

S6E POWER BRAKE VALVE

- Hydraulic power brake valve single circuit



- Hydraulic power brake valve double circuit



SAFIM S.p.A.

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S6 HYDRAULIC POWER BRAKE VALVE "E" TYPE

DESCRIPTION

The main advantage of this solution over the standard brake master cylinder is a power braking increase along with a reduction in pedal force and an unlimited oil quantity that can be used for the braking; all these features make this valve particularly suitable for big size vehicles.

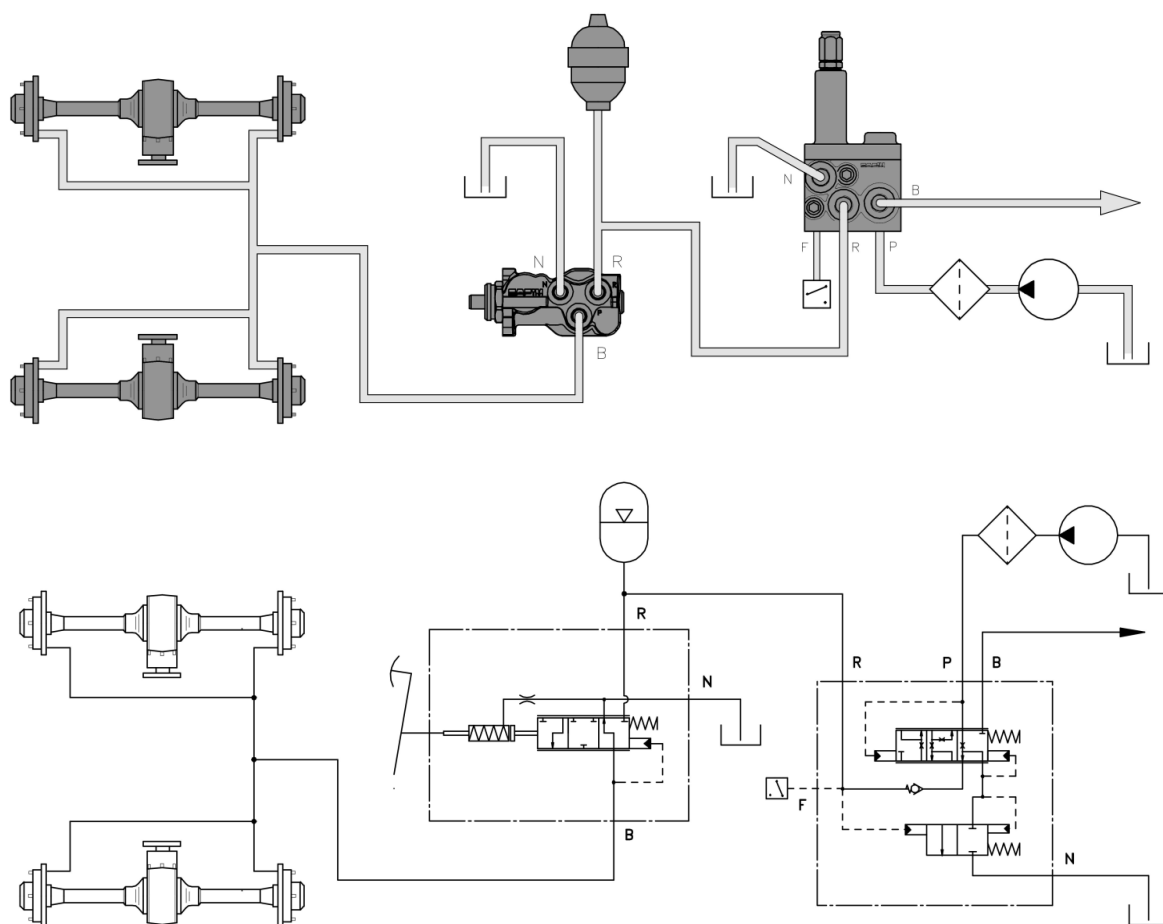
This valve is being supplied to customers already set according to the technical data given when placing the order.

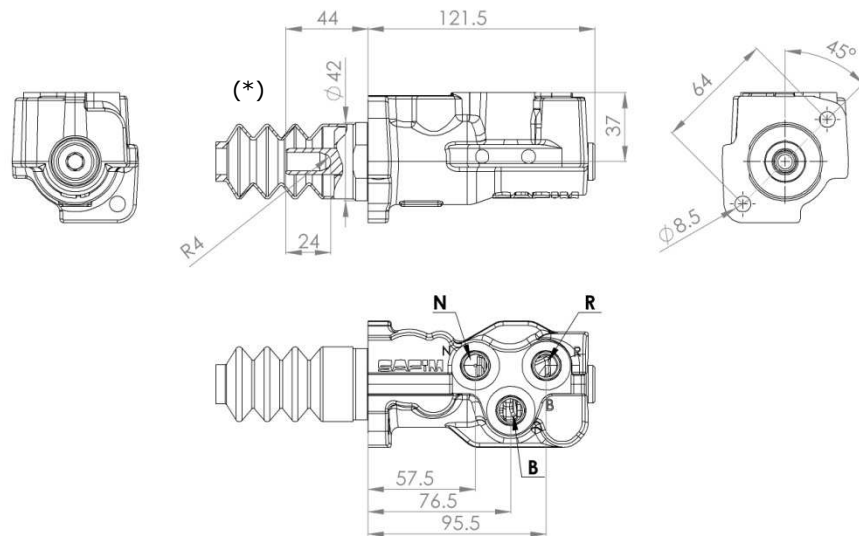
The installation is very easy, the maintenance needed is very little and our customer support service is always there to assist you.

The flange matching with the master cylinders one and the connections that are on the same side, make it immediately adaptable on whatever type of cab and vehicle.

A potentiometer can be also fitted and it's being phased with the braking pressure during the setting.

BASIC APPLICATION



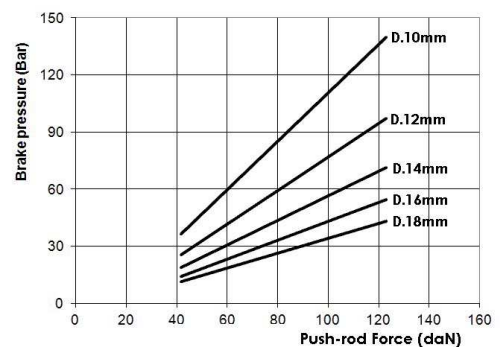
cod. 103520**Single circuit**

(*) : The valve shown in drawing corresponds to part number 103520/_ _ _ _ _ I _

CONNECTION		I	S
R	Accumulator	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B	Service brake	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE

The diagram corresponds to part number 103520/_ _ _ _ _ I _

ORDER PART NUMBER

103520/	0	I	L	100	I	
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Final painting:
 _ :None
B:Black RAL 9005

