

Throttle check valve

Type Z2FS

RE 27506

Edition: 2016-02

Replaces: 05.11



H5556

- ▶ Size 6
- ▶ Component series 4X
- ▶ Maximum operating pressure 315 bar
- ▶ Maximum flow 80 l/min

Features

- ▶ Sandwich plate valve
- ▶ Porting pattern according to DIN 24340 form A
- ▶ Porting pattern according to ISO 4401-03-02-0-05 (**with** locating hole)
- ▶ For the main or pilot flow limitation of 2 actuator ports
- ▶ 4 adjustment types:
 - Setscrew with lock nut and protective cap
 - Lockable rotary knob with scale
 - Spindle with internal hexagon and scale
 - Rotary knob with scale
- ▶ For supply or discharge throttling
- ▶ Corrosion-protected design

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Ordering codes

01	02	03	04	05	06	07	08	09	10
Z2FS	6			-	4X	/			*

01	Throttle check valve	Z2FS
02	Size 6	6
03	Throttle check valve side A and B	- ¹⁾
	Throttle check valve side A	A
	Throttle check valve side B	B

Adjustment type

04	Setscrew with lock nut and protective cap (versions "J3" and "J5" without protective cap)	2
	Lockable rotary knob with scale	3 ²⁾
	Spindle with internal hexagon and scale	5
	Rotary knob with scale	7
05	Component series 40 ... 49 (40 ... 49: unchanged installation and mounting dimensions)	4X
06	With fine adjustment	1Q
	Standard version	2Q

Corrosion resistance (outside)

07	None (valve housing primed)	no code
	Improved corrosion protection (240 h salt spray test according to EN ISO 9227)	J3 ³⁾
	High corrosion protection (720 h salt spray test according to EN ISO 9227)	J5 ³⁾

Seal material

08	NBR seals	no code
	FKM seals	V
	Observe compatibility of seals with hydraulic fluid used.	
09	Without locating hole	no code
	With locating hole	/60 ⁴⁾
10	Further details in the plain text	*

1) Identical adjustment types on sides A and B.

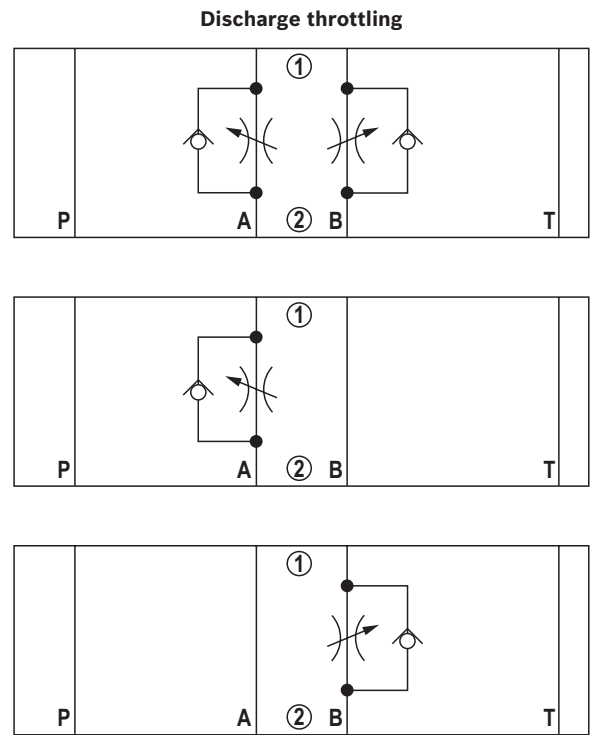
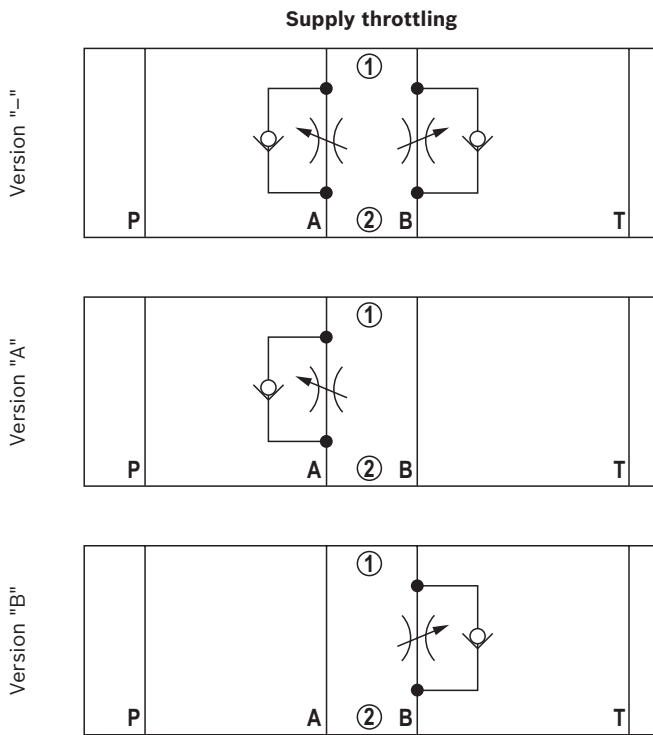
2) H-key with material no. **R900008158** is included in the scope of delivery.

