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1 Product Description

The hydraulic system of a mobile work-machine normally consists of at least two hydraulic circuits: The high-pressure circuit used for controlling the hydraulic attachments and the main functions, and the pilot control circuit that controls the valves of the main circuit. This proportional pressure relief valves are meant to be built into the pilot control circuit.

1.1 Application

The pressure control valves are used for the electrical-proportional control of a main control valve. This can replace a purely hydraulic pilot control valve and it can be used for expanding a hydraulic system for operating additional attachments. Potential applications are actuating proportional shear controllers or priority valves.

1.2 Mounting location

The location for mounting should be chosen close to the main function to be controlled.

2 Function

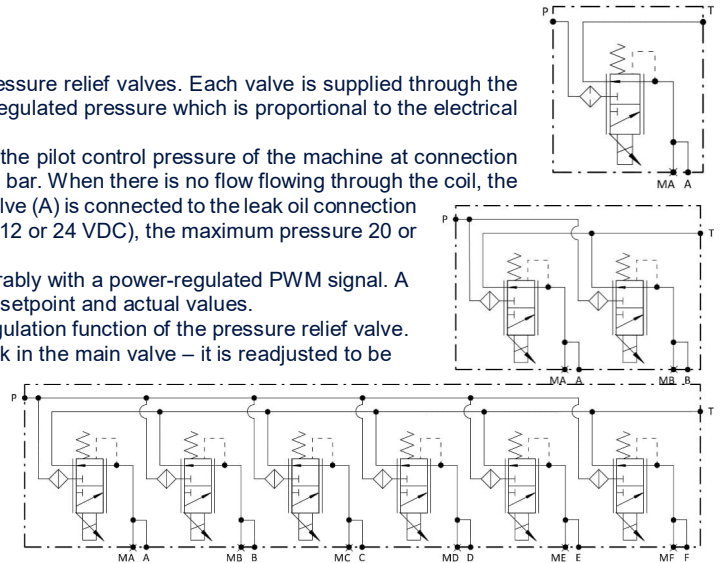
The valve models consist of one or more independently working proportional pressure relief valves. Each valve is supplied through the connection to the pilot control line and provides pilot control connections with a regulated pressure which is proportional to the electrical current.

The proportional pressure control valve is activated electrically. It is supplied by the pilot control pressure of the machine at connection (VST). This pressure is normally between 25 and 40 bar and must not exceed 50 bar. When there is no flow flowing through the coil, the pressure at connection (A) is zero bar or the pilot control connection of the main valve (A) is connected to the leak oil connection (L). When an unregulated flow flows through attachment of the on-board voltage 12 or 24 VDC, the maximum pressure 20 or 32 bar is set at the connection A).

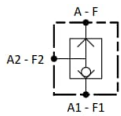
The exact proportional pressure setting results through electrical actuation preferably with a power-regulated PWM signal. A temperature drift is thus prevented and good agreement is reached between the setpoint and actual values.

The pressure at the connection (A) is set according to the PWM signal by the regulation function of the pressure relief valve.

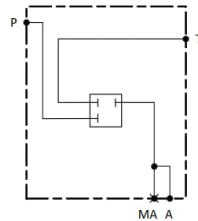
In the case of falling pressure at the connection (A) – e.g. through an internal leak in the main valve – it is readjusted to be connected with (VST) by the valve. This also happens when the pilot control pressure at (A) needs to be increased. In the case of intentional reduction of the pilot control pressure at (A), the valve is connected in a regulating manner with the connection (L).



Option: Wechselsventil



Option: Stopfen



2.1 Characteristics

- High accuracy
- Linear characteristic line in the adjustment area
- Low hysteresis
- Drift-free in the case of regulated flow of the PWM signal

