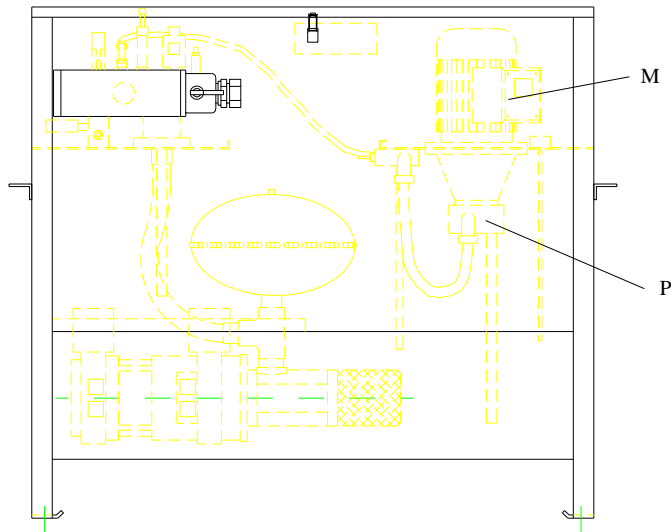


90/E - 90/M PUMP UNIT

The auxiliary levelling system allows to actuate the up movement of the cabin without the pump unit main motor starting



COMPONENTS :

GR Valve assembly of the pump unit

M Auxiliary motor

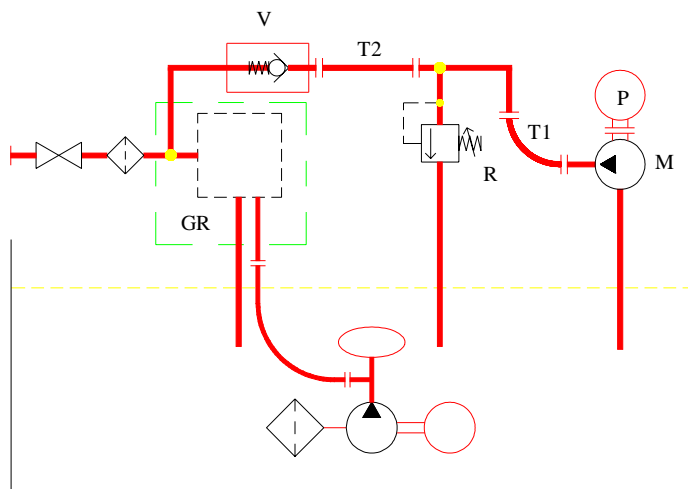
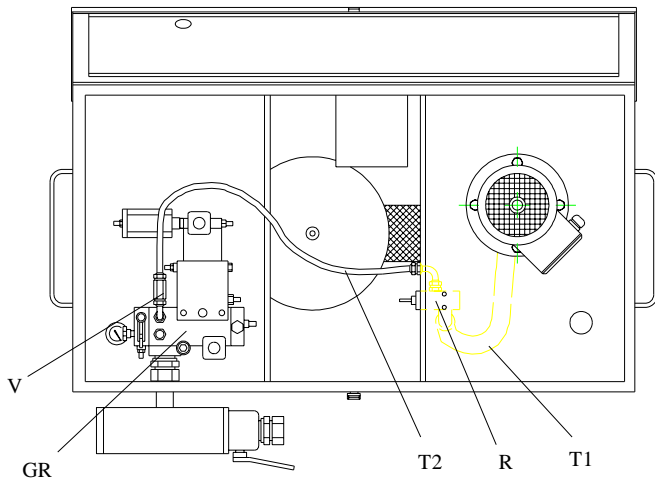
P Auxiliary pump

R Auxiliary safety valve

T1 Pump connection flexible pipe

T2 Valve assembly connection flexible pipe

V Auxiliary non-return valve



Piston Speed [cm /sec]

Piston Type	7 l/min		15 l/min	
	50Hz	60Hz	50Hz	60Hz
110	1.2	1.5	2.6	3.2
120	1	1.2	2.2	2.7
130	0.9	1	1.9	2.3
150	0.7	0.8	1.4	1.7
180	0.5	0.6	1	1.2
200	0.4	0.4	0.8	1
238	0.3	0.3	0.6	0.7
280	0.2	0.2	0.4	0.5
120/2	1	1.2	2.2	2.7
141/2	0.7	0.9	1.6	1.9
170/2	0.5	0.6	1.1	1.3
205/2	0.4	0.4	0.8	0.9
127/3	0.9	1.1	2	2.4
150/3	0.7	0.8	1.4	1.7
176/3	0.5	0.6	1	1.2

AUXILIARY LEVELLING PUMP UNIT



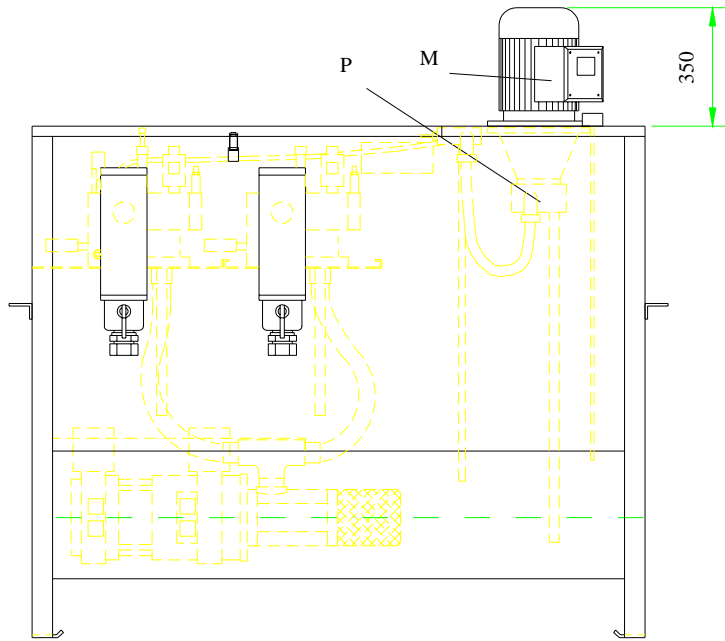
Start Elevator Srl

08 210 / G

rev. 0

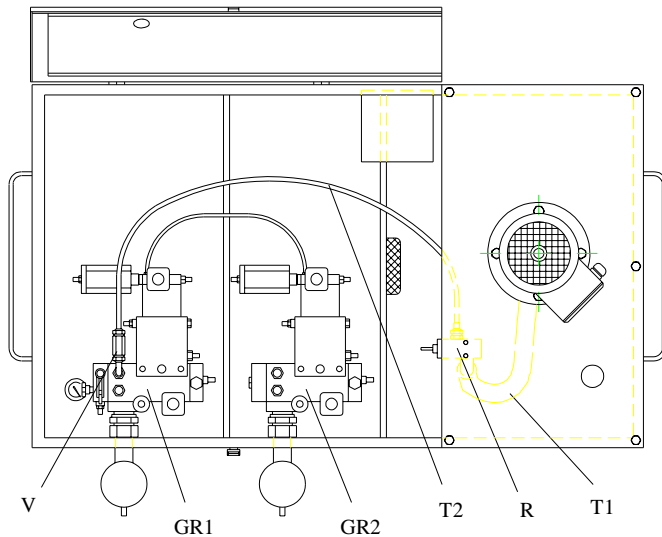
1/2

90/E2 - 90/M2 PUMP UNIT



COMPONENTS :

- GR1 First valve assembly of the pump unit
- GR2 Second valve assembly of the pump unit
- M Auxiliary motor
- P Auxiliary pump
- R Auxiliary safety valve
- T1 Pump connection flexible pipe
- T2 Valve assembly connection flexible pipe
- V Auxiliary non-return valve



CHARACTERISTICS :

Type : 7 Lt 1 HP

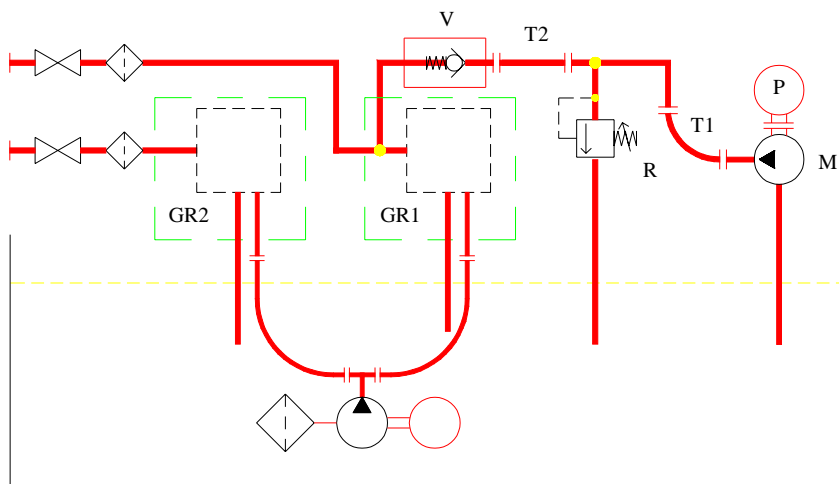
- 4 poles three-phase 50 Hz - 0.75 kW motor
- 230/400 V - 2,2 A
- volumetric pump 7 l/min flow rate (50 Hz)

Type : 7 Lt 2 HP

- 4 poles three-phase 50 Hz - 1.5 kW motor
- 230/400 V - 4 A
- volumetric pump 7 l/min flow rate (50 Hz)

Type : 15 Lt 2 HP

- 4 poles three-phase 50 Hz - 1.5 kW motor
- 230/400 V - 4 A
- volumetric pump 15 l/min flow rate (50 Hz)



**AUXILIARY LEVELLING
PUMP UNIT**

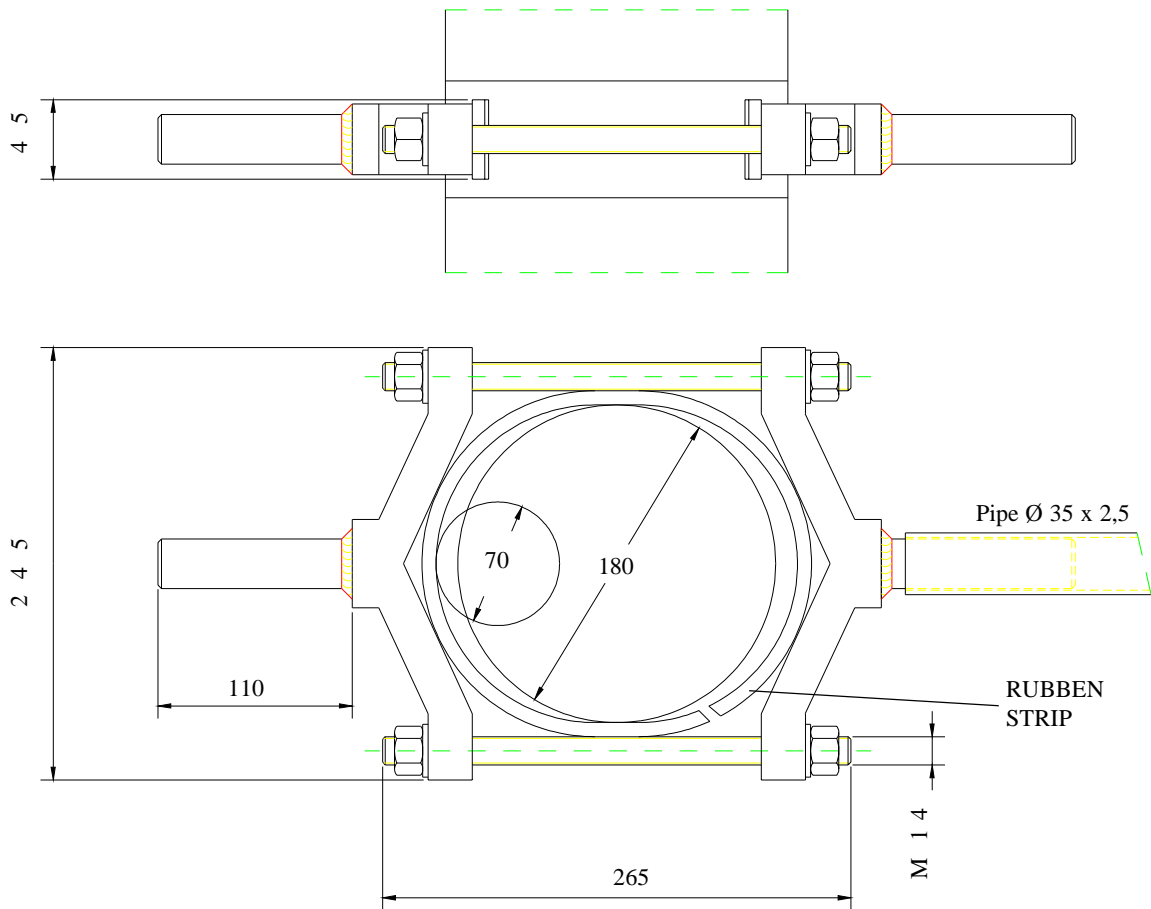


Start Elevator Srl

08 210 / G

rev. 0

2/2



THESE BRACKETS PERMIT TO HANDLE THE PARTS OF THE RAM AND OF THE CYLINDER DURING THE SCREWING OF THE JOINTING.



TO USE A RUBBER STRIP 5-10 MM THICKNESS THAT PROTECTS THE SURFACE OF THE PARTS OF THE RAM IN CONTACT WITH THE BRACKETS.

TO BLOCK THE BRACKETS ON THE PART OF RAM OR CYLINDER TO SCREW THERE ARE TWO SCREWS WHICH PERMIT ALSO TO ADJUST THE EQUIPMENT ACCORDING TO THE DIAMETER OF THE ELEMENTS TO JOINT.

TO ASSEMBLE THE PISTONS IS NECESSARY ONE "KIT PISTONS ASSEMBLY" COMPOSED OF TWO BRACKETS, ONE TO BLOCK THE MALE PART AND ONE FOR THE FEMALE PART.

**BRACKETS FOR
TO ASSEMBLY THE
PISTONS IN MORE PIECES**

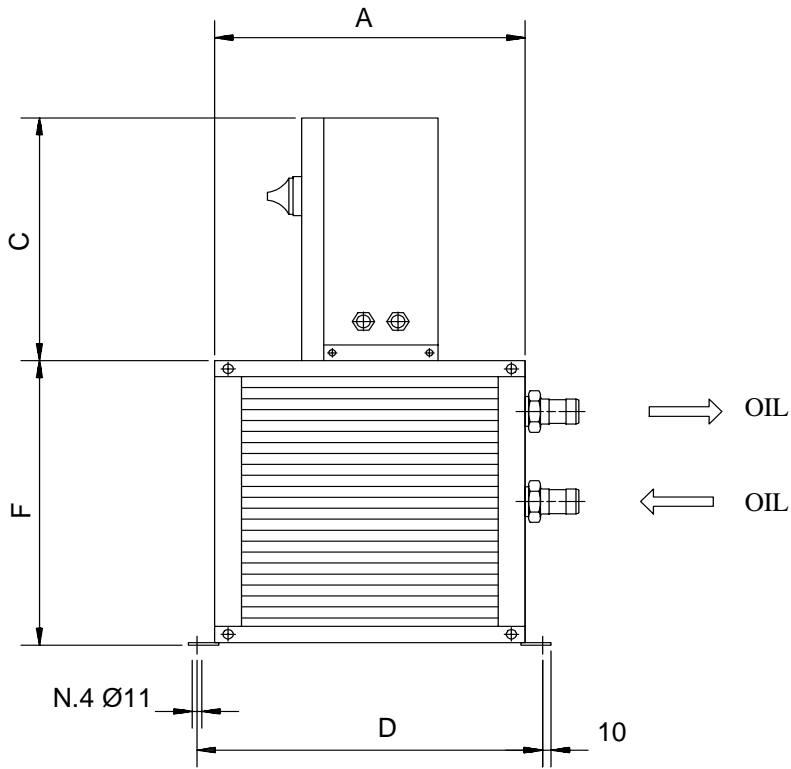


Start Elevator Srl

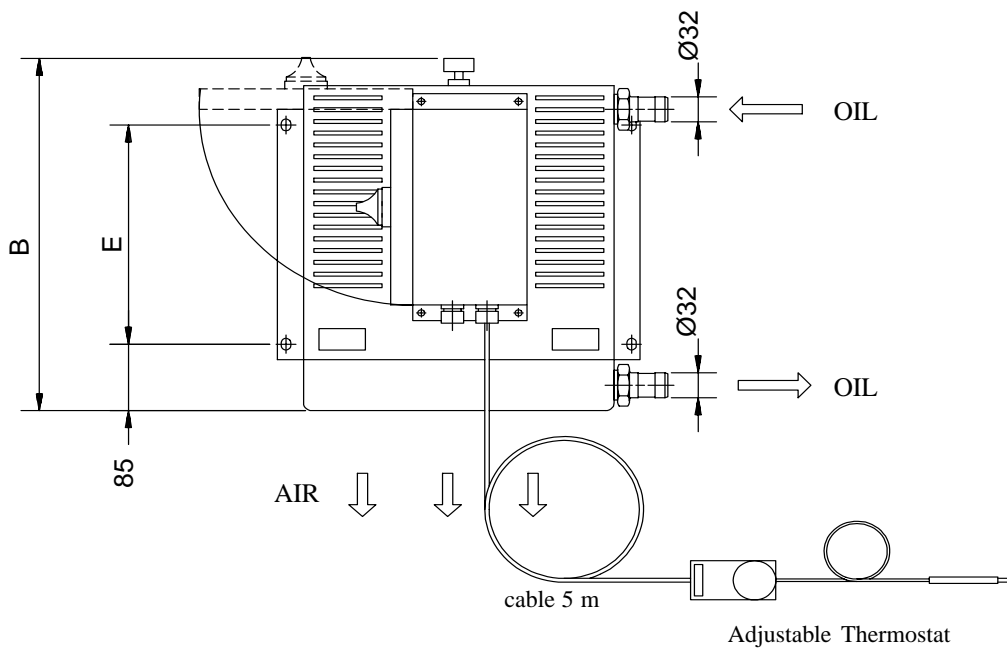
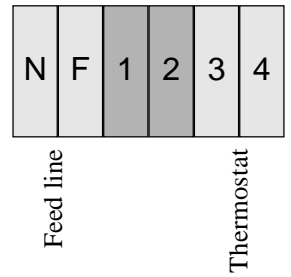
08 120 / G

rev. 1

1/1



TERMINAL BOARD



TYPE	Kcal/h	Kw	A [230 V]	DIMENSIONS [mm]						Kg
				A	B	C	D	E	F	
7500 KC MG 25	7500	0,75	4,6	364	450	310	405	280	360	49
11000 KC MG 45	11000	0,75	4,6	534	470	310	562	300	515	64

