

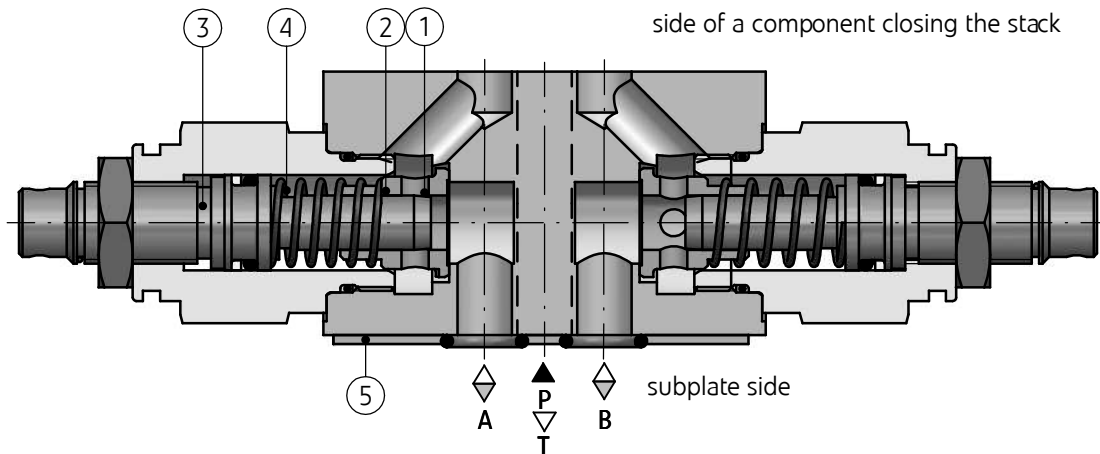
APPLICATION

Throttle/check valve type **Z2FS6...** is used to control main flow rate (or pilot flow rate) in one direction of flow and to allow free flow in the opposite direction. The valve may be designed as double version (twin version - valve function is realized in two ports **A** and **B**) or single version (valve function is realized in one port **A** or **B**). The valve is applied to vertical stack mounting (sandwich plate) - generally is fitted between subplate and directional valve of the same nominal size and in this case is used to limit main flow rate (to control the speed of a receiver movement). For directional valves pilot operated the valve is installed as a pilot choke adjuster (to limit pilot flow rate). In this case it is fitted between the main and the pilot valve.



DESCRIPTION OF OPERATION

Z2FS6 - 42/2



Hydraulic fluid from directional valve via port **A** (or **B**) flows to receiver through throttling slot (1). At the same time the fluid under operating pressure acts via line **A** on spring (4) loaded side of spool (2). The spool (2) is thus hold in the throttle position by both spring (4) and hydrostatic force.. Hydraulic fluid flowing back from a receiver through port **B** (or **A**) shifts the spool (2) in the direction of adjustment and allows the

