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## Operation Installation and Maintenance Instructions



# Pressure and flow regulating valve, Type B-PRO





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## 1 General Safety Notes

<b>⚠ CAUTION</b>	Indicates a potentially dangerous situation. If this is not avoided, small or light injury may result.
<b>NOTICE</b>	Indicates general information on a danger of property damage. Indicates general information on a danger of personal injury.

**The notes for installation and maintenance are intended for a specialist!**

**The operator shall responsible for complying with general accident prevention, safety and operating provisions.**

## 2 General Information

The hp-Pressure and flow regulating valves B-Pro are designed to control system pressure and flow. The pressure range can be changed to 2 alternative levels by exchanging the regulating spring (see chapter 4). The Housing is designed in GGG40 cast iron.

The following information is engraved into the type plate of the valve:

- Exact description of the valve
- Serial number – NNNNN MM/YY
- Max. permitted operating pressure



### Model/Type designation: B-G-PRO-2

- B-G-PRO → Pressure regulating valve with capacity 90 – 600 l/h
- 2 → pressure stage

### 2.1 Operational limits

Flow max.	2000 l/h
Max. pressure	45 bar
Temperature	up to 150 °C
Max. viscosity	450 mm <sup>2</sup> /s
Ambient temperature	-10 to +90 °C
Storage temperature	-10 to +60 °C

### 2.2 Operating principle

The pressure and flow regulating valve is pressure limiting, spring-loading piston valve.

A suitable drive (e.g. cam disk, not included in scope of delivery) realize an axially moving of the actuator. This leads to a change of the spring pressure. Thereby the return pressure and the return oil volume by an oil burner nozzle can be changed and the required nozzle/burner output can be adjusted. Any excess fluid is fed off into the return line "T".