**DIMENSIONS
AIR COOLER**



Start Elevator Srl

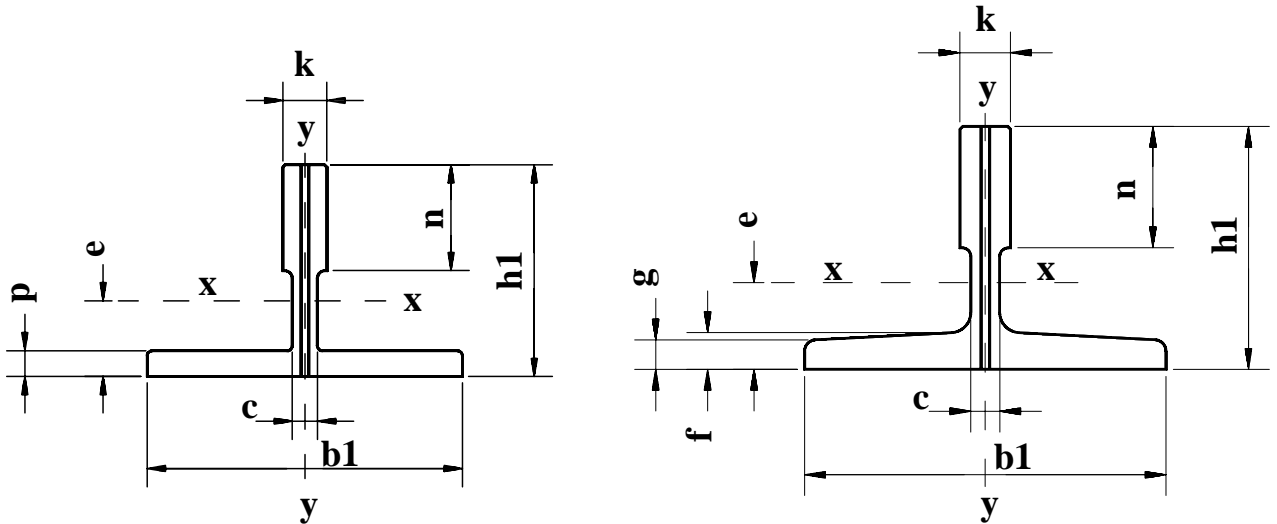
08 130 / G

rev. 2

1/1

According to ISO 7465

Material : Steel Fe 360 B



Profile		GF 509	GF 765	GF 770	GF 762	GF 755	GF 654	GF 829	GF 890	GF 965	GF 975	GF 125
Dimensions		50x50x9	70x65x9	70x70x9	75x62x10	75x55x10	65x54x8	82.5x68.2x9	89x62x15.88	90x65x14	90x75x16	125x82x16
ISO 7465			T70-1/A		T75-3/A			T82/A	T89/A		T90/A	T125/A
h1	mm	50	65	70	62	55	54	68.25	62	65	75	82
b1	mm	50	70	70	75	75	65	82.5	89	90	90	125
k	mm	9	9	9	10	10	8	9	15.88	14	16	16
n	mm	35	34	35	30	30	20	25.4	33.4	35	42	42
c	mm	7.5	6	8	8	7	5	7.5	10	10	10	10
g	mm						4	6	7.9	8	8	9
f	mm						6	8.25	11.1	10	10	12
p	mm	6.5	7	8.5	7.5	7.5						
Section S	cm ²	7.04	9.51	11.22	10.99	9.94	6.3	10.9	15.7	15.1	17.35	22.83
Weight q1	Kg/m	5.54	7.47	8.83	8.63	7.82	4.96	8.55	12.3	11.88	13.55	17.9
e	cm	1.7	2.04	2.11	1.86	1.63	1.7	1.98	2.02	2.06	2.61	2.43
Ixx	cm ⁴	17.33	41.3	52.77	40.35	28.56	20.18	49.4	59.52	62.77	102	151
Wxx	cm ³	5.25	9.24	10.79	9.29	7.39	5.45	10.2	14.25	14.12	20.87	26.2
ixx	cm	1.57	2.09	2.17	1.92	1.7	1.79	2.13	1.95	2.04	2.43	2.57
Iyy	cm ⁴	7.01	18.65	24.62	26.49	26.67	10.51	30.5	52.4	52.98	52.6	159
Wyy	cm ³	2.8	5.35	7.03	7.06	7.11	3.23	7.4	11.8	11.77	11.8	25.4
iyy	cm	1	1.4	1.48	1.55	1.64	1.29	1.67	1.83	1.87	1.75	2.64

**DIMENSIONS AND CHARACTERISTICS
DRAWN GUIDES**



Start Elevator Srl

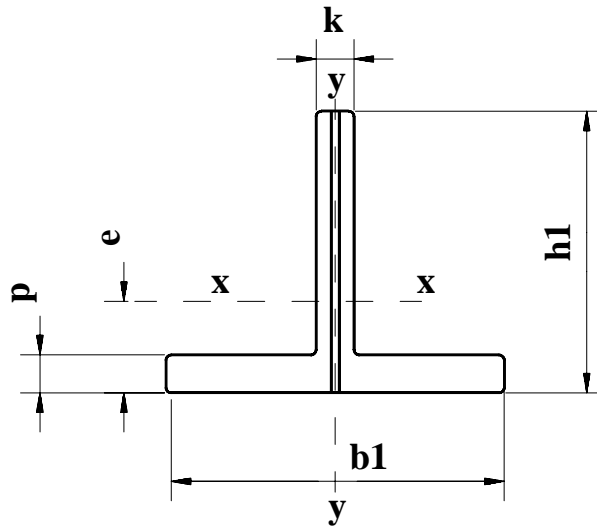
08 101 / G

rev. 1

1/2

According to ISO 7465

Material : Steel Fe 360 B

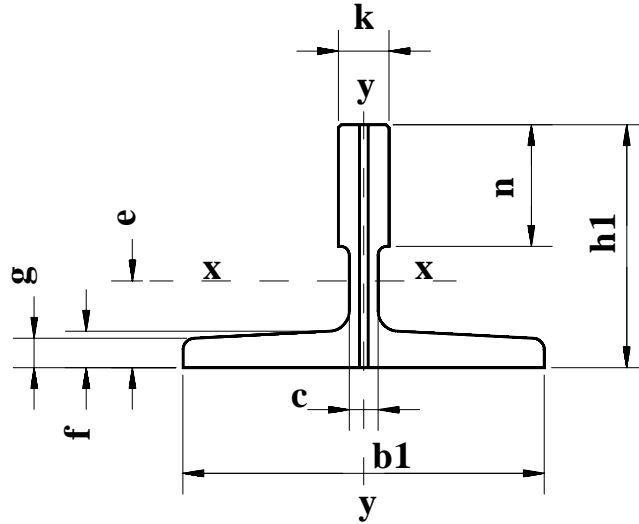


Profile		GL 445	GL 506	GL 607	GL 505	GL 809	GL 708
Dimen.		45x45x5	50x50x6	60x60x7	50x50x5	80x80x9	70x70x8
ISO 7465		T45/A			T50/A		T70-2/A
h1	mm	45	50	60	50	80	70
	mm	45	50	60	50	80	70
k	mm	5	6	7	5	9	8
p	mm	5	6	7	5	9	8
Section S	cm ²	4.25	5.64	7.91	4.75	13.59	10.52
Weight q1	Kg/m	3.34	4.44	6.23	3.73	10.7	8.26
e	cm	1.31	1.47	1.76	1.43	2.33	2.02
Ixx	cm ⁴	8.08	13.13	26.58	11.24	81.5	47.43
Wxx	cm ³	2.53	3.72	6.27	3.15	14.37	9.63
ixx	cm	1.38	1.53	1.83	1.54	2.45	2.12
Iyy	cm ⁴	3.84	6.33	12.75	5.25	38.83	23.13
Wyy	cm ³	1.71	2.53	4.25	2.1	9.71	6.61
iyy	cm	0.95	1.06	1.27	1.05	1.69	1.48



According to ISO 7465

Material : Steel Fe 430 B



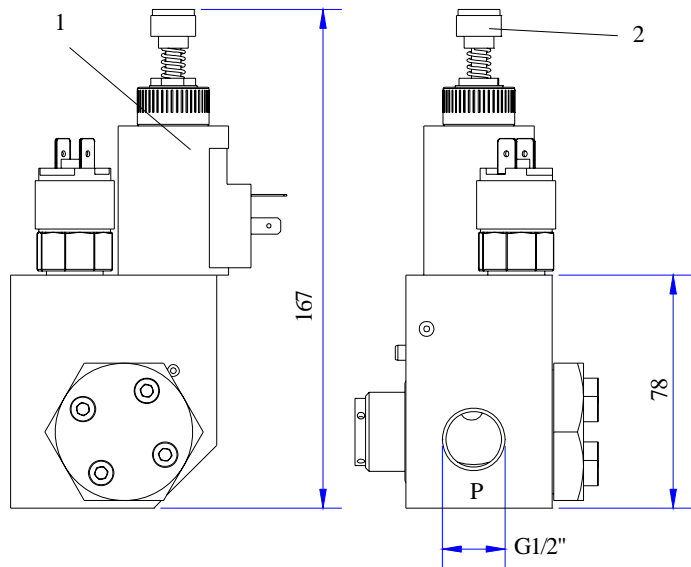
Profile		GM 890	GM 975	GM 125	GM 127-1	GM 127-2	GM 127-3	GM 140-1	GM 140-2
Dimen.		89x62x15.88	90x75x16	125x82x16	127x88.9x15.88	127x88.9x15.88	127x88.9x15.88	140x108x19	140x102x28.6
ISO 7465		T89 /B	T90 /B	T125 /B	T127 1/B	127 2/B	127 3/B	140 1/B	140 2/B
h1	mm	62	75	82	88.9	88.9	88.9	108	102
b1	mm	89	90	125	127	127	127	140	140
k	mm	15.88	16	16	15.88	15.88	15.88	19	28.6
n	mm	33.4	42	42	44.5	50.8	50.8	50.8	50.8
c	mm	10	10	10	10	10	14	12.7	17.5
g	mm	7.9	8	9	7.9	12.7	12.7	12.7	14.5
f	mm	11.1	10	12	11.1	15.9	15.9	15.9	17.5
Section S	cm ²	15.7	17.25	22.83	22.64	28.63	29.56	35.2	43.22
Weight q1	Kg/m	12.3	13.55	17.90	17.77	22.48	23.26	27.6	33.92
e	cm	2.02	2.61	2.43	2.75	2.47	2.47	3.24	3.47
Ixx	cm ⁴	59.52	102	151	186.2	198.4	199.37	404	457
Wxx	cm ³	14.25	20.87	26.2	30.4	30.9	31.05	53.4	68
ixx	cm	1.95	2.43	2.57	2.87	2.63	2.60	3.39	3.25
Iyy	cm ⁴	52.4	52.6	159	148	230	234.34	310	358
Wyy	cm ³	11.8	11.8	25.4	23.4	36.2	36.9	44.3	51.2
iyy	cm	1.83	1.75	2.64	2.87	2.83	2.82	2.97	2.88



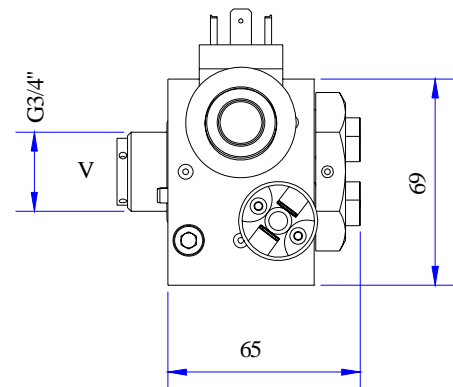
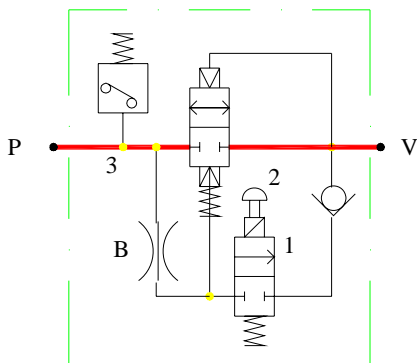
Type	Identificazione	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1/2"	14208 00	4 ÷ 55	11 ÷ 80	14 ÷ 290

- 1 Solenoid valve 24 o 48/12 VCC - 45 W
- 2 Emergency downstroke pushbutton
- 3 Pressure switch conenction

B - Section of control of closing speed
P - To Piston
V - To pump unit



SCHEMATIC DIAGRAMM



USE INSTRUCTIONS

1. It is not necessary power on the DS device solenoid valve in upward phases, on the contrary, it must power on before (300-500 ms) and after (1-1,5 s) any downward manoeuvre.
2. If necessary, the DS solenoid valve must power on, in lift stop with door open, for the pressure measurement in the pump unit.
3. The power supply to DS solenoid valve must put off (DS device activation), with door open, when the controller recognizes a unintended car movement.
4. DS device must be activate before the cabin to go away 200 mm from floor level.

DS DEVICE CAN BE USED AS AN ELEMENT OF REDUNDANCY IN DOWN COMMANDS ON THE PUMP UNIT. IT PROVIDES AN AUTOMATIC MONITORING FUNCTION BY THE CONTROL PANEL.

**DS-1/2" DEVICE
FOR PROTECTION AGAINST
UNINTENDED CAR MOVEMENT**



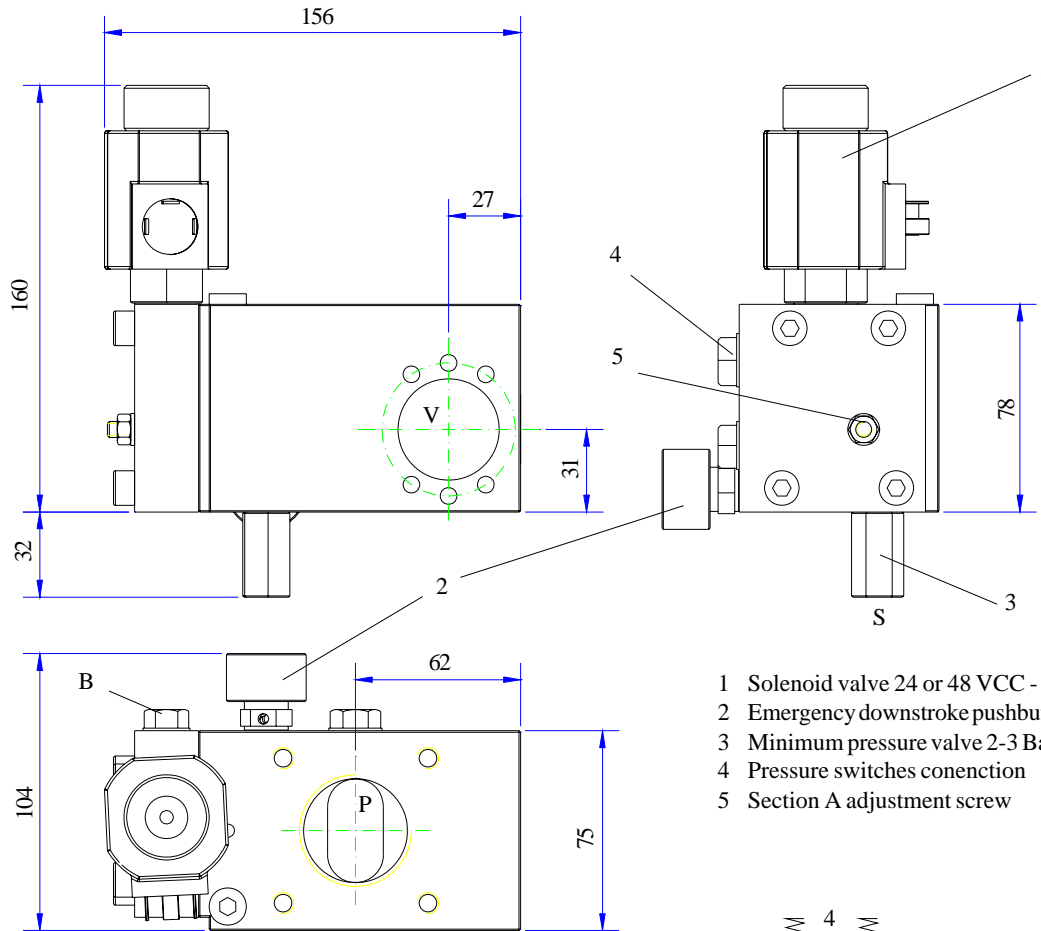
Start Elevator

08 186 / G

rev. 0

1/1

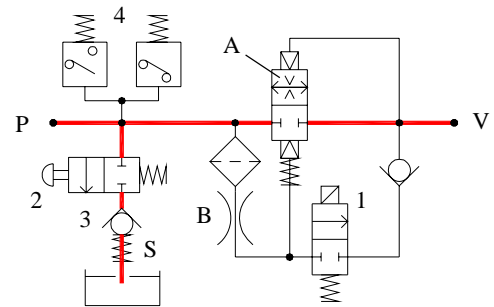
Type	Identification	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1"1/4	19200 00	45 ÷ 210	10 ÷ 60	14 ÷ 290



- 1 Solenoid valve 24 or 48 VCC - 45 W
- 2 Emergency downstroke pushbutton
- 3 Minimum pressure valve 2-3 Bar
- 4 Pressure switches connection
- 5 Section A adjustment screw

- A - Operating flow adjusting section
- B - Section of control of closing speed
- P - To Piston
- S - Emergency downstroke daining pipe
- V - To pumpunit

SCHEMATIC
DIAGRAMM



USE INSTRUCTIONS

1. It is not necessary power on the DS device solenoid valve in upward phases, on the contrary, it must power on before (300-500 ms) and after (1-1,5 s) any downward manoeuvre.
2. If necessary, the DS solenoid valve must power on, in lift stop with door open, for the pressure measurement in the pump unit.
3. The power supply to DS solenoid valve must put off (DS device activation), with door open, when the controller recognizes a unintended car movement.
4. DS device must be activate before the cabin to go away 200 mm from floor level.

DS DEVICE CAN BE USED AS AN ELEMENT OF REDUNDANCY IN DOWN COMMANDS ON THE PUMP UNIT. IT PROVIDES AN AUTOMATIC MONITORING FUNCTION BY THE CONTROL PANEL.

**DS-1"1/4 DEVICE
FOR PROTECTION AGAINST
UNINTENDED CAR MOVEMENT**



Start Elevator

08 183 / G

rev. 0

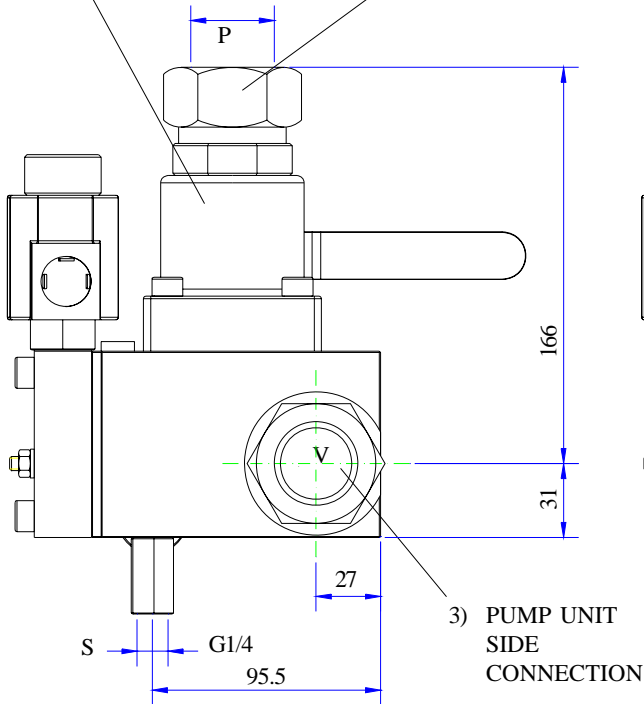
1/2

CONNECTION CONFIGURATION

1) EXIT BALL VALVE

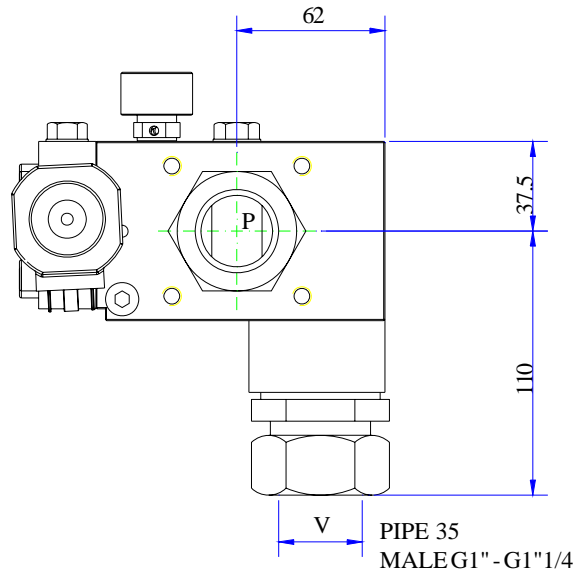
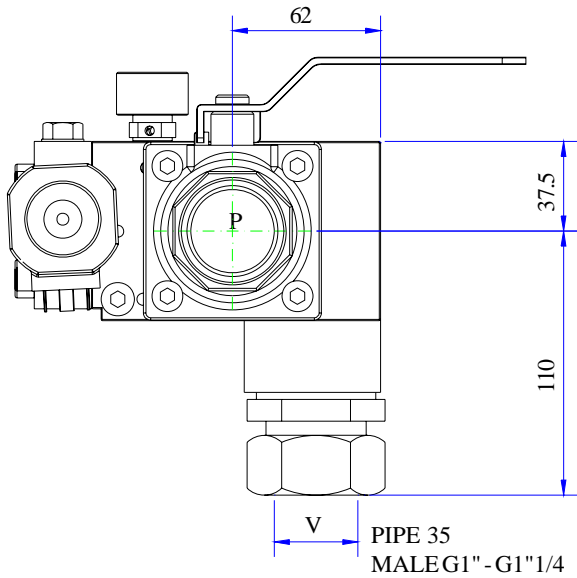
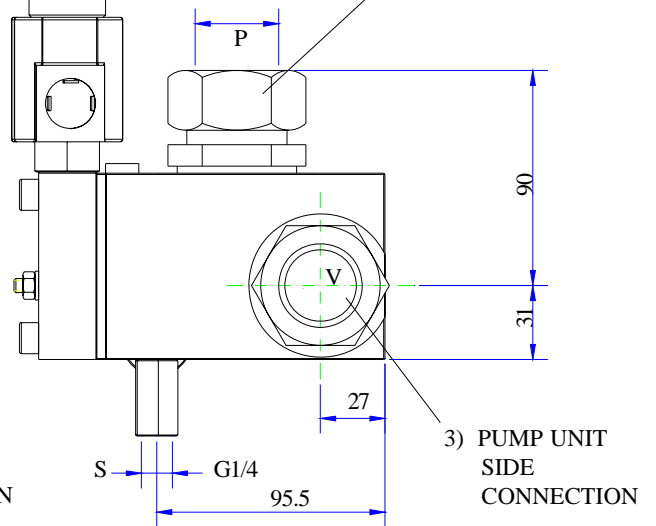
2) PISTON SIDE CONNECTION