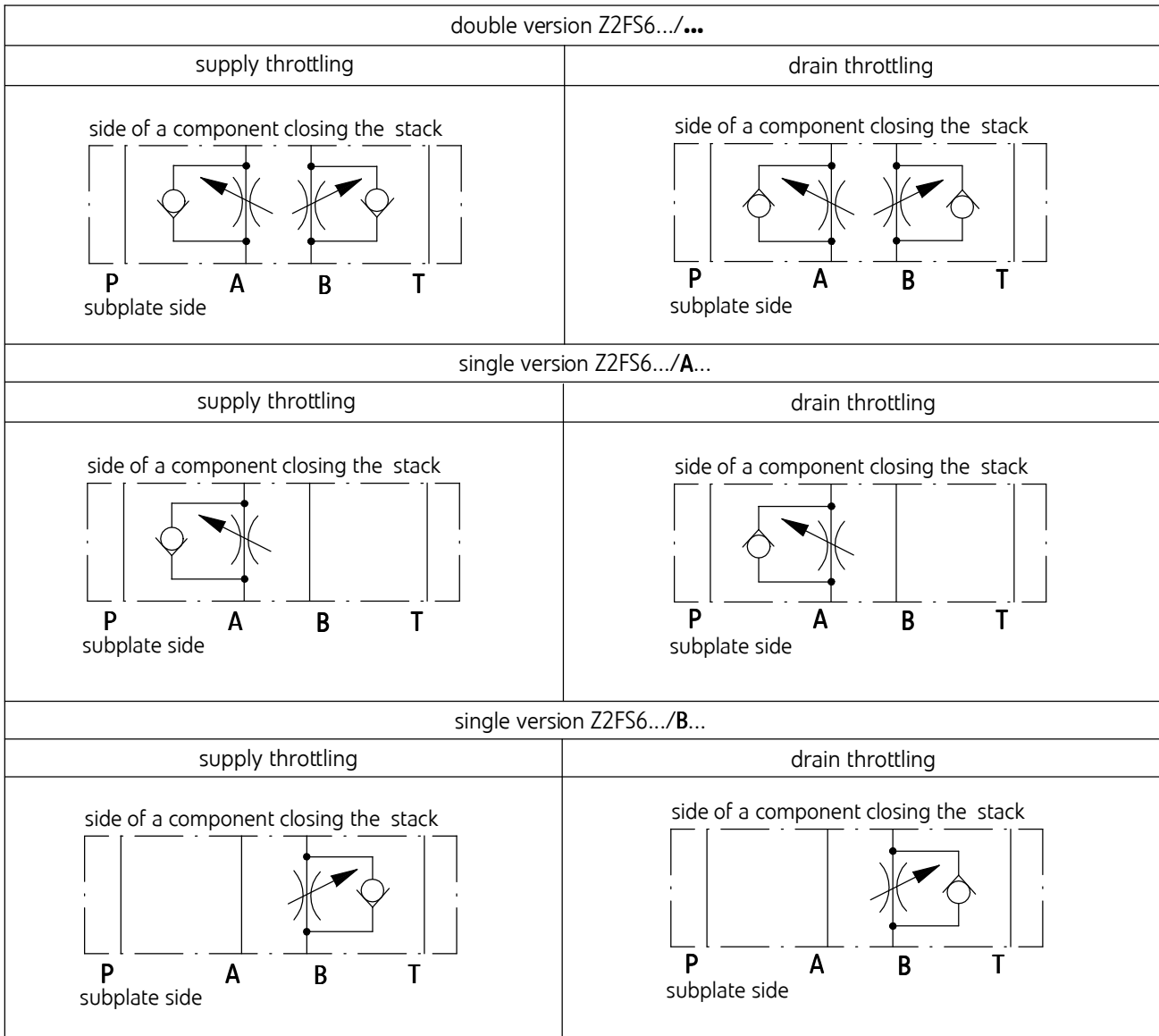
fluid to flow freely (the valve operates as a check valve). Throttle rate (volume of fluid flow) can be adjusted by means of adjustment screw (3). Depending on the way the valve is fitted in relation to the seal ring plate (5), throttling effect can be achieved either in the supply of a receiver (option shown on the drawing) or drain (by rotating the valve about the longitudinal horizontal axis by 180°).

TECHNICAL DATA

Hydraulic fluid	mineral oil	
Required filtration	up to 16 µm	
Recommended filtration	up to 10 µm	
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	31,5 MPa	
Cracking pressure	0,06 MPa	
Maximum flow	60 dm³/ min	
Weight	0,9 kg	