3) Only versions "2" and "/60"

4) Locking pin ISO 8752-3x8-St, material no. **R900005694** (separate order)**Notices:**

- ▶ For valve types for use in explosive areas, refer to data sheet 07011.
- ▶ Preferred types and standard units are contained in the EPS (standard price list).

Symbols (1) = component side, (2) = plate side



Notice:

Modification from supply to discharge throttling is realized by rotation of the device around axis "X" - "X" (see page 7)

Function, section

The valve type Z2FS is a throttle check valve in sandwich plate design. It is used for the main or pilot flow limitation of one or two actuator ports.

Two throttle check valves aligned symmetrically to each other limit flows in one direction and allow free return flow in the opposite direction.

In case of supply throttling, the hydraulic fluid is directed via channel A ① via throttling point (1) formed by the valve seat (2) and the throttle spool (3) to actuator A ②. The throttle spool (3) can be axially adjusted via the set-screw (4) for adjustment of the throttling point (1).

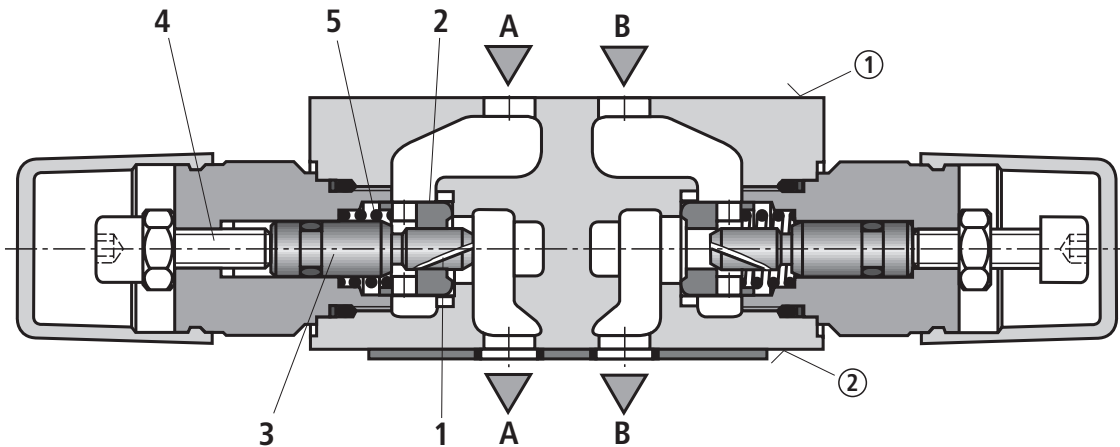
The hydraulic fluid return flow from actuator A ② displaces the valve seat (2) against the spring (5) in the direction of the throttle spool (3) and enables the unobstructed flow as check valve. Depending on the installation position, the throttling effect may occur in supply or discharge.

Main flow limitation (version "2Q")

For actuator velocity adjustment (main flow limitation), the throttle check valve is installed between the directional valve and the subplate.

Pilot flow limitation (version "1Q")

With pilot-operated directional valves, the throttle check valve can be applied for switching time adjustment (pilot flow limitation). In this case, it is installed between the pilot control valve and the main valve.



Type Z2FS 6 -2... (supply throttling)

- ① = component side
- ② = plate side

Technical data

(For applications outside these parameters, please consult us!)

