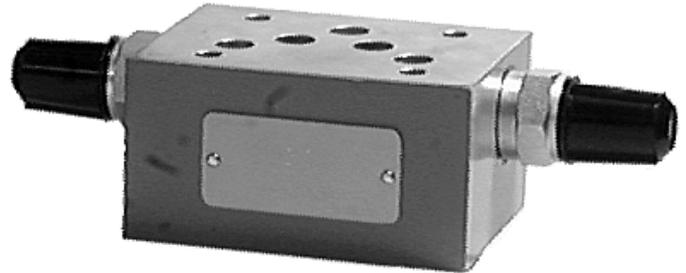
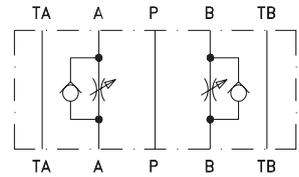


- Modular design for use in vertical stacking assemblies
- Meter-in or meter-out control
- Three functional symbols:
  - throttle valve in line A
  - throttle valve in line B
  - throttle valves in lines A and B
- Flow adjustment - hexagon set screw with locknut and protective cap
- Installation dimensions to ISO 4401-05-04-0-94 and DIN 24 340-A10



## Functional Description

Double throttle valves are used to control flow rates in two separate lines (A, B) of a hydraulic circuit.

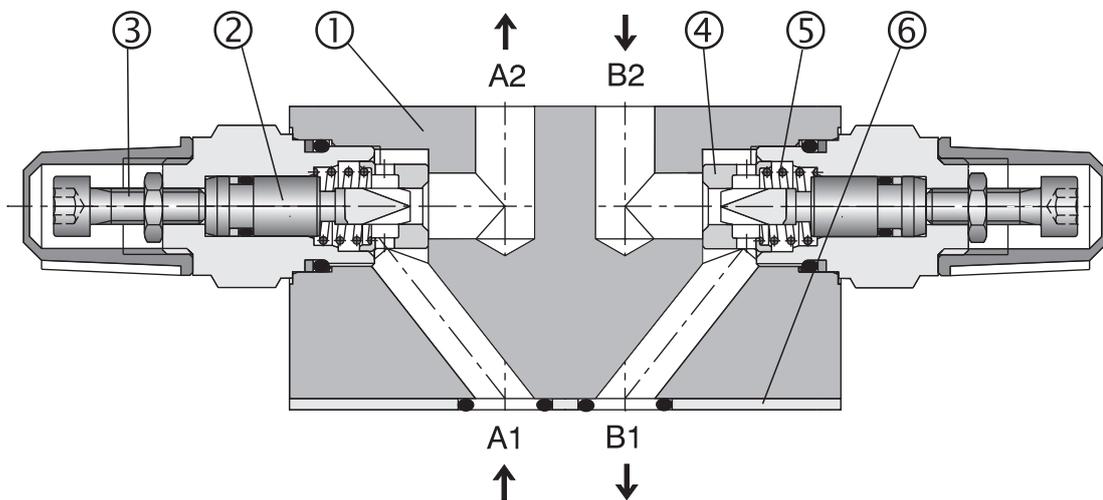
The valve body (1) has drilled channels and the throttle valve is built into channel A or B or into channels A and B. They restrict the fluid flow in one direction while providing reverse free-flow in the opposite direction. The throttling spool (2) is adjusted by means of set screw (3) and each spool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

Fluid entering port A1 is throttled to port A2 via a groove and an annulus area. Fluid entering 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 modular design enables simple vertical stacking with other components of the same size. A separate O-ring plate (6) with fitted O-rings is mounted underneath the valve body, thus providing its sealing. According to the valve arrangement, the meter-in or meter-out control is provided. Changing the meter-in mode into the meter-out mode can be done by turning the valve body by 180° around its x-axis.

