

Table of Contents

1	Product Description	2
1.1	Application	2
1.2	Mounting location (Recommendation)	2
1.3	Function	2
1.4	Characteristics	2
2	Technical Data	3
3	Ordering Information	3
3.1	Versions currently available	3
3.2	Characteristic input flow rate.....	3
3.2.1	Pressure loss	3
3.3	Characteristic maximum permissible pressure	4
3.4	Characteristic actuation	4
4	Installation	4
4.1	General remarks	4
4.2	Connection recommendations	4
4.3	Installation - space	5
5	Notes, Standards and Safety Requirements	6
5.1	General remarks	6
5.2	Standards.....	6
6	Accessories	6

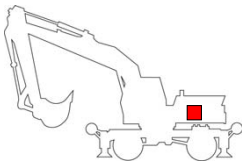
1 Product Description

The proportional flow control valve was specially developed for the actuation of two consumers that are operated independently and simultaneously. These requirements are needed for example for the control of tiltrotators (pivoting/turning). Besides the simple installation in any hydraulic systems, special value is placed on the very compact construction of the valve.

1.1 Application

Control valve for 2 dual-acting functions on attachments.

1.2 Mounting location (Recommendation)

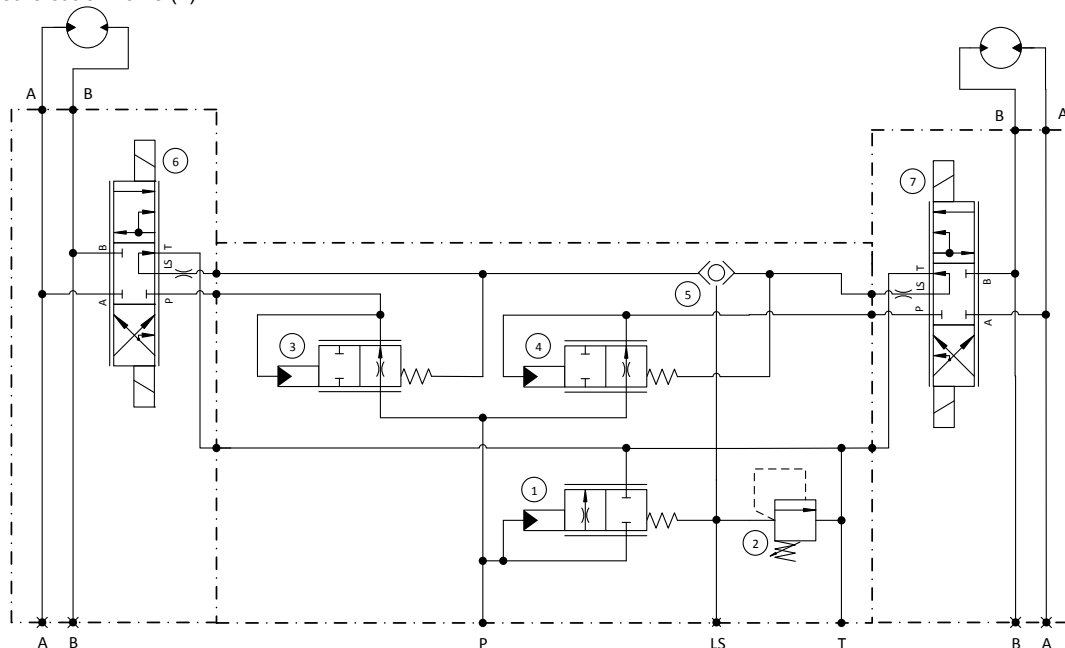


Hydraulic supply takes place from an additional function of the backhoe (e.g. turn gripper or attachment tool)

1.3 Function

If no function is actuated, the volume flow goes from P via the bypass hydro-balance (1) to the tank with very little pressure loss. As soon as one of the two functions is actuated, the input pressure compensator (3) or (4) determines a part of the input volume flow for the functions through the opening cross-section of the directional valve (6) or (7) acting as restrictor. The excess volume flow is directed to the tank via the internal LS system with very little pressure loss.

If both functions are activated simultaneously, the speed of the individual movements is not impacted. External load changes are ideally compensated by use of priority valves (3) and (4). The maximum possible operating pressure is uniformly restricted for both functions via the pressure cut-off valve (2).