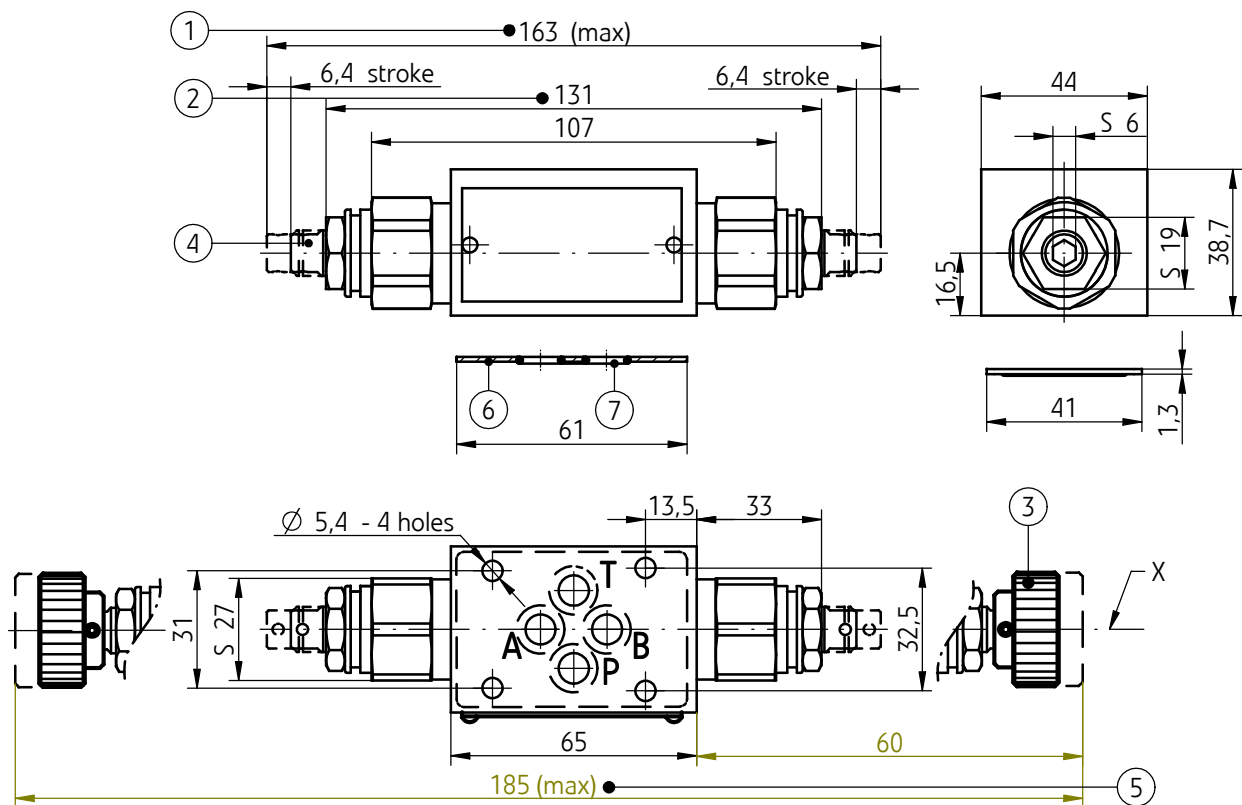
SCHEMES

Hydraulic schemes of valves type Z2FS6...



OVERALL AND CONNECTION DIMENSIONS

double version Z2FS6.../...



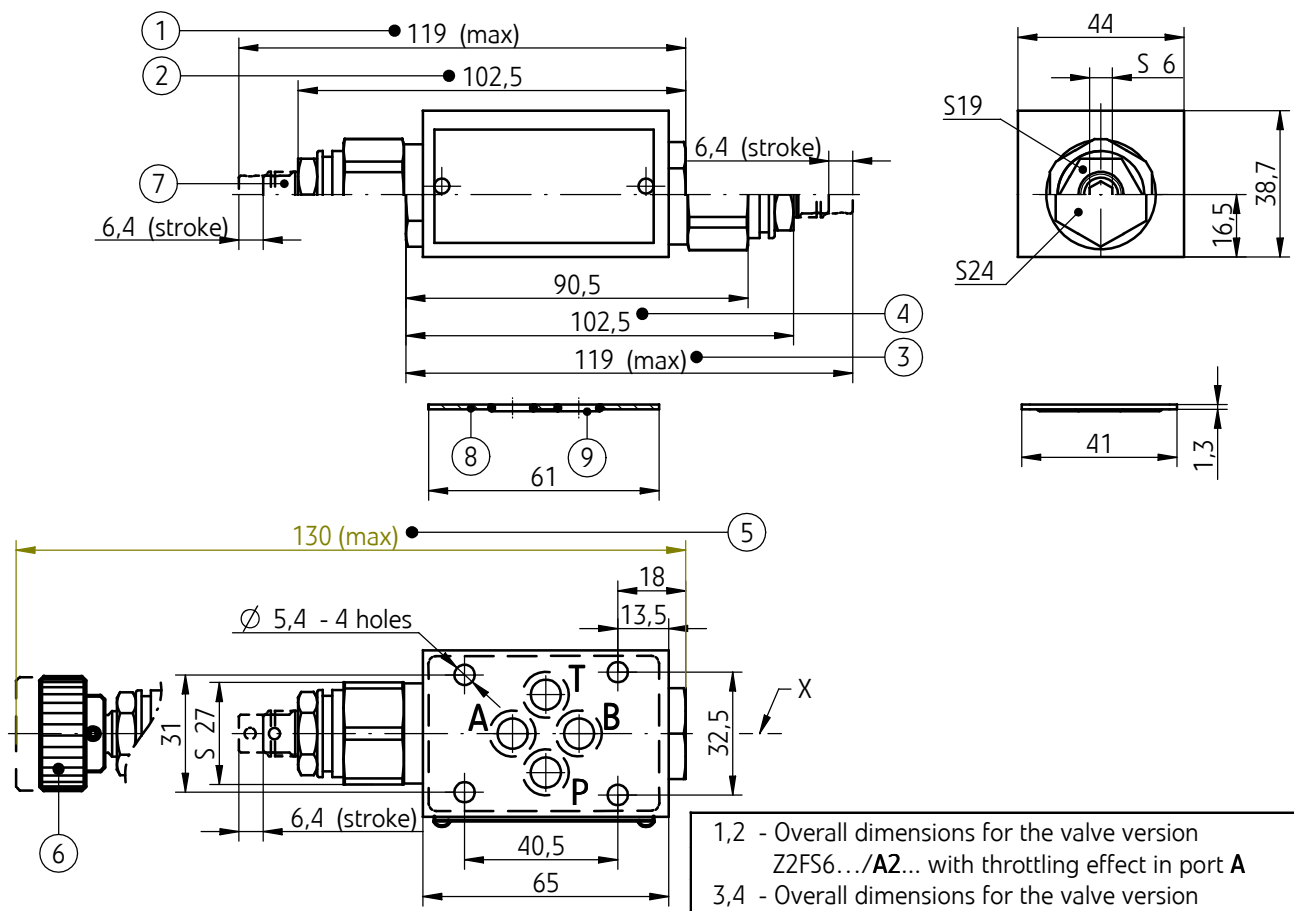
- 1,2 - Overall dimensions for the valve version Z2FS6.../2... with throttling effect in ports **A, B**
- 3 - Adjusting element **1** (hand knob); rotation to the right - increasing flow throttling effect; rotation to the left - decreasing flow throttling effect
- 4 - Adjusting element **2** (set screw)
- 5 - Overall dimensions for the valve version Z2FS6.../1... with throttling effect in ports **A, B**
- 6 - Seal ring plate - enables to arrange throttling effect in the supply or in the drain by changing the way in which the valve is fitted in relation to the plate - rotation the valve about the axis X by 180° (see examples on page 5)
- 7 - Seal **o-ring 9,2 x 1,8** - 4 pcs/kit (**P, T, A, B**)
- 8 - Mounting holes configuration of a subplate in accordance with the standards listed below:
 - **CETOP RP 121H** - symbol **CETOP 4.2-4-03** (nominal size **CETOP 03**)
 - **ISO 4401** - symbol **ISO 4401-03-02-0-94**
 fixing screws **M5 x L*** - 10.9 - 4 pcs/kit in accordance with **PN - EN ISO 4762** tightening torque **Md = 9 Nm**
- 9 - Required surface finish of a subplate