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

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



VSO2-10/MCS (meter-out control)

# Ordering Code

**VSO2-10/M**

Double Throttle Check Valve

Nominal size

Modular design

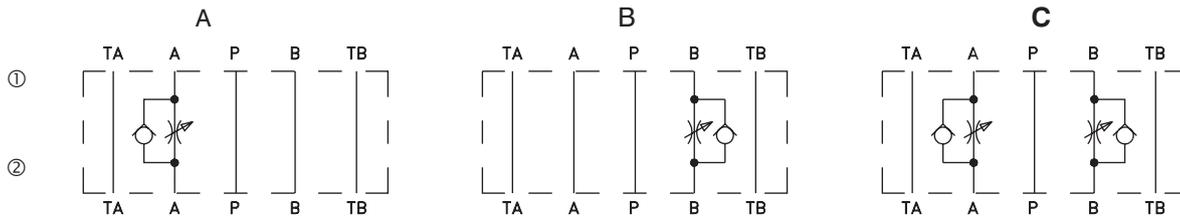
**Seals**  
 no designation V Standard (NBR)  
 Viton (FPM)

**Adjustment element**  
 S Set screw with inside hexagon

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

**FOR PREFERRED TYPES SEE BOLD TYPING IN ORDERING CODE**

## Functional Symbols



**Notes:** ① valve side  
 ② subplate or manifold side  
 The orientation of the symbol shown on the name plate corresponds with the function of the valve (meter-out control).

## Technical Data

Nominal size	mm	10
Maximum flow rate	L/min	100
Maximum operating pressure	bar	350
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 according to ISO 4406 (1999).	
Weight	kg	4.725 (2.15)
Mounting position	optional	

## Preferred Types of Valves

Type	Ordering Number
VSO2-10/MCS	525-0123

## Caution!

- The packing foil is recyclable. The protective plate can be returned to manufacturer.
- Mounting bolts must be ordered separately. Tightening torque of the screws is 15 Nm.
- 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.

