

DATA SHEET - OPERATION MANUAL

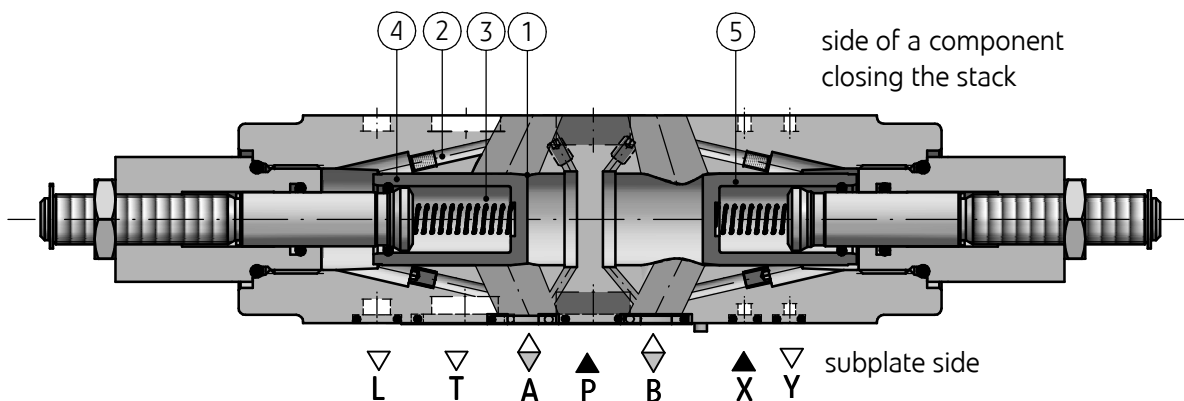
APPLICATION

Throttle/check valve type Z2FS16... is used for setting the size of the main or control flow in one direction, and allow free flow in the opposite direction. The Z2FS16... type valve is a double throttle/check valve. Two symmetrically positioned against each other throttle/check valves limit through adjustable throttle (throttling piston) size of the flow in one direction, and allow free flow in the opposite direction through the check valve. The valve is designed for sandwich type mounting - it is usually installed between the subplate and the valve of the same nominal size and is used for limiting the size of the main flow (changing the speed of movement of the receiver).



DESCRIPTION OF OPERATION

Z2FS16 - 42/S



Hydraulic fluid from the port **A** flows through the throttling slot (1) to the receiver. At the same time, the fluid under operating pressure flows through port (2) to the side (3) of the piston (4) which is loaded with the spring. The piston (4) is therefore maintained in the

throttling position both by the force of the spring and the hydraulic force. The fluid returning from the receiver moves the piston (5) to the right and allow free flow of the fluid through the valve system (throttling insert) which now acts as a check valve.

TECHNICAL DATA

Hydraulic fluid	mineral oil	
Required fluid cleanliness class	ISO 4406 class 20/18/15	
Nominal fluid viscosity	37 mm ² /s at temperature 55 °C	
Viscosity range	2,8 up to 380 mm ² /s	
Fluid temperature range (in a tank)	recommended	40°C up to 55°C
	max	-20°C up to +70°C
Ambient temperature range	- 20°C up to +70°C	
Maximum operating pressure	35 MPa	
Maximum flow	250 dm ³ / min	
Weight	4,7 kg	