NOTE:

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

OVERALL AND CONNECTION DIMENSIONS

single versions: Z2FS6.../A...; Z2FS6.../B...

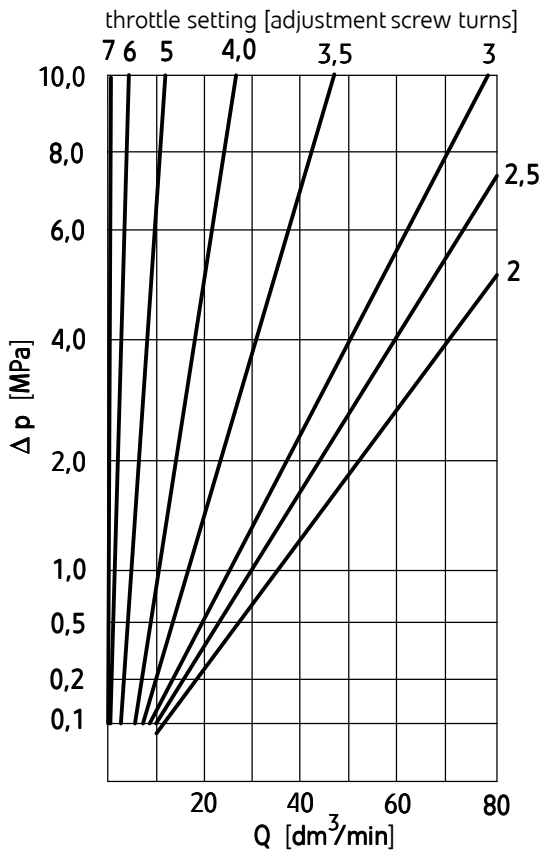


- 1,2 - Overall dimensions for the valve version Z2FS6.../A2... with throttling effect in port **B**
 - 3,4 - Overall dimensions for the valve version Z2FS6.../B2... with throttling effect in port **B**
 - 5 - Overall dimensions for the valve version Z2FS6.../A1... with throttling effect in port **A** (apply also Z2FS6.../B1... with throttling effect in port **B**)
 - 6 - Adjusting element **7** (hand knob); rotation to the right - increasing flow throttling effect; rotation to the left - decreasing flow throttling effect
 - 7 - Adjusting element **2** (set screw)
 - 8 - Seal ring plate - enables to arrange throttling effect in the supply or in the drain by changing the way in which the valve is fitted in relation to the plate - rotation the valve about the axis X by 180° (see examples on page 5)
 - 9 - Seal **o-ring 9,2 x 1,8** - 4 pcs/kit (P, T, A, B)
 - 10 - Mounting holes configuration of a subplate in accordance with the standards listed below:
 - CETOP RP 121H - symbol CETOP 4.2-4-03 (nominal size CETOP 03)
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 - 11 - Required surface finish of a subplate
- NOTE:**
 (*) - Required length of the screws **L** is related to type and the number of hydraulic components sandwich fitted