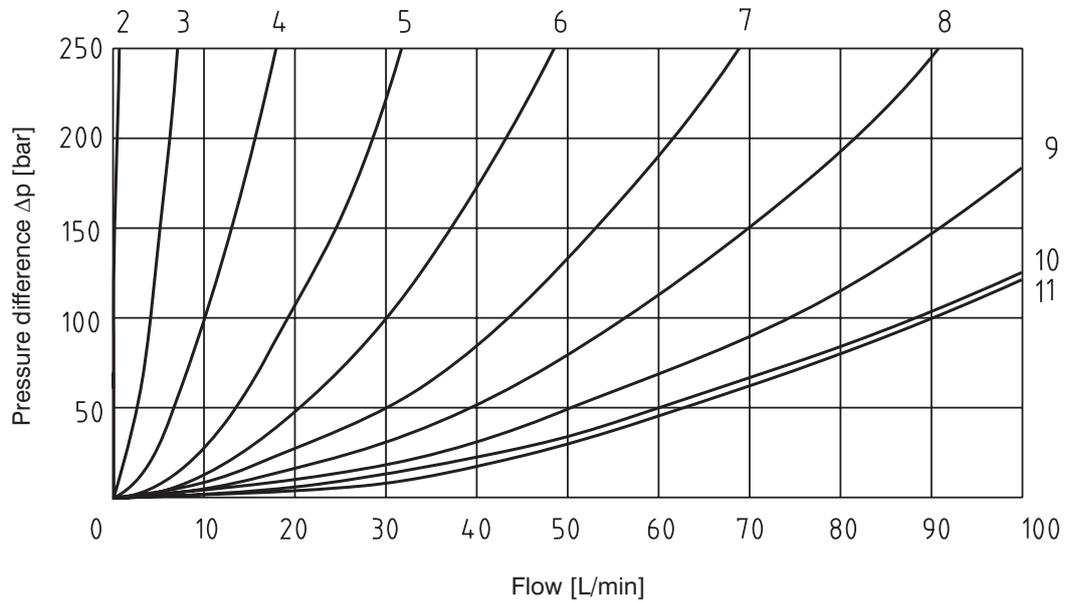
# Δp-Q Characteristics

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

## Throttle valve

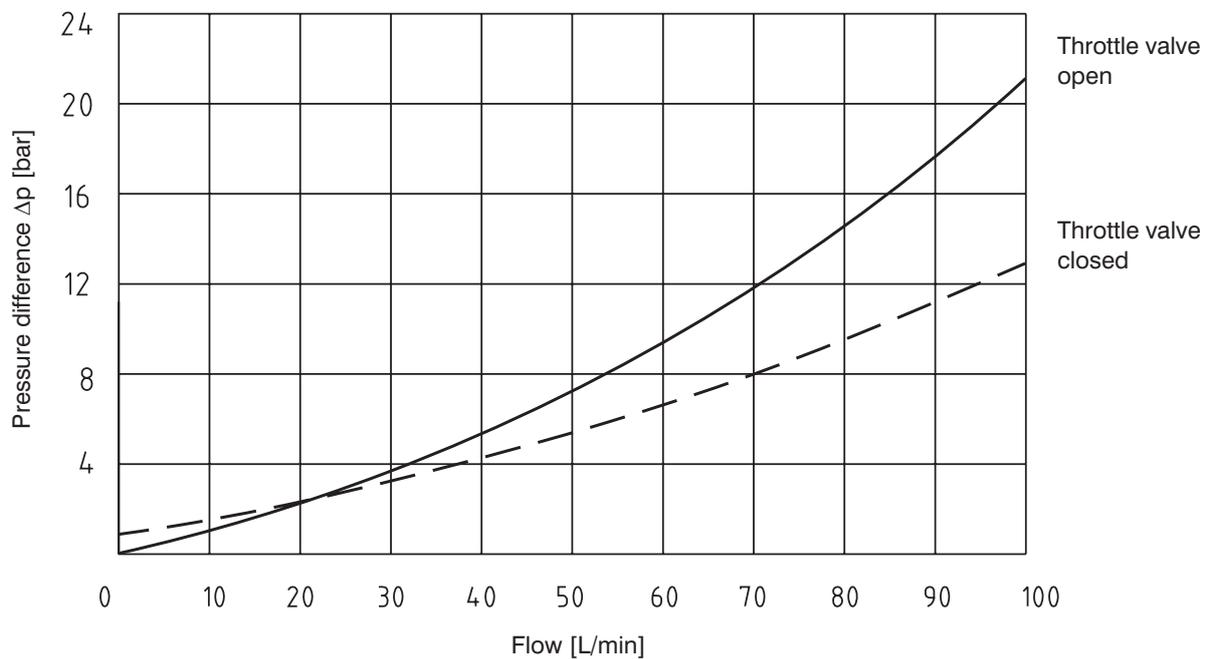
Pressure difference  $\Delta p$  related to flow from A1 to A2, (from B1 to B2)

- 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)