Type of drive:
I: For push-rod
B: Button type
C: With push-rod
 See page 040.010

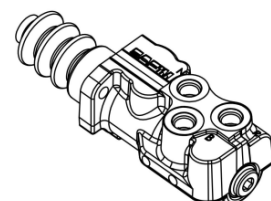
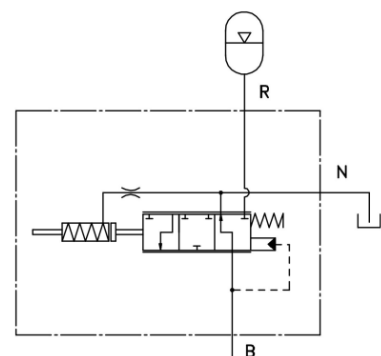
Max brake pressure:
 See page 070.010 for standard value

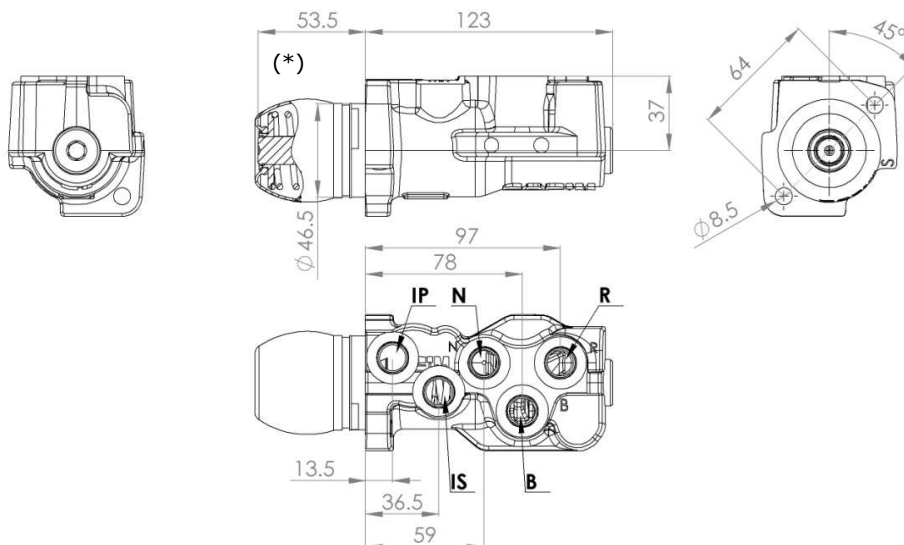
Brake pressure ramp:
 It is related to brake pressure, see page 070.010 for standard value

Connection ports threads
I: Metric threads according to ISO 6149
S: UNF threads according to ISO 11926-1

Spool diameter:
 It is related to brake pressure, see page 070.010 for standard values

0 : 10mm	2 : 12mm	4 : 14mm
6 : 16mm	8 : 18mm	

HYDRAULIC SCHEMATIC

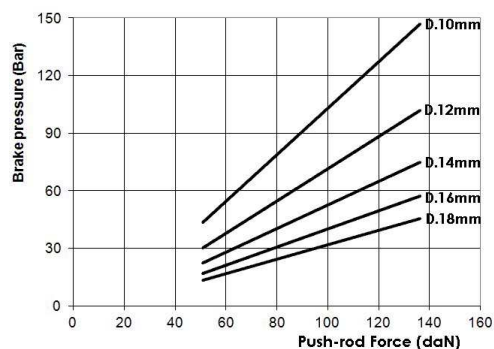
cod. 103524**Single circuit with inching valve**

(*) : The valve shown in drawing corresponds to part number 103524/_ _ _ _ _ B _

CONNECTION		I	S
R	Accumulator	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B	Service brake	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
IP	Inching line	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
IS	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE**ORDER PART NUMBER**

103524/	0	I	L	100	B	
----------------	----------	----------	----------	------------	----------	--

Final painting:

_:None

B:Black RAL 9005**Type of drive:****B:** Button type**C:** With push-rod

See page 040.010

Max brake pressure:

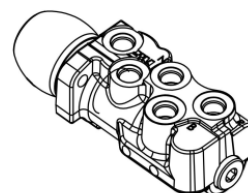
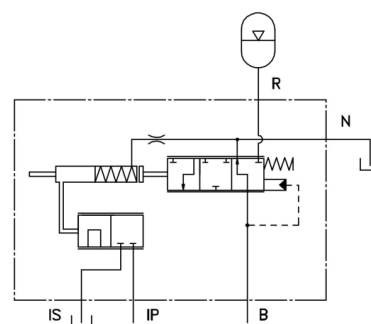
See page 070.010 for standard value

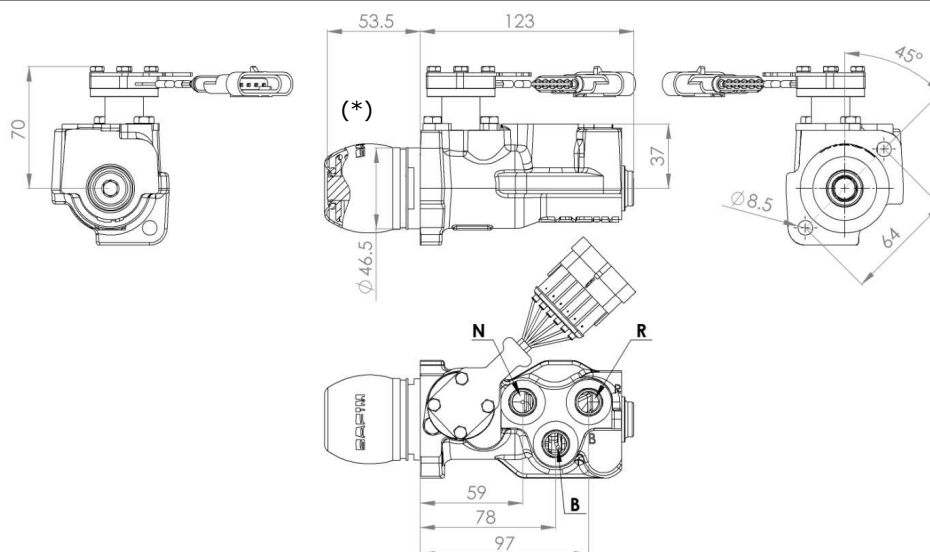
Brake pressure ramp:

It is related to brake pressure, see page 070.010 for standard value

Connection ports threads**I:** Metric threads according to ISO 6149**S:** UNF threads according to ISO 11926-1**Spool diameter:**

It is related to brake pressure, see page 070.010 for standard values

0: 10mm**2:** 12mm**4:** 14mm**6:** 16mm**8:** 18mm**HYDRAULIC SCHEMATIC**

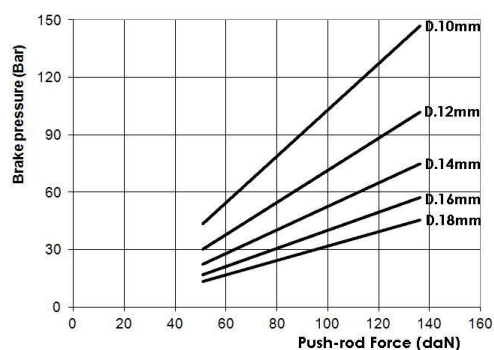
cod. 103522**Single circuit with pedal position sensor**

(*) : The valve shown in drawing corresponds to part number 103522/_ _ _ _ _ B _

CONNECTION		I	S
R	Accumulator	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B	Service brake	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE**ORDER PART NUMBER**

