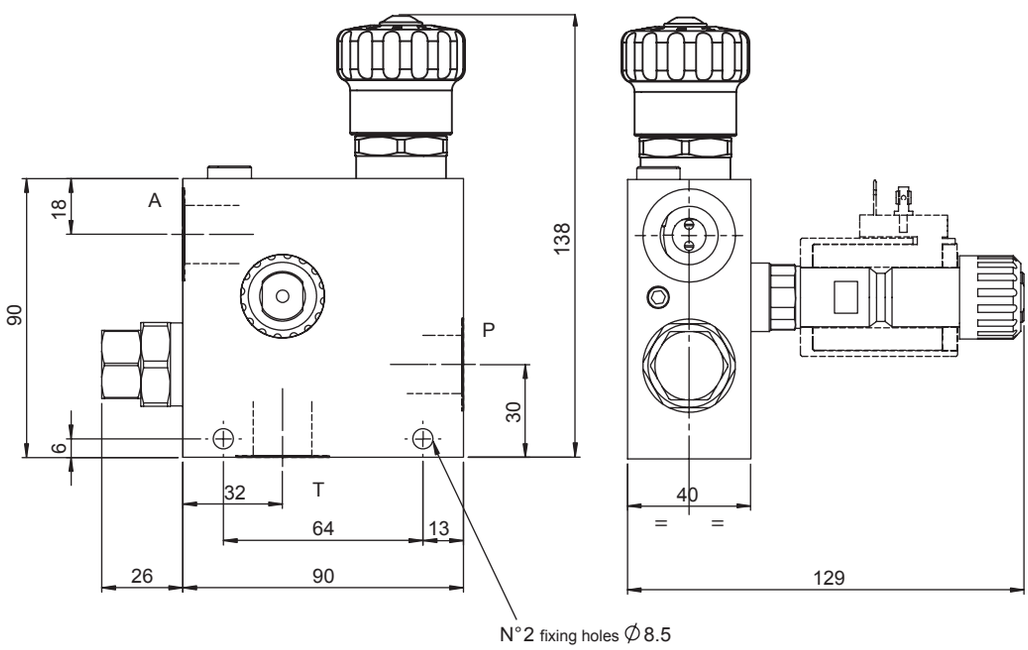
RELIEF VALVE	M2	M3
Setting range [bar]	40 - 220	50 - 350
Pressure increase [bar/turn]	34	63
Standard Setting 4 l/min [bar]	100	200

PORTS	05
A,P,T	G 3/4”

3 WAY FLOW CONTROL VALVE, MANUAL CONTROL & ELECTRO-PROPORTIONAL RELIEF VALVE

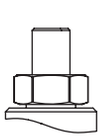
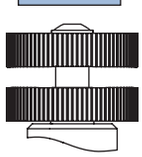
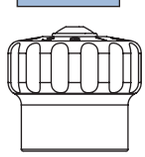
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

6 F 3 0 0 ☐ ☐ S ☐ 0 0 0

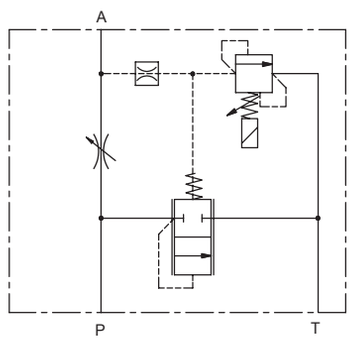
0	4	5
		
Screw	Handknob	Friction lock hand knob

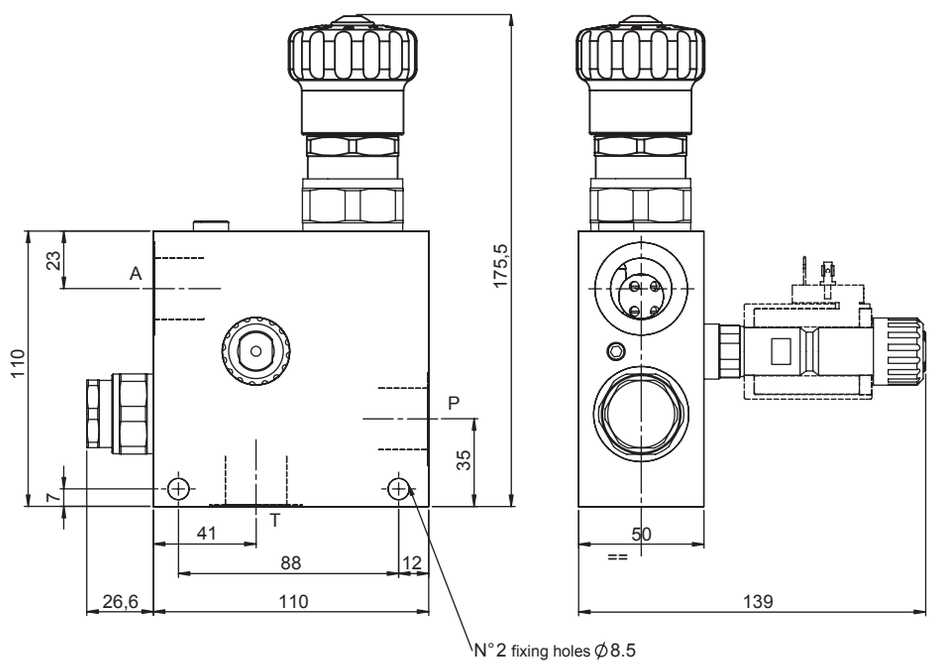
RELIEF VALVE	P2
Setting range [bar]	8 - 250

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

3 WAY FLOW CONTROL VALVE, MANUAL CONTROL & ELECTRO-PROPORTIONAL RELIEF VALVE

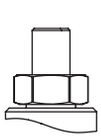
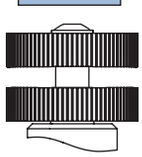
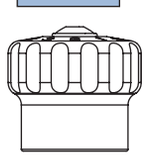
- Max regulated flow . . . . . **90 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

6 F 3 0 0 ☐ ☐ S ☐ 0 0 0

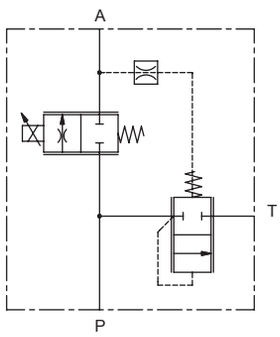
0	4	5
		
Screw	Handknob	Friction lock hand knob

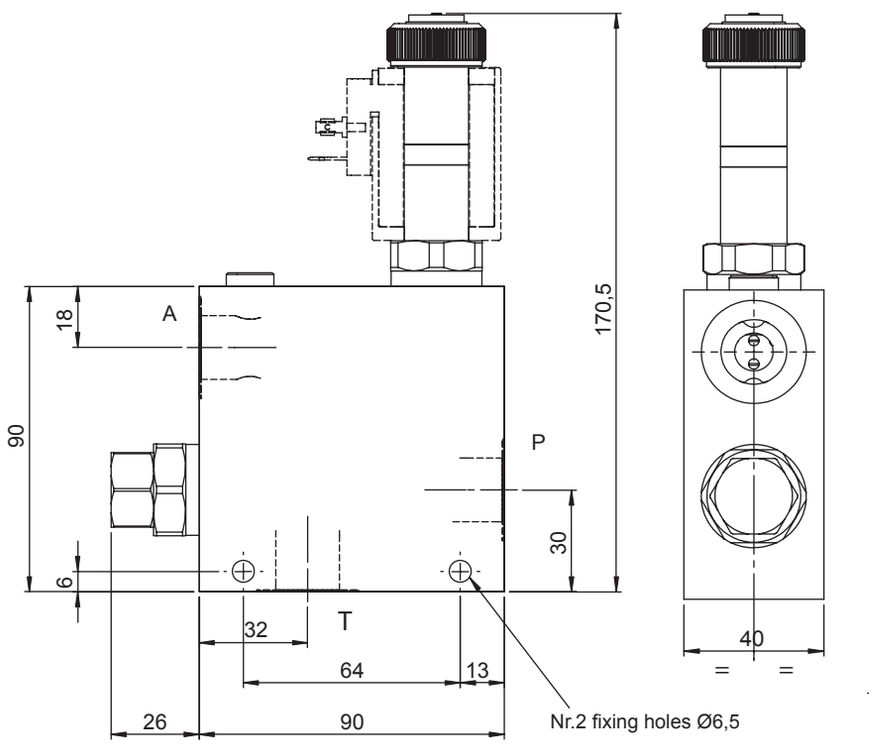
RELIEF VALVE	P2
Setting range [bar]	8 - 250

PORTS	05
A,P,T	G 3/4”

3 WAY FLOW CONTROL VALVE, ELECTRO-PROPORTIONAL CONTROL

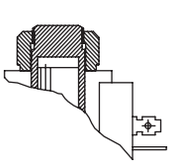
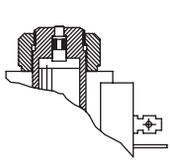
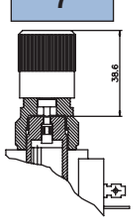
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