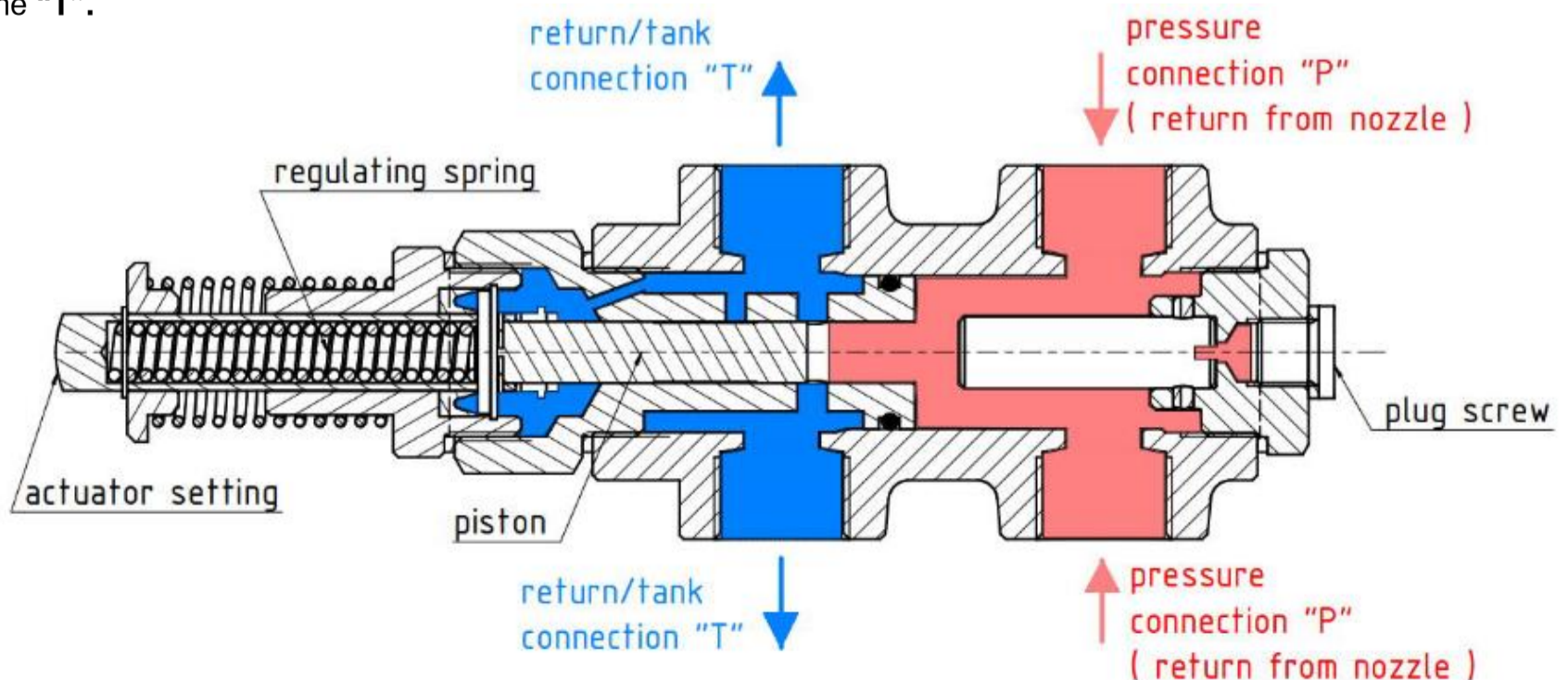


Fig.1 Operating principle



### 3 Installation

- Screw tight the valve over the drill holes in the flange.
- Before connecting the lines, all plastic caps must be removed.
- All connections and lines must be installed free of tension and tight. We recommend only using sealing rings made of copper, aluminium or plastics. Never use hemp or similar materials. The pipes must be cleaned from any dirt and metal particles before the valve is connected.
- Unused connections must be covered with plug screws and sealing rings.
- Should there be no manometer attached, please remove the plug screw and fit one to the manometer connection G1/4" respectively G 1/8" (Fig. 1).

## NOTICE

Never use water as purging liquid!  
Danger of corrosion!

- The pressure line from the burner nozzle which fluid pressure is to be regulated by the valve, shall be connected to the pressure connection "P".
- Please connect the return flow line which has to lead back the controlled fluid from the regulating piston to the tank, to the return-flow / tank connection "T".

### 4 Initial Start-up and pressure adjustment

- The B-Pro valves cannot work without a suitable drive (e.g. cam disk, not included in scope of delivery). The main application of these valves is the pressure regulation of the return pressure of oil burners and so the burner output can be mechanically modulated.
- Now switch on the unit's pump. For a reading of the set value, Section 4.13 of DIN EN 12514-2, Issue 2000 calls for a manometer to be attached to the unit. Should there be no manometer attached, please remove the plug screw (see Fig.1) and fit one to the manometer connection.
- The complete pressure operating range of the valve is covered by the actuator. There is adjustment distance H [mm] available, depending on the valve type (see Chapter 8).

### 5 Application range and operation

When setting the desired operating pressure assure that a setting is chosen which is within the pressure range of the built-in pressure spring. The pressure spring code is the digit following the type designation (pressure stage 2 and 4).

#### Pressure range and pressure stage

pressure stage	Pressure range
2	from 2 - 22 bar
4	from 5 - 45 bar

## NOTICE

Setting a higher operating pressure (one that exceeds the designated pressure range) will result in the pressure spring blocking.

### 6 Liquid fuels

Liquid fuels, mainly fuel oils derived from crude oil distillation, qualities according to DIN 51603 Part 1 – 5  
 FAME – mix with fuel oil according to DIN 51603 Part 6 (FAME = Fatty Acid Methyl Ester)  
 FAME 100% DIN EN 14214 respectively EN 14213  
 Marine fuel ISO 8217 (HFO, MDF Kategorie ISO-F-DMX, DMA, DMB)  
 Cold-pressed bio fuel according to DIN V 51605



### Characteristics for different fuels (reference value)

Fuel	Density (at 20 °C)	Kin. viscosity (at 40°C)	Max. temperature at spraying viscosity *)
Unit	[kg/m <sup>3</sup> ]	[mm <sup>2</sup> /s]	[°C]
Fuel oil (DIN 51603-1)	max. 856	max. 3,6	15
HFO (DIN 51603 -3)		max. 1150	160
Re – raffinate (DIN 51603 -4)		<45	90
Fuel oil (DIN 51603-6)	max. 860	max. 3,6	15
Marine Fuels (ISO 8217)	890 (15°C)	min: 1,4; max. 11	80
RME (DIN EN 14213)	856,6-896,6	3,5 – 5,0	28
Rape oil (DIN V 51605)	896,6-926,6	max. 36,0	85

\*) temperature values are approximate

**Chemical resistance of all parts for specified types of fuel. Non-standard fuels are excluded from the warranty.**

## 7 Inspection and Maintenance

hp-Pressure and flow regulating valves are maintenance free.