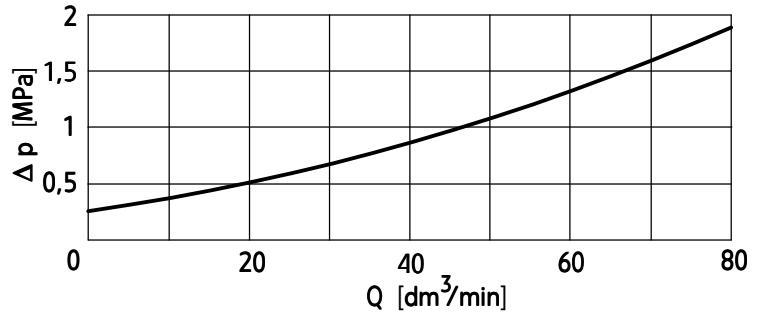
PERFORMANCE CURVES

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 Z2FS6... for various throttle settings

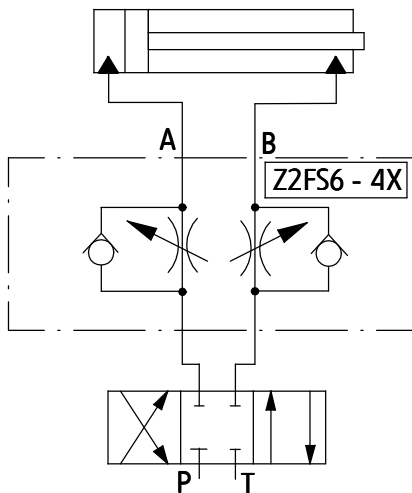


Flow resistance curve $\Delta p(Q)$ for the check valve - throttle closed

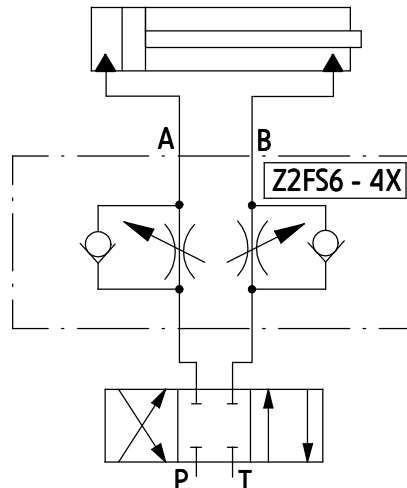


EXAMPLES OF APPLICATION IN HYDRAULIC SYSTEM

Flow throttling in the supply of the receiver (actuator)



Flow throttling in the drain of the receiver (actuator) - valve fitted in rotated position by 180°



HOW TO ORDER

Z2FS	6	+	/				*
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Nominal size (NS)

NS6 = 6

Series number

(40-49) - connection and installation dimensions unchanged = 4X
series 42 = 42

Throttling location (hydraulic schemes on page 2)

throttle valves on the side of ports A and B = no code

throttle valve on the side of port A = A

throttle valve on the side of port B = B

Setting element

hand knob = 1

set screw with internal hexagon = 2

Sealing

NBR (for fluids on mineral oil base) = no code

FKM (for fluids on phosphate ester base) = 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 are the preferred versions available in short delivery time.

Coding example: Z2FS6 42/2

SUBPLATES AND FIXING SCREWS

Subplates must be ordered according to catalogue sheet **WK 496 480**. Subplate symbols:

G 341/01 - threaded connections **G 1/4**

G 342/01 - threaded connections G 3/8

G 502/01 - threaded connections G 1/2

G 341/02 - threaded connections M14 x 1,5

G 342/02 - threaded connections M16 x 1,5

Subplates and screws fixing the throttle/check valve

M5 x L* - 10,9 - 4 pcs/kit in accordance with **PN - EN ISO 4762** must be ordered separately.

Tightening torque **Md = 9 Nm**

NOTES:

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

The subplate symbol in bold is the preferred version available in short delivery time.

PONAR Wadowice S.A.
 ul. Wojska Polskiego 29
 34-100 Wadowice
 tel. +48 33 488 21 00
 fax. +48 33 488 21 03
www.ponar-wadowice.pl

