Check valve, pilot operated

RE 21548/07.10 1/8
Replaces: 02.09

Type Z2S

tb0256

Size 6
Component series 6X
Maximum operating pressure 315 bar *[4568 psi]*
Maximum flow 60 l/min *[15.8 US gpm]*

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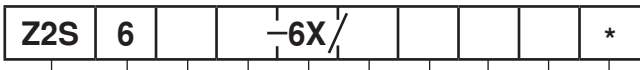
Features

- Sandwich plate valve for use in vertical stackings
- Porting pattern according to DIN 24340 form A (**without** locating hole) (standard)
- Porting pattern according to ISO 4401-03-02-0-05 and NFPA T3.5.1 R2-2002 D03 (**with** locating hole)
- For the leak-free blocking of one or two actuator ports, optionally
- Different cracking pressures
- With pre-opening optional
- Check valve installation sets separately available
- Special versions upon request
- Amending documentation:
  - "Sandwich plates size 6", data sheet 48050
  - "Hydraulic fluids on a mineral oil basis", data sheet 90220

Information on available spare parts:
www.boschrexroth.com/spc

Ordering code



Check valve, sandwich plate

Size 6 **= 6**

Leak-free blocking in channel A and B **= –**
Leak-free blocking in channel A **= A**
Leak-free blocking in channel B **= B**

Cracking pressure
1.5 bar *[21.7 psi]* **= 1**
3 bar *[43.5 psi]* **= 2**
6 bar *[86.0 psi]* **= 3**

Component series 60 to 69 **= 6X**
(60 to 69: unchanged installation and connection dimensions)

Surface without corrosion resistance [1] **= no code**

Seal material
NBR seals **= no code**
FKM seals **= V**

☞ **Note!**
The selection depends on the operating parameters (fluid, temperature, etc.)!

Further details in the plain text

Special version
no code = Without
SO40 = Control open by external port G1/4 (only version "A" or "B")
SO55 = With pre-opening
SO60 = Control spool to "T" port unloaded
SO150 = With pre-opening and control open from channel "P"
Symbols (examples) see page 3

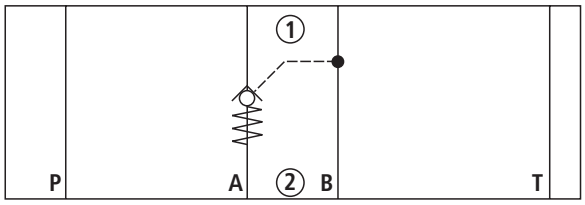
no code = **Without** locating hole
/60 [2] **=** **With** locating hole
/62 = **With** locating hole and locating pin ISO 8752-3x8-St

[1] Corrosion-resistant surface upon request:
e.g. "J50" thick layer passivated
(DIN 50979 Fe//Zn8//Cn//T0)

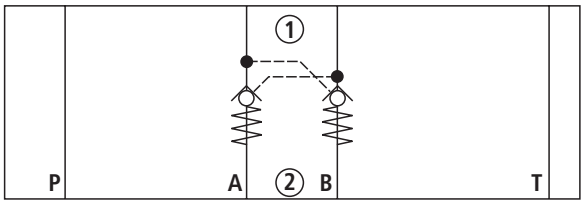
[2] Locating pin ISO 8752-3x8-St,
Material no. **R900005694** (separate order)