PIPE 35
MALE G1" - G1"1/4



2) PISTON SIDE CONNECTION

PIPE 35
MALE G1" - G1"1/4



P - To Piston
S - Emergency downstroke daining connection
V - To pumpunit

**DS-1"1/4 DEVICE
FOR PROTECTION AGAINST
UNINTENDED CAR MOVEMENT**



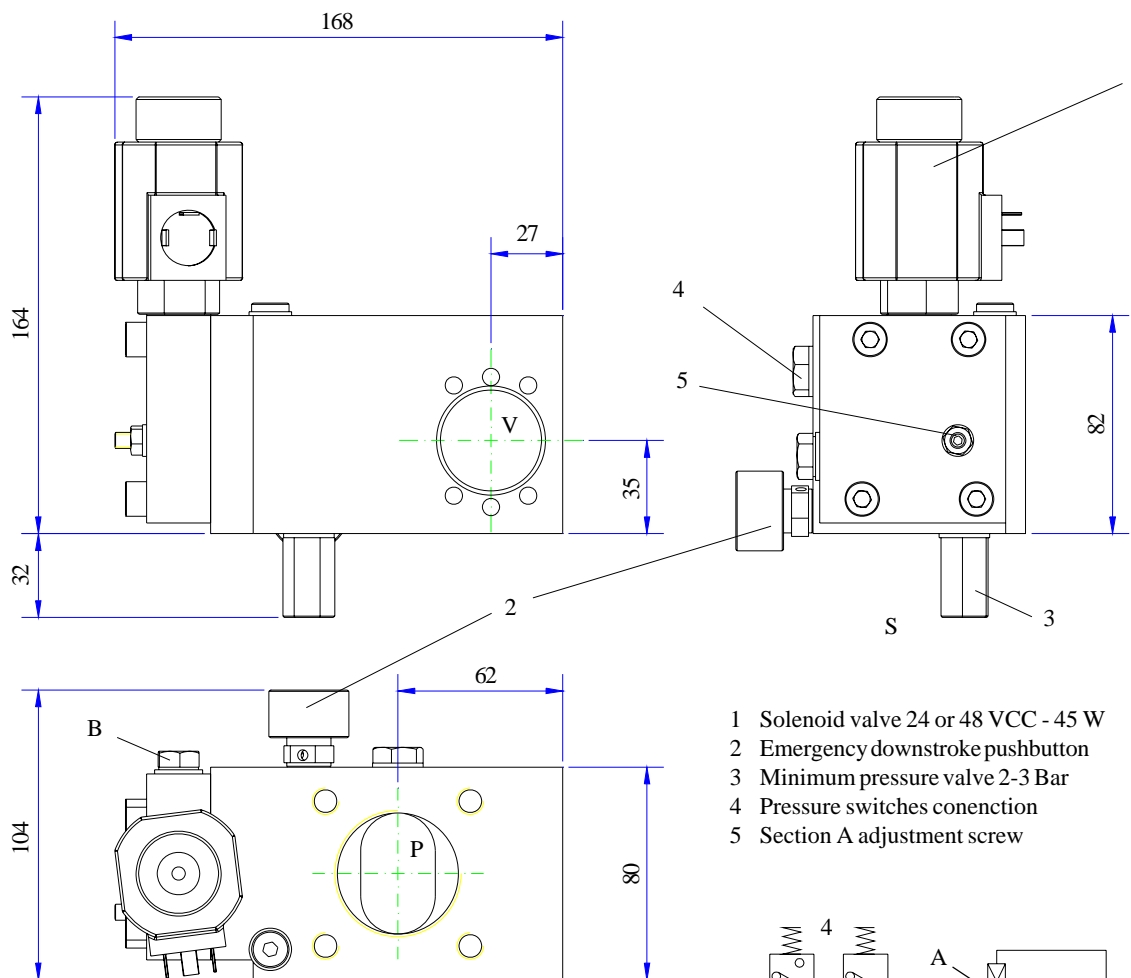
Start Elevator

08 183 / G

rev. 0

2/2

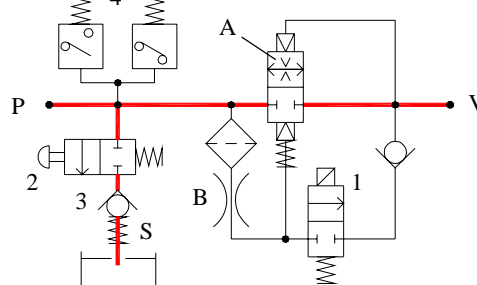
Type	Identificazione	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1"1/2	19208 00	250 ÷ 380	10 ÷ 60	14 ÷ 290



- 1 Solenoid valve 24 or 48 VCC - 45 W
- 2 Emergency downstroke pushbutton
- 3 Minimum pressure valve 2-3 Bar
- 4 Pressure switches conenction
- 5 Section A adjustment screw

- A - Operating flow adjusting section
- B - Section of control of closing speed
- P - To Piston
- S - Emergency downstroke daining pipe
- V - To pumpunit

SCHMATIC
DIAGRAMM



USE INSTRUCTIONS

1. It is not necessary power on the DS device solenoid valve in upward phases, on the contrary, it must power on before (300-500 ms) and after (1-1,5 s) any downward manoeuvre.
2. If necessary, the DS solenoid valve must power on, in lift stop with door open, for the pressure measurement in the pump unit.
3. The power supply to DS solenoid valve must put off (DS device activation), with door open, when the controller recognizes a unintended car movement.
4. DS device must be activate before the cabin to go away 200 mm from floor level.

DS DEVICE CAN BE USED AS AN ELEMENT OF REDUNDANCY IN DOWN COMMANDS ON THE PUMP UNIT. IT PROVIDES AN AUTOMATIC MONITORING FUNCTION BY THE CONTROL PANEL.

**DS-1"1/2 DEVICE
FOR PROTECTION AGAINST
UNINTENDED CAR MOVEMENT**



Start Elevator

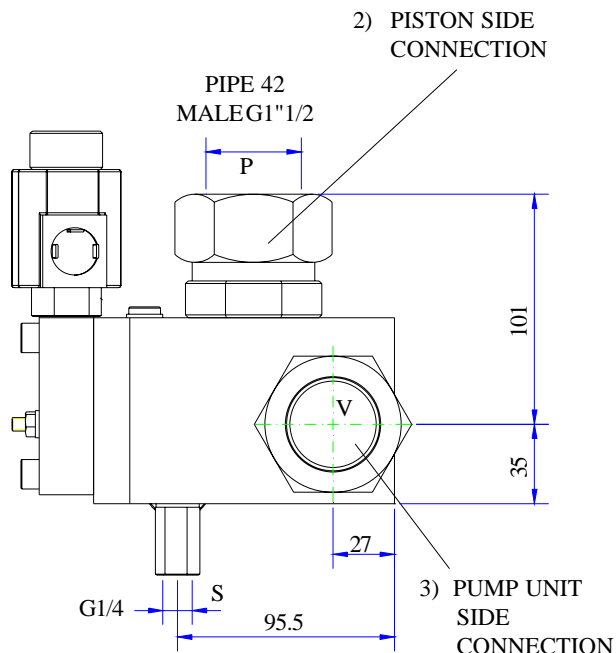
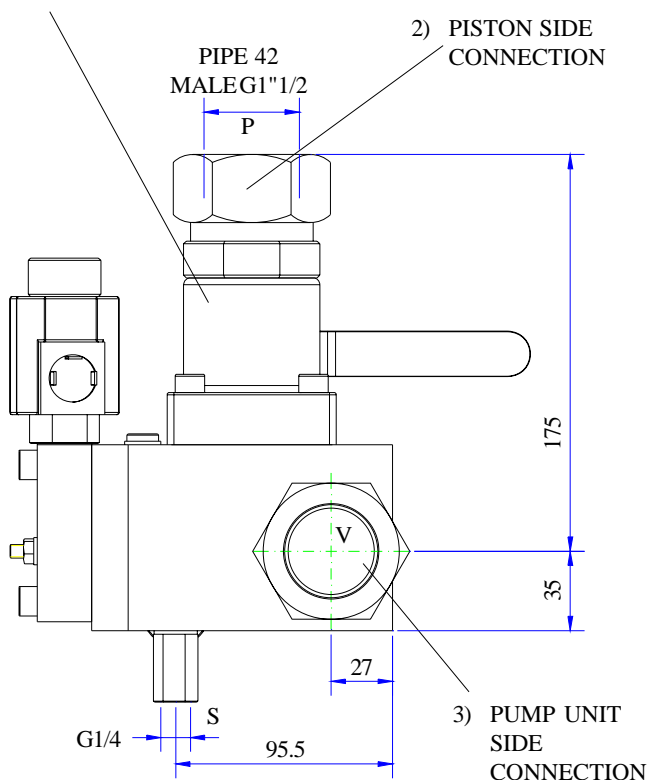
08 184 / G

rev. 0

1/2

CONNECTION CONFIGURATION

1) EXIT BALL VALVE



P - To Piston
 S - Emergency downstroke daining connection
 V - To pump unit

**DS-1"1/2 DEVICE
 FOR PROTECTION AGAINST
 UNINTENDED CAR MOVEMENT**



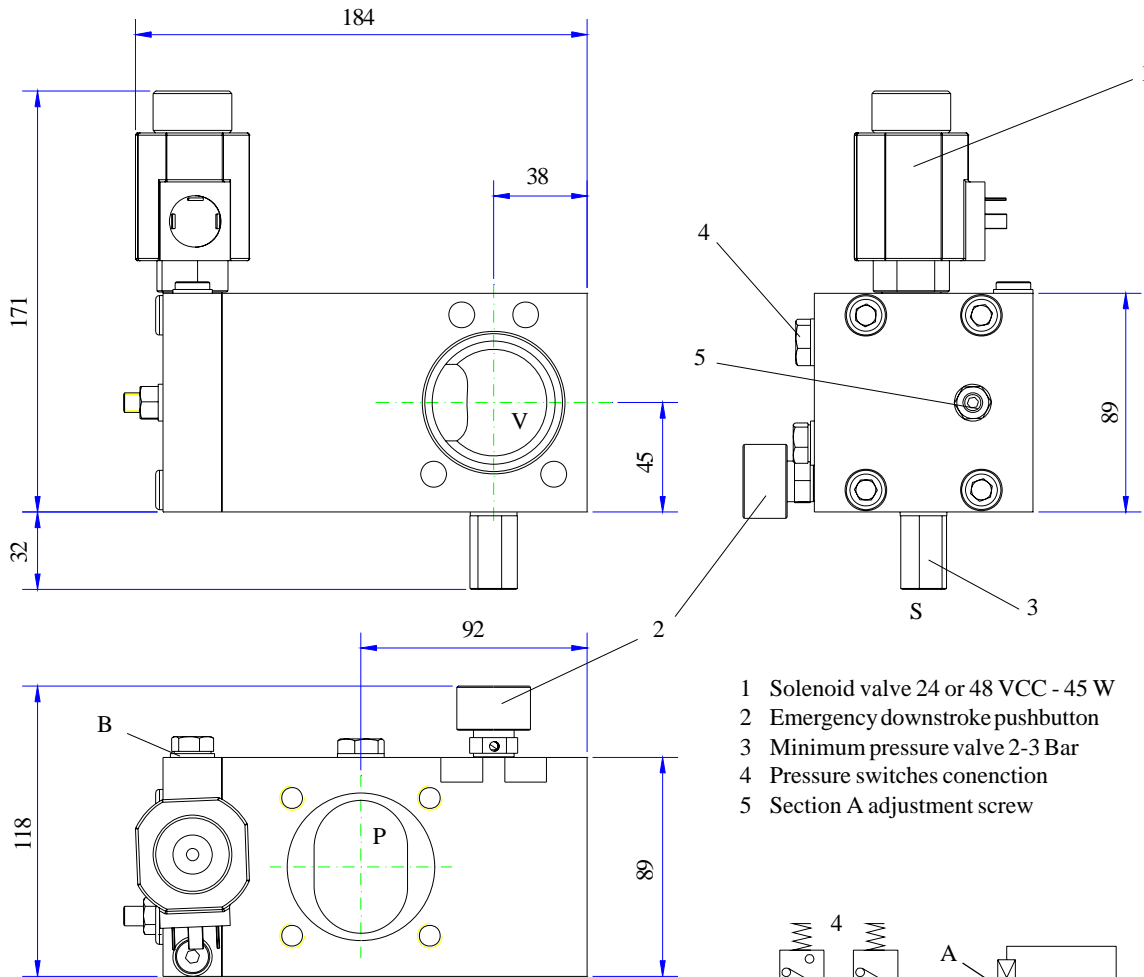
Start Elevator

08 184 / G

rev. 0

2/2

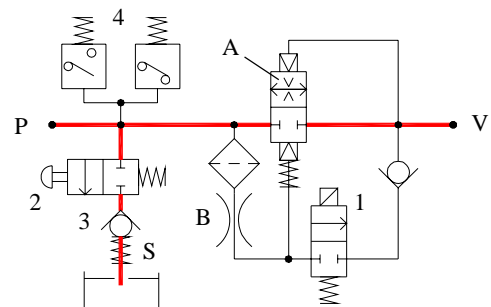
Type	Identification	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
2"	19217 00	380 ÷ 660	10 ÷ 60	14 ÷ 290



- 1 Solenoid valve 24 or 48 VCC - 45 W
- 2 Emergency downstroke pushbutton
- 3 Minimum pressure valve 2-3 Bar
- 4 Pressure switches conencion
- 5 Section A adjustment screw

- A - Operating flow adjusting section
 B - Section of control of closing speed
 P - To Piston
 S - Emergency downstroke daining pipe
 V - To pumpunit

SCHEMATIC
DIAGRAMM



USE INSTRUCTIONS

1. It is not necessary power on the DS device solenoid valve in upward phases, on the contrary, it must power on before (300-500 ms) and after (1-1,5 s) any downward manoeuvre.
2. If necessary, the DS solenoid valve must power on, in lift stop with door open, for the pressure measurement in the pump unit.
3. The power supply to DS solenoid valve must put off (DS device activation), with door open, when the controller recognizes a unintended car movement.
4. DS device must be activate before the cabin to go away 200 mm from floor level.

DS DEVICE CAN BE USED AS AN ELEMENT OF REDUNDANCY IN DOWN COMMANDS ON THE PUMP UNIT. IT PROVIDES AN AUTOMATIC MONITORING FUNCTION BY THE CONTROL PANEL.

**DS-2" DEVICE
FOR PROTECTION AGAINST
UNINTENDED CAR MOVEMENT**



Start Elevator

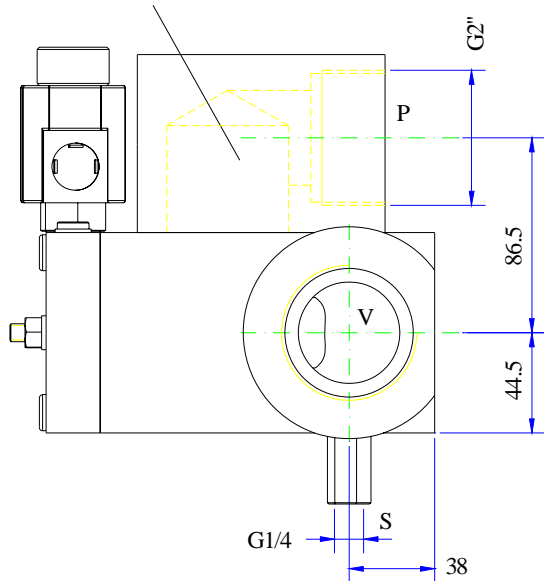
08 185 / G

rev. 0

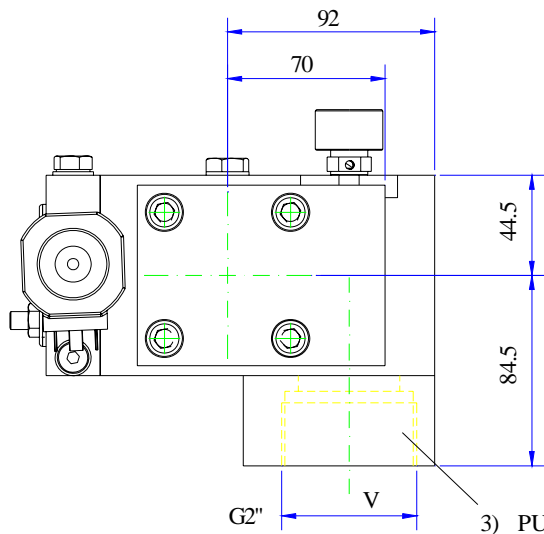
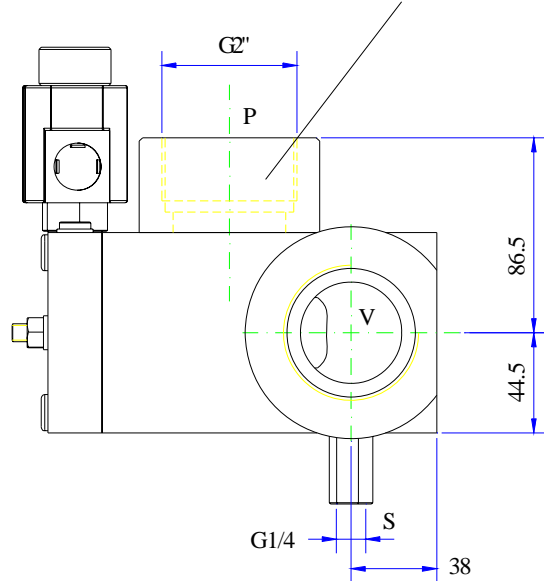
1/2