Regular checks of the tightness and the reached pressures during operation are to be carried out weekly. Use a suitable filter/strainer to protect the valves from dirt. (Please refer to the Operating Instructions for the pump in question.)

# NOTICE

These mounting, maintenance and operating instructions are intended solely for the use of a trained specialist.

## 8 Dimensions

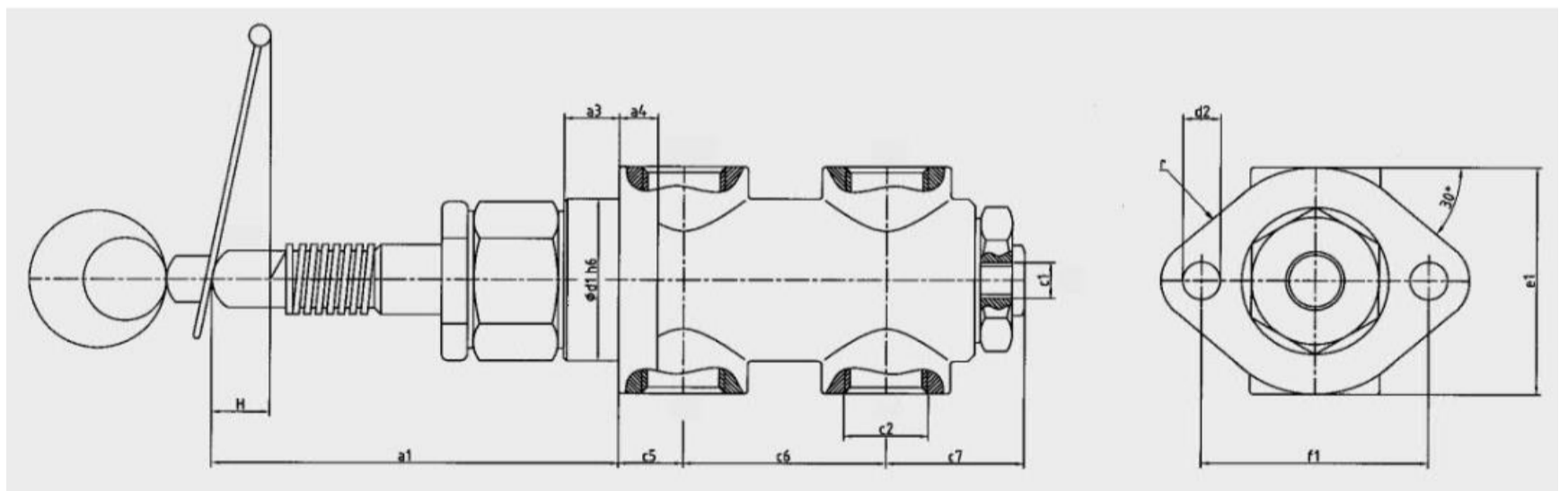


Fig.2 Dimensions

Type	a1	a3	a4	c1	c2	c5	c6	c7	d1	d2	e1	f1	H	r
B-PP-PRO	73	10	8	R1/8"	R1/4"	12	43	34	26	5.5	40	40	6	8
B-P-PRO	90	12	10	R1/8"	R3/8"	15	65	37	32	6.2	55	51	10	8
B-G-PRO	9	12	10	R1/8"	R3/8"	15	65	37	32	6.2	55	51	10	8
B-GH-PRO	121	17	12	R1/4"	R3/4"	20	63	48	50	8.4	70	70	12	12.5

Valve	Pressure (bar)		Stroke (h) mm
	p1	p2	
P-PP-PRO	2 5	22 45	6
P-P-PRO	2 5	22 45	10
P-G-PRO	2 5	22 45	10
P-GH-PRO	2 5	22 45	12