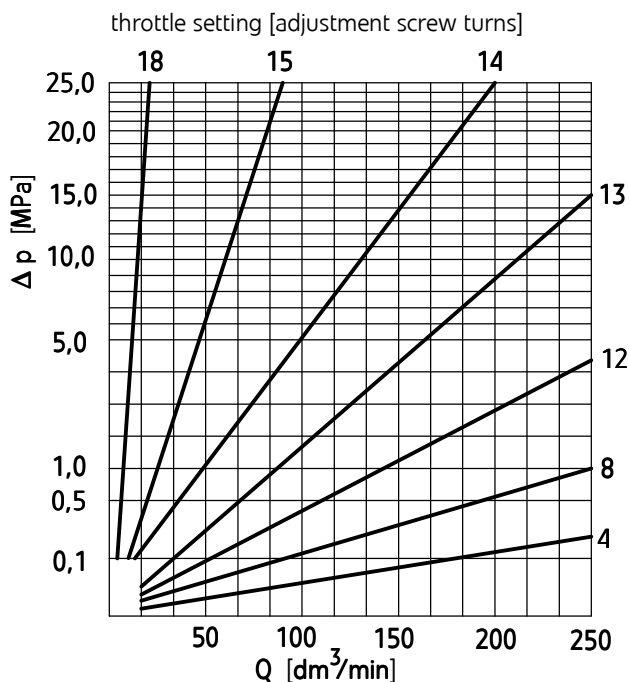
INSTALLATION AND OPERATION REQUIREMENTS

1. Only fully functional and operational valve, properly connected to electrical installation must be used.
2. During the period of operation must be kept fluid viscosity acc. to requirements defined in this Data Sheet - Operation Manual
3. In order to ensure failure free and safe operation the following must be checked:
 - proper working of the valve
 - cleanliness of the hydraulic fluid
4. Due to heating of valve body to high temp., the valve should be placed in such a way as to eliminate possibility of accidental contact with the valve body during operation or one should provide suitable shields in accordance with requirements of EU standards: PN - EN ISO 13732-1 and PN - EN ISO 4413.
5. In order to provide tightness of the valve connection to a hydraulic system, one should follow the sizes of sealing rings, tightening torques and work parameters of the valve given in this Data Sheet - Operation Manual
6. A person that operates the valve must be thoroughly familiar with this Data Sheet - Operation Manual.

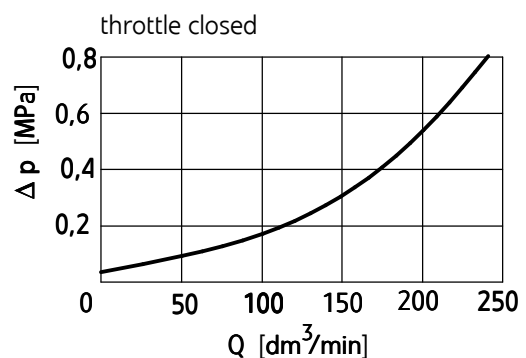
PERFORMANCE CURVES

measured at viscosity $\nu = 41 \text{ mm}^2/\text{s}$ and temperature $t = 50^\circ\text{C}$

Characteristic curves $\Delta p(Q)$ for the valve type Z2FS16 for various throttle settings