3 Technical Data

Criteria	Unit	Value	
Installation position		any	
Maximum input pressure (VST) or (P)	bar	50	
Adjustable pressure at connection (A)	bar	0 ...20 bar, 0...25 bar, 0...32 bar	
Maximum volume flow per valve	l/min	standard max. 7 / high flow max.16	
Maximum recommended tank pressure (L)	bar	< 1	
Hydraulic medium		Mineral oil (HL, HLP) conforming with DIN 51524	
temperature range	°C	-40 bis +105	
Ambient temperature environmental temperature	°C	< +50	
Viscosity range	mm ² /s	2,8 - 500	
Screen	µm	125	
degree of contamination		Min Filtration: 20/18/15 According to ISO 4406	
Supply voltage		12 V DC 24 V DC	
Resolution		1500 mA 750 mA	
Resistance	5,5 - 7 l/min	4,72 Ω ± 5%	20,8 Ω ± 5%
	16 l/min		
	4,5 - 7 l/min	5,3 Ω ± 5%	21,2 Ω ± 5%
Type of Control		current control, PWM 100Hz, recommended	
connector		AMP Junior Timer Deutsch ConnectorDT04-2P	
Protection class according to DIN 40050		IP6K6 / IPX9K	

4 Ordering Information

PCV	2V		50		999			
00	01	02	03	04	05	06	07	
00	Product group	pressure reducing valve					PCV	
01	Design	2. generation for pilot control valves					2V	
02	Connections / max. flow rate	cartridge standard max. 7 l/min					CA-7	
		cartridge high flow max. 16 l/min					CA-16	
		G 1/4 ISO 1179-1 standard max. 7 l/min					03B-7	
		G 3/8 ISO 1179-1 high flow max. 16 l/min					03C-16	
03	Max. permissible pressure	Pmax. 50 bar					050	
04	Actuation	Elektrisch proportional 12 VDC AMP Junior Timer Stecker					12P002	
		Elektrisch proportional 24 VDC AMP Junior Timer Stecker					24P002	
		DR-Deutsch DT04-2P 12 VDC					12P003	
		DR-Deutsch DT04-2P 24 VDC					24P003	
05	P adjusted	customer setting					999	
06	amount of channels	single					1	
		double					2	
		6-fold					6	
07	Outlet pressure range	0 ... 20 bar					20	
		0 ... 25 bar					25	
		0 ... 32 bar					32	

Unfortunately, various configurations cannot be implemented for technical reasons. If you have any questions, please contact us for advice.

5 Description of Characteristics in Accordance with Type Code

5.1 Variant

The valve is provided for use in pilot control circuits. The different variants result from arrangement of different numbers of pressure relief valves in different housings.

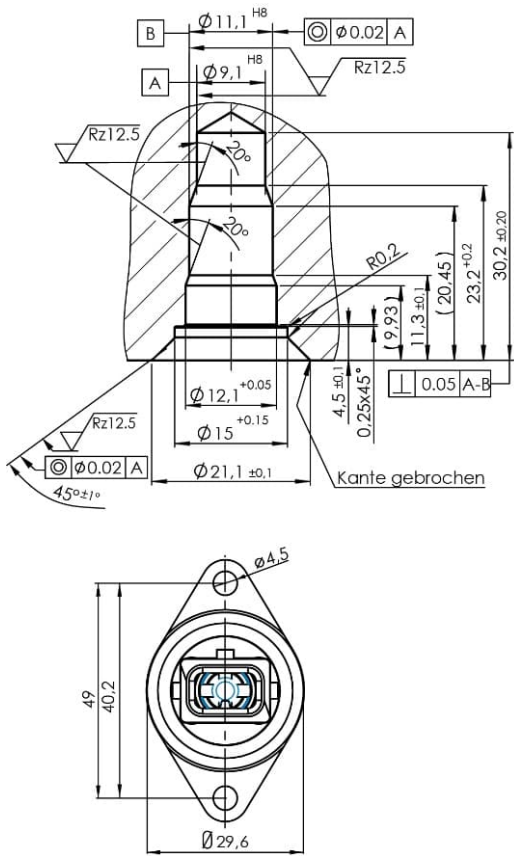
5.2 ports / body

port	size	Norm	annotation
A	G 1/4" (standard max.7 l/min)	ISO 1179-1	actuator port
	G3/8" (high flow max.16 l/min)		
P	G 1/4" (standard max.7 l/min)		supply port
	G3/8" (high flow max.16 l/min)		
T	G 1/4" (standard max.7 l/min)		tank
	G3/8" (high flow max.16 l/min)		
MA	G 1/4" (standard max.7 l/min)	measuring port	
option: shuttle valve			
A1	G 1/4" (standard max.7 l/min)	ISO 1179-1	external actuator port
	G3/8" (high flow max.16 l/min)		
A2	M14x1,5	ISO 9974-1	actuator port