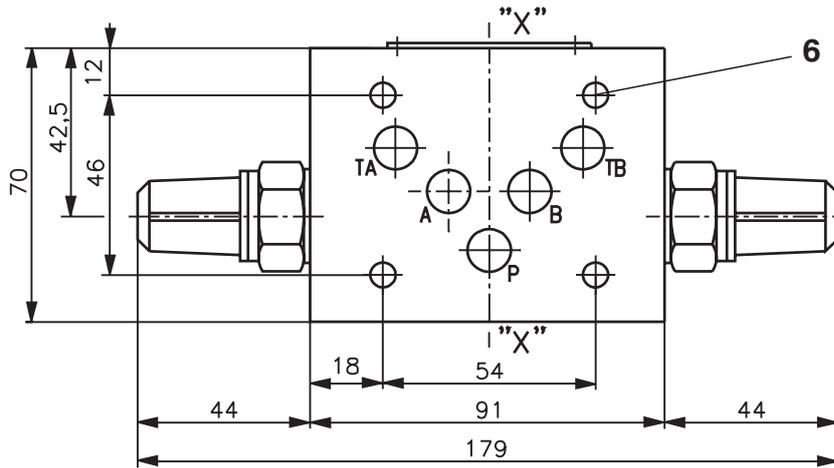
## Spare Parts

### Seal kit

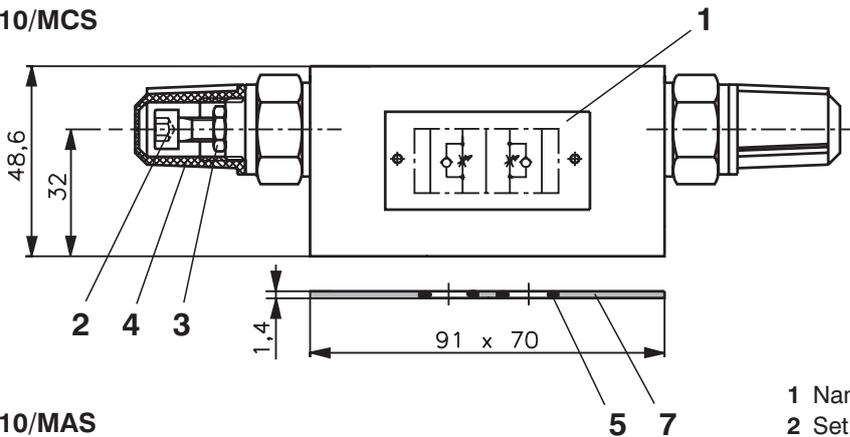
Typ	Dimensions, quantity			Ordering number
	O-ring	Square ring	Back-up ring	
Standard NBR	18 x 2.65 NBR70 (2 pcs.)	12.42 x 1.68 (5 pcs.)	7,1 x 10 x 1,2 PTGB (2 pcs.)	525-9930
	6.9 x 1.8 NBR70 (2 pcs.)	-	17,5 x 22 x 1,2 PTGB (2 pcs.)	
Viton	17.12 x 2.62 (2 pcs.)	-	7,1 x 10 x 1,2 PTGB (2 pcs.)	525-9960
	6.75 x 1.78 (2 pcs.)	-	17,5 x 22 x 1,2 PTGB (2 pcs.)	
	12.42 x 1.78 (5 pcs.)	-	-	

# Valve Dimensions

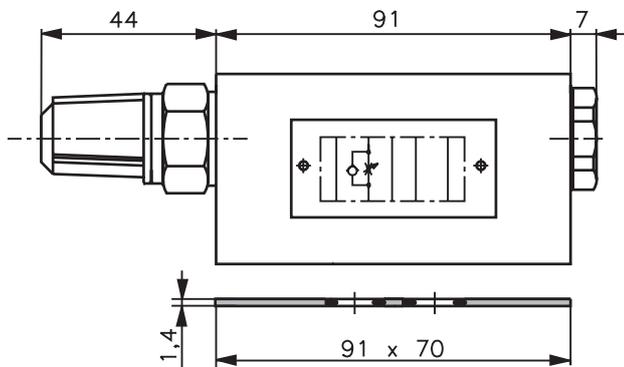
Dimensions in millimetres



## VSO2-10/MCS



## VSO2-10/MAS



- 1 Name plate
- 2 Set screw with inside HEX 5  
Clockwise rotation = flow increase  
Counterclockwise rotation =  
= flow decrease
- 3 Lock nut HEX 10
- 4 Protective cap
- 5 Sealing ring (5 pcs.)  
Standard (NBR) R 014S 12.42 x 1.68  
Viton (FPM) 12.42 x 1.78  
supplied in each delivery packet
- 6 4 mounting holes (∅ 6.4 mm)
- 7 O-ring plate

Turning the valve around the x-axis changes the meter-out control mode into the meter-in one.

## VSO2-10/MBS