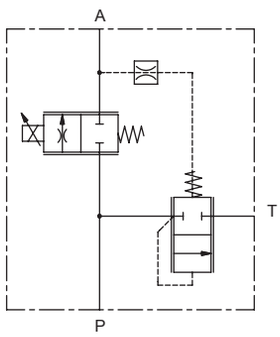
6 F 3 0 1 ☐ 0 0 S ☐ 0 0 0

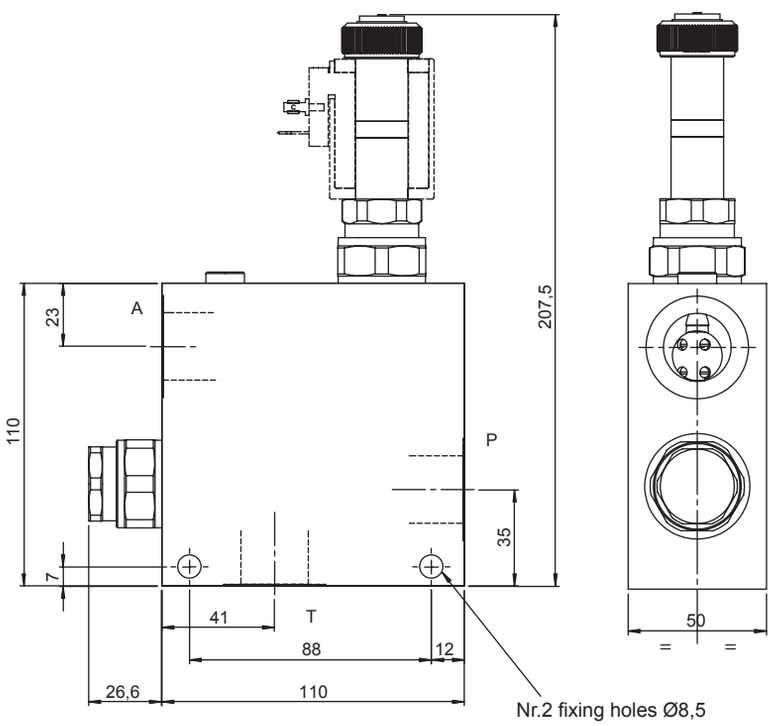
0	1	7
		
No emergency	Push pin	Handknob

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

3 WAY FLOW CONTROL VALVE, ELECTRO-PROPORTIONAL CONTROL

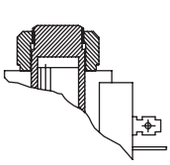
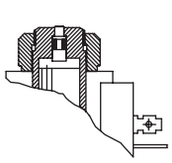
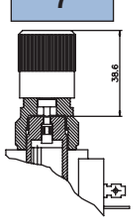
- Max regulated flow . . . . . **75 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **2,2 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

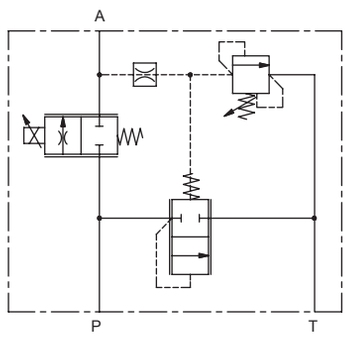
6 F 3 0 1 ☐ 0 0 S ☐ 0 0 0

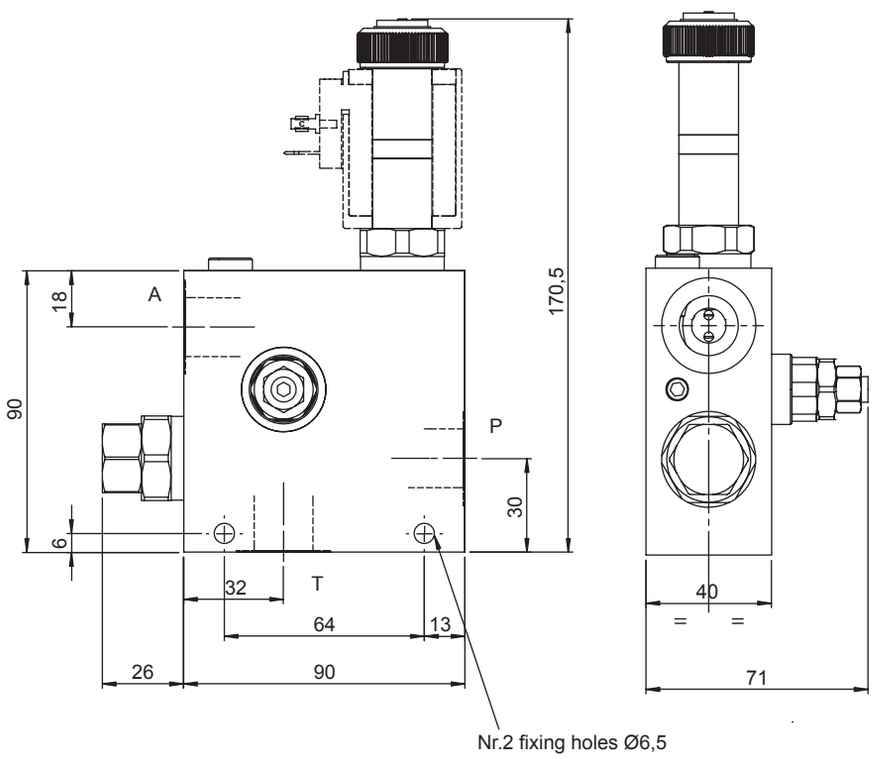
0	1	7
		
No emergency	Push pin	Handknob

PORTS	05
A,P,T	G 3/4”

3 WAY FLOW CONTROL VALVE, ELECTRO-PROPORTIONAL CONTROL & PRESSURE RELIEF VALVE

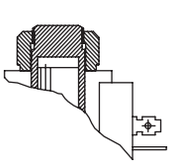
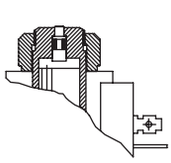
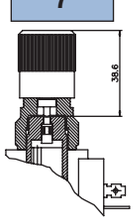
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page**190**)





Ordering code

6 F 3 0 1 ☐ ☐ S ☐ 0 0 0

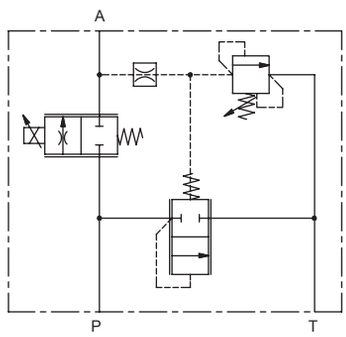
0	1	7
		
No emergency	**Push pin**	**Handknob**

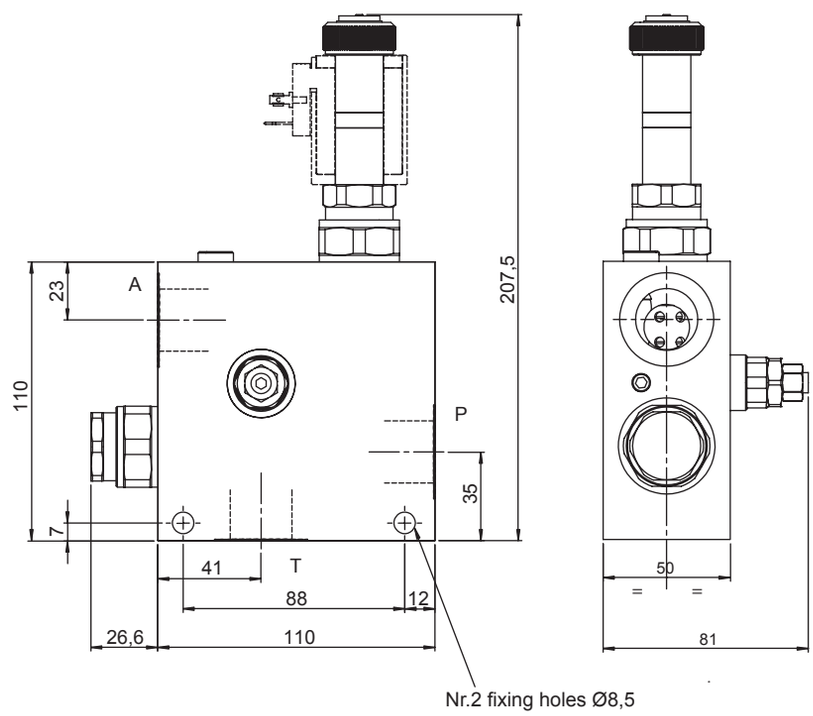
RELIEF VALVE	M2	M3
Setting range [bar]	40 - 220	50 - 350
Pressure increase [bar/turn]	34	63
Standard Setting 4 l/min [bar]	100	200

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

3 WAY FLOW CONTROL VALVE, ELECTRO-PROPORTIONAL CONTROL & PRESSURE RELIEF VALVE

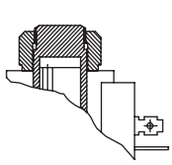
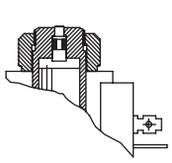
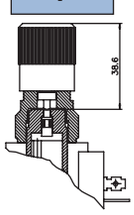
- Max regulated flow . . . . . **75 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