103522/	0	I	L	100	B	
----------------	----------	----------	----------	------------	----------	--

Final painting:
 _ : None
B : Black RAL 9005

Type of drive:
B : Button type
C : With push-rod
 See page 040.010

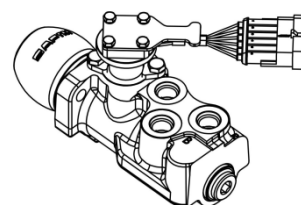
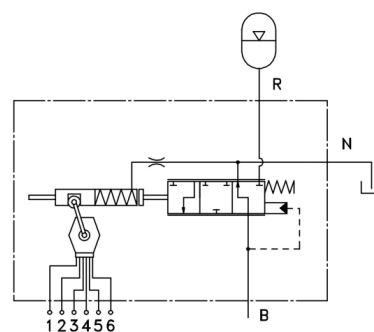
Max brake pressure:
 See page 070.010 for standard value

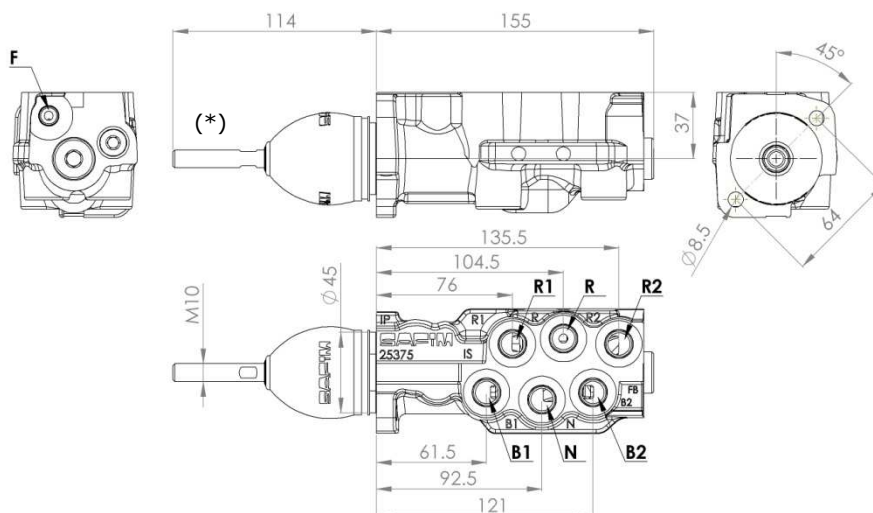
Brake pressure ramp:
 It is related to brake pressure, see page 070.010 for standard value

Connection ports threads
I : Metric threads according to ISO 6149
S : UNF threads according to ISO 11926-1

Spool diameter:
 It is related to brake pressure, see page 070.010 for standard values

0: 10mm **2**: 12mm **4**: 14mm
6: 16mm **8**: 18mm

HYDRAULIC SCHEMATIC

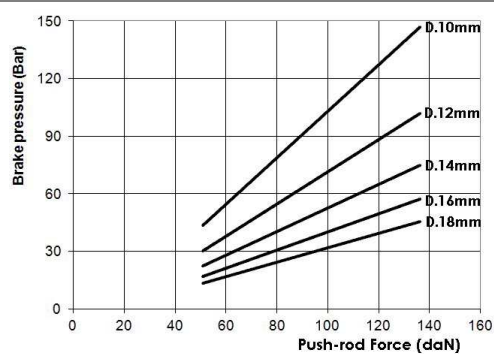
cod. 103895**Double circuit with inverse shuttle valve**

(*) : The valve shown in drawing corresponds to part number 103895/____ C _

CONNECTION		I	S
R R1 R2	Accumulators	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B1 B2	Service brakes	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
FB	Brake gauge	M10x1 ISO 6149	7/16-20UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE**ORDER PART NUMBER****103895/****0****I****L****100****C****Final painting:**

_:None

B:Black RAL 9005**Type of drive:****B:** Button type**C:** With push-rod

See page 040.010

Max brake pressure:

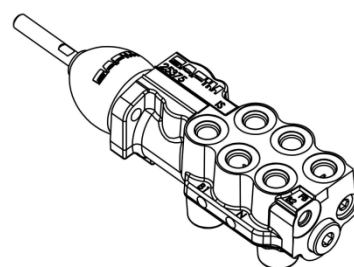
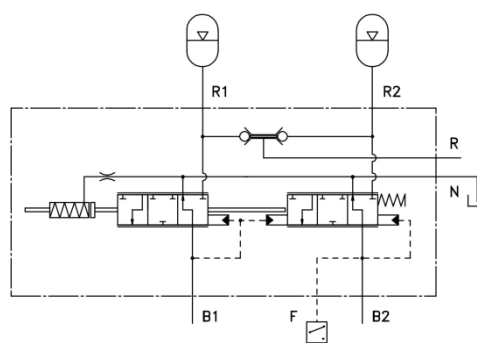
See page 070.010 for standard value

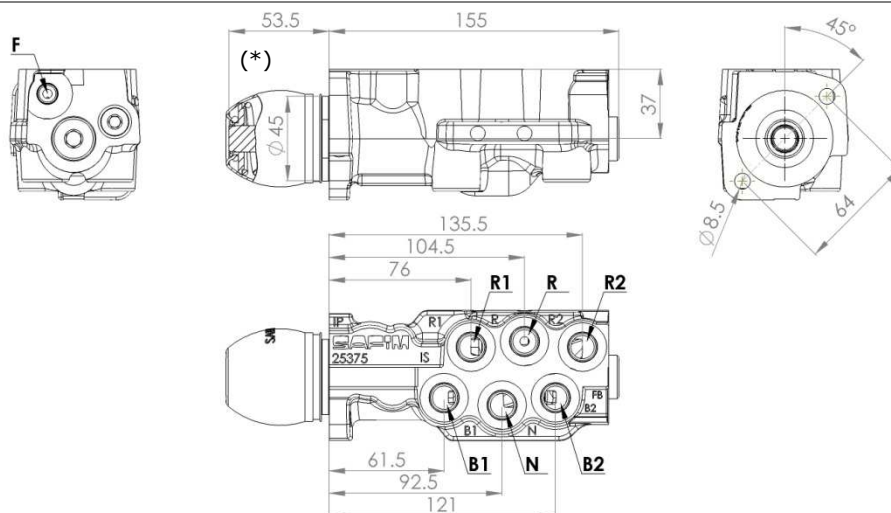
Brake pressure ramp:

It is related to brake pressure, see page 070.010 for standard value

Connection ports threads**I:** Metric threads according to ISO 6149**S:** UNF threads according to ISO 11926-1**Spool diameter:**

It is related to brake pressure, see page 070.010 for standard values

0: 10mm**2:** 12mm**4:** 14mm**6:** 16mm**8:** 18mm**HYDRAULIC SCHEMATIC**

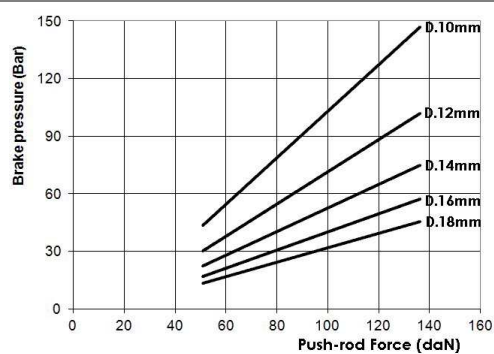
cod. 103896**Double circuit with single check valves**