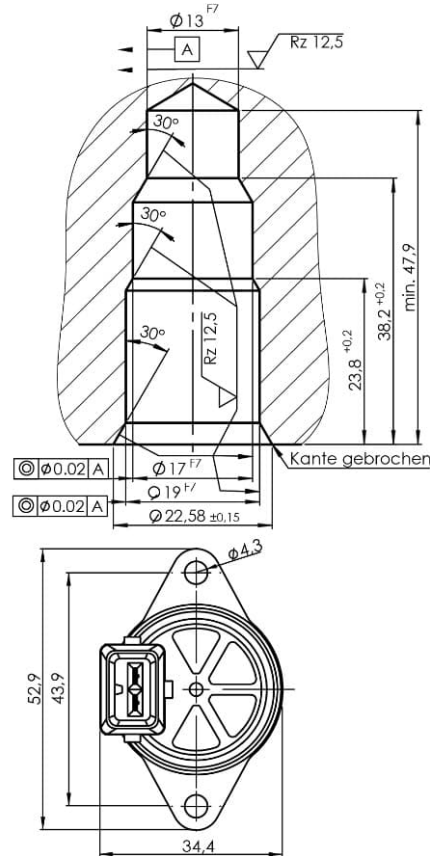
5.2.1 Spool

In the variant CA, the valve is delivered as a cartridge valve. The cavity has to be designed according to the following information.

Stepped cavity 8.00169
for standard max. 7,0 l/min



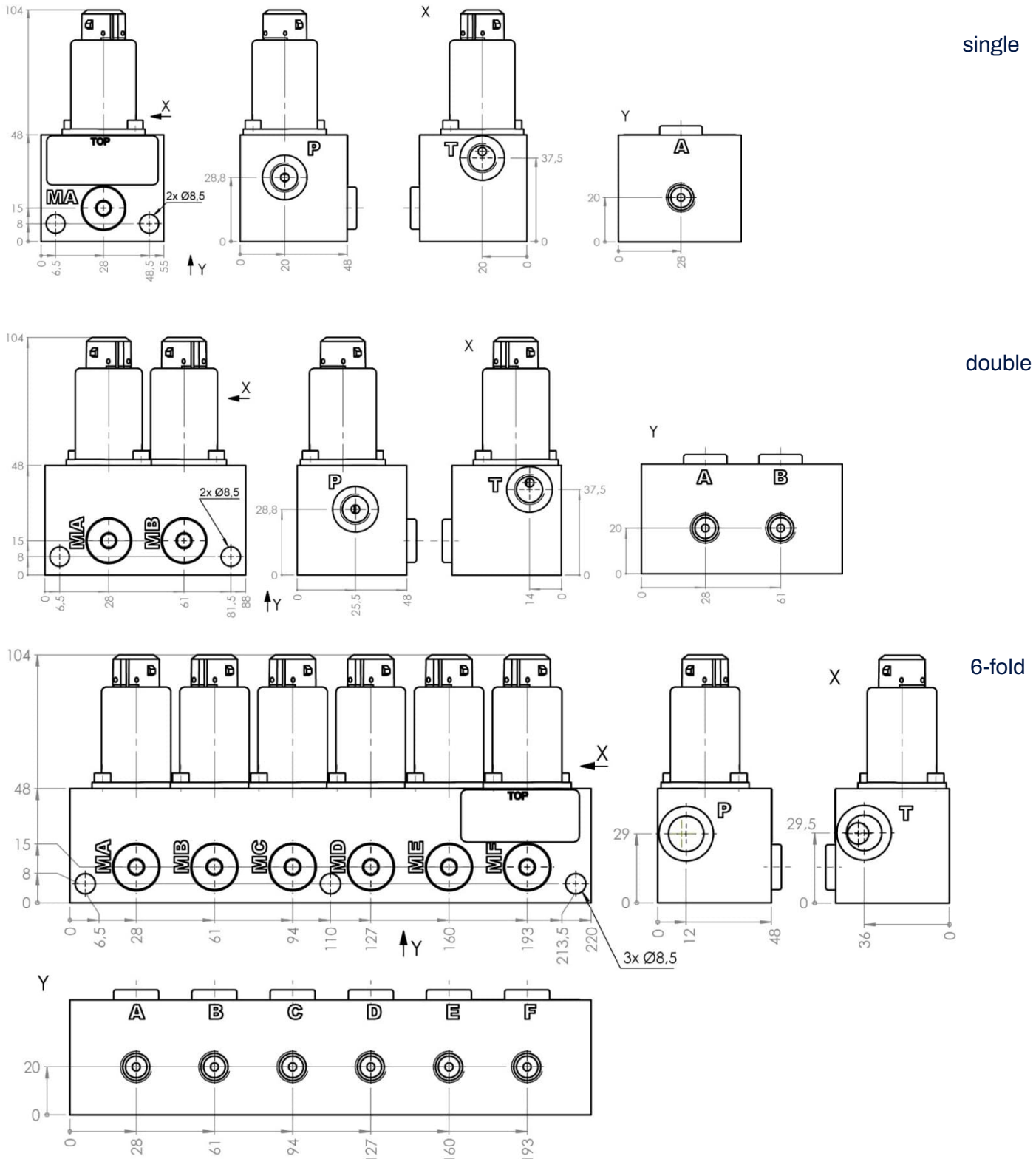
Stepped cavity 8.00253
for high flow max. 16 l/min



