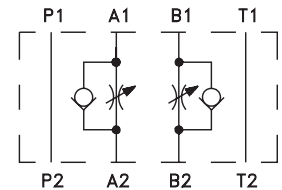


- Sandwich plate design for use in vertical stacking assemblies
- Meter-in or meter-out control as required
- Three possible arrangements:
  - throttle valve in channel A
  - throttle valve in channel B
  - throttle valves in channels A and B
- Flow adjustment - hexagon set screw with locknut and protective cap
- Installation dimensions to ISO 4401:1994 and DIN 24 340-A6



## Functional Description

Double throttle valves are used to control flow rates in two separate lines (A,B) of a hydraulic circuit. The modular design provides six functional symbols.

The valve body (1) has drilled channels and the throttle valve is built into channel A or B or into channels A and B. They restrict the fluid flow in one direction while providing reverse free-flow in the opposite direction. The throttling spool (2) is adjusted by means of a set screw (3) and each spool position corresponds with a certain area of passage.

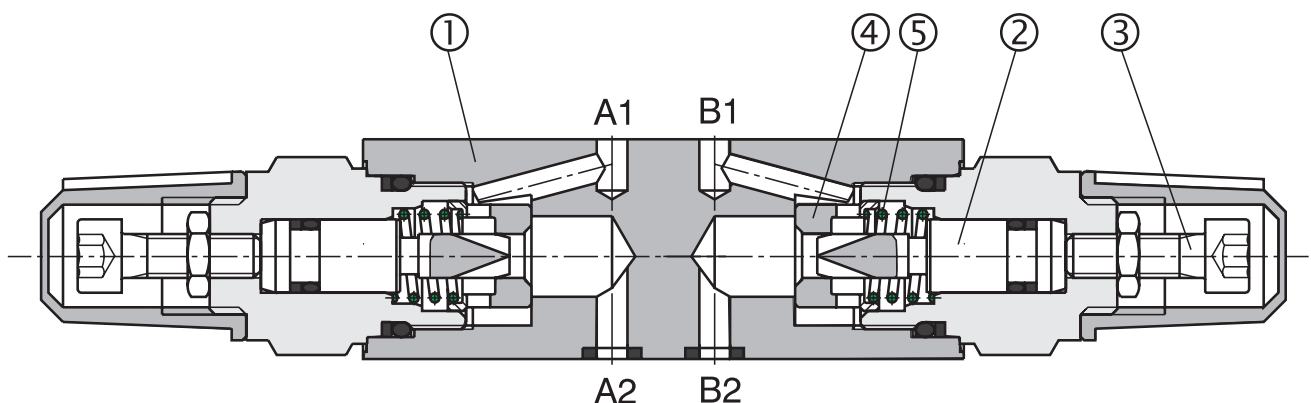
Fluid entering port A1 is throttled to port A2 via a groove and an annulus area. Fluid returning from port B2 shifts

the valve seat (4) against the spring (5), thus creating a passage which allows reverse free-flow to port B1 (function of a check valve).

The sandwich design enables simple stacking with other components of the same size.

According to the valve arrangement, the meter-in or meter-out control is provided. The orientation of the throttle check valves in the valve body corresponds with the symbols shown on the name plate.

The valve housing (1) is phosphate coated, the surfaces of the other parts are zinc coated.



# Ordering Code

VSO1-04/M  S

Double Throttle Check Valve

Nominal size

Modular design

no designation  
V

**Seals**  
NBR  
FPM (Viton)

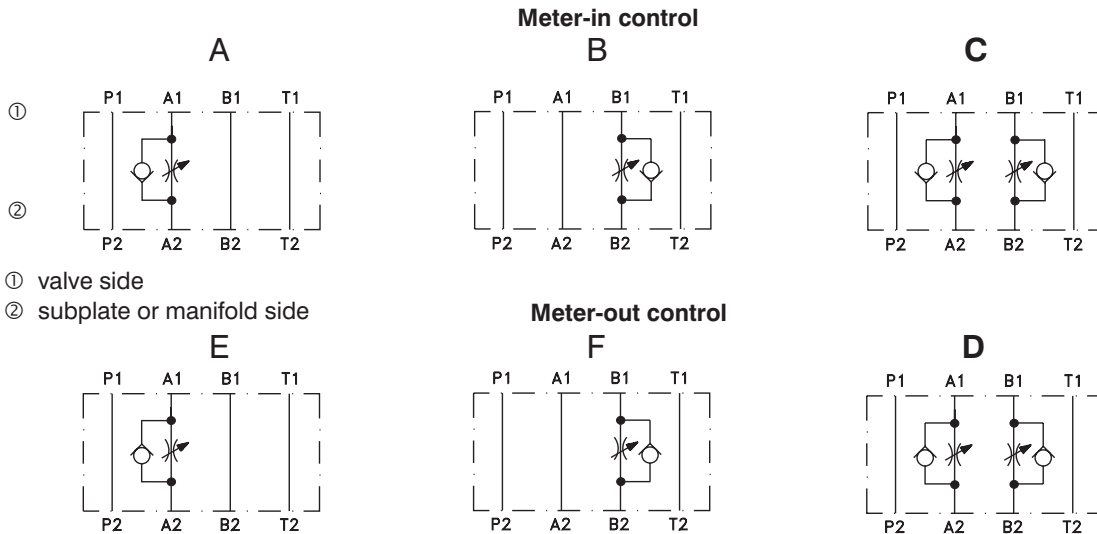
**Adjustment element**  
Hexagon set screw with locknut  
and protective cap