(*) : The valve shown in drawing corresponds to part number 103896/____ B _

CONNECTION		I	S
R R1 R2	Accumulators	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B1 B2	Service brakes	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
FB	Brake gauge	M10x1 ISO 6149	7/16-20UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE**ORDER PART NUMBER**

103896/	0	I	L	100	B	
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Final painting:

_:None
B:Black RAL 9005

Type of drive:

B: Button type
C: With push-rod
 See page 040.010

Max brake pressure:

See page 070.010 for standard value

Brake pressure ramp:

It is related to brake pressure, see page 070.010 for standard value

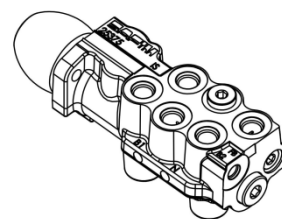
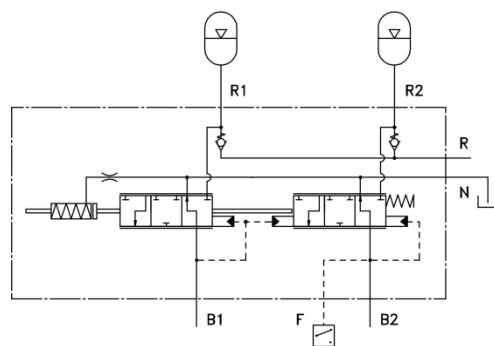
Connection ports threads

I: Metric threads according to ISO 6149
S: UNF threads according to ISO 11926-1

Spool diameter:

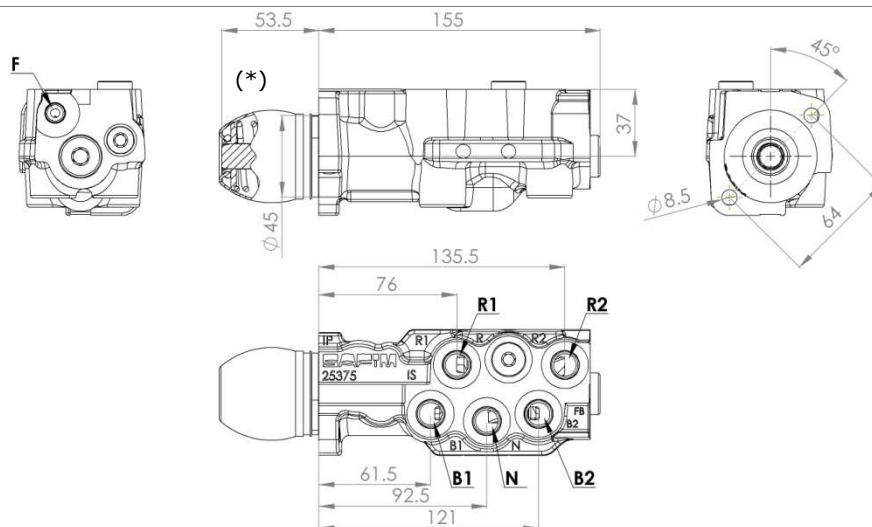
It is related to brake pressure, see page 070.010 for standard values

0: 10mm **2**: 12mm **4**: 14mm
6: 16mm **8**: 18mm

HYDRAULIC SCHEMATIC

cod. 103894

Double circuit without check valves



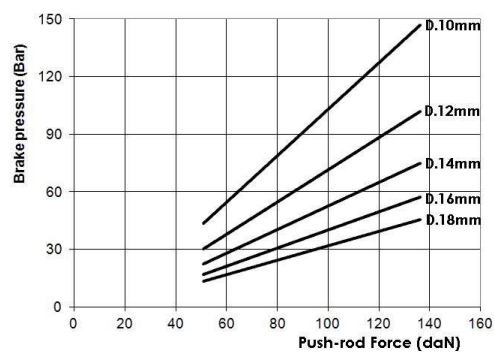
(*) : The valve shown in drawing corresponds to part number 103894/____ B _

CONNECTION		I	S
R R1 R2	Accumulators	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B1 B2	Service brakes	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
FB	Brake gauge	M10x1 ISO 6149	7/16-20UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE



ORDER PART NUMBER

103894/	0	I	L	100	B	
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Final painting:

_: None
B: Black RAL 9005

Type of drive:

B: Button type
C: With push-rod
 See page 040.010

Max brake pressure:

See page 070.010 for standard value

Brake pressure ramp:

It is related to brake pressure, see page 070.010 for standard value

Connection ports threads

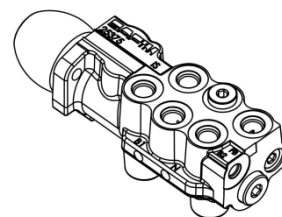
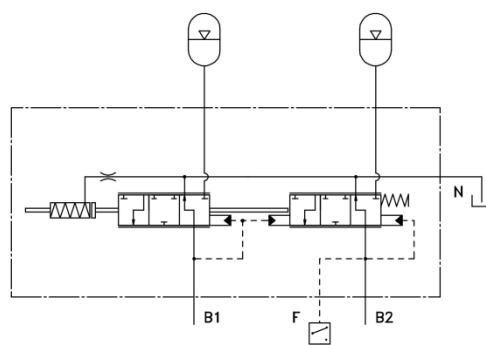
I: Metric threads according to ISO 6149
S: UNF threads according to ISO 11926-1

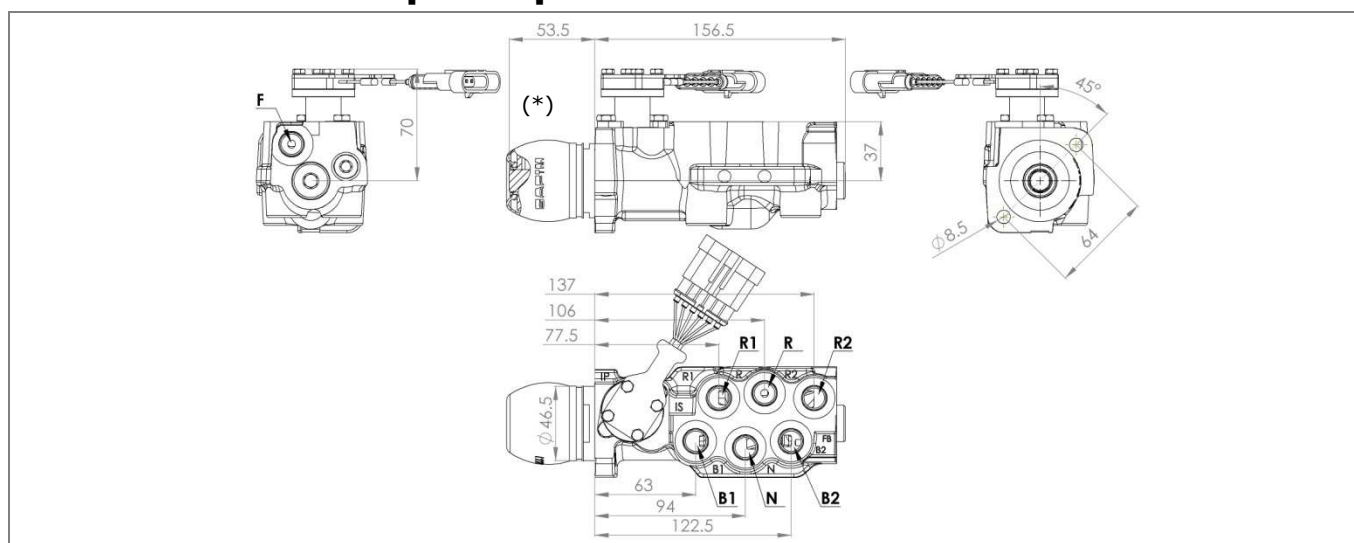
Spool diameter:

It is related to brake pressure, see page 070.010 for standard values

0: 10mm **2**: 12mm **4**: 14mm
6: 16mm **8**: 18mm

HYDRAULIC SCHEMATIC



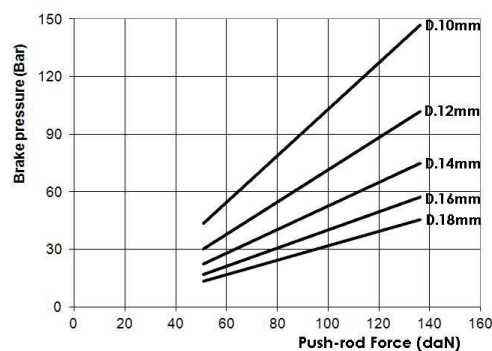
cod. 105101**Double circuit with inverse shuttle valve and pedal position sensor**

(*) : The valve shown in drawing corresponds to part number 105101/_ _ _ _ _ B _

CONNECTION		I	S
R R1 R2	Accumulators	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
N	Tank	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
B1 B2	Service brakes	M14x1.5 ISO 6149	9/16-18UNF ISO 11926-1
FB	Brake gauge	M10x1 ISO 6149	7/16-20UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9

BRAKE PRESSURE VS PUSH-ROD FORCE**ORDER PART NUMBER**

105101/	0	I	L	100	B	
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Final painting:
 _ : None
 B : Black RAL 9005

Type of drive:
 B : Button type
 C : With push-rod
 See page 040.010

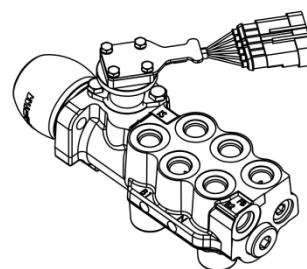
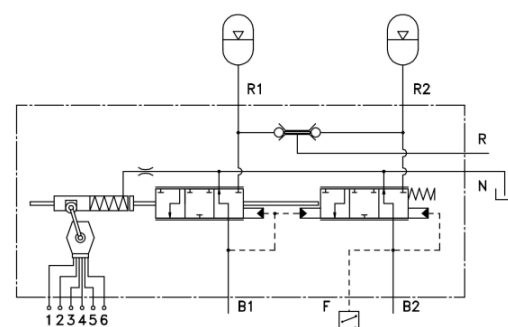
Max brake pressure:
 See page 070.010 for standard value

Brake pressure ramp:
 It is related to brake pressure, see page 070.010 for standard value

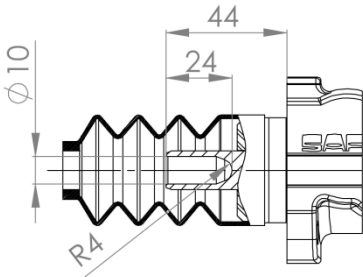
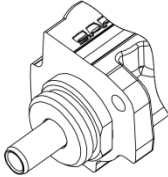
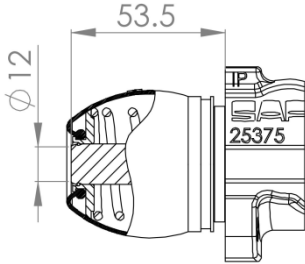
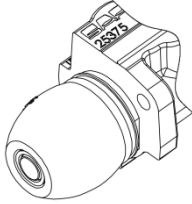
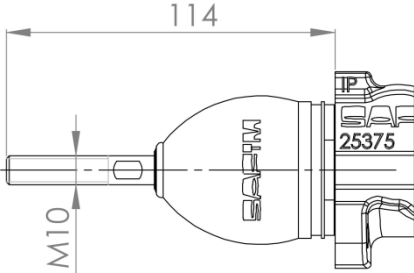
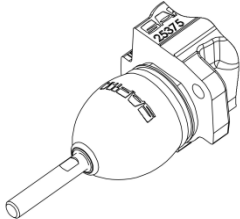
Connection ports threads
 I : Metric threads according to ISO 6149
 S : UNF threads according to ISO 11926-1

Spool diameter:
 It is related to brake pressure, see page 070.010 for standard values