General		
Weight	kg	0.8
Installation position		Any
Ambient temperature range	°C	-30 ... +80 (NBR seals) -20 ... +80 (FKM seals)

Hydraulic		
Maximum operating pressure	bar	315
Maximum flow	l/min	80
Maximum leakage (at Δp 315 bar)	l/min	< 1
Hydraulic fluid		See table below
Hydraulic fluid temperature range	°C	-30 ... +80 (NBR seals) -20 ... +80 (FKM seals)
Viscosity range	mm ² /s	10 ... 800
Maximum admissible degree of contamination of the hydraulic fluid cleanliness class according to ISO 4406 (c)		Class 20/18/15 ¹⁾

Hydraulic fluid	Classification	Suitable sealing materials	Standards	Data sheet
Mineral oils	HL, HLP	NBR, FKM	DIN 51524	90220
Bio-degradable ²⁾	▶ Insoluble in water	HETG	ISO 15380	90221
		HEES		
	▶ Soluble in water	HEPG	ISO 15380	
Flame-resistant ²⁾	▶ Water-free	HFDU	ISO 12922	90222
	▶ Containing water	HFC (Fuchs Hydrotherm 46M, Petrofer Ultra Safe 620)	ISO 12922	90223



Important information on hydraulic fluids:

- ▶ For more information and data on the use of other hydraulic fluids, please refer to the data sheets above or contact us!
- ▶ There may be limitations regarding the technical valve data (temperature, pressure range, life cycle, maintenance intervals, etc.)!
- ▶ The flash point of the hydraulic fluid used must be 50 K higher than the maximum surface temperature.

▶ Flame-resistant – containing water:

- Maximum pressure differential 210 bar
- Maximum hydraulic fluid temperature of 60 °C
- Life cycle as compared to operation with mineral oil HL, HLP 30 ... 100 %

¹⁾ The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and simultaneously increases the life cycle of the components.

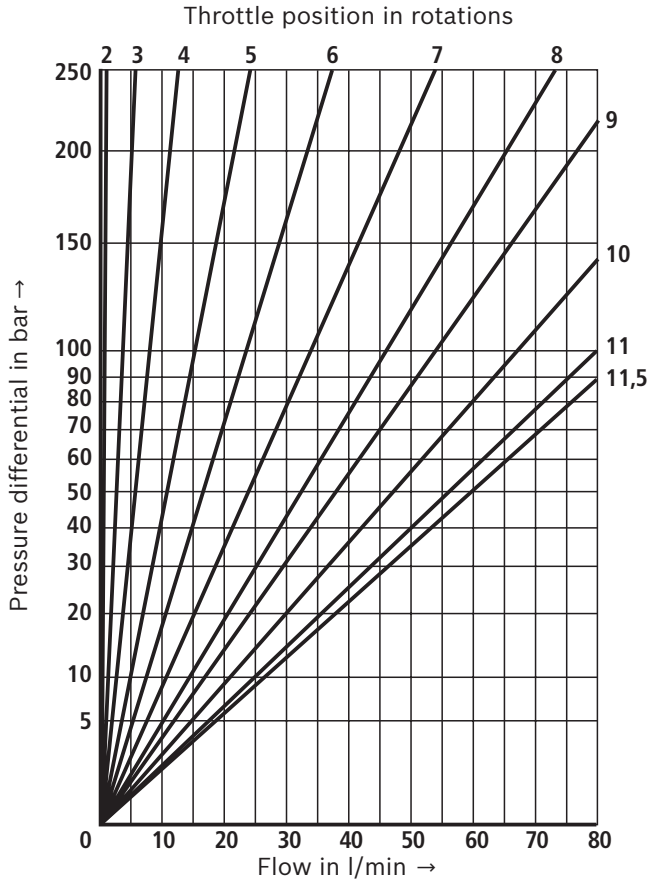
Available filters can be found at www.boschrexroth.com/filter.

²⁾ Not recommended for corrosion-protected versions "J3" and "J5"