6 F 3 0 1 ☐ ☐ S ☐ 0 0 0

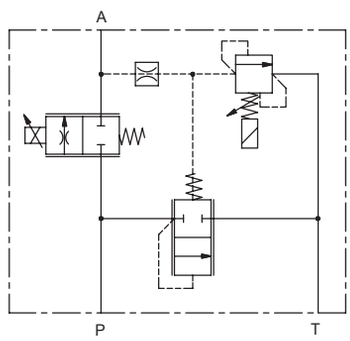
0	1	7
		
No emergency	**Push pin**	**Handknob**

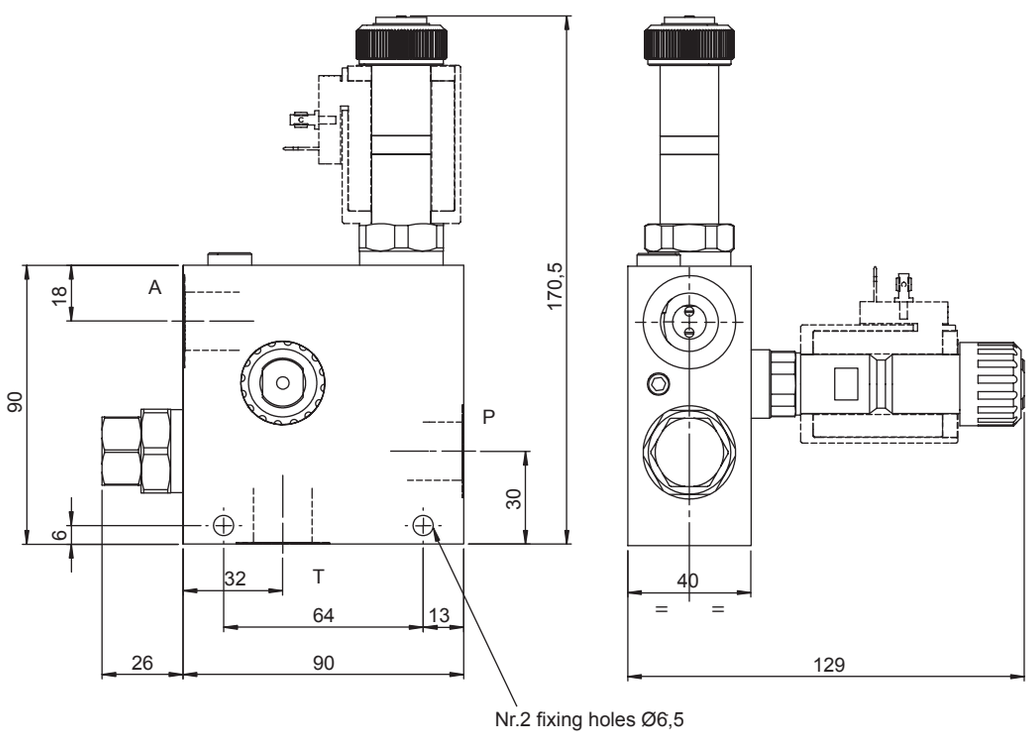
RELIEF VALVE	M2	M3
Setting range [bar]	40 - 220	50 - 350
Pressure increase [bar/turn]	34	63
Standard Setting 4 l/min [bar]	100	200

PORTS	05
A,P,T	G 3/4”

ELECTRO-PROPORTIONAL 3 WAY FLOW CONTROL & RELIEF VALVE

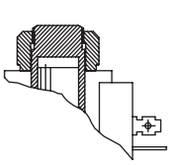
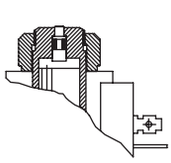
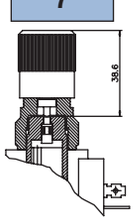
- Max regulated flow . . . . . **50 l/min**
- Maximum flow. . . . . **90 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

6 F 3 0 1 ☐ ☐ S ☐ 0 0 0

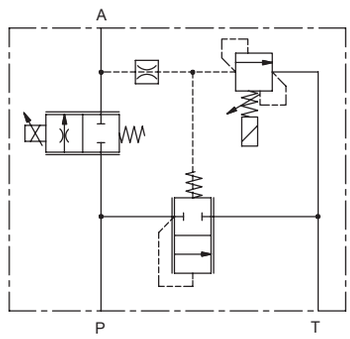
0	1	7
		
No emergency	Push pin	Handknob

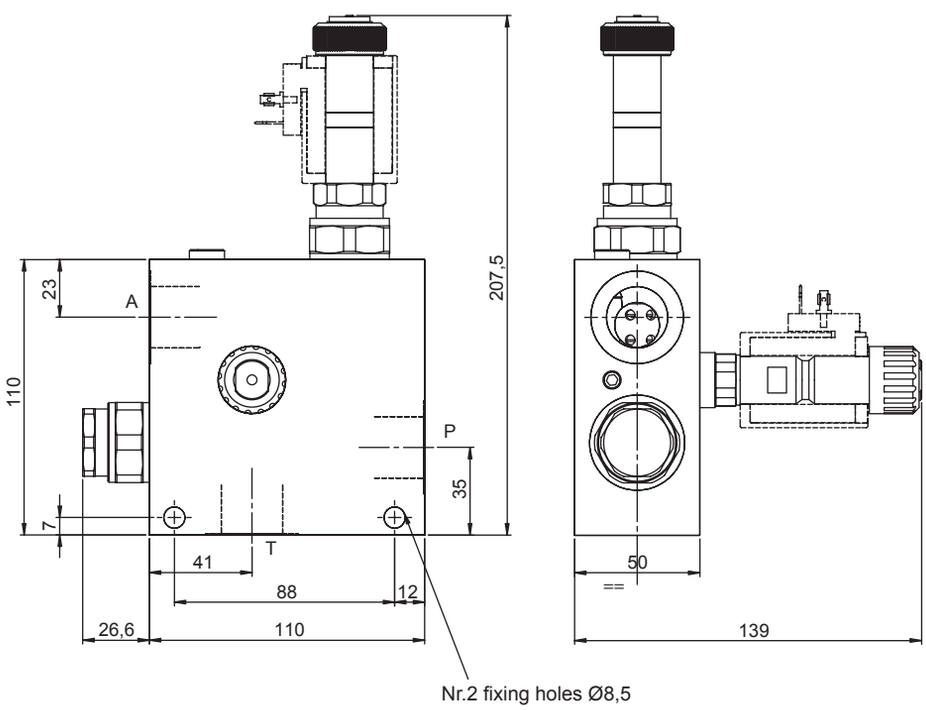
RELIEF VALVE	P2
Setting range [bar]	8 - 250

PORTS	03	04
A,P,T	G 3/8”	G 1/2”

ELECTRO-PROPORTIONAL 3 WAY FLOW CONTROL & RELIEF VALVE

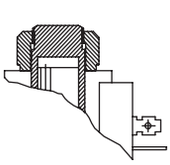
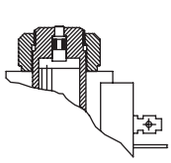
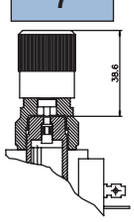
- Max regulated flow . . . . . **75 l/min**
- Maximum flow. . . . . **150 l/min**
- Max pressure T. . . . . **10 bar**
- Max pressure P:A. . . . . **350 bar**
- Seals. . . . . **NBR**
- Max current at 12 Vcc. **1800mA**
- Max current at 24 Vcc **900mA**
- PWM . . . . . **120 Hz**
- Hysteresis. **5%**
- Weight (with coil). . . . . **1,8 Kg**
- Ring nut tightening torque for coil: . . . . . **5 Nm**
- Coil **09800** to be ordered separately (page **190**)





Ordering code

6 F 3 0 1 ☐ ☐ S ☐ 0 0 0

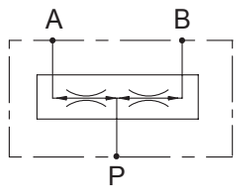
0	1	7
		
No emergency	Push pin	Handknob

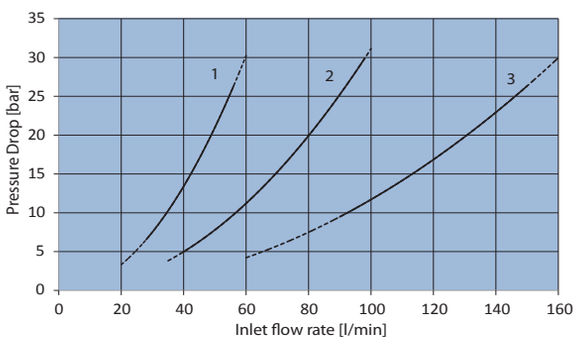
RELIEF VALVE	P2
Setting range [bar]	8 - 250

PORTS	05
A,P,T	G 3/4”

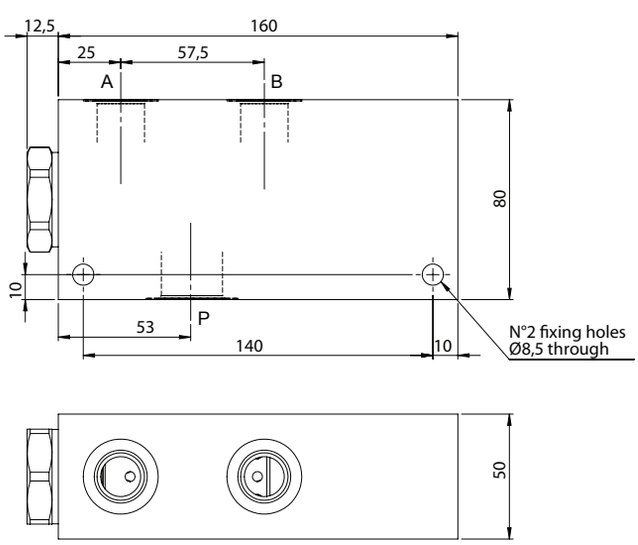
FLOW DIVIDER AND COMBINER VALVE

- Flow. . . . . .**150 l/min**
- Max working pressure. . . . . .**250 bar**
- Division ratio . . . . . **50% ÷ 50%**
- Tollerance. . . . . .**< +/-3%**
- Weight (layout 0). . . . . **1,90 Kg**
- Weight (layout 1). . . . . **1,75 Kg**

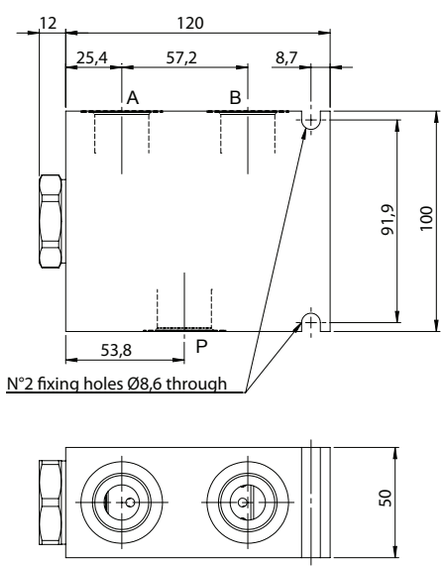




LAYOUT 0



LAYOUT 1



Ordering code

6 D 8 2 5 ☐ 0 A ☐ ☐ N 0 0

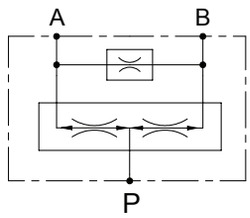
SETTING RANGE	1	2	3
Qmin ÷ Qmax l/min	28 ÷ 55	56 ÷ 95	90 ÷ 150