CONFIGURAZIONI RACCORDI

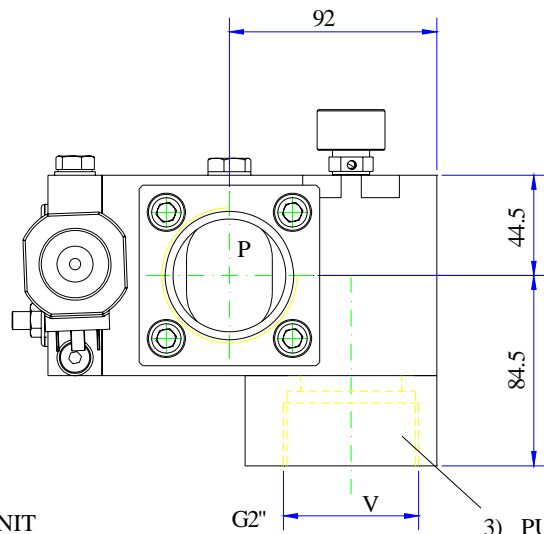
1) DIRECTIONABLE BLOCK



2) PISTON SIDE FLANGE



3) PUMP UNIT SIDE FLANGE



3) PUMP UNIT SIDE FLANGE

P - To Piston
 S - Emergency downstroke daining connection
 V - To pumpunit

**DS-2" DEVICE
 FOR PROTECTION AGAINST
 UNINTENDED CAR MOVEMENT**



Start Elevator

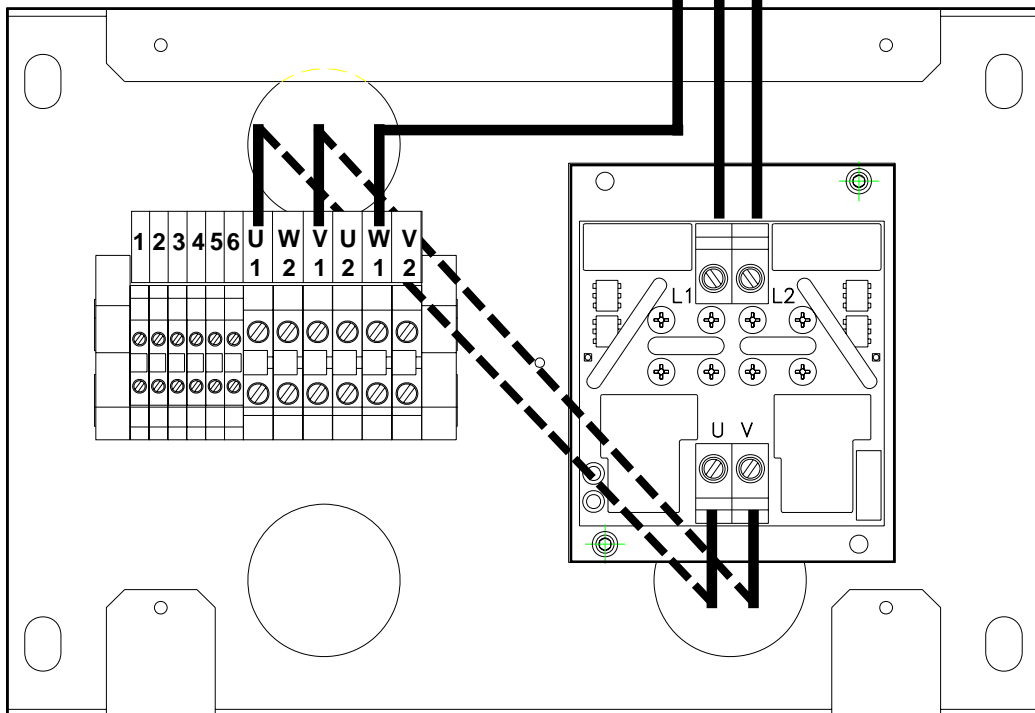
08 185 / G

rev. 0

2/2

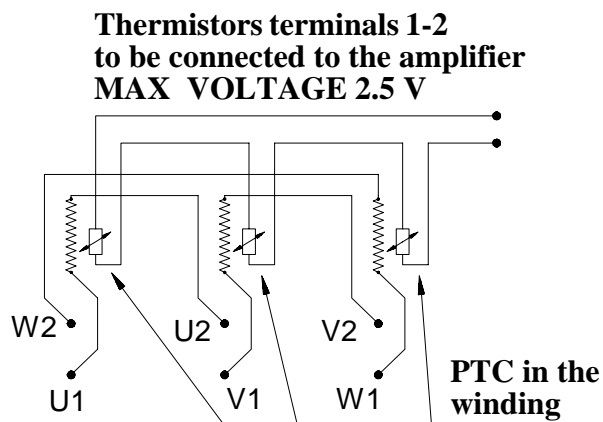
- 1-2 Motor protection thermistors
- 3-4 Oil thermostat 70°C opening
- 5-6 Oil heater resistance 500 W

LINE
230,400 Vac (50-60 Hz)



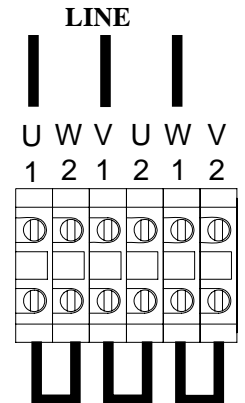
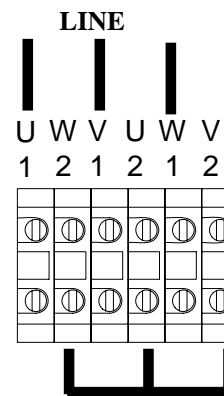
Nominal current	40 A
Max starting current	100 A
Size	11,3 Kw at 230 V 20 Kw at 400 V
Starting current	2 - 2,3 In

MOTOR ELECTRICAL DIAGRAM



λ CONNECTION

Δ CONNECTION



**ELECTRICAL CONNECTION PUMP UNIT
WITH MOTOR ELECTRONIC STARTER
DIGISTART 2DS10**



Start Elevator

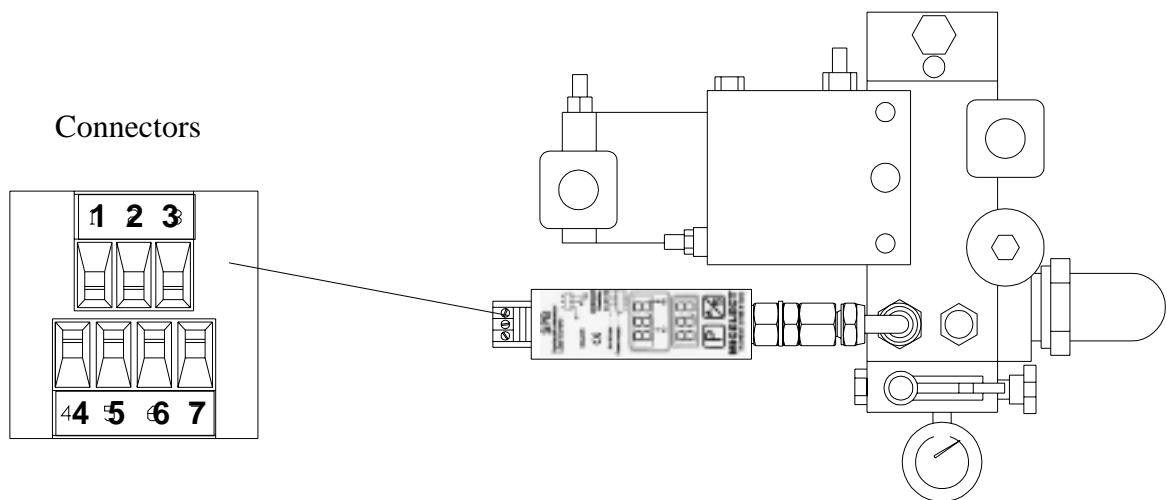
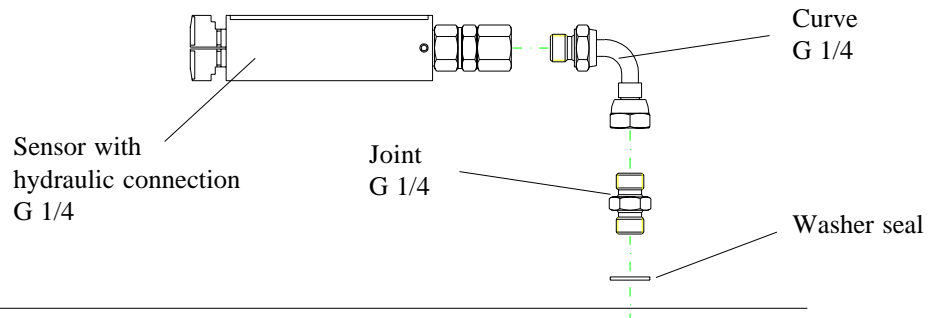
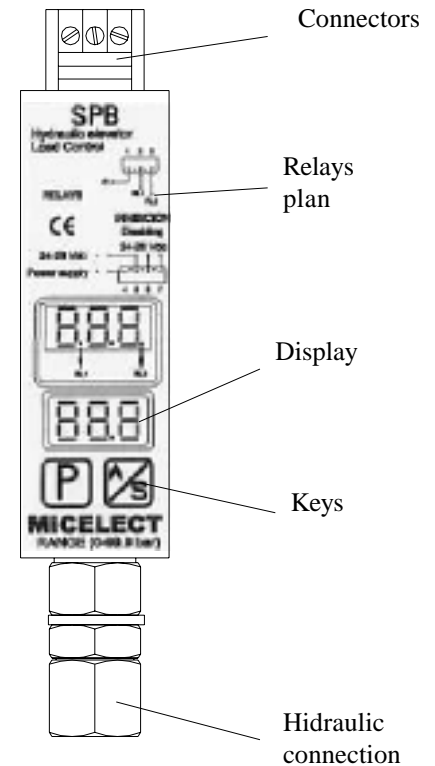
08 300 / G

rev. 0

1/1

INSTALLATION GUIDE

1. PLACE THE SENSOR IN THE HYDRAULIC CIRCUIT
2. CONNECT THE POWER SUPPLY CONNECTOR
PIN 4 (+)
PIN 5 (-)
Power supply range: 24-48 V DC
3. CONNECT THE DISABLING/BLOCKING CONNECTOR
PIN 6
PIN 7
 The sensor must be disabled (blocked) when the lift begins to move to avoid any dynamic pressure error. Connect the disabling input by means of a door contact (**closed contact with closed doors**)
Blocking signal range: 24-48 V AC/DC
4. CONNECT THE RELAY CONNECTOR
PIN 1 Common
PIN 2 Alarm 1: always assigned to Full Load
PIN 3 Alarm 2: always assigned to Overload
5. PROGRAMMING THE ZERO AND THE ALARMS
 (see the plan at page 2)
6. DISCONNECT AND CONNECT AGAIN THE POWER SUPPLY
7. MAKE AN OPERATING TEST



**ELECTRONIC PRESSURE SENSOR
TYPE SPB**



Start Elevator Srl

08 201 / G

rev. 0

1/2

PROGRAMMING

THE PROGRAMMING MUST BE CARRIED OUT WITH THE CAR ON THE LOWEST FLOOR

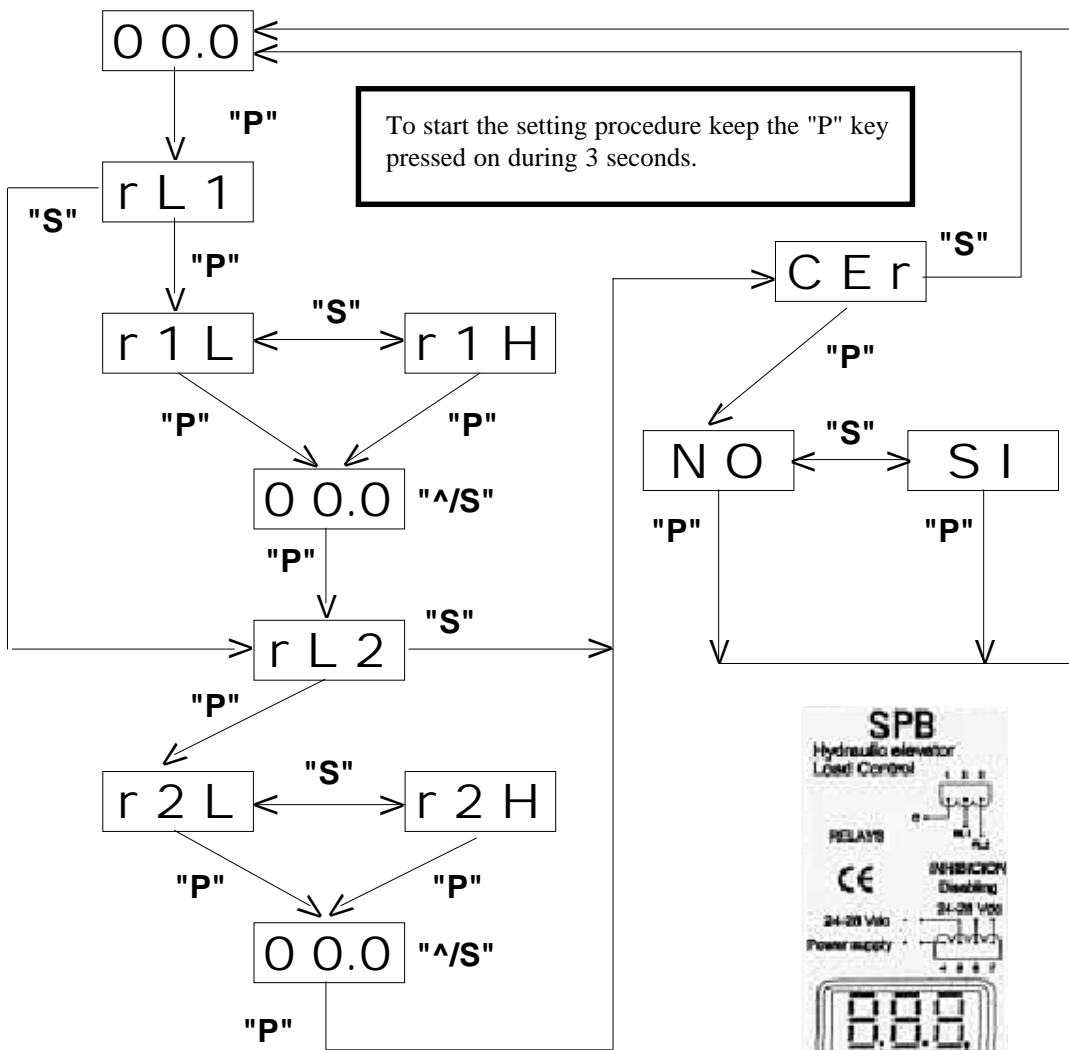
Nomenclature:

- RL1** Relay 1 = Alarm 1 = **Full Load Alarm**
- R1H** Normally open (Alarm 1)
- R1L** Normally closed (Alarm 1)
- RL2** Relay 2 = Alarm 2 = **Overload Alarm**
- R2H** Normally open (Alarm 2)
- R2L** Normally closed (Alarm 2)
- CEr** Zero (tare with **empty cabin**)

For the values to give to the alarms you can calculate the pressure with this expression

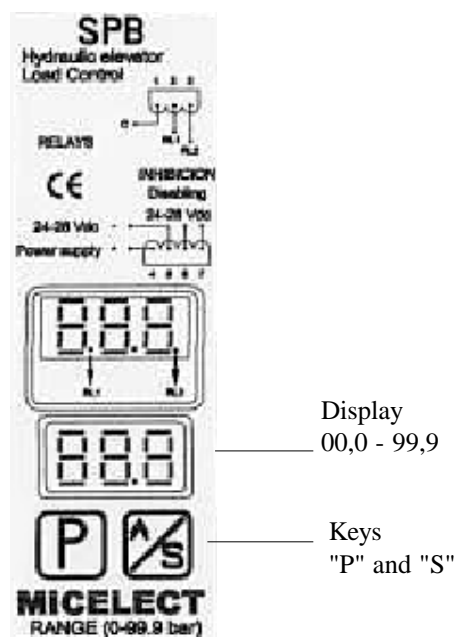
$$Ps \text{ [bar]} = N * 75 * C * 127,3 / D^2$$

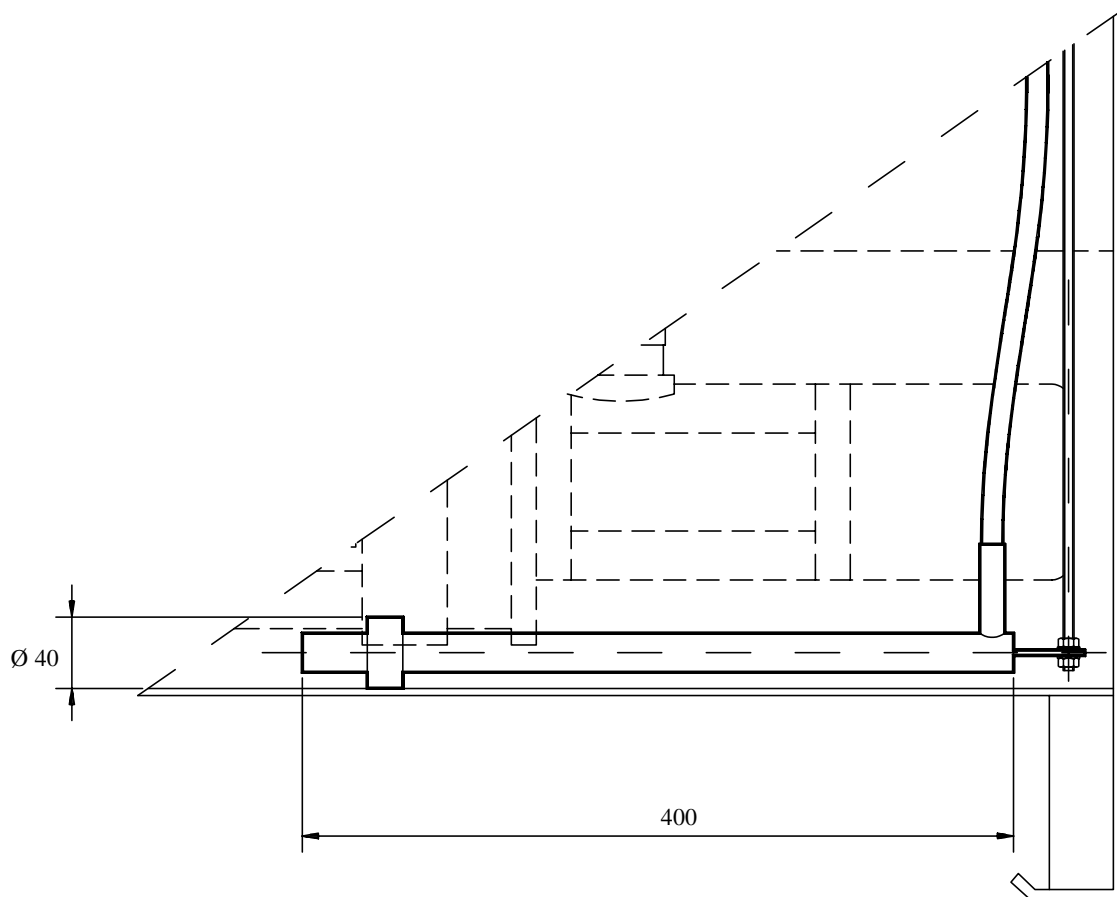
- for N = person number
- C = reeving rate (2:1 = 2)
- D = piston diameter [mm]



To start the setting procedure keep the "P" key pressed on during 3 seconds.

Note: the display remains switched off after 5 minutes of normal operation. Press any key to visualize the display value again.