The versions listed below are available as standard. Further versions as part of the options given on the type code can be configured upon request.

designation	type code	part number
PCV, cartridge, high flow max. 16 lpm, Pmax. 50bar, 24V AMP, 1 channel, Pmax. reduced 32bar	PCV-2V-CA-16-050-24P002-000-1-32	281.719.000.6

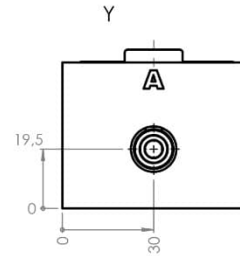
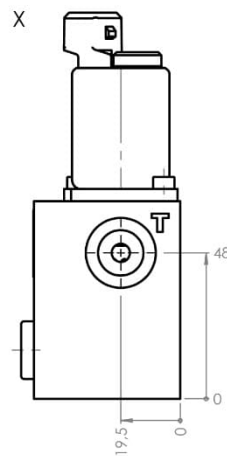
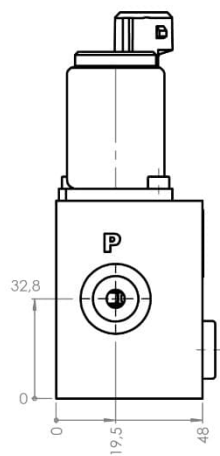
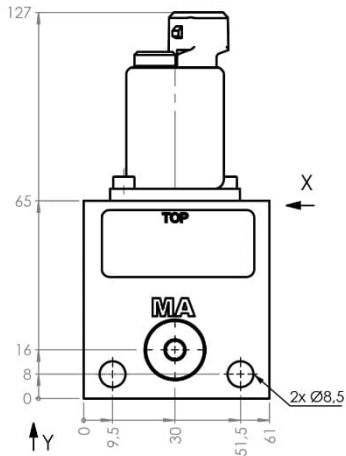
5.2.2 Variant 03B: G 1/4 ISO 1179-1 (standard max. 7 l/min)