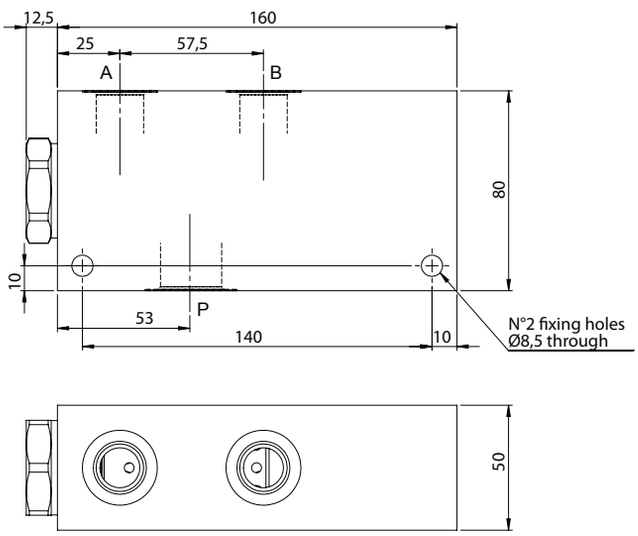
LAYOUT	0	1

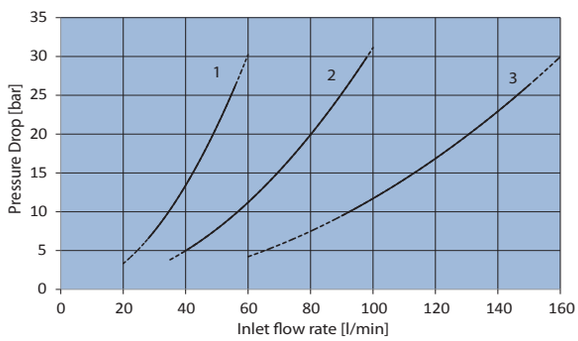
PORTS	54	55	65	66
P	G 3/4”	G 3/4”	G 1”	G 1”
A,B	G 1/2”	G 3/4”	G 3/4”	G 1”

FLOW DIVIDER AND COMBINER VALVE WITH EQUALIZING ORIFICE

- Flow. . . . . .**150 l/min**
- Max working pressure. . . . . .**250 bar**
- Division ratio . . . . . **50% ÷ 50%**
- Tollerance. . . . . .**< +/-3%**
- Weight . . . . . **1,90 Kg**







Ordering code

6 D 8 2 5 ☐ 0 A 0 ☐ G ☐

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

PORTS	54	55	65	66
P	G 3/4”	G 3/4”	G 1”	G 1”
A,B	G 1/2”	G 3/4”	G 3/4”	G 1”

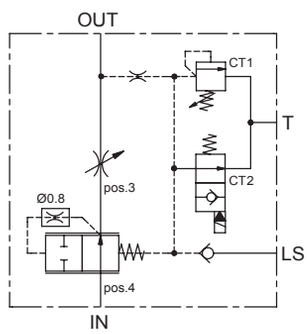
EQUALIZING ORIFICE	
00	Plug
******	Orifice diameter**

** Ordering code examples
6D82520A055G06 orifice Ø 0,6 mm
6D82520A055G15 orifice Ø 1,5 mm
(maximum Ø 2,8 mm)

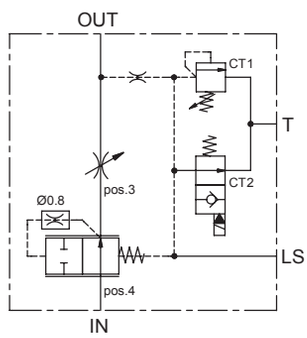
2 WAY PRESSURE COMPENSATED FLOW CONTROL VALVE FOR LS CIRCUITS

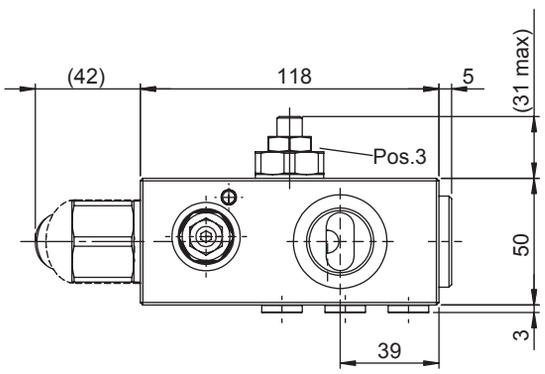
- Max pressure. . . . . **350 bar**
- Max regulated flow . . . . . **140 l/min**
- Standard regulated flow. . . . . **30 l/min**
- Regulated flow variation by turn . . . . . **15,5 l/min**
- Weight . . . . . **4,6 Kg**
- Coil **09400** to be ordered separately (page**189**)

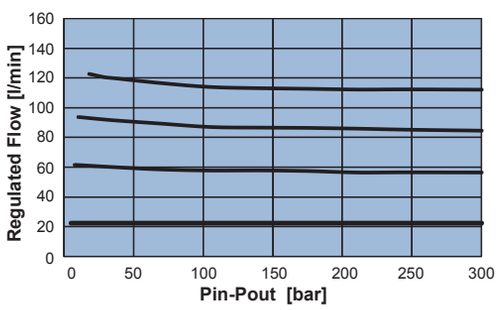
with LS check valve

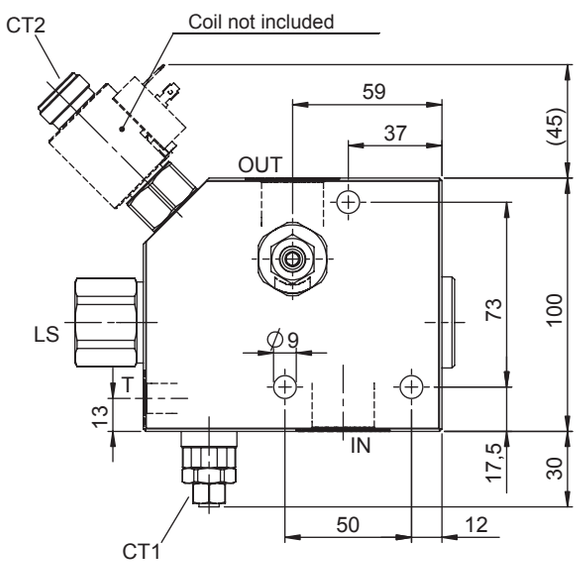


without LS check valve









Note:

- Flow (OUT) can be regulated at the required value, acting on adjustable screw (pos. 3); flow increases when the screw is turned clockwise.
- Max leakage in T: 3l/min.
- Max backpressure in T: 1,5 bar.
*- For optimal functionality of the compensator, when the electric valve (CT2) is open, it’s important to make sure that regulated line OUT is pressurized at 7,5 bar at least. If not, a unidirectional valve must be installed, to supply the required backpressure (see **pag. 182-183**).*
- Check valve on port LS requires dumping of Load Sensing line, through a compensated draining, when electric valve is open (CT2).
- For applications which need Post-Compensated directional control valves, refer to schemes 2 and 3, in which there is an LS check valve.
- For applications which need Pre-Compensated directional control valves and direct connections to variable piston pumps, refer to schemes 4 and 5.

Ordering code

6 F 2 S ☐ ☐ ☐ **0 0**

ELECTRIC-VALVE SCHEME	
0	Normally open - NO

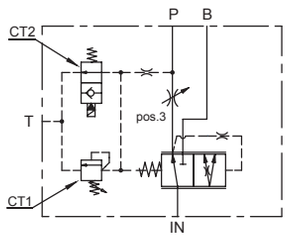
SPRING	2	3	4	5
Setting range [bar]	40 - 220	50 - 350	40 - 220	50 - 350
Pressure Increase [bar/turn]	34	63	34	63
Standard Setting [bar]	210	350	210	350
Check Valve LS	**with**	**with**	**without**	**without**

PORTS	05	55
IN,OUT	G 3/4”	SAE 12
T,LS	G 1/4”	SAE 06

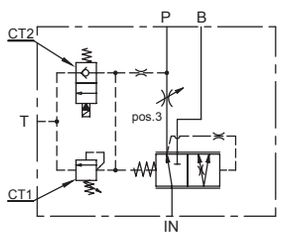
PRIORITY FLOW REGULATOR WITH ELECTRIC ACTIVATION AND PRESSURE RELIEF VALVE

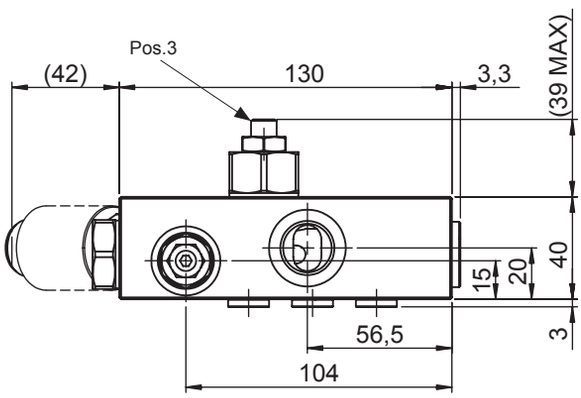
- Nominal Flow (IN) . . . . . **100 l/min**
- Max pressure. . . . . **350 bar**
- Max regulated flow (P). . . . . **85 l/min**
- Standard regulated flow . . . . . **30 l/min**
- Regulated flow variation by turn . . . . . **10 l/min**
- Weight . .. . **11.9 Kg**
- Coil **09400** to be ordered separately (page **189**)