0: 10mm **2:** 12mm **4:** 14mm
6: 16mm **8:** 18mm

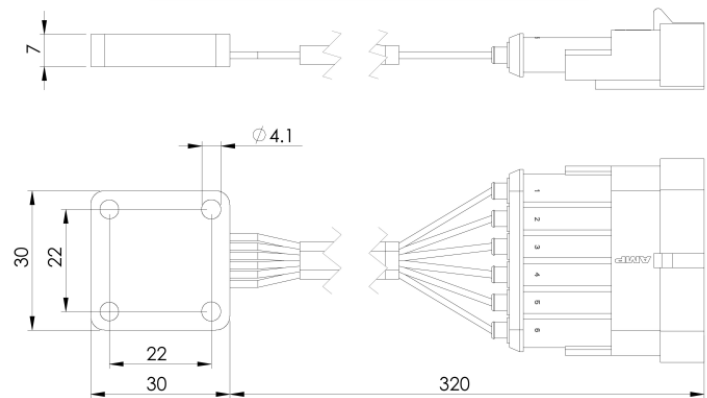
HYDRAULIC SCHEMATIC

STANDARD DRIVE TYPE

IDENTIFICATION	DIMENSION	3D VIEW
I FOR PUSH-ROD		
B BUTTON TYPE		
C WITH PUSH-ROD		

SENSOR DATA

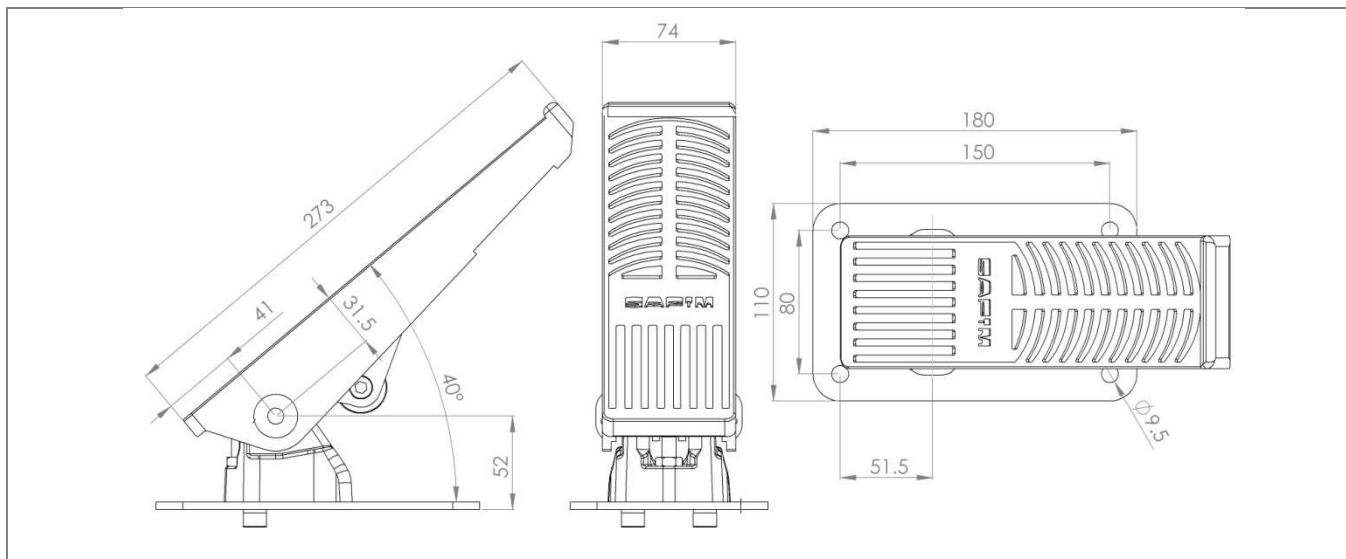
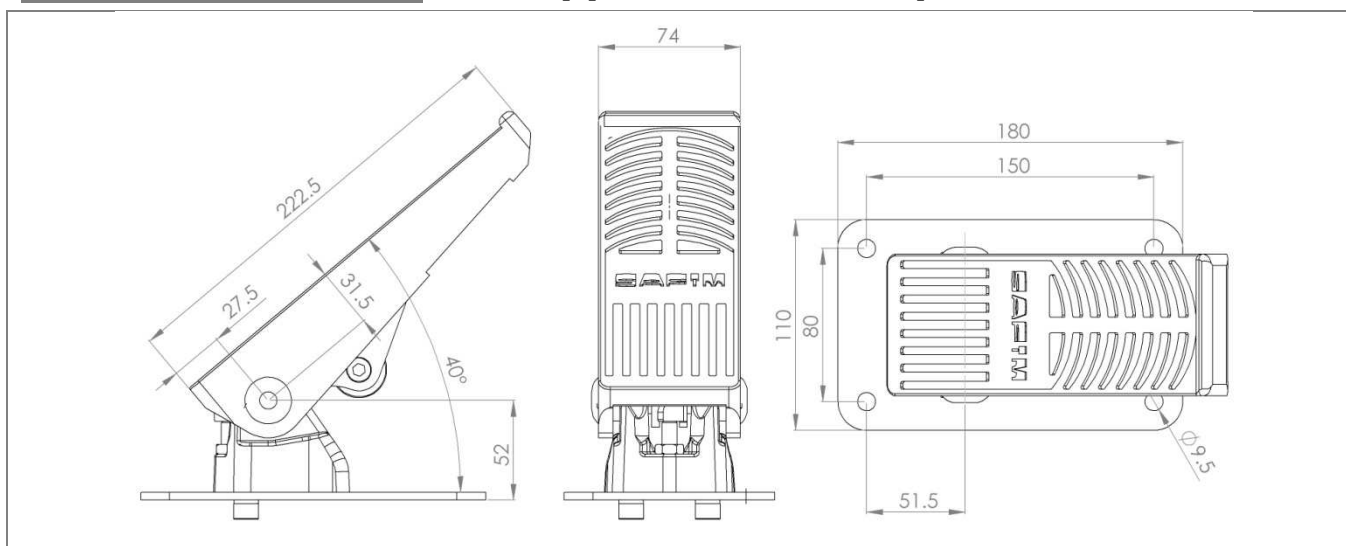
Sensor Novotechnik RFA 4001



TECHNICAL FEATURES	
Shaft Size	Touchless
Ingress Requirement	IP 67 DIN 40050/IEC 529
Supply voltage (Ub)	5 VDC ± 0,5 (15 mA typical)
Output signal 1	Ratiometric 10%....90% Ub
Output signal 2	Ratiometric 90%....10% Ub
Operating Temp. Range	- 40 / + 125
Mating Electrical Connector	AMP Superseal P/N C282108
Measured Angle	0 ÷ 140°
Range of travel	360° continuous

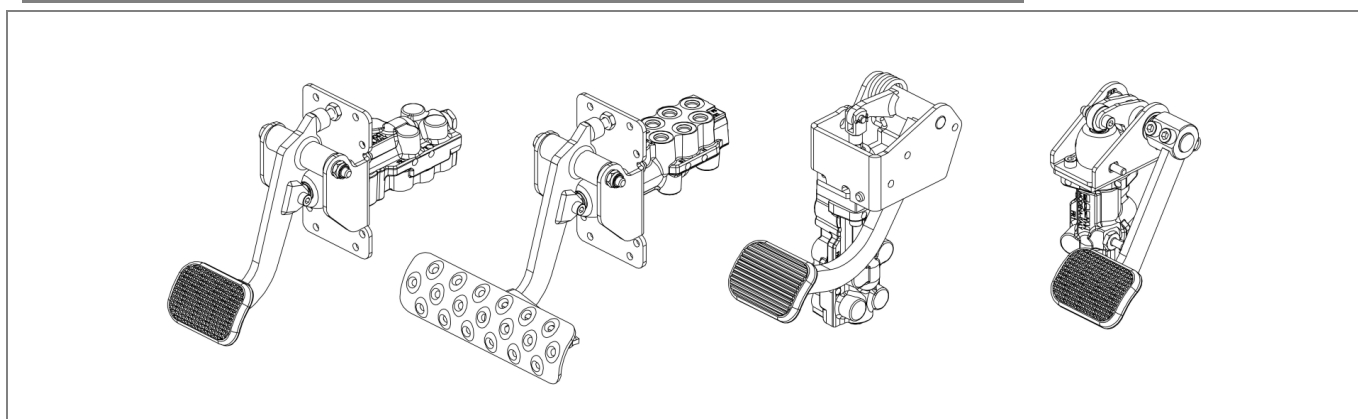
PINNS DESCRIPTION						
	Output sognal 1			Output signal 2		
PIN N°	1	2	3	4	5	6
Signal	Ground 1	Supply 1	Signal 1	Ground 2	Supply 2	Signal 2

STANDARD PEDAL SUPPORTS

cod. 105159/40
Support with standard pedal

cod. 105158/40
Support with short pedal


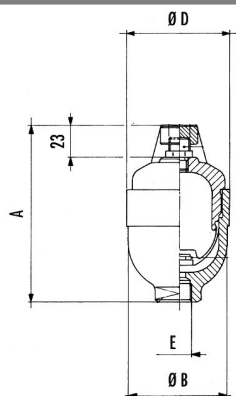
To permit the correct assembly with the pedal, the brake valve must have "B" drive type (see page 040.010).