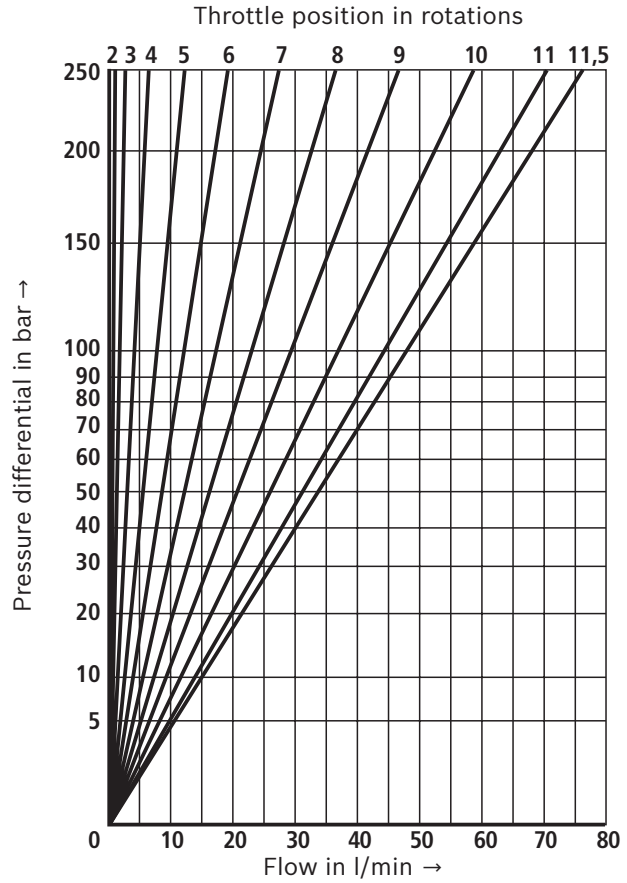
Characteristic curves

(measured with HLP46, $\vartheta_{oil} = 40 \pm 5 \text{ } ^\circ\text{C}$)

Δp - q_v characteristic curves (version "2Q")

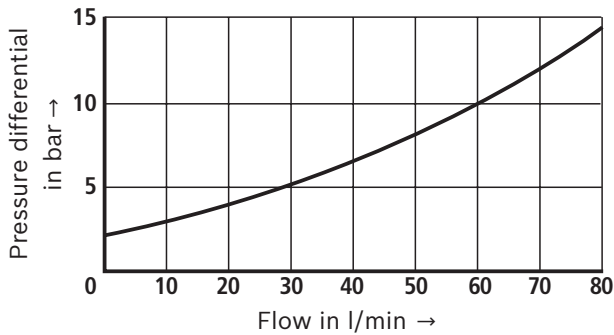


Δp - q_v characteristic curves (version "1Q")