TECHNICAL CHARACTERISTICS

Voltages 220 o 380 V

Power 500 Watt

Thermostat setting + 30°C

**OIL-HEATING
RESISTANCE**

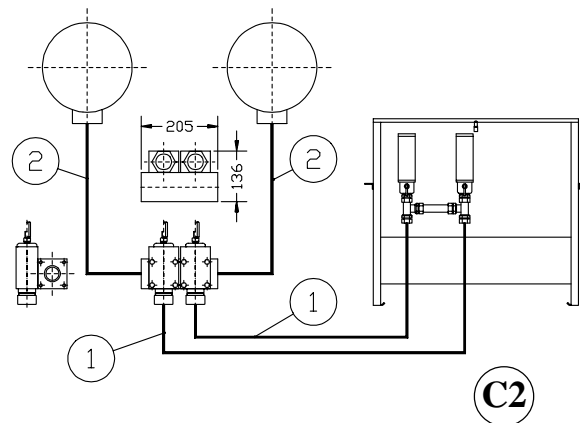
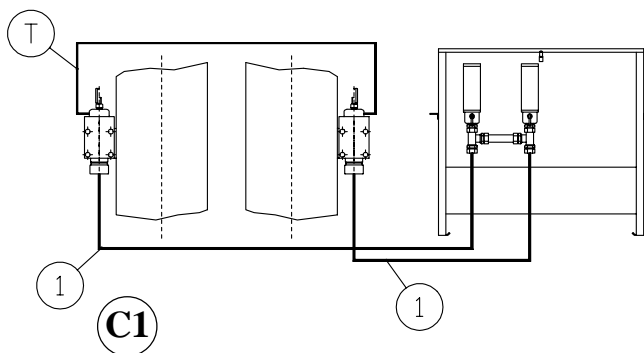
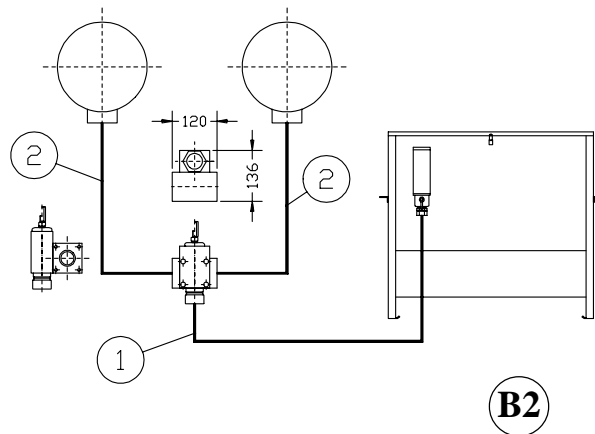
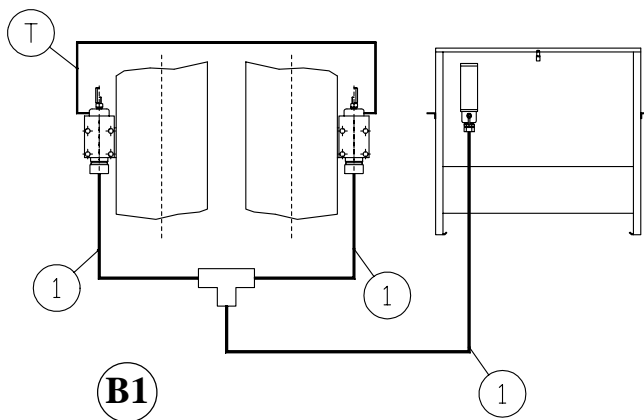
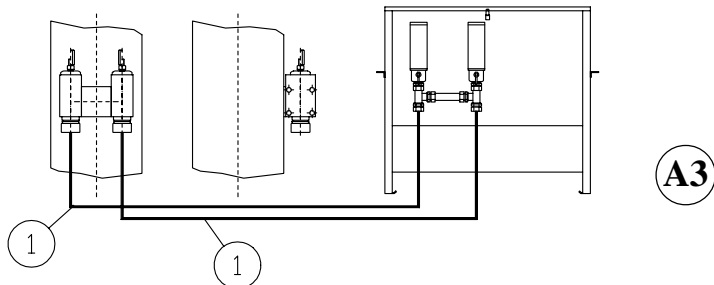
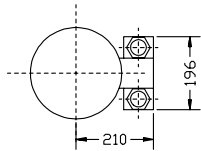
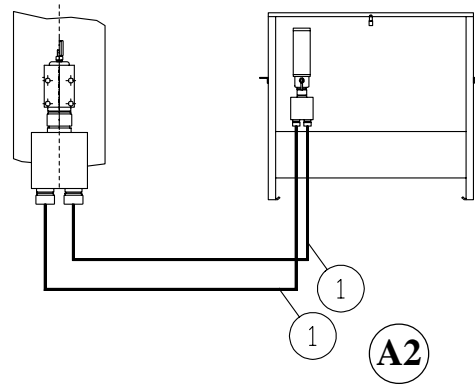
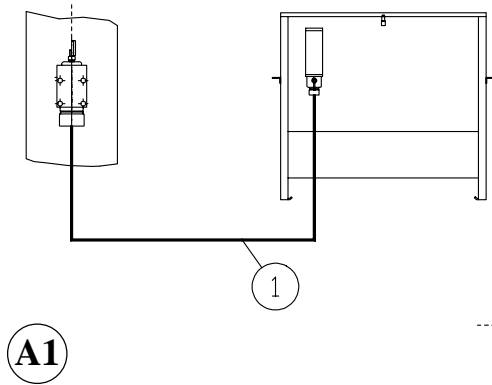


Start Elevator Srl

08 150 / G

rev. 0

1/1



PISTON - PUMP UNIT
CONNECTION HOOKUP



Start Elevator Srl

08 190 / G

rev. 0

1/3

CASE "A1" : A PISTON AND A **55-380 L/MIN** 90/E OR 90/M PUMP UNIT
- A TUBE TYPE <1> WITH 35, 42 OR 1"1/4, 1"1/2 DIAMETER

CASE "A2" : A PISTON AND A **380 L/MIN** 90/E OR 90/M PUMP UNIT
WITH A LONG PIPE OR LOW STATIC PRESSURE
- TWO PIPES TYPE <1> WITH 42 OR 1"1/2 DIAMETER
- TWO 2"-2x1"1/2 MANIFOLD

CASE "A3" : A PISTON AND A **440-660 L/MIN** 90/E2 OR 90/M2 PUMP UNIT
- TWO PIPES TYPE <1> WITH 42 OR 1"1/2 DIAMETER

CASE "B" : TWO PISTONS AND A **55-380 L/MIN** 90/E OR 90/M PUMP UNIT

"B1" TRADITIONAL SYSTEM

- THREE PIPES TYPE <1> WITH 35, 42 OR 1"1/4, 1"1/2 DIAMETER
- A TUBE TYPE <T> WITH 1/4 DIAMETER

"B2" CONFORMITY WITH 95/16/EC DIRECTIVE

- A TUBE TYPE <1> WITH 35, 42 OR 1"1/4, 1"1/2 DIAMETER
- TWO PIPES TYPE <2> 35 OR 42 DIAMETER

CASE "C" : TWO PISTONS AND A **440-660 L/MIN** 90/E2 OR 90/M2 PUMP UNIT

"C1" TRADITIONAL SYSTEM

- TWO PIPES TYPE <1> WITH 42 OR 1"1/2 DIAMETER
- A TUBE TYPE <T> WITH 1/4 DIAMETER

"C2" CONFORMITY WITH 95/16/EC DIRECTIVE

- TWO PIPES TYPE <1> WITH 42 OR 1"1/2 DIAMETER
- TWO PIPES TYPE <2> 42 DIAMETER

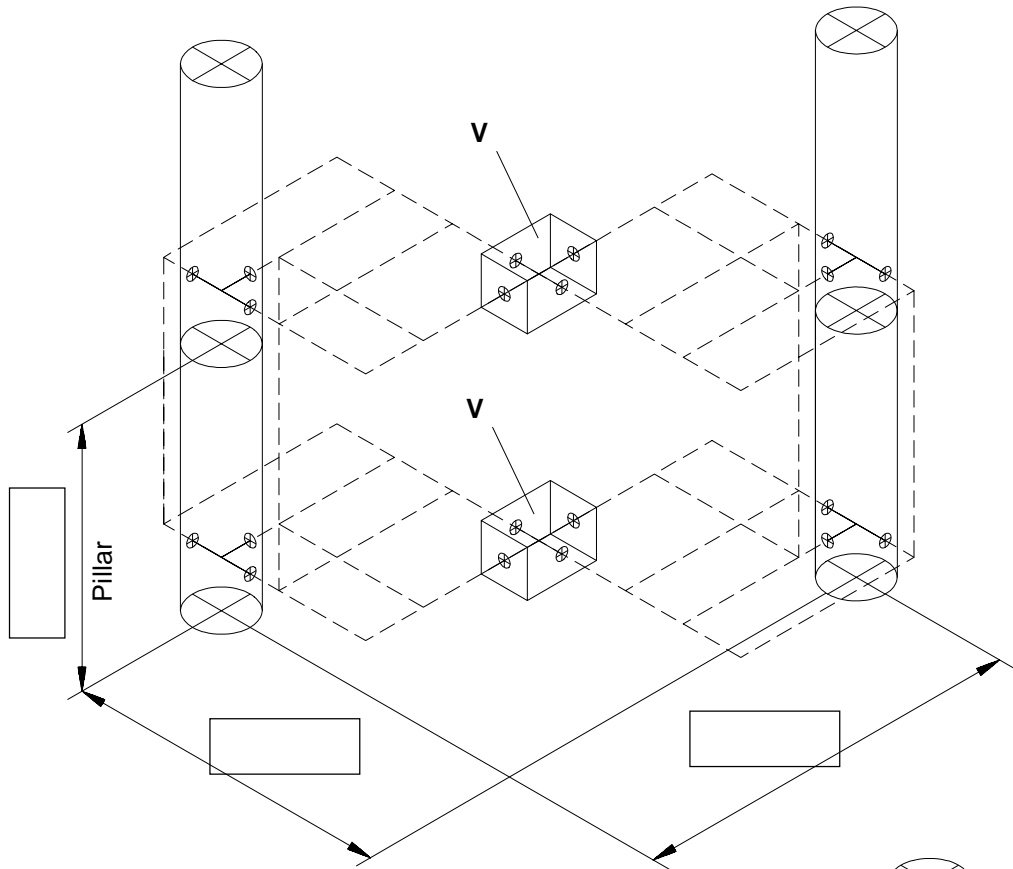
THE PIPES <1> CAN BE RIGID OR FLEXIBLE TYPE.

THE PIPES <2> CAN BE RIGID TYPE ONLY,
MUST BE WELDED, FLANGED OR THREADED AND CALCULATED AS THE CYLINDER WALLS.

THE PIPES <T> ARE NORMALLY FLEXIBLE TYPE WITH SMALL DIAMETER.

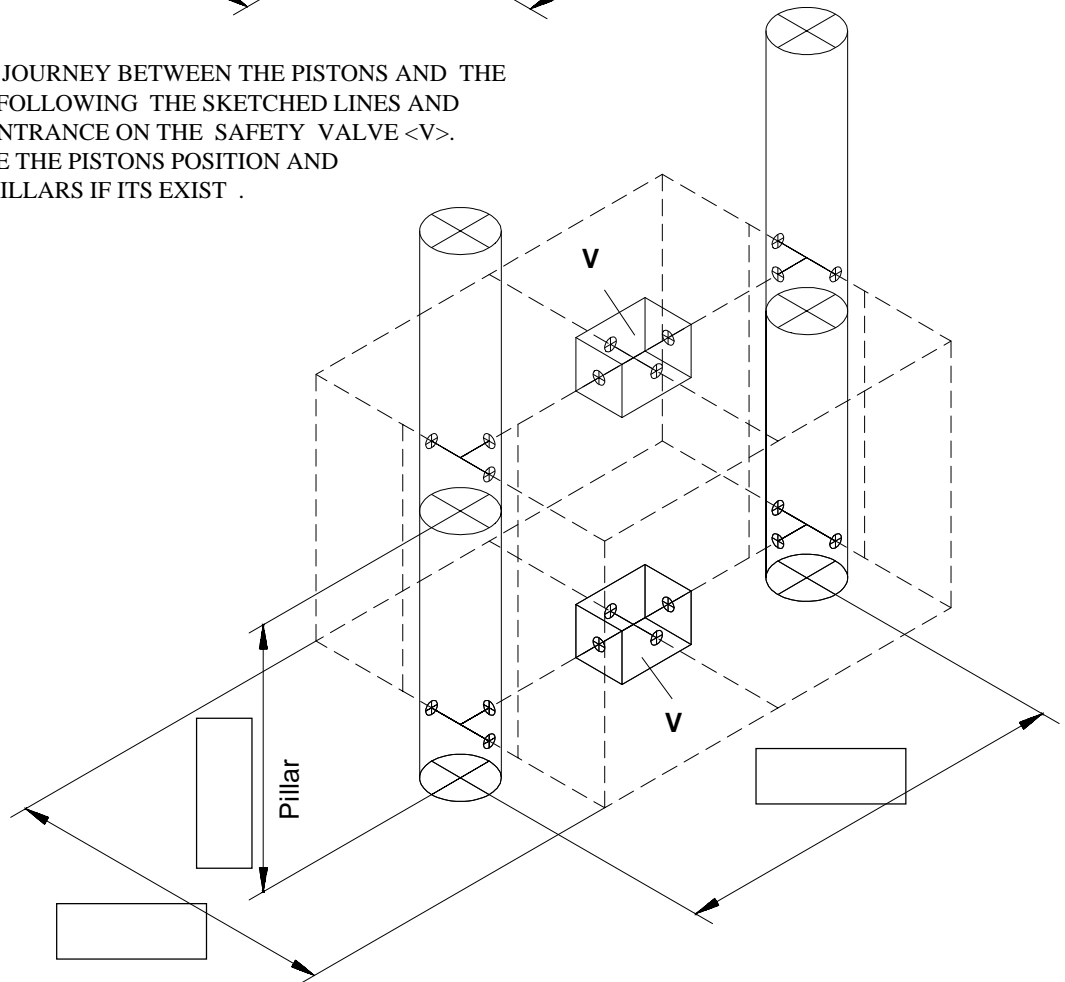
IS POSSIBLE TO SUPPLY THE COMPLETE PIPES <2> ONLY HAVING THE ACCURATE POSITION OF THE PISTONS AND OF THE SAFETY VALVE.

TO USE THE OUTLINES QUOTED ON PAGE 3
FOR TO INDICATE THE PIPES JOURNEY AND THE SAFETY VALVE POSITION.



TO STRESS THE PIPES JOURNEY BETWEEN THE PISTONS AND THE SAFETY VALVE. <V> FOLLOWING THE SKETCHED LINES AND TO INDICATE PIPES ENTRANCE ON THE SAFETY VALVE <V>. MOREOVER TO VALUE THE PISTONS POSITION AND THE HEIGHT OF THE PILLARS IF ITS EXIST .

SIZE IN MM.



PISTON - PUMP UNIT
CONNECTION HOOKUP



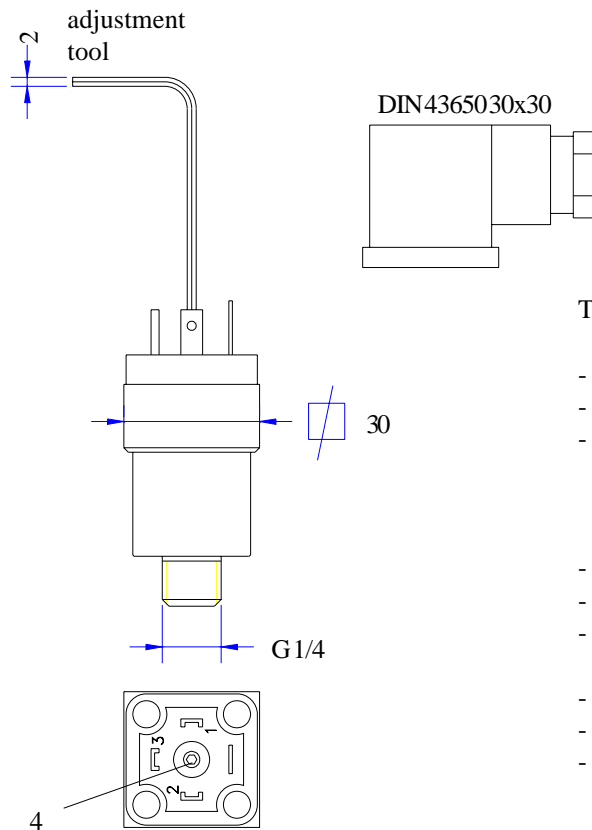
Start Elevator Srl

08 190 / G

rev. 0

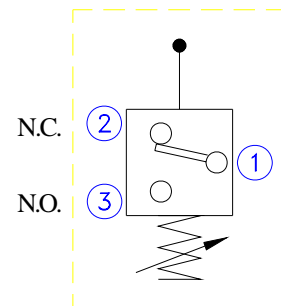
3/3

The pressure switch permits to commute an electrical circuit when in the hydraulic system the pressure switch setting is reached or is over.



TECHNICAL CHARACTERISTICS

- Intervention tolerance $\pm 4\%$ of set pressure
- Maximum static pressure 200 bar
- Maximum contact load
 - Alternating current up to 250 Volts - 0.5 Amp
 - Direct current up to 125 Volts - 0.25 Amp
- Code PRSM005050D
- Field of adjusting 5-50 bar
- Mark recognition DIW0/50
- Code PRSM010100D
- Field of adjusting 10-100 bar
- Mark recognition DIW0/100



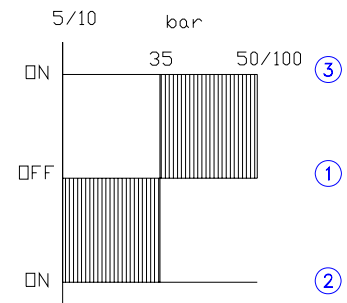
Pressure setting to be executed before connecting the pressure switch to the control board:

It's necessary to have an instrument that relieves the electrical continuity between the taps 1-2 of the pressure switch (N.C.) or between the taps 1-3 (N.O.)

Moreover it's necessary to take the pressure of the system to the operating value.

If the switch 1-2 is closed (1-3 open) gradually turn anticlockwise the screw <4> to open the switch 1-2 (1-3 closed).
 If the switch 1-2 is open (1-3 closed) gradually turn clockwise the screw <4> to close the switch 1-2 (1-3 open), then screw anticlockwise to open the switch 1-2 again (switch 1-3 closed).