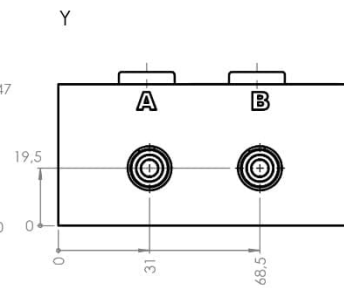
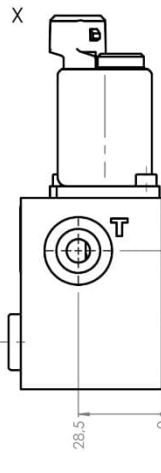
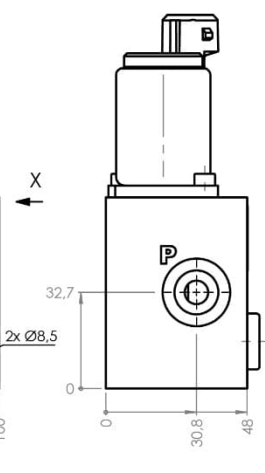
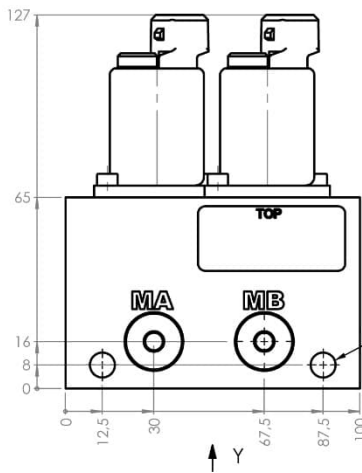
The versions listed below are available as standard. Further versions as part of the options given on the type code can be configured upon request.

designation	type code	part number
PCV, G1/4, standard max. 7lpm, Pmax. 50bar, 24V, AMP, 6-fold, Pmax. reduced 32bar	PCV-2V-03B-7-050-24P002-006-32	221.011.240.9
PCV, G1/4, standard max. 7lpm, Pmax. 50bar, 24V, AMP, single, Pmax. reduced 32bar	PCV-2V-03B-7-050-24P002-001-32	221.011.242.9
PCV, G1/4, standard max. 7lpm, Pmax. 50bar, 24V, AMP, double, Pmax. reduced 32bar	PCV-2V-03B-7-050-24P002-002-32	221.011.244.9

5.2.3 Variant 03C: G 3/8 ISO 1179-1 Qmax. (high flow max. 16 l/min)



single

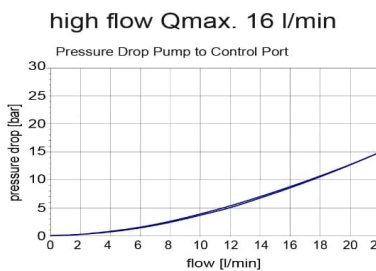
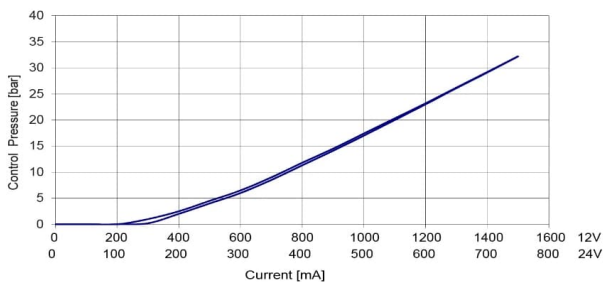
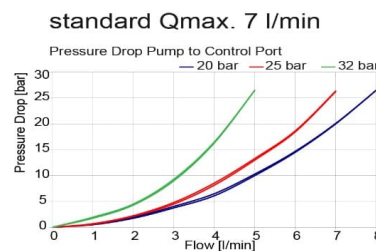
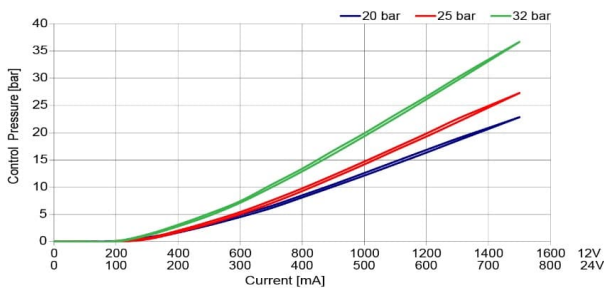


double

The versions listed below are available as standard. Further versions as part of the options given on the type code can be configured upon request.