1.4 Characteristics

- Compatible with all standard hydraulic systems
- Simple expansion for attachments
- Compact construction
- Additional function also individually and proportionally controllable
- Consumer connections all doubled

2 Technical Data

Criterion	Units	Value
Max. operating pressure P, A, B, LS	bar	420
Max. volume flow inlow	l/min	150
Max. volume flow expiration A,B	l/min	50
Weight	kg	11,5
Installation position		any
Connections		
A, B - G1/2 ISO 1179-1	bar	420
P - G3/4 ISO 1179-1	bar	420
T - G3/4 ISO 1179-1	bar	8
LS - G1/4 ISO 1179-1	bar	420
Hydraulic		
Hydraulic fluid		Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request
Hydraulic fluid temperature range	°C	-20 – +80
Ambient temperature:	°C	< +50
Viscosity range	mm ² /s	2,8 – 500
Contamination grade		Filtering conforming with NAS 1638, class 9, with minimum retention rate $\beta_{10} \geq 75$
Elektrik		
Supply voltage	VDC	12 or 24
Voltage tolerances	%	± 10
Solenoid switch power consumption	W	33
Solenoid switch flow rate	A	2.9 at 12 VDC, 1.4 at 24 VDC
Solenoid switch duty cycle	%	100
Protection class according to DIN		IP 65
Current supply		Device connector / ISO 4400 angle connector or AMP Junior Timer connector

3 Ordering Information

3.1 Versions currently available

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.

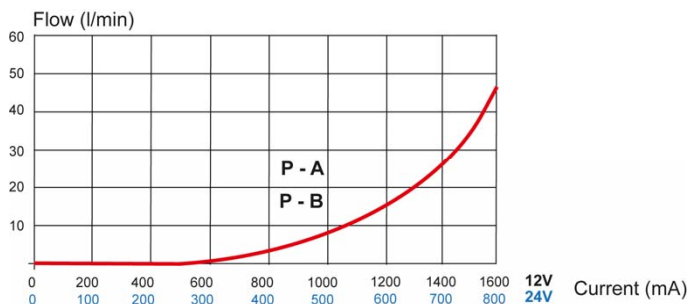
Name	Part No.
Flow control valve double, electrically proportional, 50 l/min, 420 bar, 24 VDC	296.311.700.9
Flow control valve double, electrically proportional, 50 l/min, 420 bar, 12 VDC	296.211.700.9

3.2 Characteristic input flow rate

The maximum input flow rate is 150 l/min.


3.2.1 Pressure loss

Flow rate characteristic P to A or B

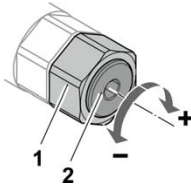


3.3 Characteristic maximum permissible pressure

The maximum permissible pressure at input P, A,B,LS of the flow control valve is 420 bar.
Pressure valve: Pressure cutoff at 250 bar opening begin preset

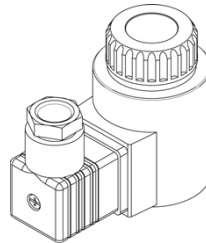
 **ATTENTION** Valve can heat up to the oil temperature during operation.

The maximum operating pressure of the pressure valve depends on the maximum operating pressure of the machine. Observe the technical data.



- a. Undo the lock-nut SW19 (1).
- b. The operating pressure is preset to 250 bar opening begin.
Increase: Turn the set-screw SW5 (2) clockwise.
Decrease: Turn the set-screws SW5 (2) counter-clockwise. One turn is 80 bar.
- c. Tighten the lock-nut SW19 (1).

3.4 Characteristic actuation



Device socket for plug-in connector: 12S001 / 24S001

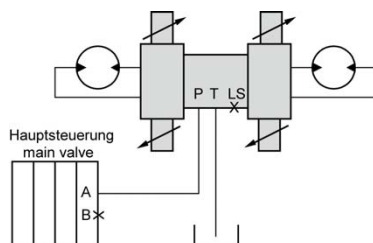
4 Installation

4.1 General remarks

- Observe all installation and safety information of the construction machine manufacturer.
- 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.