35 bar adjustment example



PRESSURE SWITCH
5-50 BAR 2C
10-100 BAR 2C



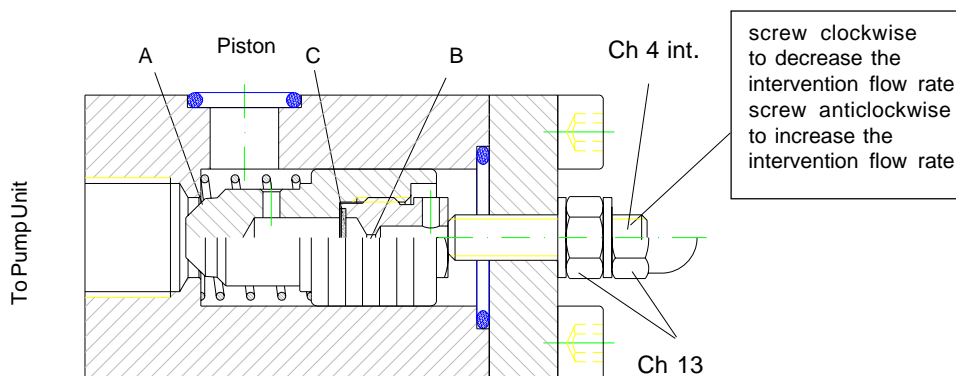
Start Elevator

08 202 / G

rev. 0

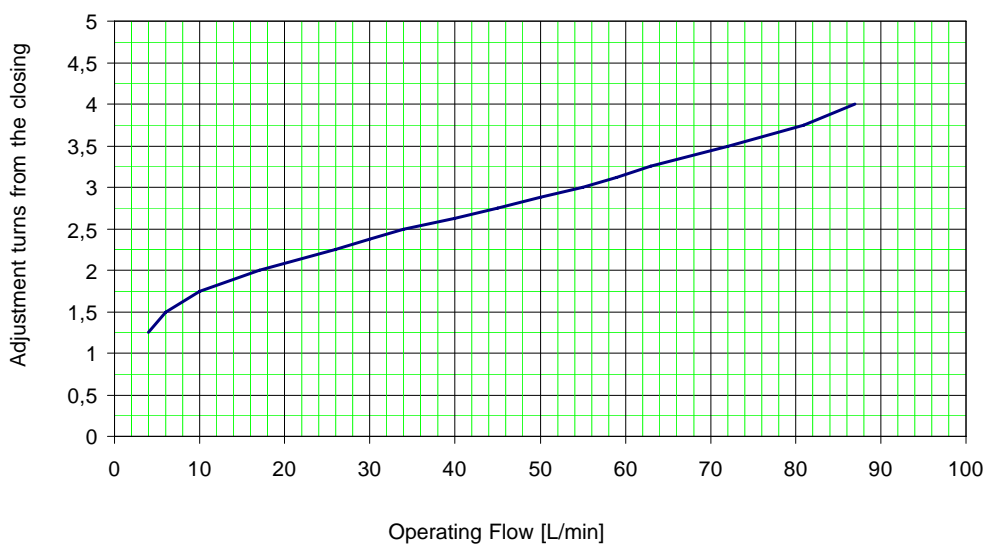
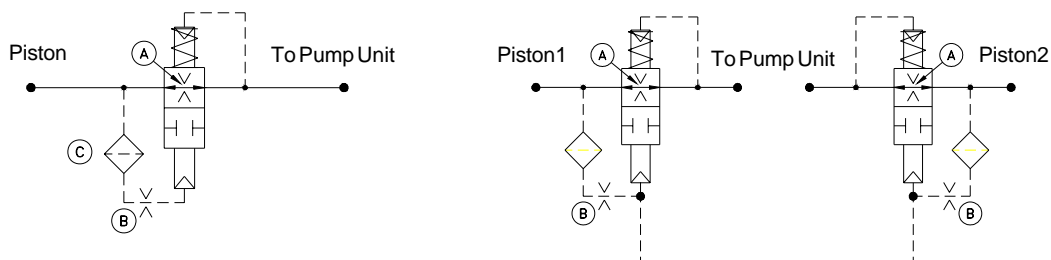
1/1

Type	Identification	Pipe Connection	Comp. Conention	Nominal Flow L/min	Static Pressure bar	Oil Viscosity cSt
1/2"	03026 01	Gas 1/2"	/	min ÷ max 4 ÷ 70	min ÷ max 10 ÷ 80	min ÷ max 14 ÷ 290
	03026 02	Gas 1/2"	Gas 1/4 "			



- A - Operating flow adjusting section
- B - Section of control of closing speed
- C - Filter

Schematic Diagram 1 and 2 pistons



**SAFETY VALVE
ADJUSTING
TYPE 1/2" 03026 EN81**



Start Elevator

08 176 / G

rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

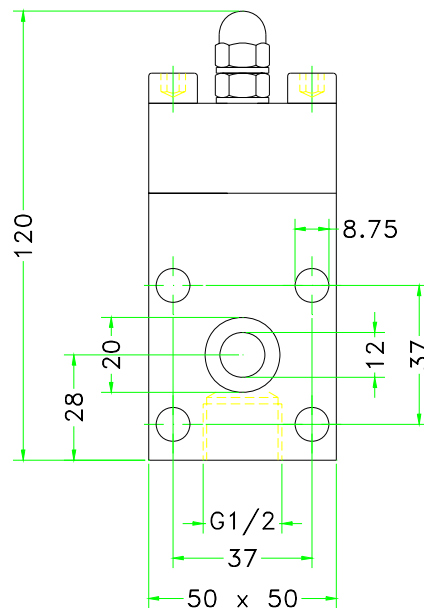
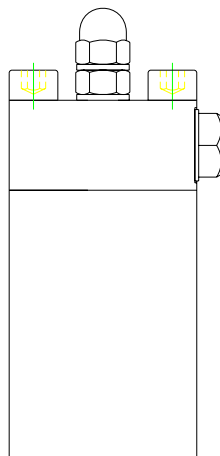
Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.

VALVE ADJUSTMENT TABLE

Pump litres	Adjust.turns	L/min oper.	increase %
4	1 1/2	6	50
8	1 3/4	10	25
12	2	17	42
16	2 1/4	26	63
25	2 1/2	34	36
34	2 3/4	45	32
40	3	55	38
/	3 1/4	63	/
55	3 1/2	72	31
/	3 3/4	81	/
70	4	87	24



**SAFETY VALVE
ADJUSTING
TYPE 1/2" 03026 EN81**

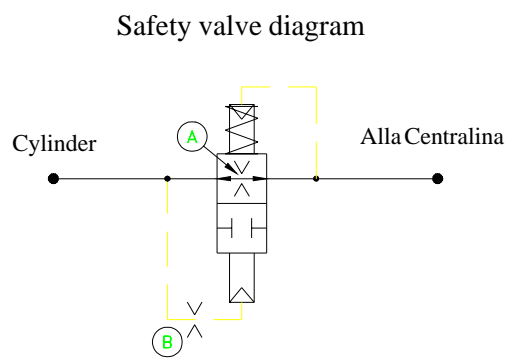
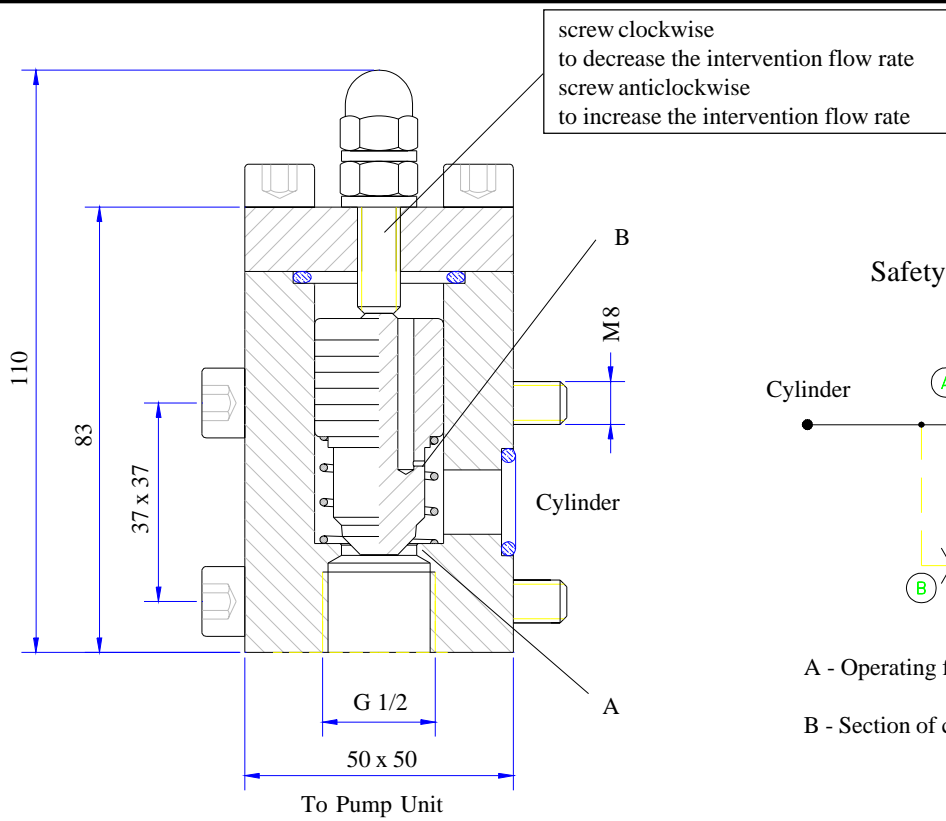


Start Elevator

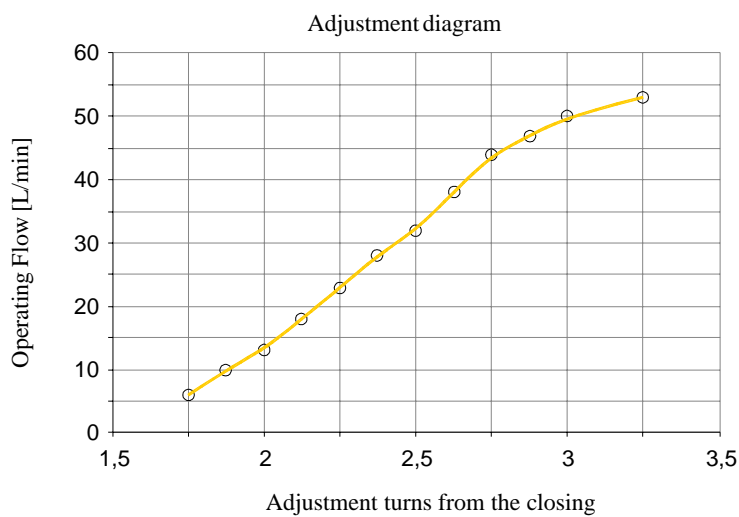
08 176 / G

rev. 0

2/2



A - Operating flow adjusting section
 B - Section of control of closing speed



OPERATING FLOW WITH OIL
 VISCOSITY FROM 14 TO 290 cSt

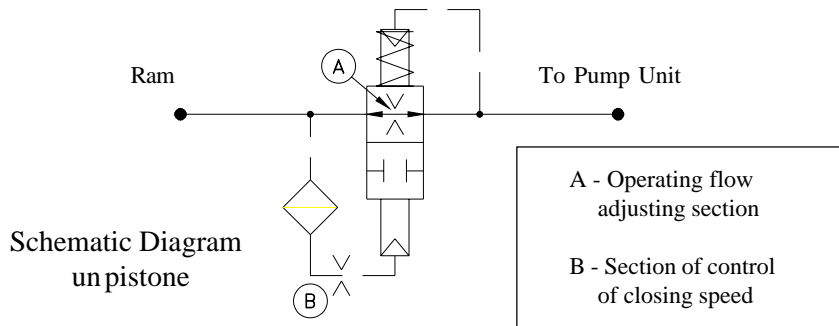
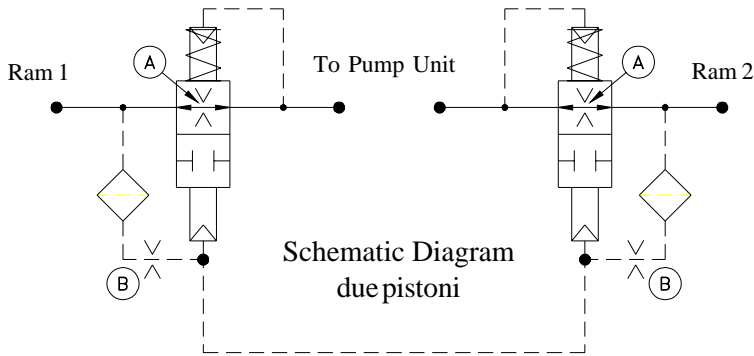
Litres/min Pump Units	Adjusting turns	Litres/min operating
8	2	13
12	2 - 1/4	23
16	2 - 1/2	32
25	2 - 3/4	44
30	3	50
35	3 - 1/4	53

Valve adjustment instructions

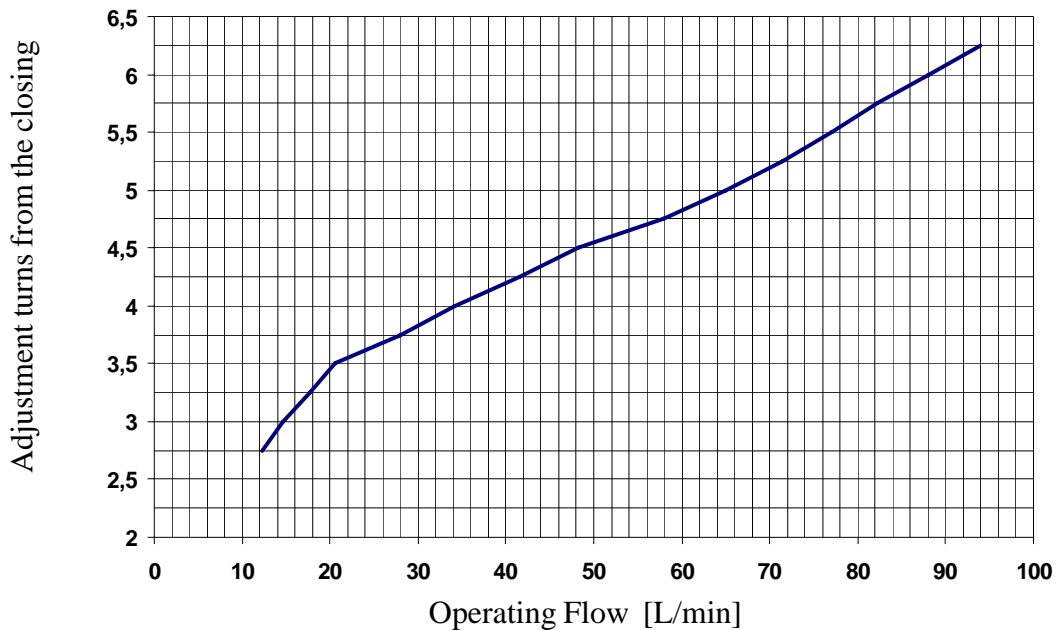
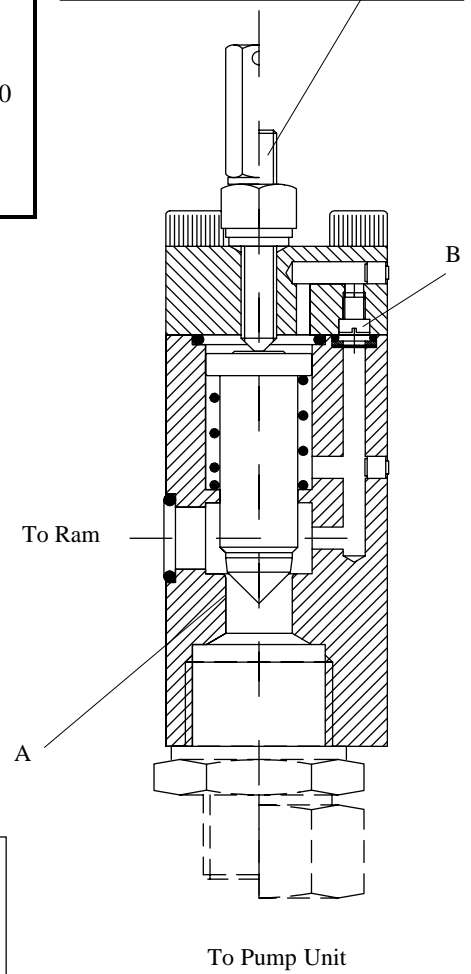
The ADJUSTMENTS TABLE give instructions to adjust the safety valves on the basis of the litres normally used in the pump unit.
 Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.
 Then turn it anticlockwise to reach the adjusting value previously calculated.
 Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.
 An intervention test is then recommended, following the instructions of the pump unit manufacturer.

Valve Type	Identification	Pump Unit Connection	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1"	04114 01	Gas 1"	20 ÷ 75 (1) 16 ÷ 55 (2)	10 ÷ 61	14 ÷ 290
	04114 02	Gas 3/4"			
	04114 03	Gas 1/2"			
	04114 04	28 - M36 x 2			
	04114 05	Gas 3/8"			

(1) for Lifts - (2) for Platforms



screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate



**SAFETY VALVE
ADJUSTING
TYPE 1"**



Start Elevator

08 175 / G

rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

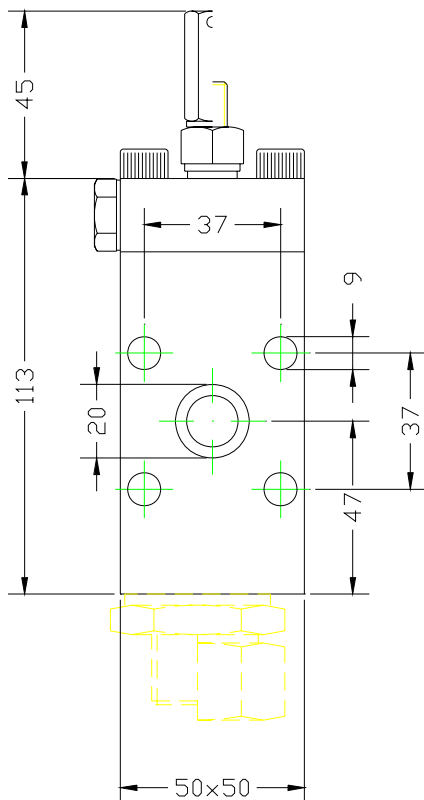
If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.



ADJUSTMENTS TABLE

adjust. turns	L/min oper.	L/min (1) Pump / %	L/min (2) Pump / %
3 3/4	27.9	20 = 39.5 %	16 = 74.4%
4	34.2	25 = 36.8%	
4 1/4	41.5	30 = 38.3%	
4 1/2	48.2	35 = 37,7%	25 = 92.8%
4 3/4	58		30 = 93.3%
5	65	50 = 30%	35 = 85.7%
5 1/4	71.5	55 = 30%	
6	88	70 = 25.7%	
6 1/4	94	75 = 25.3%	55 = 70.9%

- 1) Speed max 1.0 m/s, operation + 0.30 m/s (+30%)
- 2) Speed max 0.15 m/s, operation + 0.15 m/s (+100%)

**SAFETY VALVE
ADJUSTING
TYPE 1"**



Start Elevator

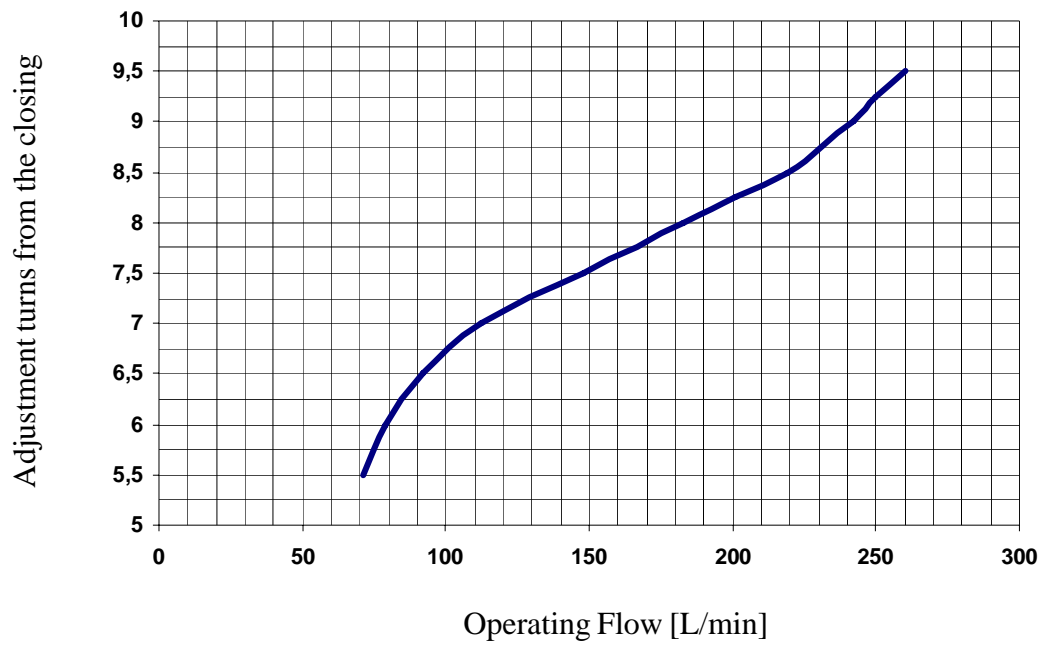
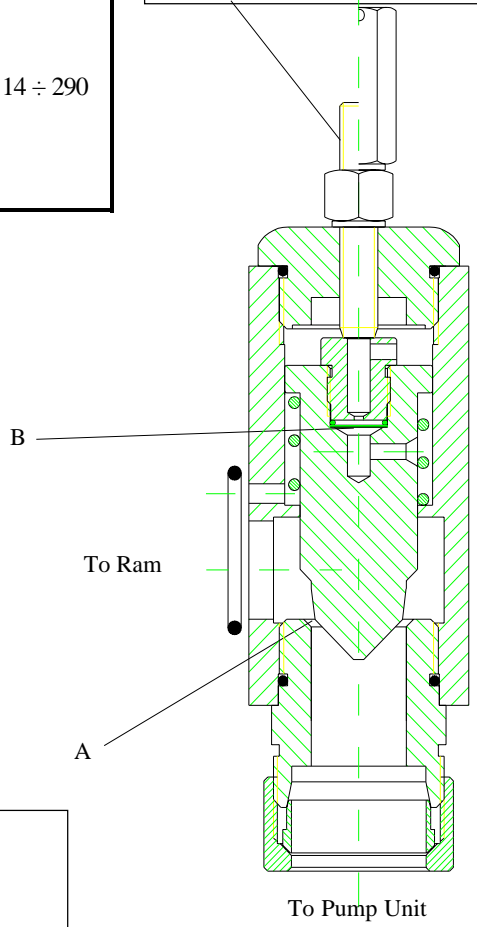
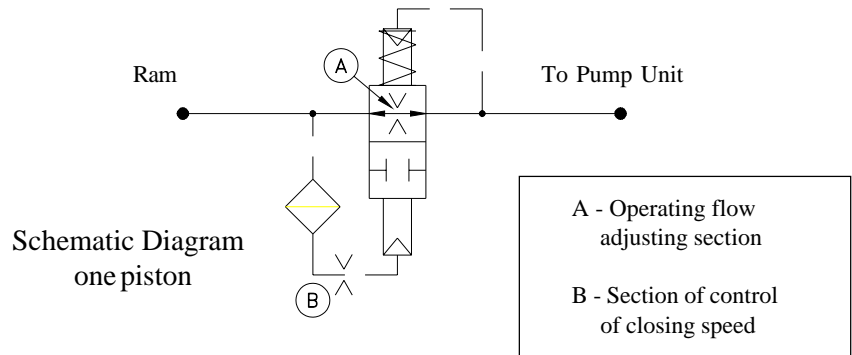
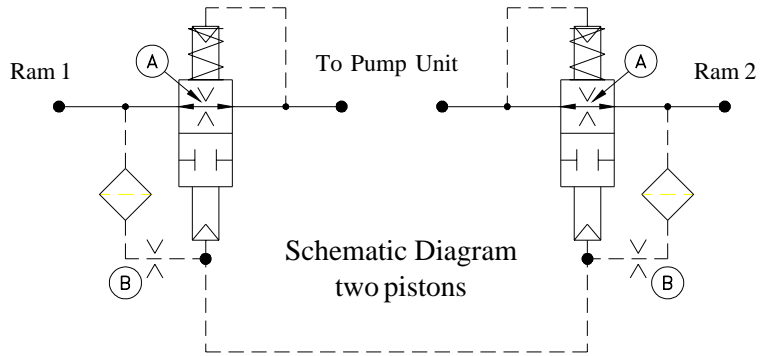
08 175 / G