OTHER PEDAL SUPPORTS ARE AVAILABLE



ACCUMULATORS

ACCUMULATOR 0.35 L



A=160
 $\phi B=94$
 $\phi D=99$
 E=M18x1.5

TECHNICAL FEATURES

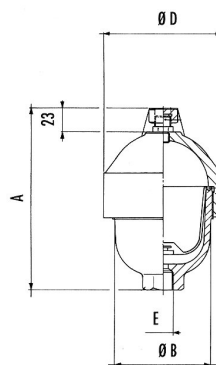
Nominal volume	0.35 l
Max operating pressure	210 bar
Max allowable pressure ratio	6/1
Working temperature	-35 ~ +130°C
Assembly	In any position
Diaphragm material	ECO
Body	Forged Steel
weight	2.6 kg

ORDER PART NUMBER

MO15565/ 50

Nitrogen pressure setting (Bar):
 15, 20, 25, 30, 40, 50, 60

ACCUMULATOR 0.5 L



A=175
 $\phi B=94$
 $\phi D=116$
 E=M18x1.5

TECHNICAL FEATURES

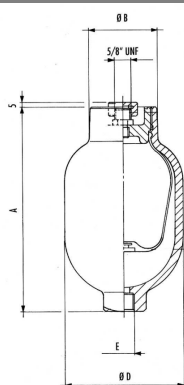
Nominal volume	0.5 l
Max operating pressure	210 bar
Max allowable pressure ratio	6/1
Working temperature	-35 ~ +130°C
Assembly	In any position
Diaphragm material	ECO
Body	Forged Steel
weight	3.6 kg

ORDER PART NUMBER

MO15557/ 50

Nitrogen pressure setting (Bar):
 15, 20, 25, 30, 40, 50, 60

ACCUMULATOR 0.75 L



A=200
 $\phi B=65$
 $\phi D=116$
 E=M18x1.5

TECHNICAL FEATURES

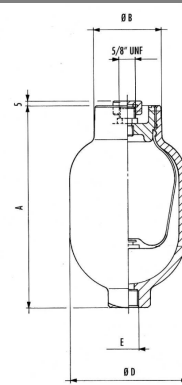
Nominal volume	0.75 l
Max operating pressure	210 bar
Max allowable pressure ratio	4/1
Working temperature	-35 ~ +130°C
Assembly	In all position
Bladder material	ECO
Body	Forged Steel
weight	4.5 kg

ORDER PART NUMBER

MO15733/ 50

Nitrogen pressure setting (Bar):
 15, 20, 25, 30, 40, 50, 60

ACCUMULATOR 1.5 L



A=290
 $\phi B=65$
 $\phi D=116$
 E=M18x1.5

TECHNICAL FEATURES

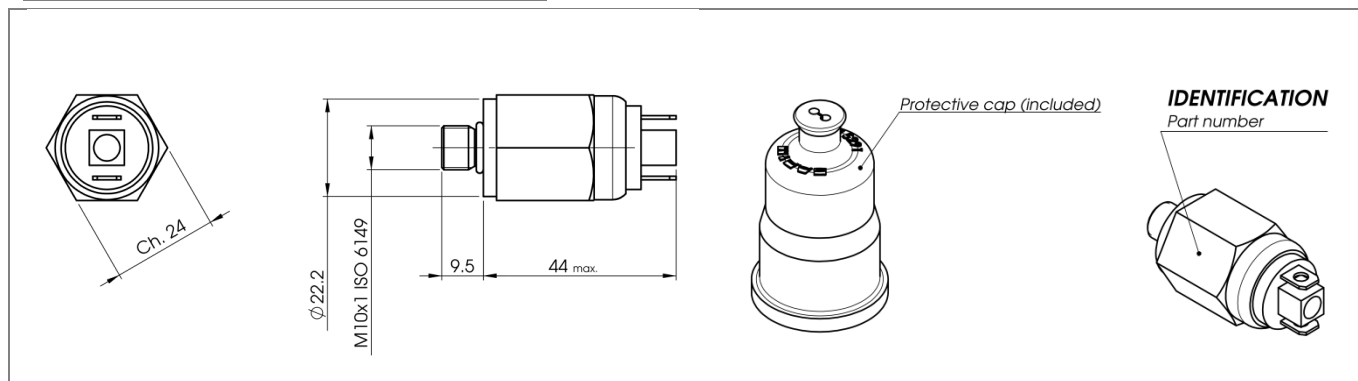
Nominal volume	1.5 l
Max operating pressure	210 bar
Max allowable pressure ratio	4/1
Working temperature	-15 ~ +80°C
Assembly	In all position
Bladder material	ECO
Body	Forged Steel
weight	5.6 kg

ORDER PART NUMBER

MO15734/ 50

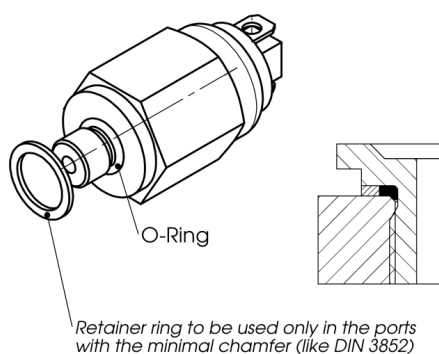
Nitrogen pressure setting (Bar):
 15, 20, 25, 30, 40, 50, 60

PRESSURE SWITCHES

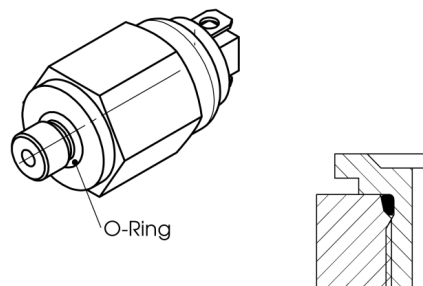


TECHNICAL FEATURES	MO17069	MO17323	MO17070	MO17351
Type of contact	NO	NO	NC	NC
Setting point range	1-50 Bar	50-150 Bar	1-50 Bar	50-150 Bar
Set point tolerance	<10 ±0.5 Bar <20 ±1 Bar <50 ±2 Bar	±5 Bar	<10 ±0.5 Bar <20 ±1 Bar <50 ±2 Bar	±5 Bar
Connector	Faston			
Max switch voltage	48 V			
Max switch current	0.5 (0.2) A			
Sealing	IP54 with cap			
Switch	Silver contact			
Temperature range	-20 ~ +120°C			
Working fluid	Hydraulic oil			
Membrane material	HNBR			
Proof pressure	300 Bar	600 Bar	300 Bar	600 Bar
Mechanical life	10 ⁵ min	10 ⁶ min	10 ⁵ min	10 ⁶ min
Snubber	NO	YES	NO	YES
Tightening torque	22 Nm max			

INSTALLATION IN PORTS DIN 3852



INSTALLATION IN PORTS ISO 6149



The position of the electrical contacts NA or NC refers to the stable state, without pressure. It is recommended to protect the electrical connections and the internal parts against the penetration of dampness, dust, solvents, paints, etc. with the protective cap.