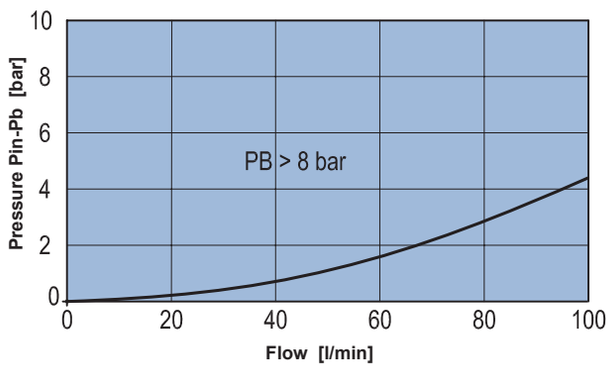
SCHEME 0

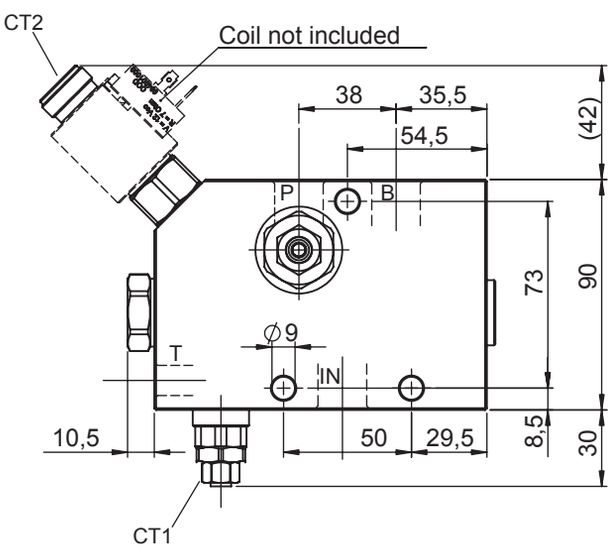


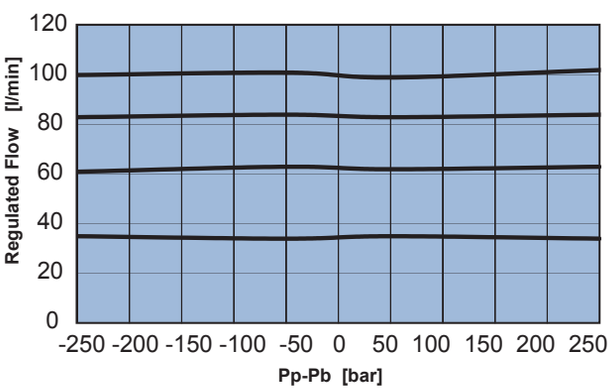
SCHEME 1











Note:

- Flow (P) can be regulated at the required value, acting on adjustable screw (pos. 3); flow gets increased when the screw is turned clockwise.
- Max leakage in T: 3l/min.
- Max backpressure in T: 1,5 bar
*- For optimal functionality of the compensator, when the electric valve (CT2) is open, it’s important to make sure that regulated P line is pressurized at least 7,5 bar. If not, a unidirectional valve must be installed, to supply the required backpressure (see **page 183**).*

Ordering code

6 F 3 S ☐ ☐ ☐ **0 0**

HYDRAULIC SCHEME	
0	CT2 Normally open - NO
1	CT2 Normally closed - NC
3	Without CT2

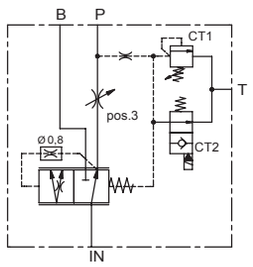
SPRING CT1	**0**	**3**
Setting Range [bar]	Without CT1	100 - 350
Pressure Increase [bar/turn]		63
Standard Setting [bar]		210

PORTS	**04**	**52**
IN,P,B	G 1/2”	SAE 10
T	G 1/4”	SAE 06

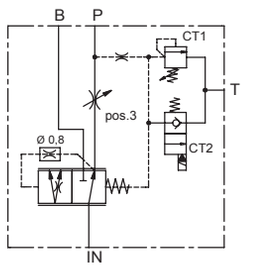
PRIORITY FLOW REGULATOR WITH ELECTRIC ACTIVATION AND PRESSURE RELIEF VALVE

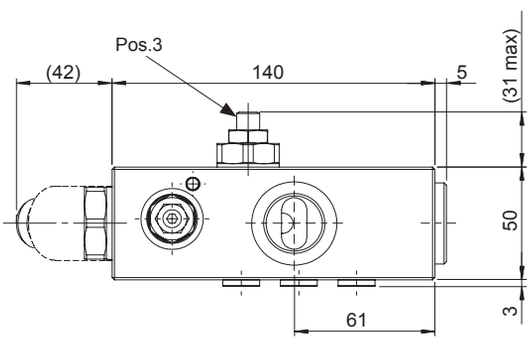
- Nominal Flow (IN). . . . . **200 l/min**
- Max pressure. . . . . **350 bar**
- Max regulated flow (P) . . . . . **140 l/min**
- Standard regulated flow. . . . . **30 l/min**
- Regulated flow variation by turn . . . . . **19 l/min**
- Weight . . . . . **5 Kg**
- Coil **09400** to be ordered separately (page **189**)

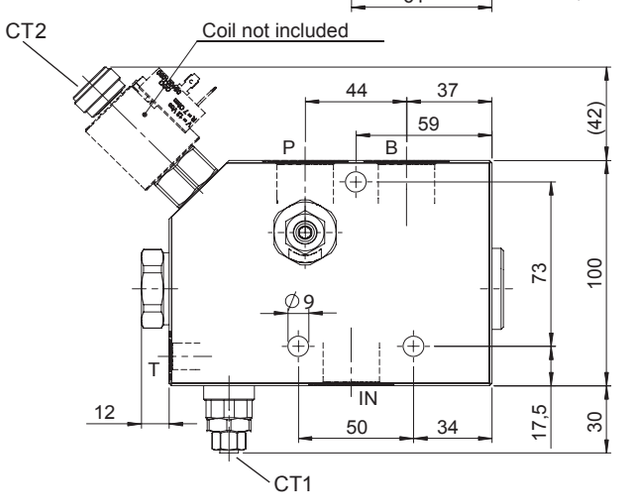
SCHEME 0

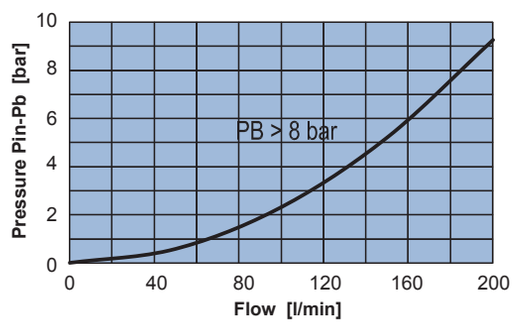


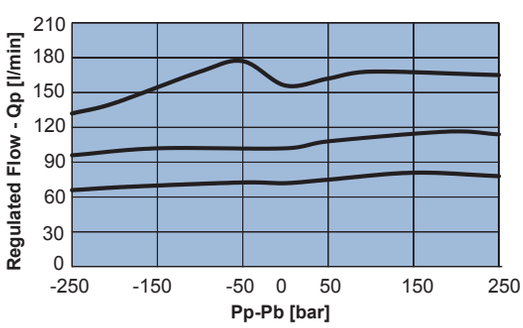
SCHEME 1











Note:
- Flow (P) can be regulated at the required value, acting on adjustable screw (pos. 3); flow gets increased when the screw is turned clockwise.
- Max leakage in T: 3l/min.
- Max backpressure in T: 1,5 bar
*- For optimal functionality of the compensator, when the electric valve (CT2) is open, it's important to make sure that regulated P line is pressurized at least 7,5 bar. If not, a unidirectional valve must be installed, to supply the required backpressure (see **page 183**).*

Ordering code

6 F 3 S ☐ ☐ ☐ **0 0**

HYDRAULIC SCHEME	
0	CT2 Normally open - NO
1	CT2 Normally closed - NC
3	Without CT2

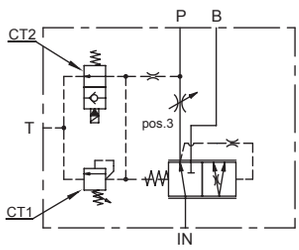
SPRING CT1	0	2	3
Setting Range [bar]	Without CT1	40 - 220	50 - 350
Pressure Increase [bar/turn]		34	63
Standard Setting [bar]		210	350

PORTS	05
IN,P,B	G 3/4”
T	G 1/4”

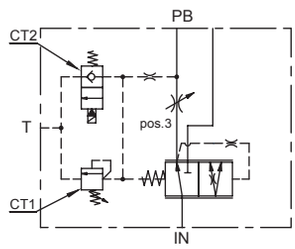
PRIORITY FLOW REGULATOR WITH ELECTRIC ACTIVATION AND PRESSURE RELIEF VALVE

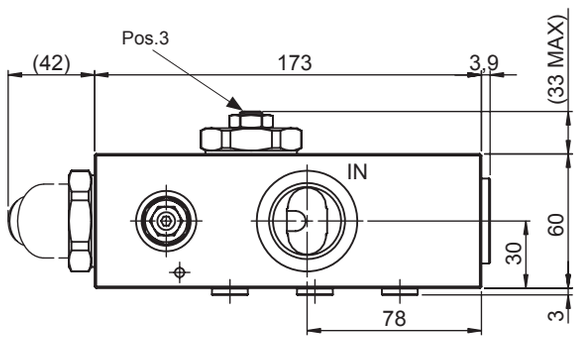
- Nominal Flow (IN) . . . . . .**300 l/min**
- Max pressure. . . . . **350 bar**
- Max regulated flow (P). . . . . .**220 l/min**
- Standard regulated flow . . . . . .**30 l/min**
- Regulated flow variation by turn (Pos.3). . . . . **27 l/min**
- Weight . .. . . **8.8 Kg**
- Coil **09400** to be ordered separately (page **189**)