A  
B  
C  
E  
F  
D

**Functional Symbols**  
check valve in line A\*  
check valve in line B\*  
check valves in lines A and B\*  
check valve in line A\*  
check valve in line B\*  
check valves in lines A and B\*  
\* see Functional Symbols

**FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE  
AND TABLE OF PREFERRED TYPES ON PAGE 3**

## Functional Symbols



- ① valve side
- ② subplate or manifold side

**Notes:** The orientation of the throttle check valves in the valve body corresponds with symbols shown on the name plate.

## Technical Data

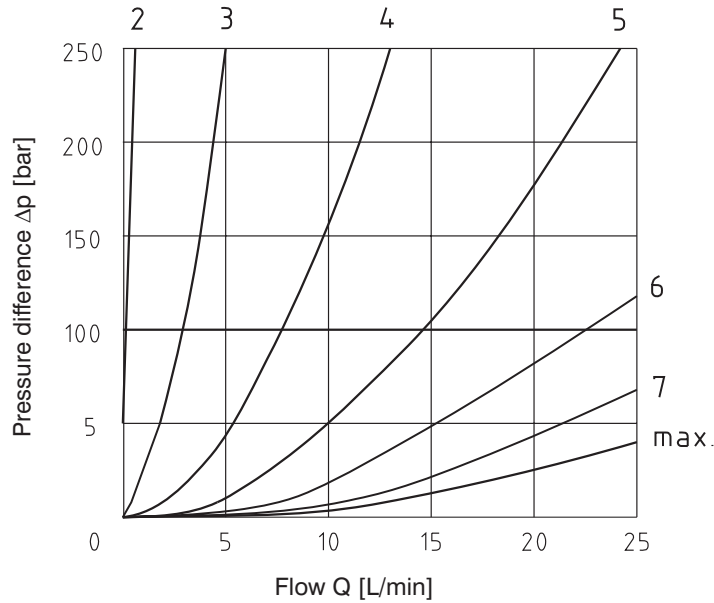
Nominal size	mm	04
Maximum flow	L/min	6.6 (25)
Maximum operating pressure	bar	4641 (320)
Hydraulic fluid	Hydraulic oils of power classes (HL, HLP) to DIN 51524	
Fluid temperature range for (NBR)	°C	-30 ... +100
Fluid temperature range for (Viton)	°C	-20 ... +120
Viscosity range	mm <sup>2</sup> /s	20 ... 400
Maximum degree of fluid contamination	Class 21/18/15 to ISO 4406 (1999).	
Weight	kg	1.76 (0.8)
Mounting position	optional	

# Δp-Q Characteristics

Measured at  $v = 32 \text{ mm}^2/\text{s}$

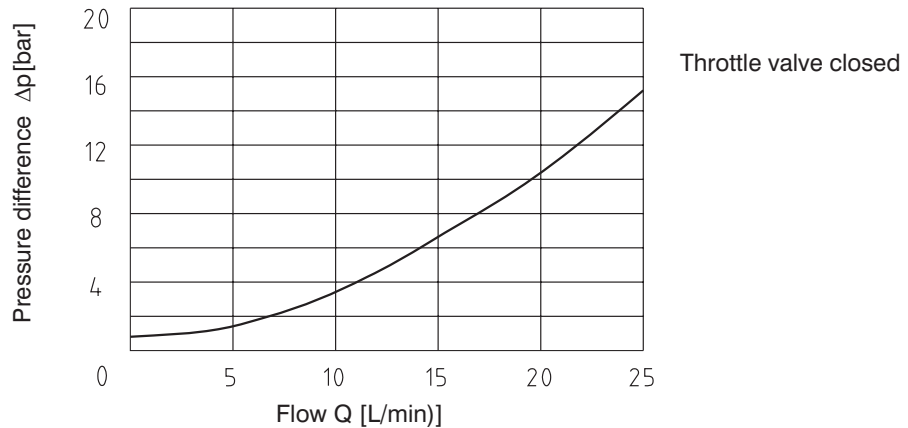
## Throttle valve

Pressure difference  $\Delta p$  related to flow from A1 to A2, (from B1 to B2)  
 - Throttle setting in turns (from the end stop)



## Check valve

pressure difference  $\Delta p$  related to flow from A2 to A1 (from B2 to B1)