rev. 0

2/2

Valve Type	Identification	Pump Unit Connection	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1" 1/4	04110 01	35 - M 45 x 2	50 ÷ 205	10 ÷ 51	14 ÷ 290
	04110 02	42 - M 52 x 2			
	04110 03	Gas 1" 1/4			
	04110 04	Gas 1"			
	04110 05	Gas 1" 1/2			

screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate



**SAFETY VALVE
ADJUSTING
TYPE 1" 1/4**



Start Elevator

08 174 / G

rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

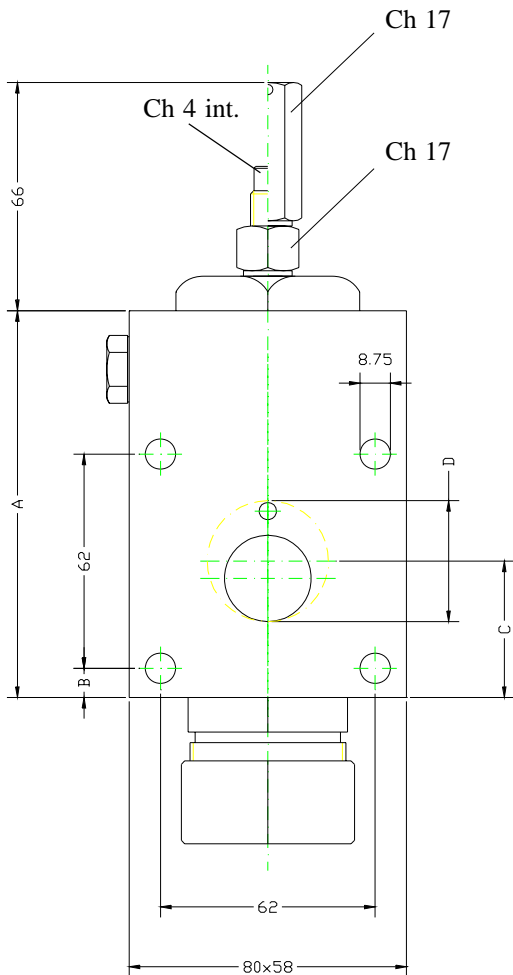
If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.



VALVE 1"1/4 ADJUSTMENTS TABLE

Pump litres	Adjust.turns	L/min oper.	increase %
55	5 1/2	71	30
70	6 1/4	86	23
100	7 1/4	130	30
120	7 1/2	148	23
150	8	183	22
180	8 1/2	218	21
205	9 1/2	260	27

DIMENSIONS TABLE [mm]

VALVE TYPE	1"1/4
A	112
B	8,5
C	39,5
D	35

**SAFETY VALVE
ADJUSTING
TYPE 1"1/4**



Start Elevator

08 174 / G

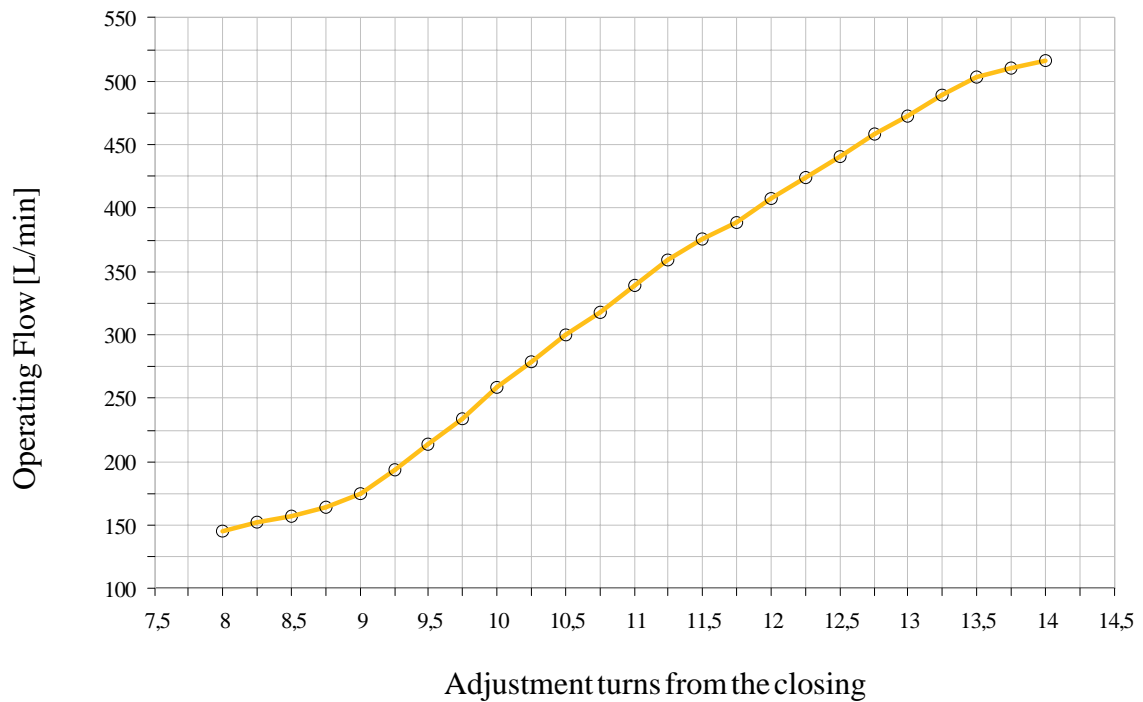
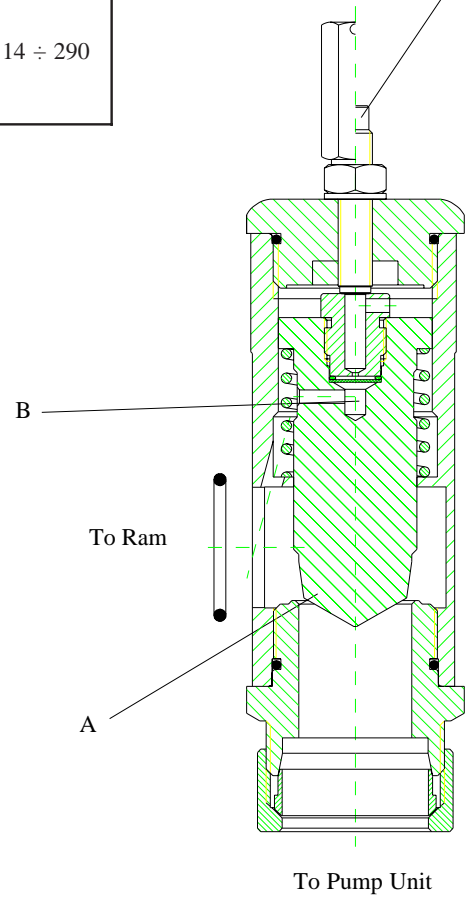
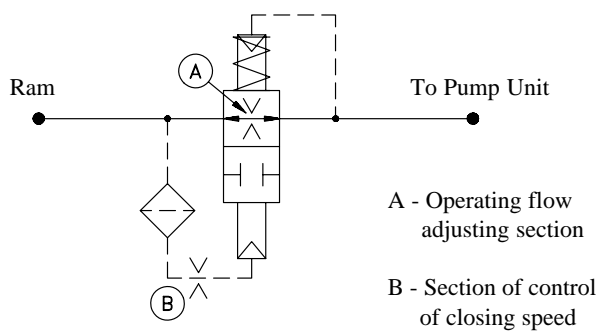
rev. 0

2/2

Valve Type	Identification	Pump Unit Connection	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1"1/2	Cod. 04088 01	42 - M 52 x 2	120 ÷ 400	10 ÷ 50	14 ÷ 290
	Cod. 04088 02	Gas 1"1/2			
	Cod. 04088 03	Gas 2"			

screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate

Schematic Diagram



**SAFETY VALVE
ADJUSTING
TYPE 1"1/2**



Start Elevator Srl

08 168 / G

rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

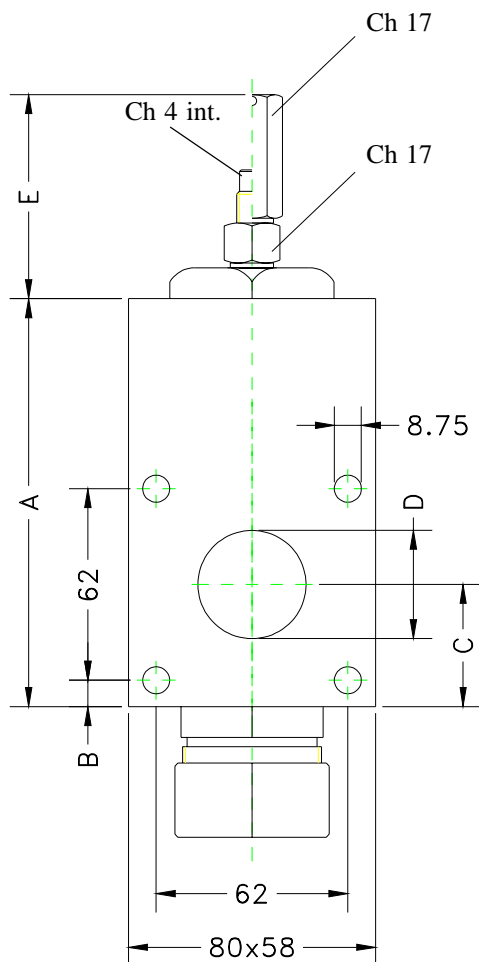
If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.



VALVE 1"1/2 ADJUSTMENTS TABLE

Pump litres	Adjust.turns	L/min oper.	increase %
120	8 - 1/4	153	27
150	9 - 1/4	194	29
180	9 - 3/4	235	30
205	10	259	26
250	10 - 3/4	318	27
300	11 - 1/2	376	25
380	13	473	24
400	13 - 1/2	503	25

DIMENSIONS TABLE [mm]

TIPO VALVOLA	1"1/2
A	132
B	9,5
C	40,5
D	35
E	66

**SAFETY VALVE
ADJUSTING
TYPE 1"1/2**



Start Elevator Srl

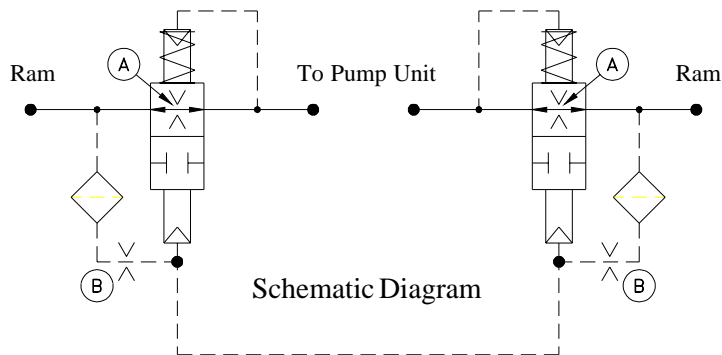
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rev. 0

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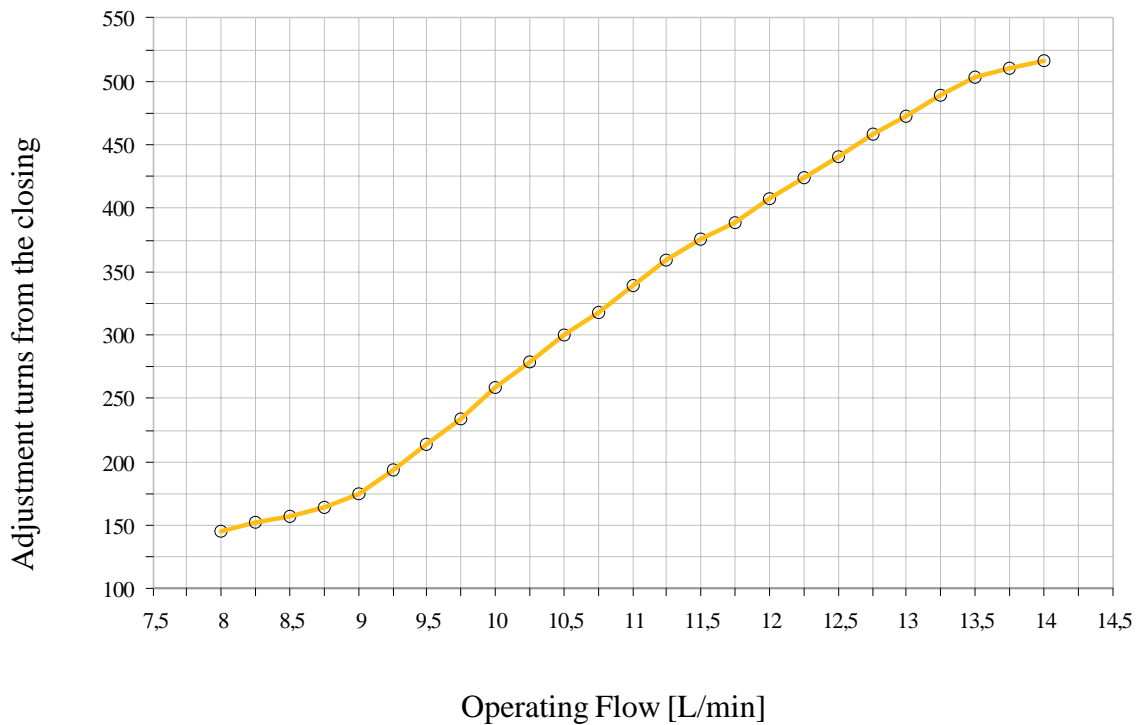
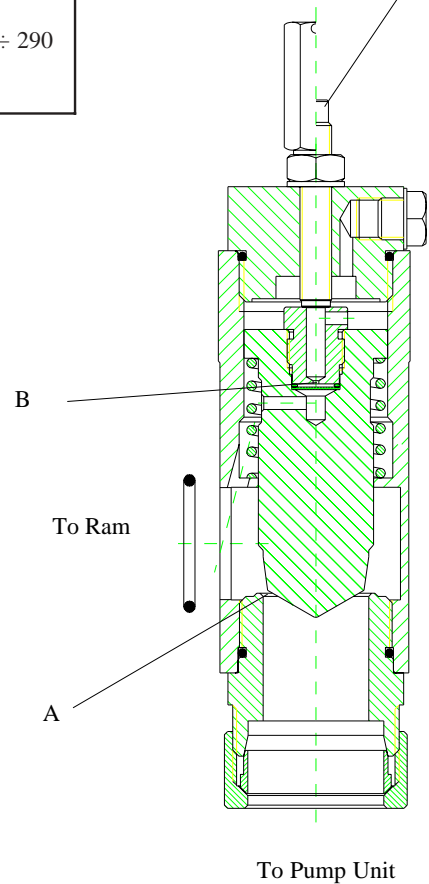
Valve Type	Identification	Pump Unit Connection	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
1"1/2	Cod. 04088 01	42 - M 52 x 2	120 ÷ 400	10 ÷ 50	14 ÷ 290
	Cod. 04088 02	Gas 1"1/2			
	Cod. 04088 03	Gas 2"			

screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate



A - Operating flow
adjusting section

B - Section of control
of closing speed



**SAFETY VALVE
ADJUSTING
TYPE 1"1/2 COMP.**



Start Elevator Srl

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Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

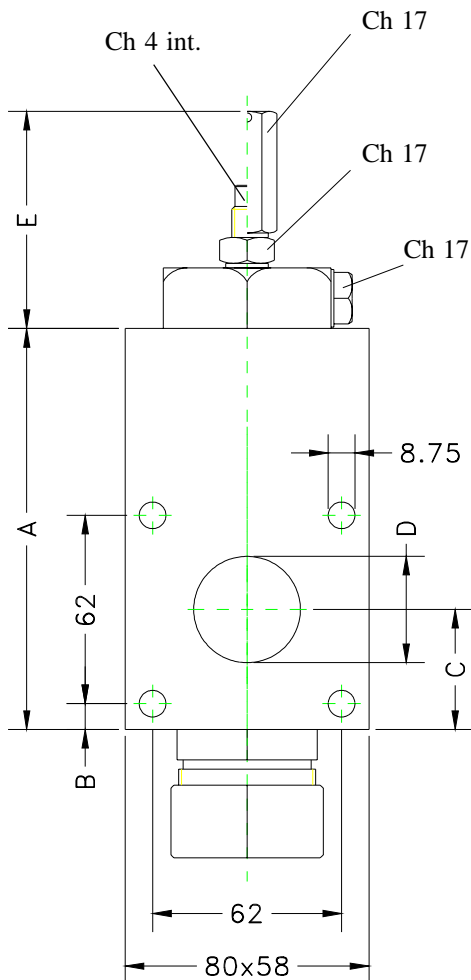
If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.