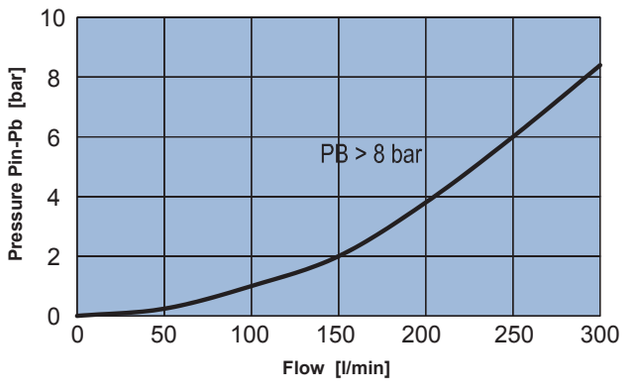
SCHEME 0

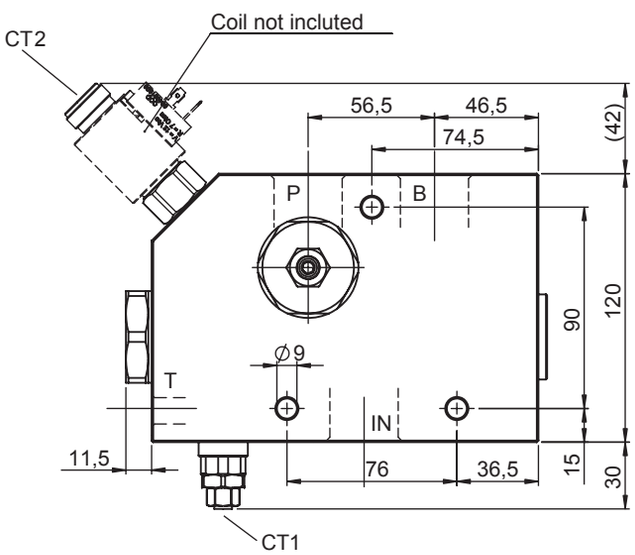


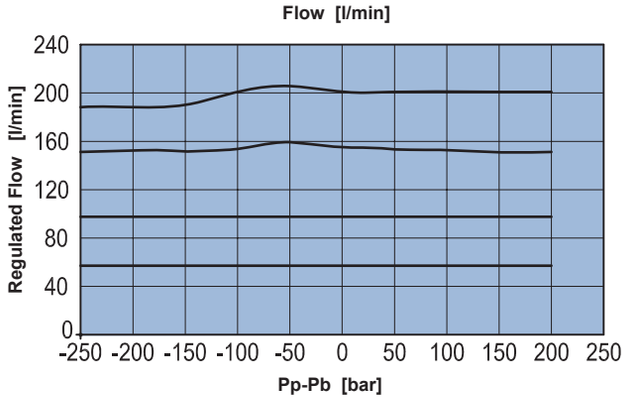
SCHEME 1











Note:
- Flow (P) can be regulated at the required value, acting on adjustable screw (pos. 3); flow gets increased when the screw is turned clockwise.
- Max leakage in T: 3l/min.
- Max backpressure in T: 1,5 bar
*- For optimal functionality of the compensator, when the electric valve (CT2) is open, it’s important to make sure that regulated P line is pressurized at least 7,5 bar. If not, a unidirectional valve must be installed, to supply the required backpressure (see **page 183**).*

Ordering code

6 F 3 S ☐ ☐ ☐ **0 0**

HYDRAULIC SCHEME	
0	CT2 Normally open - NO
1	CT2 Normally closed - NC
3	Without CT2

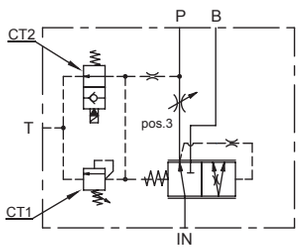
SPRING CT1	**0**	**3**
Setting Range [bar]	Without CT1	100 - 350
Pressure Increase [bar/turn]		63
Standard Setting [bar]		210

PORTS	**06**
IN,P,B	G 1”
T	G 1/4”

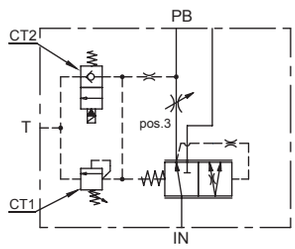
PRIORITY FLOW REGULATOR WITH ELECTRIC ACTIVATION AND PRESSURE RELIEF VALVE

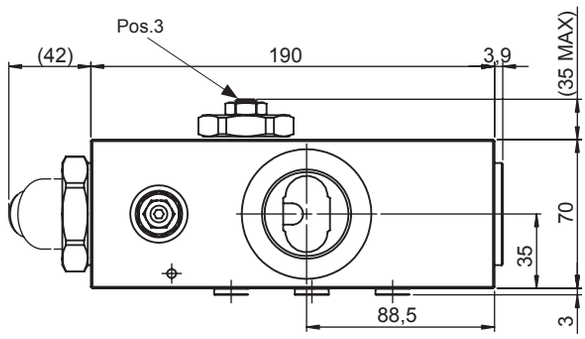
- Nominal Flow (IN) . . . . . **400 l/min**
- Max pressure. . . . . **350 bar**
- Max regulated flow (P). . . . . **300 l/min**
- Standard regulated flow . . . . . **30 l/min**
- Regulated flow variation by turn (Pos.3). . . . . **20 l/min**
- Weight . .. . **11.9 Kg**
- Coil **09400** to be ordered separately (page **189**)

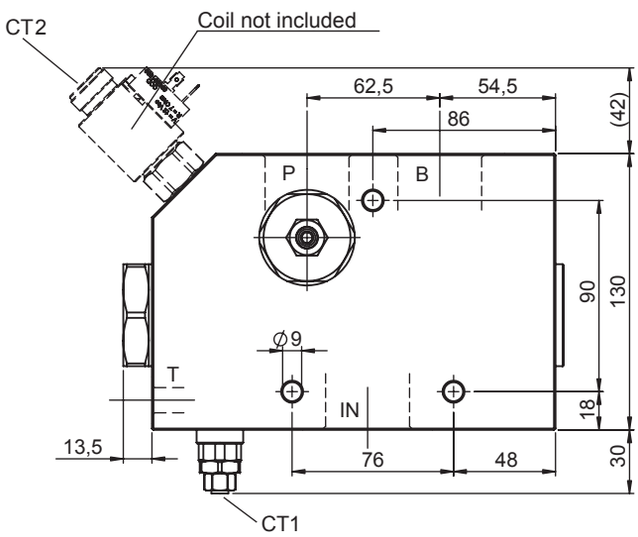
SCHEME 0

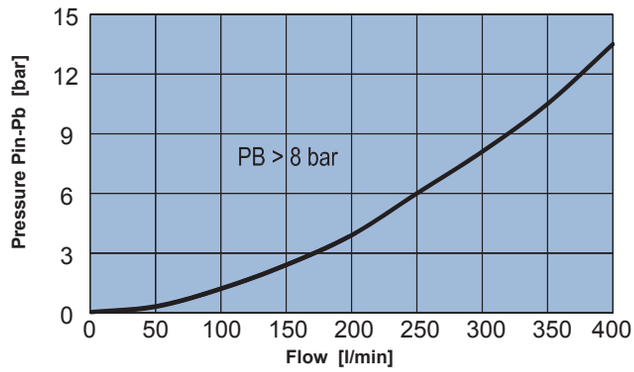


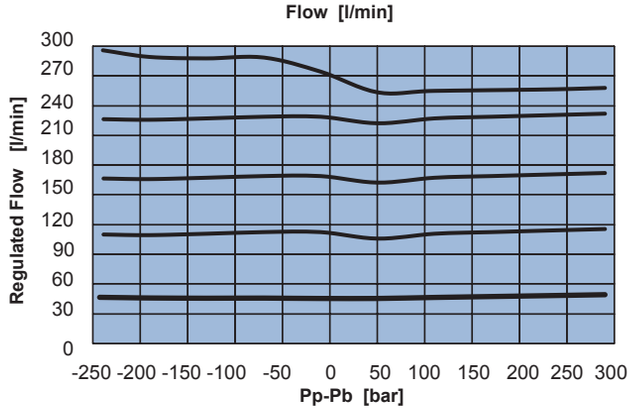
SCHEME 1











Note:
- Flow (P) can be regulated at the required value, acting on adjustable screw (pos. 3); flow gets increased when the screw is turned clockwise.
- Max leakage in T: 3l/min.
- Max backpressure in T: 1,5 bar
*- For optimal functionality of the compensator, when the electric valve (CT2) is open, it’s important to make sure that regulated P line is pressurized at least 8-9 bar. If not, a unidirectional valve must be installed, to supply the required backpressure (see **page 183**).*

Ordering code

6 F 3 S ☐ ☐ ☐ **0 0**

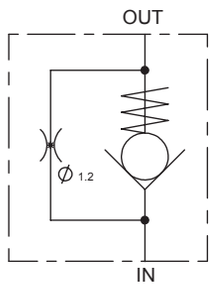
HYDRAULIC SCHEME	
0	CT2 Normally open - NO
1	CT2 Normally closed - NC
3	Without CT2