## Spare Parts

### Seal kit

Type	Dimensions, quantity			Ordering number
	O-Ring	Square ring	Back-up ring	
Standard NBR	18 x 2.65 NBR70 (2 pcs.)	7.65 x 1.68 (4 pcs.)	6.73 x 9.43 x 1.14 (2 pcs.)	525-9920
	6.9 x 1.8 NBR70 (2 pcs.)	-	17.83 x 22 x 19 x 1.14 (2 pcs.)	
Viton	17.12 x 2.62 (2 pcs.)	-	6.73 x 9.43 x 1.14 (2 pcs.)	525-9950
	7.65 x 1.78 (4 pcs.)	-	17.83 x 22.19 x 1.14 (2 pcs.)	
	6.75 x 1.78 (2 pcs.)	-	-	

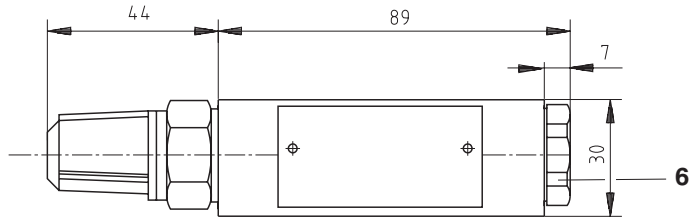
## Preferred Types of Valves

Type	Ordering Number
VSO1-04/MCS	525-0043
VSO1-04/MDS	525-0046

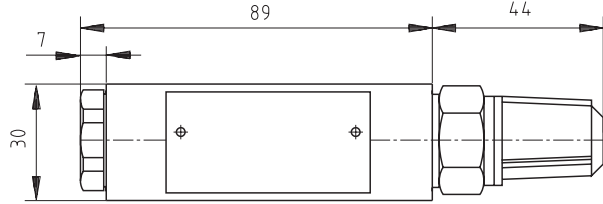
# Valve Dimensions

Dimensions in millimeters

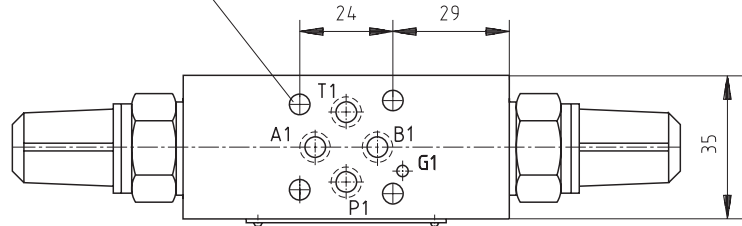
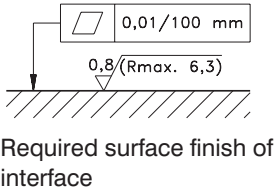
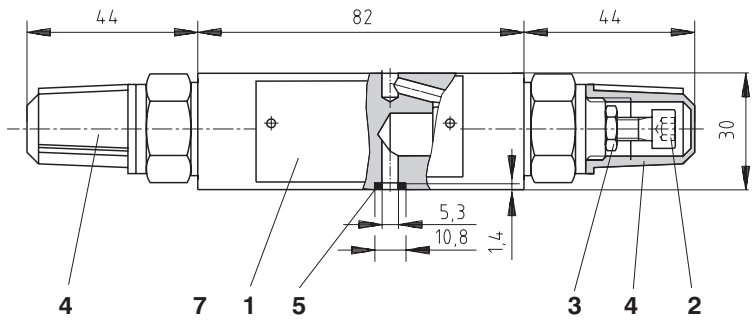
Typ VSO1-04/MAS  
Typ VSO1-04/MES



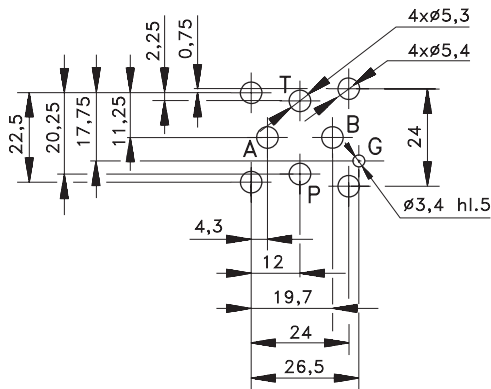
Typ VSO1-04/MBS  
Typ VSO1-04/MFS



Typ VSO1-04/MCS  
Typ VSO1-04/MDS



## Installation Dimensions



- 1 Name plate
- 2 Set screw - Inside HEX 5  
Clockwise rotation = flow decrease  
Counterclockwise rotation = flow increase
- 3 Locknut, HEX 10
- 4 Protective cap
- 5 Square ring (4 pcs.) supplied with valve
- 6 Closing screw
- 7 4 mounting holes

## Caution!

- The packing foil is recyclable. The protective plate can be returned to manufacturer.
- A cover plate DK 1-04/32-x with the respective channel connection can be ordered separately - see catalogue HA 0003 - Cover plates.
- Mounting bolts M6x40 DIN 912-10.9 or studs must be ordered separately. Tightening torque 5 Nm.
- For applications outside these parameters, please consult the manufacturer.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

ARGO-HYTOS s.r.o. CZ - 543 15 Vrchlabí  
Tel.: +420-499-403111, Fax: +420-499-403421  
E-mail: sales.cz@argo-hytos.com  
www.argo-hytos.com