ORDER PART NUMBER

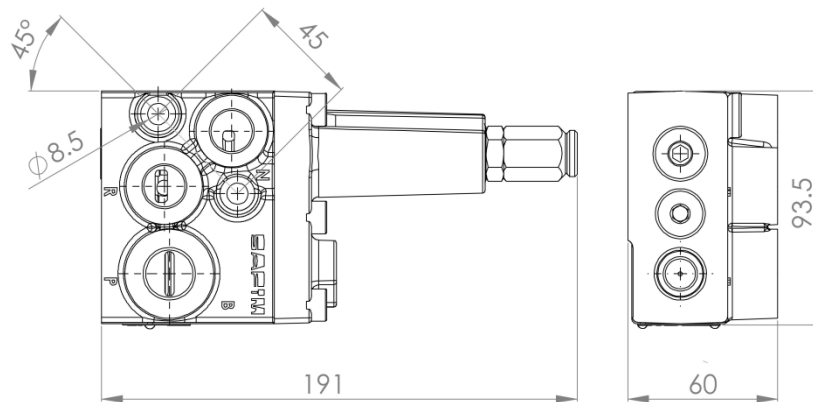
MO17070	/	45	F
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R: Rising setting **F:** Falling setting

Setting point (Bar)

3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150

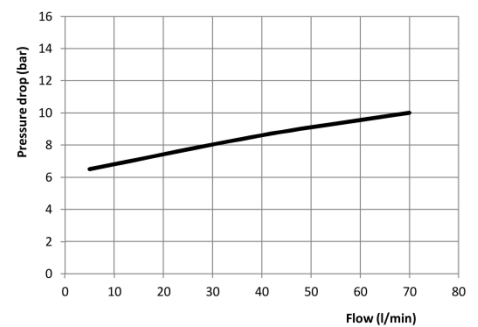
MO17069: NO 3-50 Bar, **MO17323:** NO 60-150 Bar, **MO17070:** NC 3-50 Bar, **MO17351:** NC 60-150 Bar

cod. 113740 ACCUMULATOR CHARGING VALVE OPEN CENTRE TYPE

CONNECTION		M	S
P	Pump	G 1/2 DIN 3852-2X	7/8-14UNF ISO 11926-1
B	Other service or tank	G 1/2 DIN 3852-2X	7/8-14UNF ISO 11926-1
N	Tank	M18x1.5 DIN 3852-1X	3/4-16UNF ISO 11926-1
R	Accumulator	M18x1.5 DIN 3852-1X	3/4-16UNF ISO 11926-1
F	Accum. press. switch	M10x1 DIN 3825-1X	7/16-20UNF ISO 11926-1

GENERAL TECHNICAL FEATURES

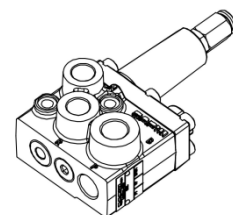
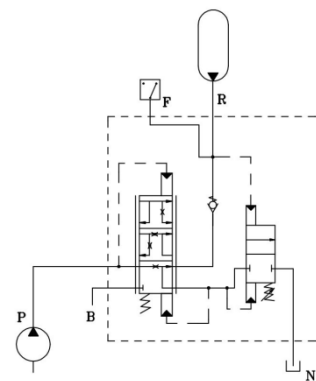
Max pressure in port R	225 Bar
Working temperature	-30°C / + 90°C
Oil type	Hydraulic oil according to DIN 51524
Oil viscosity (50°C)	from 1.9° cSt to 5.4° cSt
Filtering level	NAS 1638 CLASS 9
Max flow	70 (l/min)

PRESSURE DROP**ORDER PART NUMBER****113740/ 100 M****Connection ports threads**

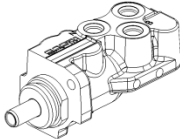
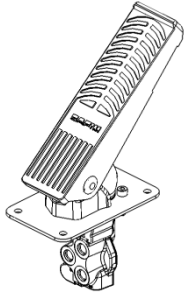
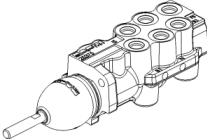
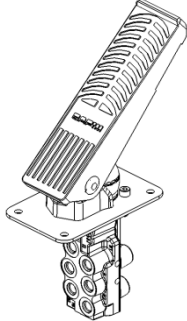
M: Metric an BPS threads according to DIN 3852
S: UNF threads according to ISO 11926-1

Pressure setting: Cut in / Cut off

065: 65 Bar / 90 Bar
080: 80 Bar / 90 Bar
100: 100 Bar / 130 Bar
120: 120 Bar / 155 Bar
150: 150 Bar / 185 Bar
170: 170 Bar / 215 Bar

HYDRAULIC SCHEMATIC

STANDARD PART NUMBERS LIST

			SINGLE CIRCUIT		DOUBLE CIRCUIT	
			FOR PUSH-ROD	WITH STANDARD PEDAL 105159/40	FOR PUSH-ROD	WITH STANDARD PEDAL 105159/40
BRAKE PRESSURE (Bar)	SPOOL DIAMETER IDENTIFICATION NUMBER	BRAKE PRESSURE RAMP IDENTIFICATION LETTER				
20	8	D	103520/8ID020I	103520/8ID020N	103895/8ID020C	103895/8ID020N
25	8	D	103520/8ID025I	103520/8ID025N	103895/8ID025C	103895/8ID025N
30	8	L	103520/8IL030I	103520/8IL030N	103895/8IL030C	103895/8IL030N
35	8	B	103520/8IB035I	103520/8IB035N	103895/8IB035C	103895/8IB035N
40	6	L	103520/6IL040I	103520/6IL040N	103895/6IL040C	103895/6IL040N
45	6	B	103520/6IB045I	103520/6IB045N	103895/6IB045C	103895/6IB045N
50	4	B	103520/4IB050I	103520/4IB050N	103895/4IB050C	103895/4IB050N
60	4	F	103520/4IF060I	103520/4IF060N	103895/4IF060C	103895/4IF060N
70	2	L	103520/2IL070I	103520/2IL070N	103895/2IL070C	103895/2IL070N
80	2	B	103520/2IB080I	103520/2IB080N	103895/2IB080C	103895/2IB080N
90	2	F	103520/2IF090I	103520/2IF090N	103895/2IF090C	103895/2IF090N
100	0	L	103520/0IL100I	103520/0IL100N	103895/0IL100C	103895/0IL100N
110	0	B	103520/0IB110I	103520/0IB110N	103895/0IB110C	103895/0IB110N
120	0	F	103520/0IF120I	103520/0IF120N	103895/0IF120C	103895/0IF120N
130	0	F	103520/0IF130I	103520/0IF130N	103895/0IF130C	103895/0IF130N
140	0	J	103520/0IJ140I	103520/0IJ140N	103895/0IJ140C	103895/0IJ140N

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- As for general supply conditions, agreements between the two parties carry authority.
- For any eventual explanations, please do not hesitate to contact us.