VALVE 1"1/2 ADJUSTMENTS TABLE

Pump litres / for valve	Adjust.turns	L/min oper. / for valve	increase %
250 / 125	8 - 1/2	314 / 157	26
300 / 150	9 - 1/4	388 / 194	29
380 / 190	9 - 3/4	470 / 235	23
440 / 220	10 - 1/4	558 / 279	27
500 / 250	10 - 3/4	636 / 318	27
600 / 300	11 - 1/2	752 / 376	25
660 / 330	12	814 / 407	23
740 / 370	13	946 / 473	28

DIMENSIONS TABLE [mm]

TIPO VALVOLA	1"1/2
A	132
B	9,5
C	40,5
D	35
E	66

**SAFETY VALVE
ADJUSTING
TYPE 1"1/2 COMP.**



Start Elevator Srl

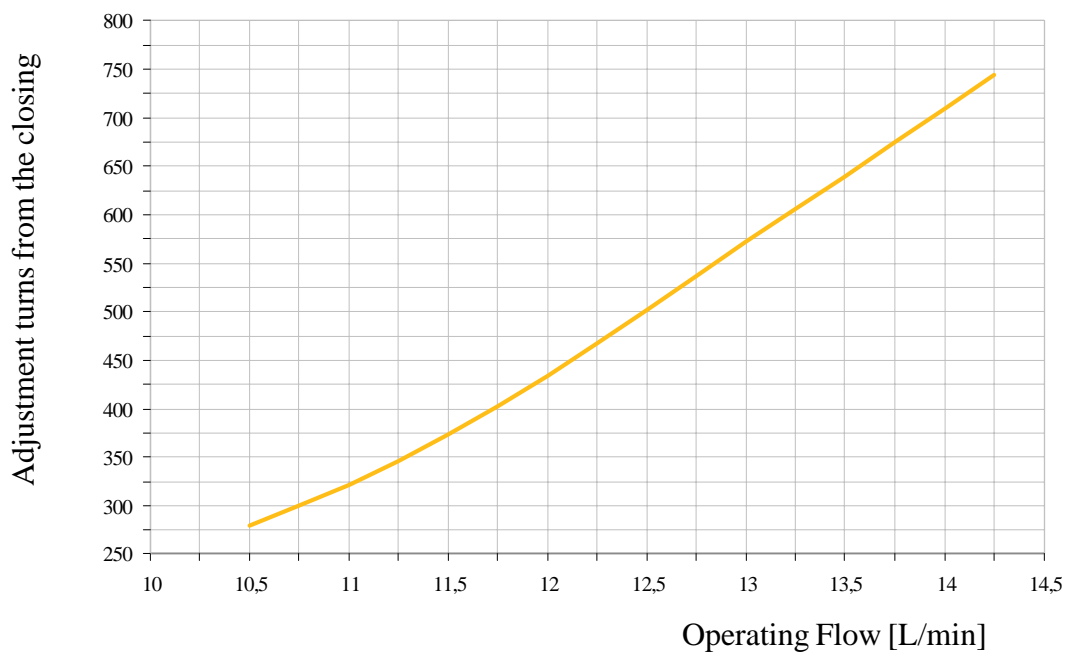
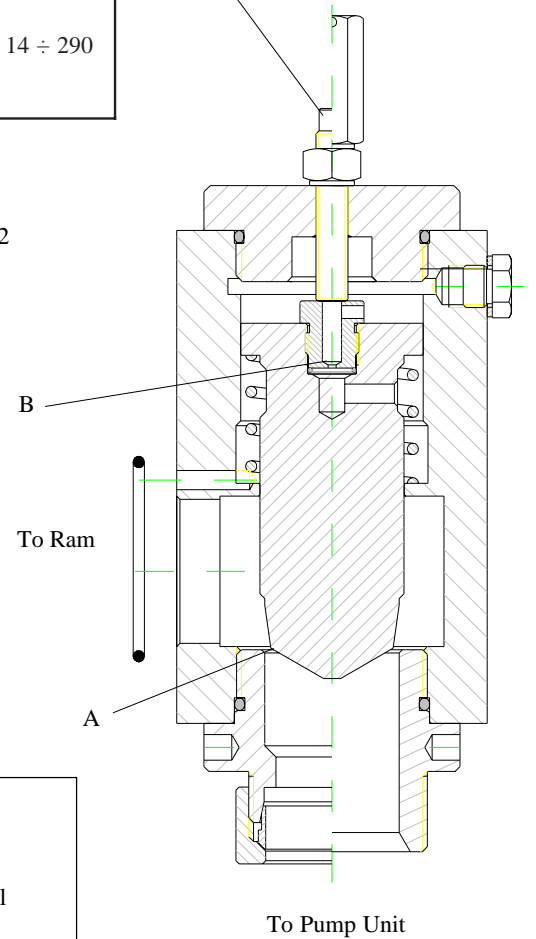
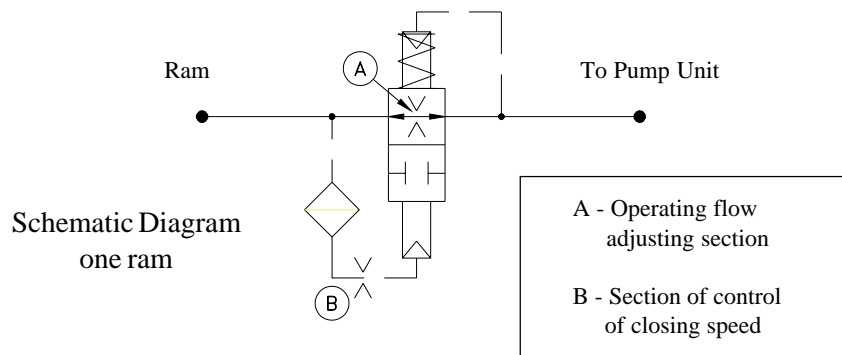
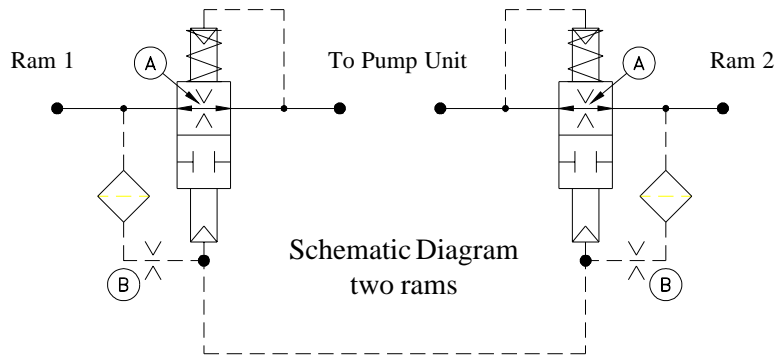
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Valve Type	Identification	Pump Unit Connection	Nominal Flow L/min min ÷ max	Static Pressure bar min ÷ max	Oil Viscosity cSt min ÷ max
2"	Cod. 04099 01	Gas 2"	260 ÷ 600	10 ÷ 51	14 ÷ 290
	Cod. 04099 02	Gas 1"1/2			
	Cod. 04099 03	42 - M 52 x 2			

screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate



**SAFETY VALVE
ADJUSTING
TYPE 2"**



Start Elevator Srl

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rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

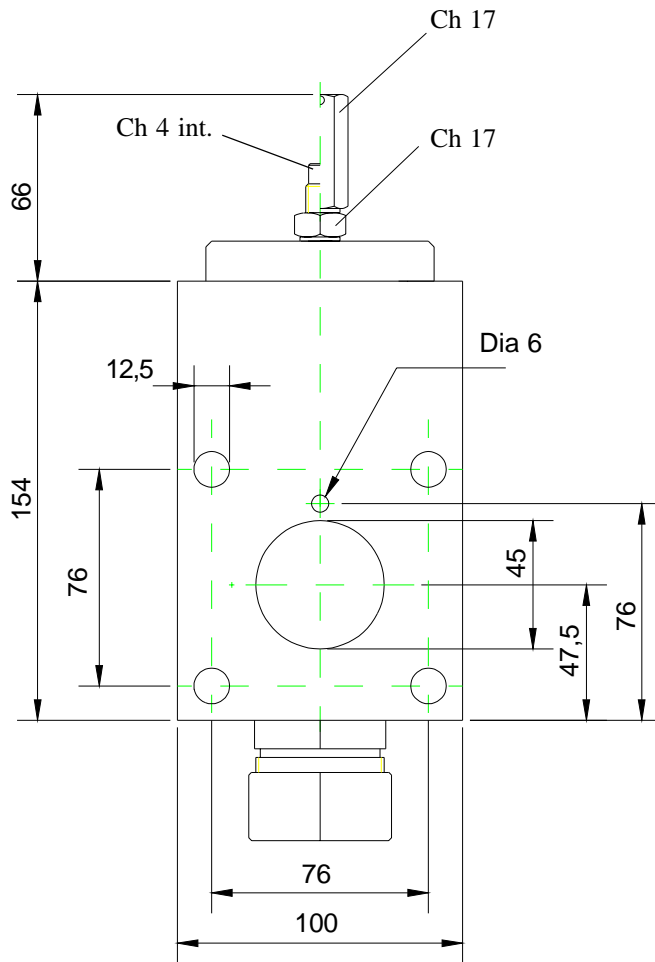
If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

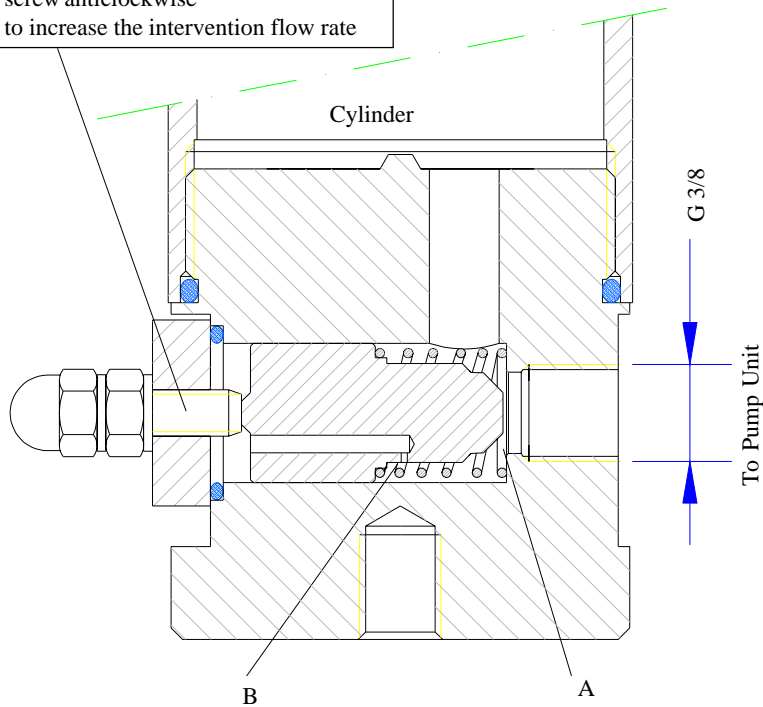
An intervention test is then recommended, following the instructions of the pump unit manufacturer.



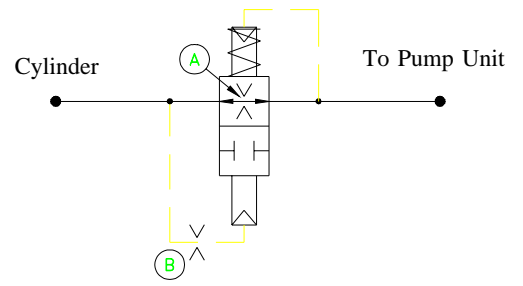
VALVE 2" ADJUSTMENTS TABLE

Pump litres	Adjust.turns	L/min oper.	increase %
260	11	322	24
300	11 - 1/2	373	24
330	11 - 3/4	403	22
380	12 - 1/4	467	23
440	12 - 3/4	536	22
500	13 - 1/2	639	28
600	14 - 1/4	744	24

screw clockwise
to decrease the intervention flow rate
screw anticlockwise
to increase the intervention flow rate



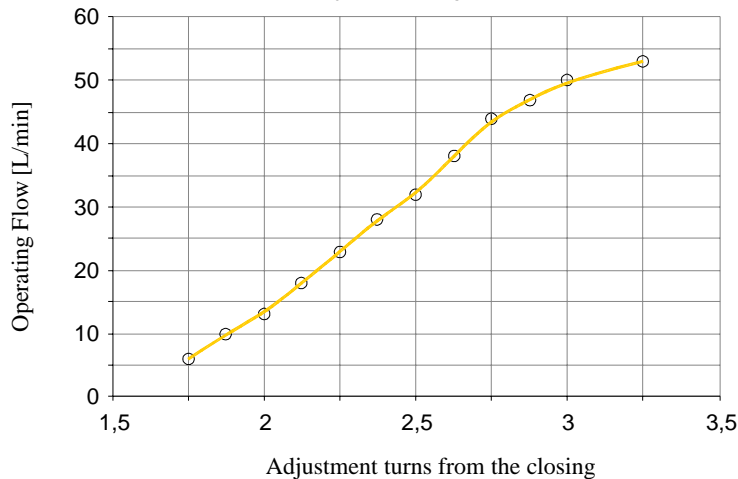
Safety valve diagram



A - Operating flow adjusting section

B - Section of control of closing speed

Adjustment diagram



OPERATING FLOW WITH OIL
VISCOSITY FROM 14 TO 290 cSt

Litres/min Pump Units	Adjusting turns	Litres/min operating
8	2	13
12	2 - 1/4	23
16	2 - 1/2	32
25	2 - 3/4	44
30	3	50
35	3 - 1/4	53

Valve adjustment instructions

The ADJUSTMENTS TABLE give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.

SAFETY VALVE ADJUSTING

TYPE 3/8 INTO PISTONS FOR PLATFORMS



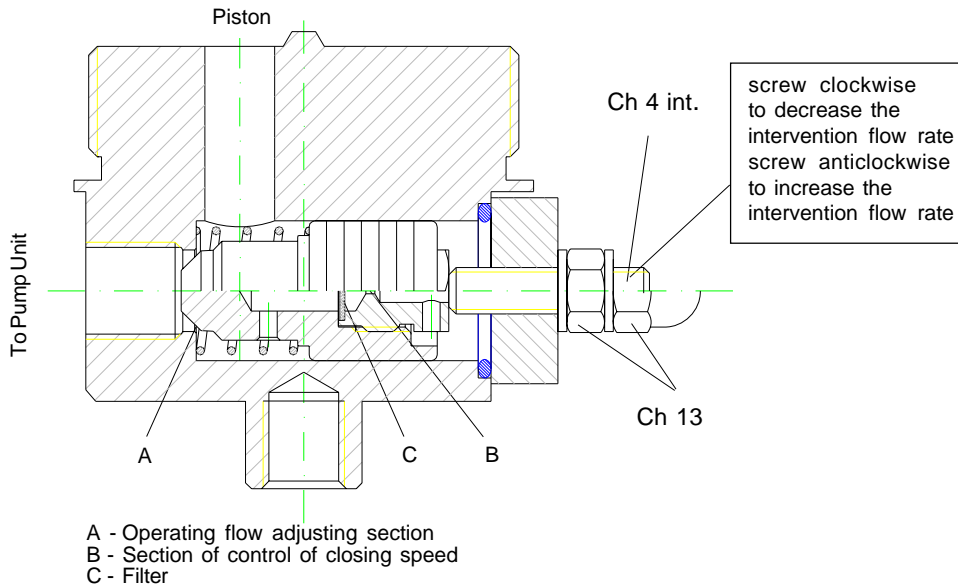
Start Elevator Srl

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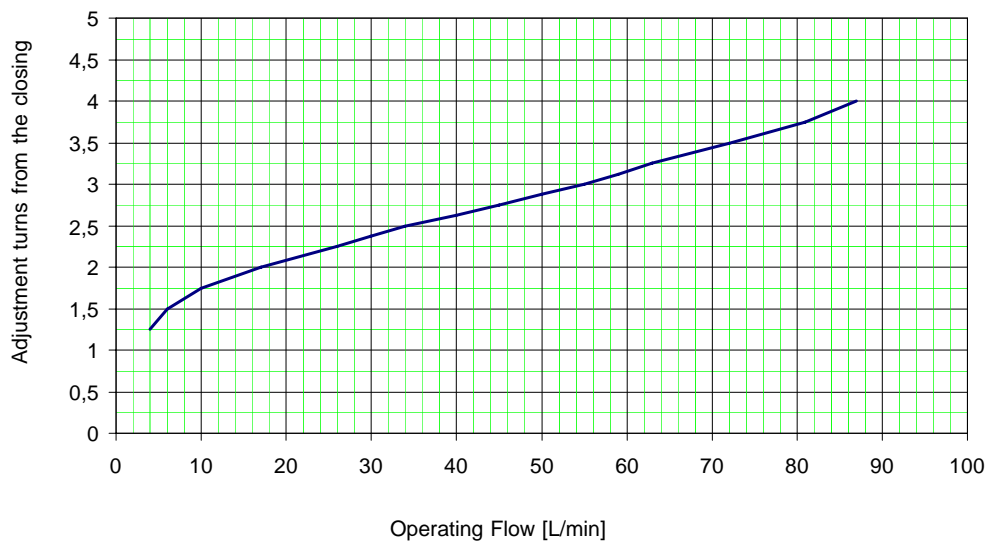
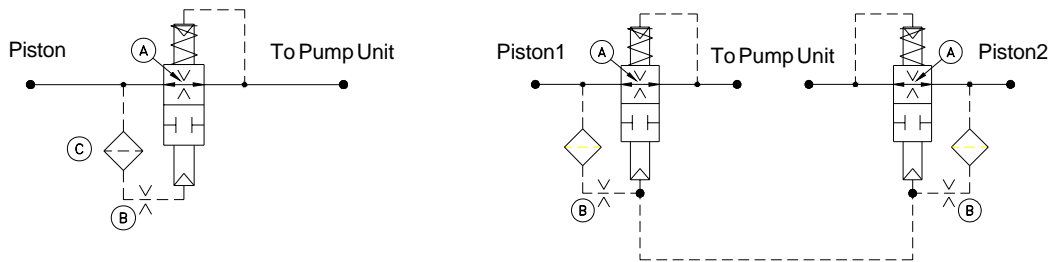
rev. 0

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Type	Identification	Pipe Connection	Comp. Conenction	Nominal Flow L/min	Static Pressure bar	Oil Viscosity cSt
1/2"	03027 01	Gas 3/8"	/	min ÷ max 4 ÷ 70	min ÷ max 10 ÷ 80	min ÷ max 14 ÷ 290
	03027 02	Gas 3/8"	Gas 1/8 "			



Schematic Diagram 1 and 2 pistons



**SAFETY VALVE INTO PISTON
 ADJUSTING
 TYPE 1/2" 03027 EN81**



Start Elevator

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rev. 0

1/2

Valve adjustment instructions

The following tables give instructions to adjust the block valves on the basis of the litres normally used in the pump unit.

If the nominal operating flow rate of the unit is not indicated in the table, see the diagram on sheet 1 to find the right adjustment for the best intervention flow rate.

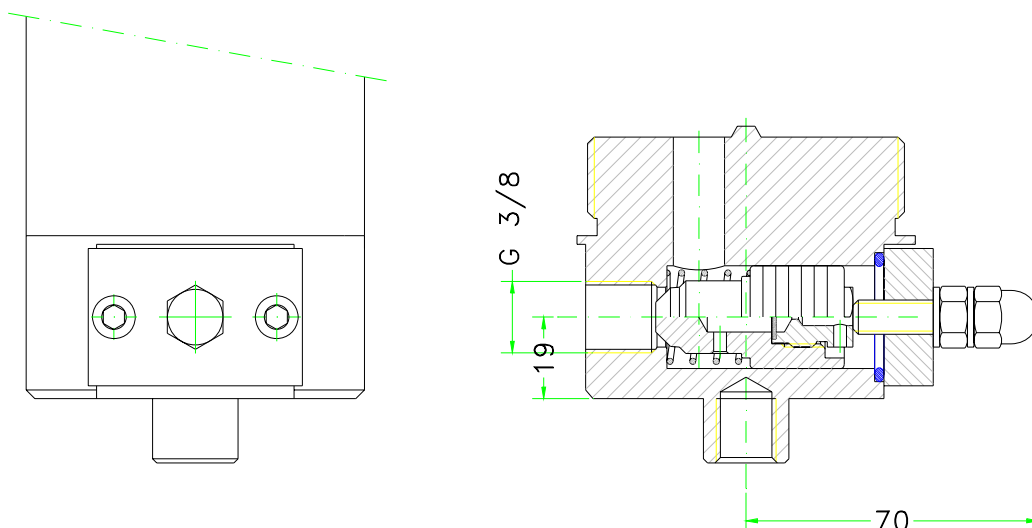
Once acquainted with the value of the adjusting turns, turn anticlockwise the valve cap, loosen the lock nut and turn clockwise the adjusting screw to the closing valve limit.

Then turn it anticlockwise to reach the adjusting value previously calculated.

Tighten the lock nut and turn the cap clockwise checking if there are oil leakages.

An intervention test is then recommended, following the instructions of the pump unit manufacturer.

VALVE ADJUSTMENT TABLE			
Pump litres	Adjust. turns	L/min oper.	increase %
4	1 1/2	6	50
8	1 3/4	10	25
12	2	17	42
16	2 1/4	26	63
25	2 1/2	34	36
34	2 3/4	45	32
40	3	55	38
/	3 1/4	63	/
55	3 1/2	72	31
/	3 3/4	81	/
70	4	87	24



**SAFETY VALVE INTO PISTON
ADJUSTING
TYPE 1/2" 03027 EN81**



Start Elevator

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rev. 0

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