4.2 Connection recommendations

Standard installation



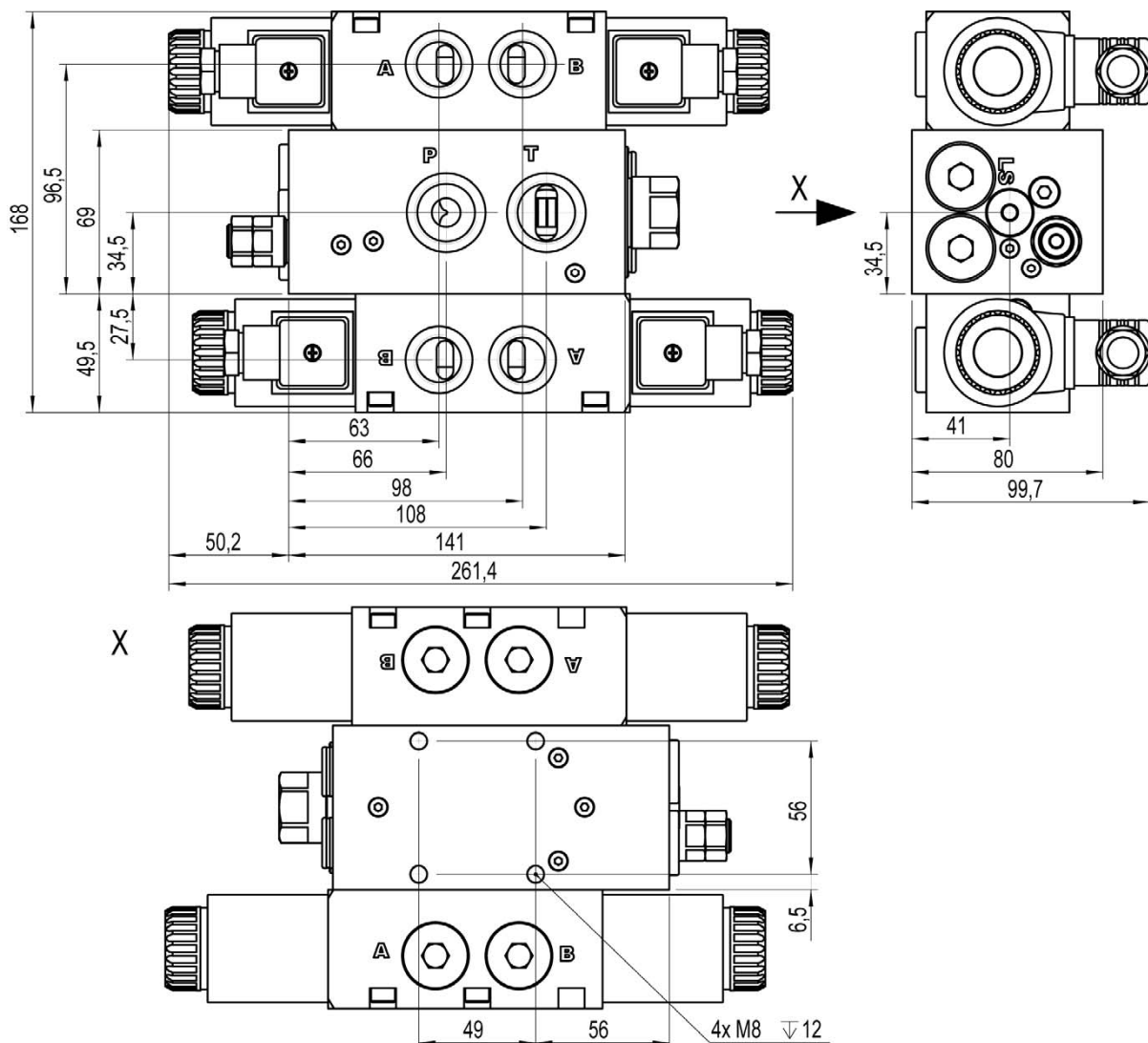
If LS is connected, a check valve must be used in the LS line to exclude external LS pressures from the valve.

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.

4.3 Installation - space

- Observe the connection labels.
 - Observe the strength category and torsional moment of the clamp bolts.
 - Do not damage seals and flange surface.
 - The air must be exhausted from the hydraulic system.
 - 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.
- a. Install the flow control valve using 4 x M8 bolts on the supporting element.
 - b. Make electrical connections.
 - c. Secure connector with screw (1).



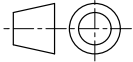
CAUTION!

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

5 Notes, Standards and Safety Requirements

5.1 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

5.2 Standards

The following standards must be observed when installing and operating the valve:

- DIN EN ISO 13732-1:2008-12, Temperatures on accessible surfaces

6 Accessories

Without accessories