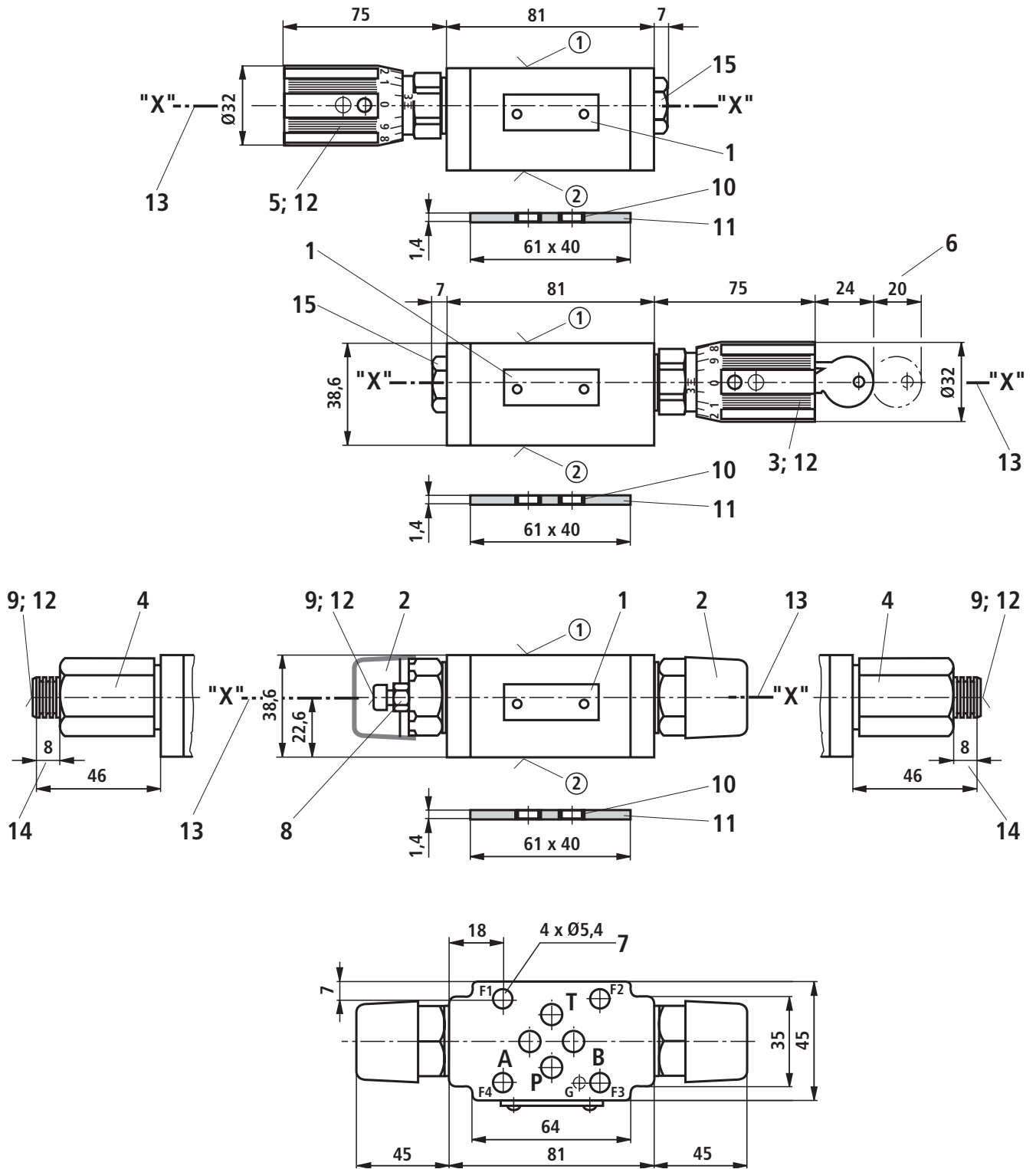


Δp - q_v characteristic curves

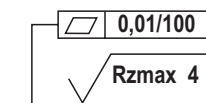
(via check valve; throttle closed)



Dimensions
(dimensions in mm)



Item explanations and valve mounting screws see page 8.



Required surface quality
of the valve contact surface

Dimensions

- ① component side – Porting pattern according to ISO 4401-03-02-0-05 (**with** locating hole $\varnothing 3 \times 5$ mm deep)
- ② plate side – porting pattern according to DIN 24340 form A (**without** locating hole), or ISO 4401-03-02-0-05 (**with** locating hole for locking pin ISO 8752-3x8-St; version "/60")

- 1 Name plate
- 2 Adjustment type "2"
- 3 Adjustment type "3"
- 4 Adjustment type "5"
- 5 Adjustment type "7"
- 6 Space required to remove the key
- 7 Valve mounting bores
- 8 Lock nut SW10
- 9 Setscrew/spindle for flow cross-section adjustment (internal hexagon SW5)
- 10 Identical seal rings for ports A, B, P, and T

- 11 Seal ring plate
- 12 For all adjustment types:
Left rotation = higher flow
Right rotation = lower flow
- 13 Modification from supply to discharge throttling is realized by rotation of the device around axis "X" – "X"
- 14 Stroke
- 15 Plug screw SW22

Valve mounting screws (separate order)

4 hexagon socket head cap screws ISO 4762 - M5 - 10.9



Notices:

- ▶ Length and tightening torque of the valve mounting screws must be calculated according to the components mounted under and over the sandwich plate valve.
- ▶ The dimensions are nominal dimensions which are subject to tolerances.

Accessories (separate order)

Denomination	Material no.
Protective cap	R900692658
Locking pin ISO 8752-3x8-St	R900005694

Additional information

- ▶ Hydraulic fluids on mineral oil basis
 - ▶ Environmentally compatible hydraulic fluids
 - ▶ Flame-resistant, water-free hydraulic fluids
 - ▶ Flame-resistant hydraulic fluids - containing water (HFAE, HFAS, HFB, HFC)
 - ▶ Hydraulic valves for industrial applications
 - ▶ General product information on hydraulic products
 - ▶ Assembly, commissioning and maintenance of industrial valves
 - ▶ Use of non-electrical hydraulic components in explosive atmospheres (ATEX)
 - ▶ Selection of filters
 - ▶ Information on available spare parts
- Data sheet 90220
 Data sheet 90221
 Data sheet 90222
 Data sheet 90223
 Operating instructions 07600-B
 Data sheet 07008
 Data sheet 07300
 Data sheet 07011
www.boschrexroth.com/filter
www.boschrexroth.com/spc

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