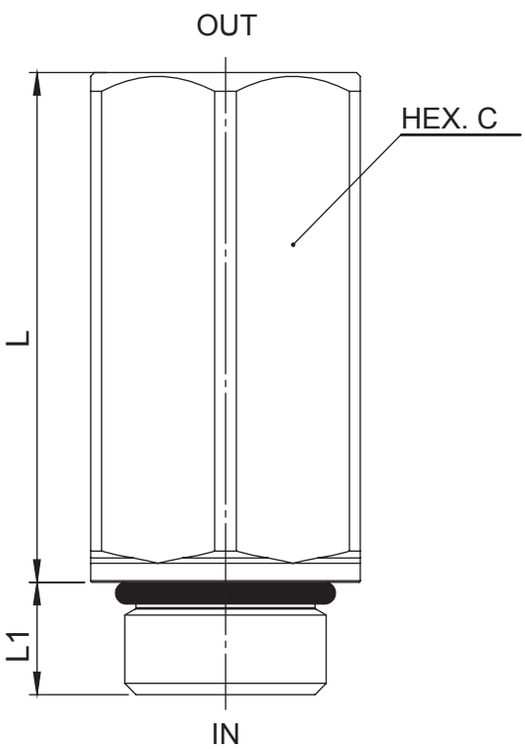
SPRING CT1	0	3
Setting Range [bar]	Without CT1	100 - 350
Pressure Increase [bar/turn]		63
Standard Setting [bar]		210

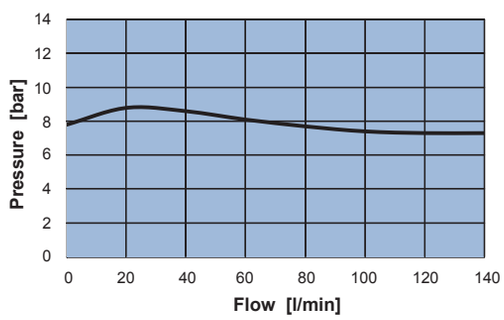
PORTS	07
IN,P,B	G 1”-1/4”
T	G 1/4”

CHECK VALVE M/F WITH BY-PASS ORIFICE

- Max pressure. . . . . **350 bar**
- Max flow. . . . . **130 l/min**
- Seals. . . . . **NBR**
- Cartridge tightening torque: . . . . . **150 Nm**
- Weight. . . . . **0,45 Kg**







Ordering code

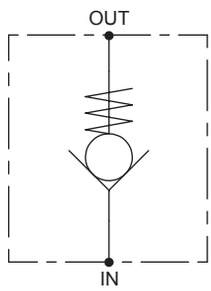
6 D 7 1 0 ☐ ☐ 1 2 0 0

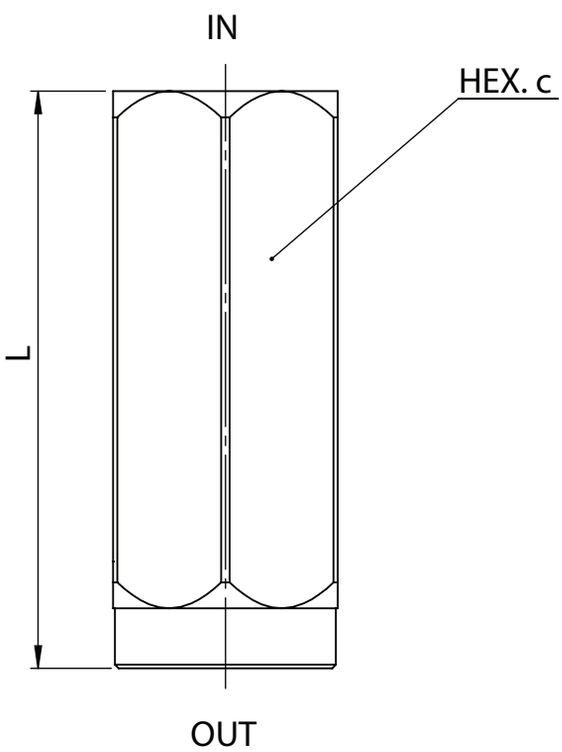
PORTS		C	L1	L
55	**SAE 12**	36	15	68

SPRING	
C	7.8 bar

CHECK VALVE F/F

Ports IN-OUT	Max flow	Max pressure	c	L	Weight
BSPP	l/min	bar	mm	mm	Kg
G 1/2”	70	350	30	77	0,322
G 3/4”	110	350	36	88	0,492
G 1”	160	350	41	105	0,676
G 1-1/4”	250	300	55	135	1,646





Ordering code

6 D 7 2 0 ☐ ☐ 0 0 0 0

PORTS	
04	G 1/2”
05	G 3/4”
06	G 1”
07	G 1-1/4”

SPRING	
C	8 bar

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.

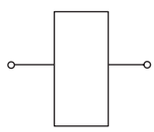
Some example of protection class:

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*

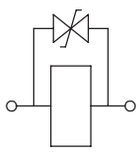
COIL - TUBE ∅ 13 — 22 W

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

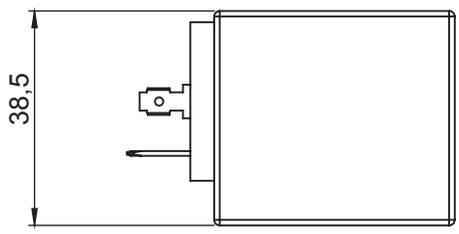
ELECTRIC CIRCUITS



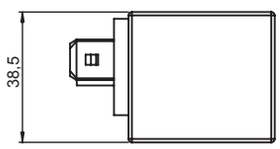
STANDARD



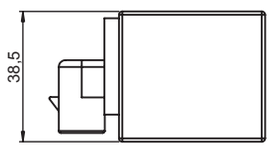
WITH DIODE (BI-DIRECTIONAL)

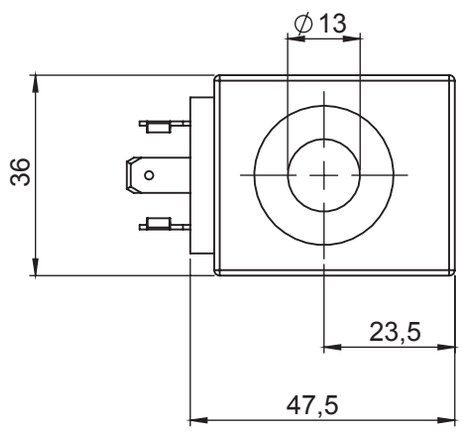


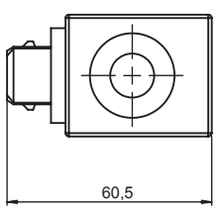
AMP - JUNIOR

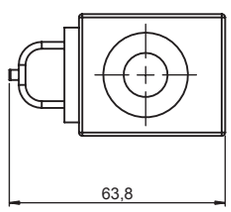


AMP - SUPER SEAL

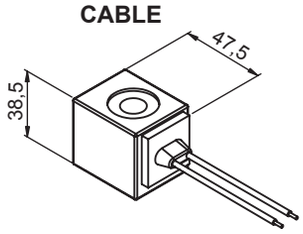








CABLE



Note:
- Coil interchangeable with CT-9400 model.

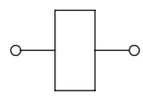
CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	F	12 V dc	6,5	STANDARD	**092001130**
DIN 43650	IP65*	F	14 V dc	8,9	STANDARD	**092001132**
DIN 43650	IP65*	F	24 V dc	26,5	STANDARD	**092002130**
DIN 43650	IP65*	F	26 V dc	30,6	STANDARD	**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**

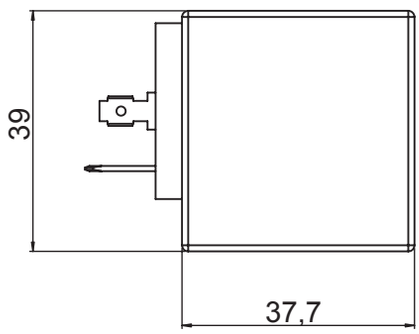
COIL - TUBE ∅ 13 — 18 W

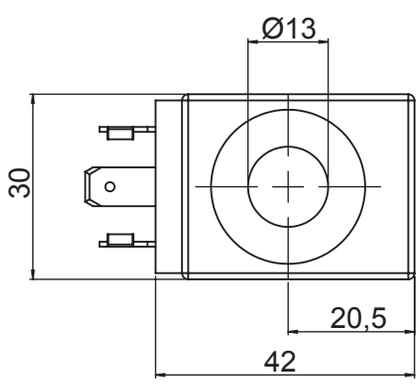
- Wire insulation class. . . . . .**H (>185°C)**
- ED. **100%**
- Coil power at 20° C. . . . . .**18 W**
- Ambient temperature . . . . . **-20 +40° C**
- Weight. . . . . .**0,15 Kg**

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**

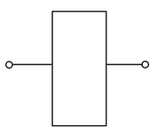
*** Protection index with standard connector**

**** Rectifier not included**

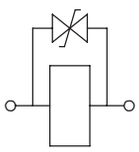
COIL - TUBE ∅ 13 — 20,5 W

- 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**

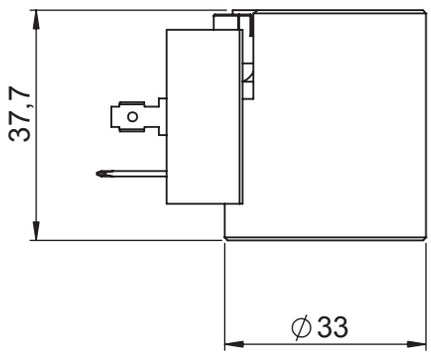
ELECTRIC CIRCUITS

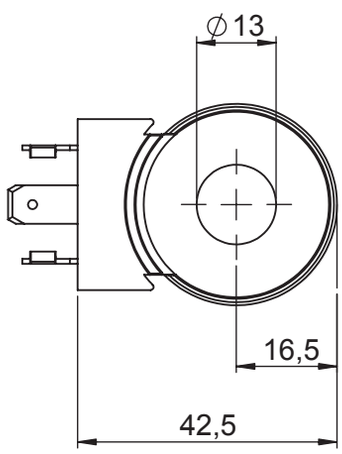


STANDARD

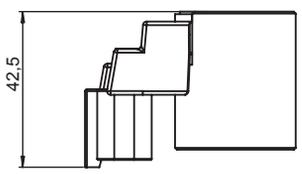


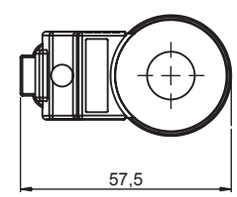
WITH DIODE (BI-DIRECTIONAL)



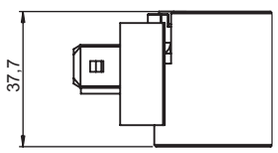


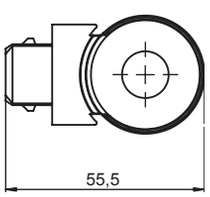
DEUTSCH DT4





AMP - JUNIOR





Note:
- Coil interchangeable with CT-9200 model.