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

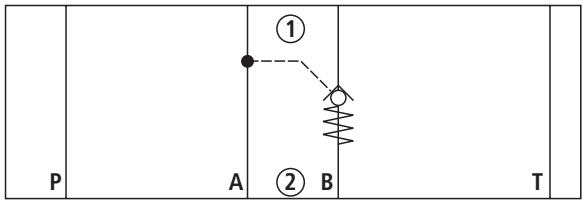
Type Z2S 6 A…



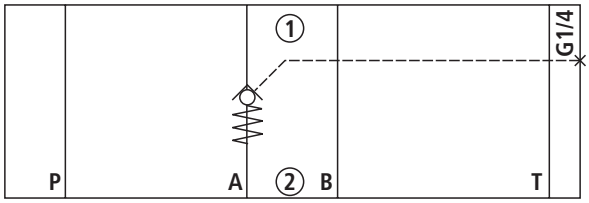
Type Z2S 6 –… and **Z2S 6 –…SO55**



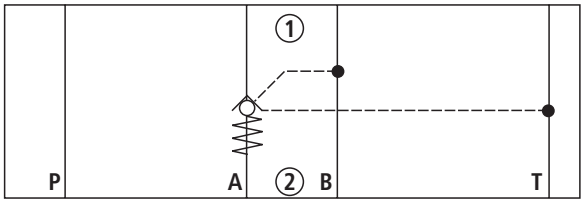
Type Z2S 6 B…



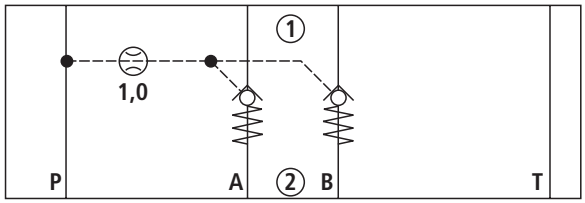
Type Z2S 6 A…SO40



Type Z2S 6 A…SO60



Type Z2S 6 –…SO150



Function, sections, circuit example

The isolator valve Type Z2S is a releasable check valve in sandwich plate design.

It is used for the leak-free blocking of one or two actuator ports, also in case of longer standstill times.

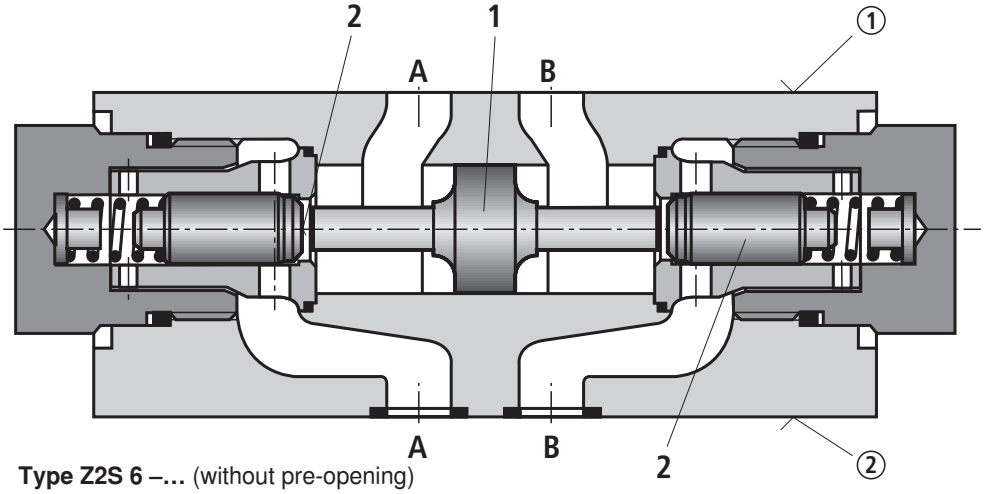
In the direction A① to A② or B① to B②, there is a free flow, in the opposite direction, the flow is blocked.

If the valve is, for example, flown through in the direction A① to A②, the control spool (1) is moved in the direction B side and pushes the poppet (2) off its seat. Now, hydraulic fluid can flow from B② to B①.

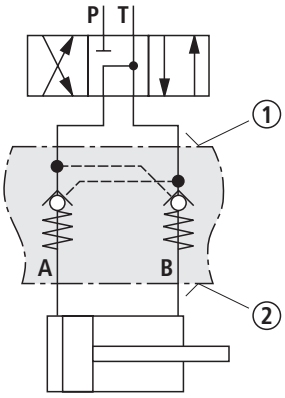
In order to allow for safe closing of the poppets (2), the control spool (1) must be hydraulically unloaded (see circuit example).

Pre-opening

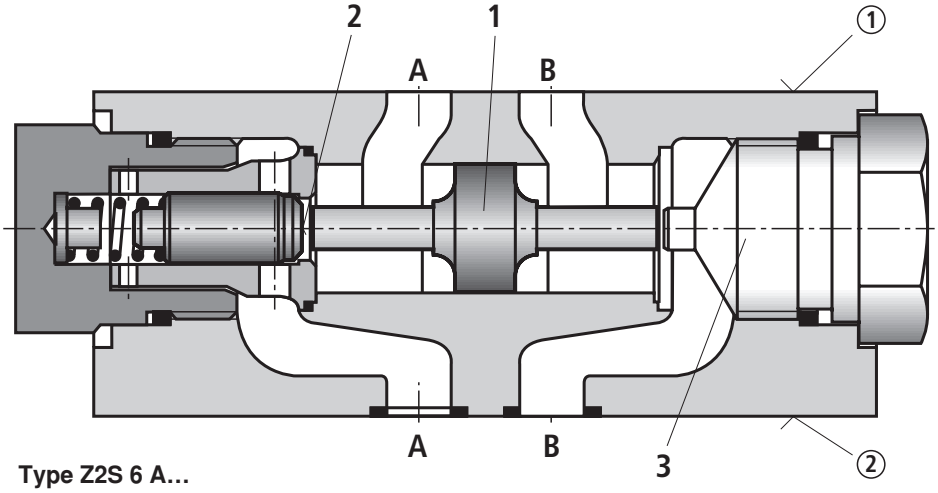
- Due to the two-stage structure with enlarged control open ratio, safe unloading is also possible with lower pilot pressure.
- Avoidance of switching shocks due to dampened decompression of the pressure volume on the actuator side.