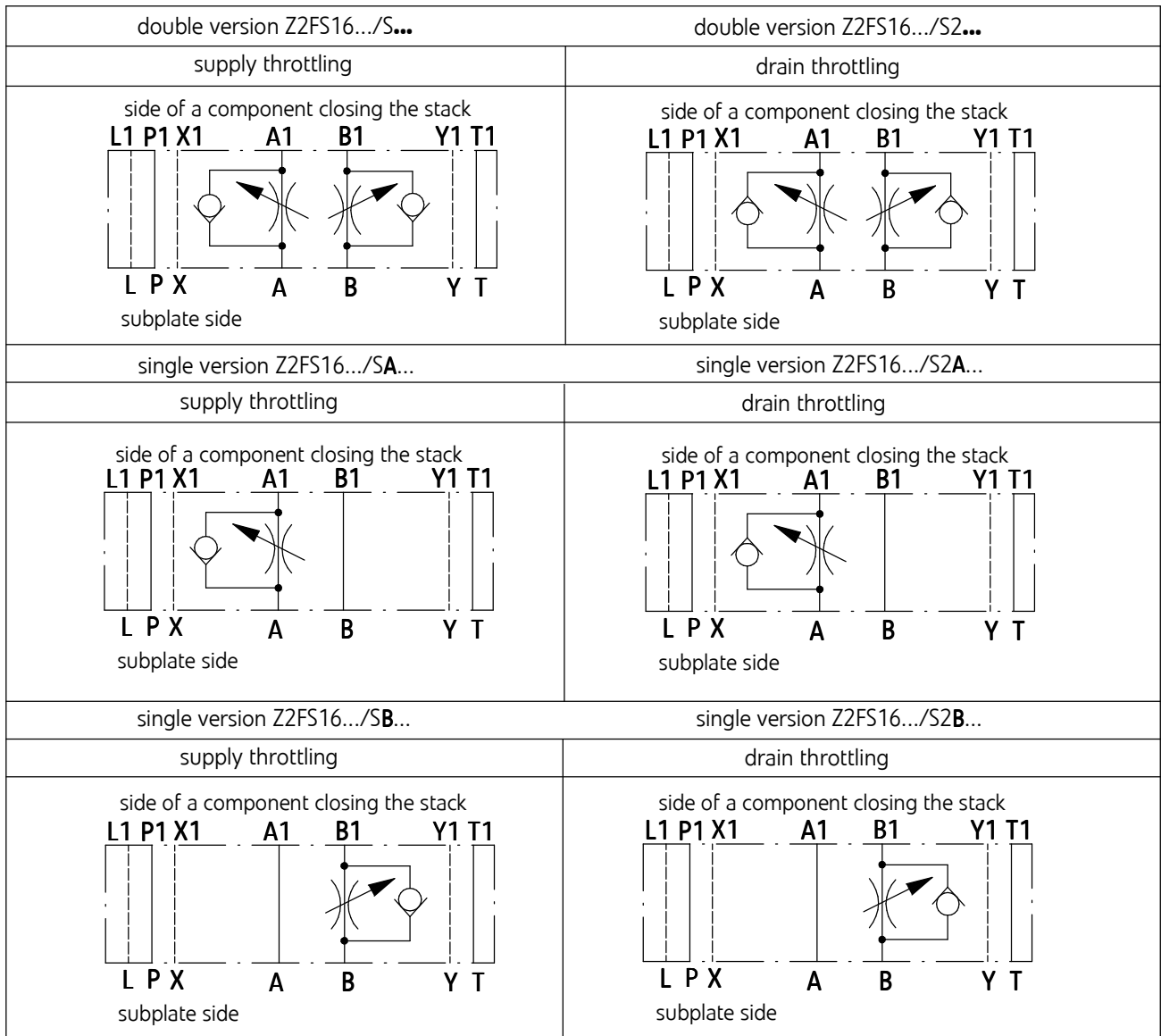


Flow resistance curve $\Delta p(Q)$ for the check valve



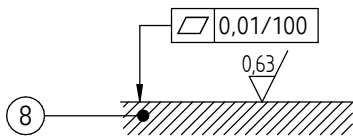
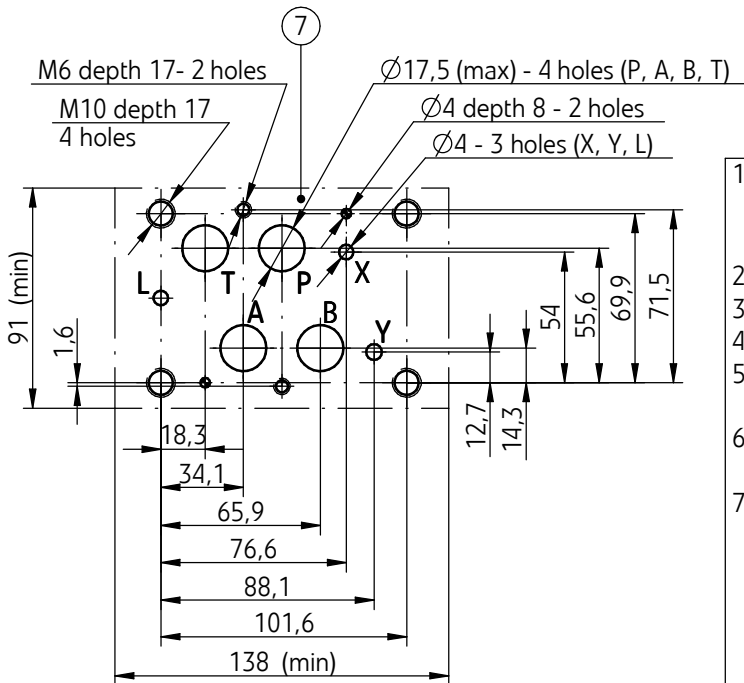
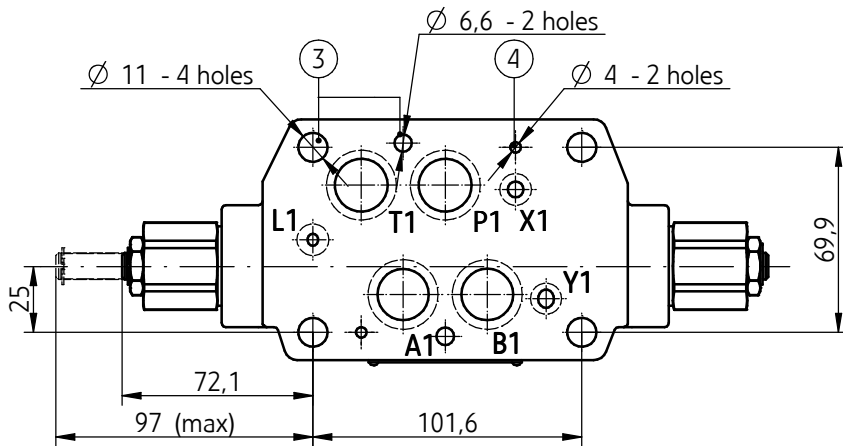
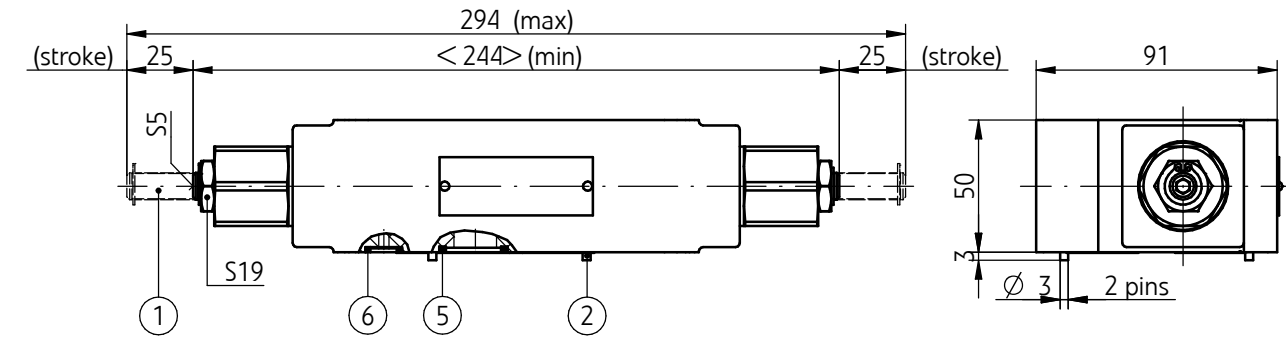
DIAGRAMS