designation	type code	part number
PCV, G 3/8 ISO 1179-1 high flow 16 lpm, Pmax. 50bar, 24V AMP, 1 Kanal, Pmax. gemin. 32bar	PCV-2V-03C-16-050-24P002-000-001-32	221.011.238.9
PCV, G3/8, high flow max. 16lpm, Pmax. 50bar, 24V AMP, 2 Kanal, Pmax. gemin. 32bar	PCV-2V-03C-16-050-24P002-000-002-32	221.011.239.9

5.3 Characteristic lines pilot control areas



6 Installation

6.1 General remarks

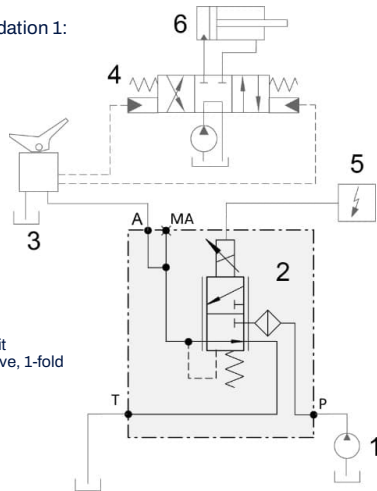
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or dismantling, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- May only be opened with the approval of the manufacturer, otherwise the warranty is invalidated.

6.2 Connection recommendations



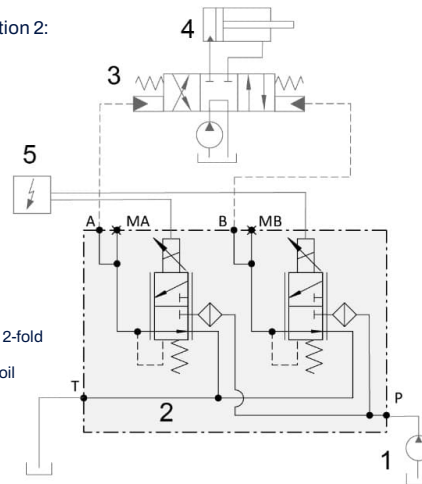
NOTE The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked. It must be ensured that the construction machine is suitable in terms of technology and safety for the operation of the attachment.

Connection recommendation 1:



- 1 – Pilot control pump circuit
- 2 – Prop. pressure relief valve, 1-fold
- 3 – Elec. signal transducer
- 4 – Hydr. signal transducer
- 5 – Main control unit
- 6 – Consumer

Connection recommendation 2:



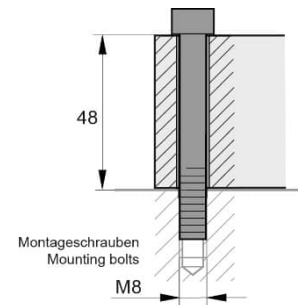
- 1 – Pilot control pump
- 2 – Prop. pressure relief valve, 2-fold
- 3 – Elec. signal transducer
- 4 – Main control unit, service coil
- 5 – Consumer

6.3 Installation – space

- Ensure that the support element is level.
- Ensure that the valve is not bent during installation.
- Ensure that there is sufficient free space for setting and installation work.



CAUTION! Hydraulic hoses must not come into contact with the directional control valve as they will suffer thermal damage.



7 Notes, Standards and Safety Requirements

7.1 General remarks

- The views in drawings are shown in accordance with the European normal projection variant
- A comma (,) is used as a decimal point in drawings
- All dimensions are given in mm



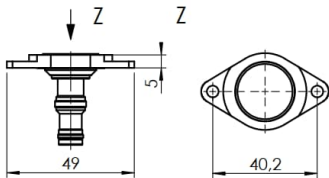
7.2 Standards

The following standards are to be observed because of the surface temperatures on the load control valve:

- EN 563, Temperatures on surfaces that can be touched.
- EN 982, Safety-technical requirements for fluid-technical systems and their components.

8 Accessories

- Junior Timer Order No.: 340.305.900.6
- WESSEL Tool Control plus Order No.: 000.310.007.9
- Valve controller Order No.: 000.310.004.9
- Option: plug, Order No.: 100.507.016.2



- Option shuttle valve, Order No.: 421.001.206.8
Shuttle valves may be mounted on the pilot ports in order to allow alternative electrical control in addition to an existing hydraulic control