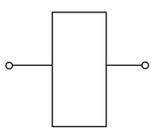
CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	H	12 V dc	7	STANDARD	**094001000**
DIN 43650	IP65*	H	24 V dc	28	STANDARD	**094002000**
DEUTSCH DT 4	IP67	H	12 V dc	7	WITH DIODE	**094101000**
DEUTSCH DT 4	IP67	H	24 V dc	28	WITH DIODE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

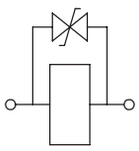
PROPORTIONAL COIL - TUBE ∅ 19 — 36 W

- 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**

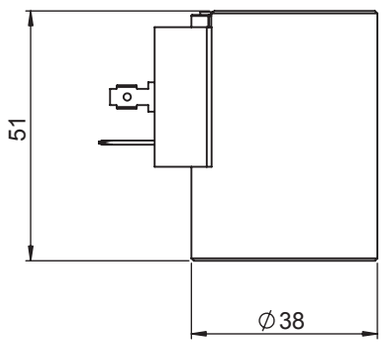
ELECTRIC CIRCUITS

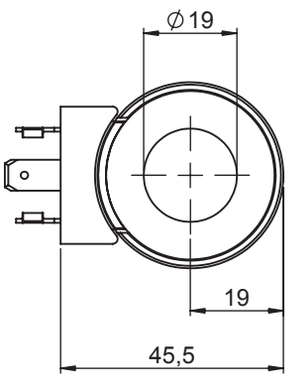


STANDARD

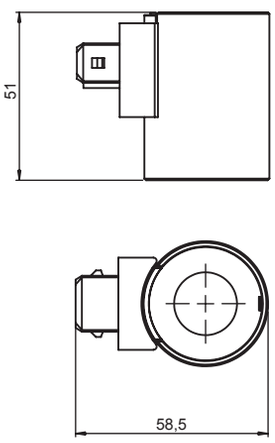


WITH DIODE (BI-DIRECTIONAL)

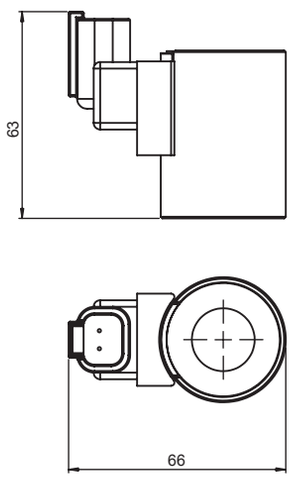




AMP - JUNIOR



DEUTSCH DT4



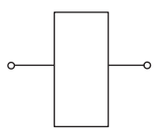
CONNECTOR	PROTECTION CLASS	COIL THERMAL INSULATION CLASS	VOLTAGE [V]	RESISTANCE [Ω]	CIRCUIT	ORDERING CODE
DIN 43650	IP65*	H	12 V dc	3,9	STANDARD	**098001190**
DIN 43650	IP65*	H	24 V dc	14,5	STANDARD	**098002190**
DEUTSCH DT 4	IP67	F	12 V dc	3,9	WITH DIODE	**098101190**
DEUTSCH DT 4	IP67	F	24 V dc	14,5	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**

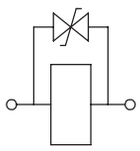
COIL - TUBE ∅ 19 — 24 W

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

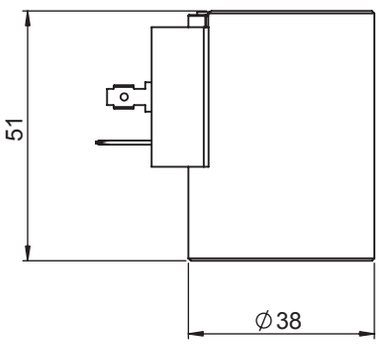
ELECTRIC CIRCUITS

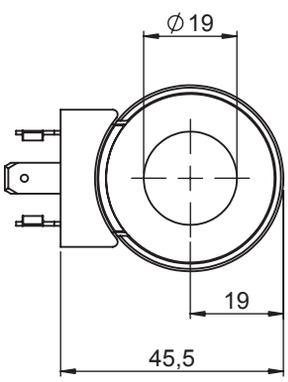


STANDARD

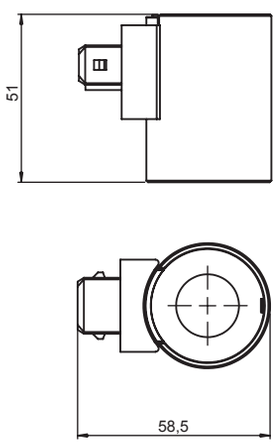


WITH DIODE (BI-DIRECTIONAL)

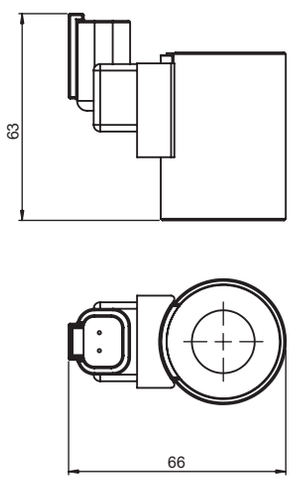




AMP - JUNIOR



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**

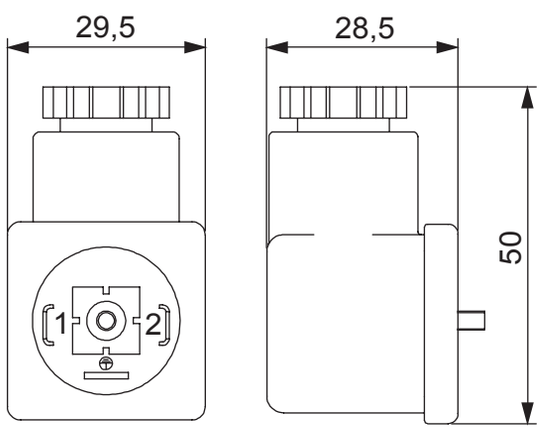
*** Protection index with standard connector**

**** 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

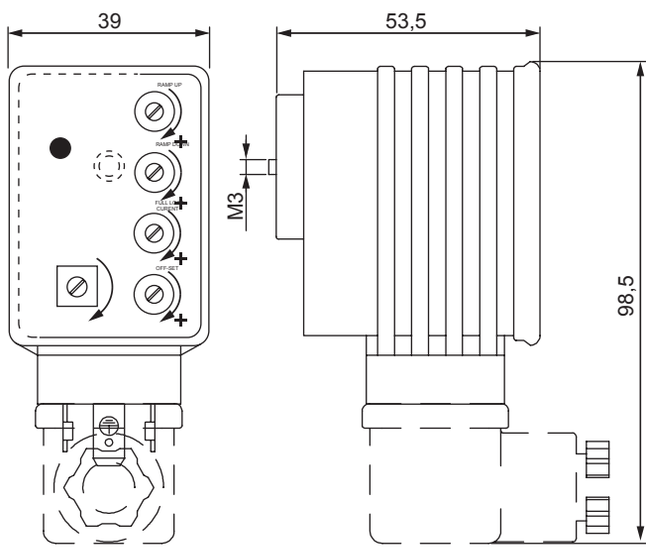
NITRILE SEAL

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

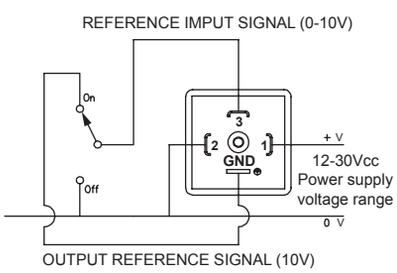
APPLICATIONS

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.

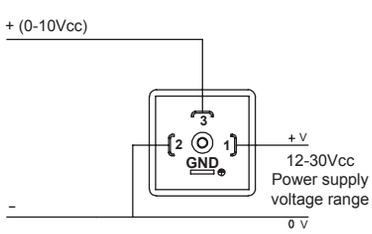
2 - Control mode using a voltage generator as input signal.
The external signal control must be connected to terminal 3 and ground (0V) must be connected to terminal 2. The input voltage on the terminal 3 can be regulated from 0 to 10V. The current on the valve coil is proportional to the input command 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.

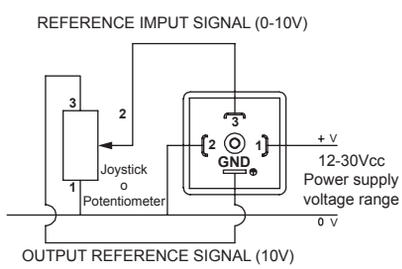
4 - Two axes control with joystick.
This control can be done using a joystick with two axes and two EPC-H02 devices. The joystick is connected to a voltage converter; this converters supplies the input reference signals for the two devices. The currents and the ramps of the two devices are independent. 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.

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.

NEM-HYDRAULICS.COM

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.

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