Hydraulic diagrams of valves type Z2FS16...



OVERALL AND CONNECTION DIMENSIONS

double version ZZFS16...



- 1 - Adjusting screw for changing the fluid flow
 - rotation to the left - increase of the flow rate
 - rotation to the right - decrease of the flow rate
- 2 - Setting pin - pcs 2
- 3 - Holes for mounting screw of the valve
- 4 - Holes for setting pins
- 5 - Sealing ring of a square cross-section $22,3 \times 2,4$ pcs. 4/set (P, T, A, B)
- 6 - Sealing ring of a square cross-section 10×2 pcs. 3/set (X, Y, L)
- 7 - Porting configuration of the subplate surface in compliance with ISO 4401 designation ISO 4401-07-06-0-94 (CETOP 07) fixing screws according to PN - EN ISO 4762
 - M10 x L* - 10.9** - pcs 4 set;
 - tightening torque **Md = 62 Nm**
 - M6 x L* - 10.9** - pcs 2/set;
 - tightening torque **Md = 12,5 Nm**

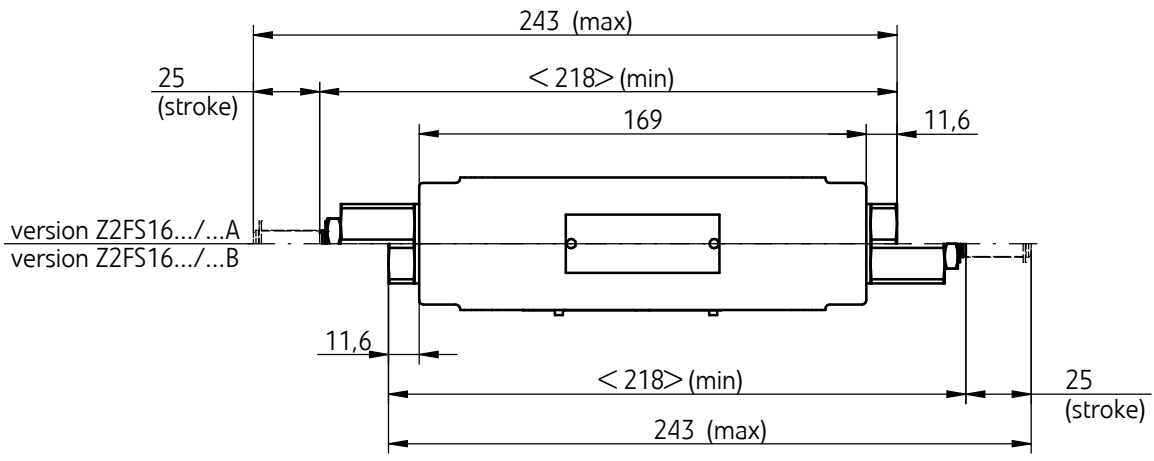
NOTE:

(*) - Required length of the screws L is related to type and the number of hydraulic components sandwich fitted

- 8 - Required finish of the subplate surface

OVERALL AND CONNECTION DIMENSIONS

single versions: Z2FS16.../...A; Z2FS16.../...B



NOTE:
other dimensions, description of elements of the valve drawing, porting pattern and required state of the connection surface - see page 4

HOW TO ORDER

Z2FS	16	-	/					*
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Nominal size (NS) NS16	= 16
Series number (40 - 49) - installation and connection dimensions unchanged = 4X series 42	= 42
Throttling method (hydraulic diagrams on page 2) throttle valve on the supply throttle valve on the drain	= S = S2
Throttling location (hydraulic diagrams on page 2) throttle valves on the side of ports A and B throttle valve on the side of port A throttle valve on the side of port B	= no code = A = B
Sealing NBR (for fluids on mineral oil base) FKM (for fluids on phosphate ester base)	= no code = V
Further requirements in clear text (to be agreed with the manufacturer)	

NOTES:

The throttle/check valve should be ordered according to the above coding.
The symbols in bold indicate versions available in short delivery time.
Coding example: Z2FS16 - 42/S2

SUBPLATES AND FIXING SCREWS

Subplates must be ordered according to data sheet
WK 450 788. Subplate types:

- G174/01** - threaded connections P, T, A, B - **G 1**
X, Y, L - **G1/4**
- G174/02 - threaded connections P, T, A, B - M33 x 2
X, Y, L - M14 x 1,5
- G172/01 - threaded connections P, T, A, B - G3/4
X, Y, L - G1/4
- G172/02 - threaded connections P, T, A, B - M27 x 2
X, Y, L - M14 x 1,5

NOTE:

The subplate symbol in bold indicates version available in short delivery time.

Subplates and screws fixing the throttle/check valve according to **PN - EN ISO 4762**:

M10 x L* - 10,9 - pcs 4/set

M6 x L* - 10,9 - pcs 2/set

must be ordered separately.

Tightening torques:

M10 x L* - **Md = 62 Nm**

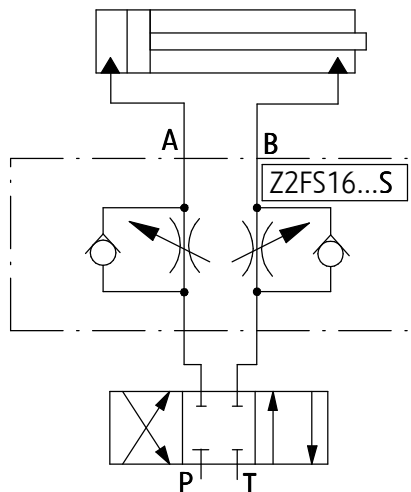
M 6 x L* - **Md = 12,5 Nm**

NOTE:

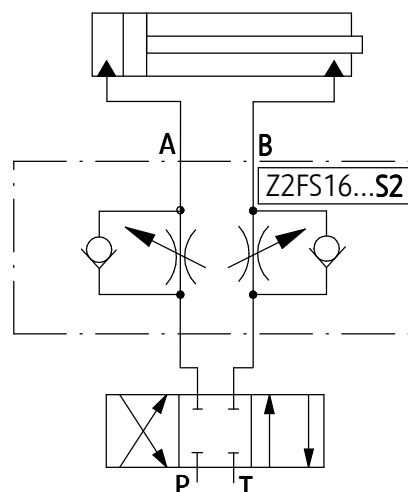
(*) - Required length of the screws L is related to type and the number of hydraulic components sandwich fitted.

EXAMPLES OF APPLICATION IN A HYDRAULIC SYSTEM

flow throttling on the **supply** of the receiver - version **Z2FS16...S...**



flow throttling on the **drain** of the receiver - version **Z2FS16...S2...**



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