Type Z2S 6 –… (without pre-opening)



Circuit example, schematic



Type Z2S 6 A…

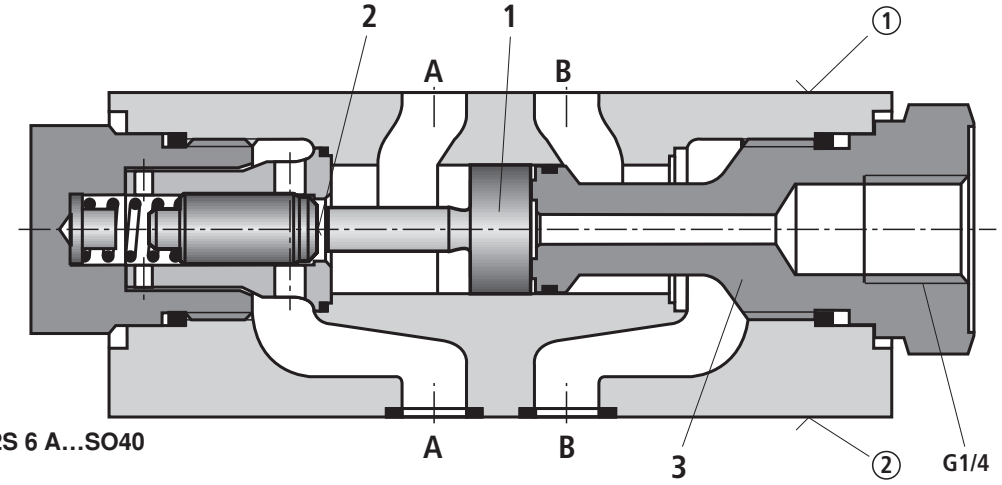
① = component side
② = plate side

1 Control spool, area A_2
2 Poppet, area A_1
3 Positive stop

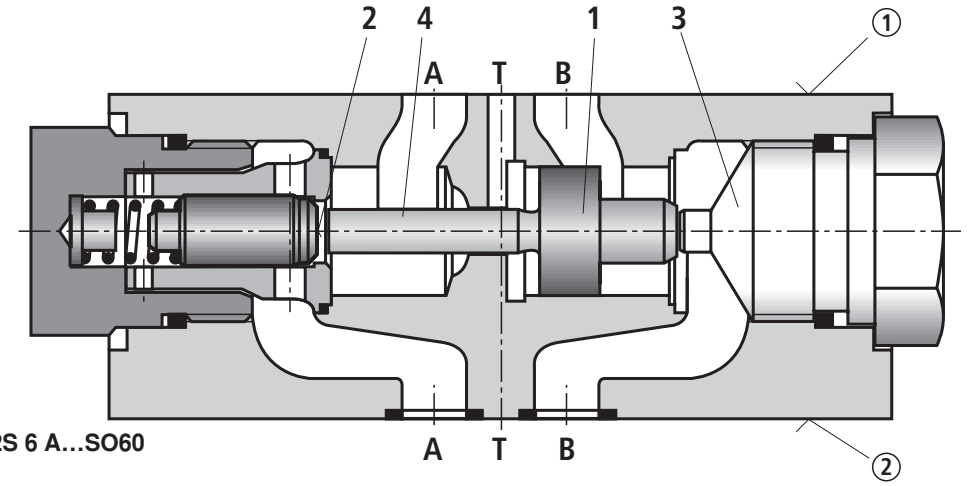
☞ **Note!**

In case of valves without pre-opening, the included pressure volume may be unloaded suddenly. Resulting switching shocks may not only lead to noise formation but also to early wear at installed components.

Function, sections



Type Z2S 6 A…SO40



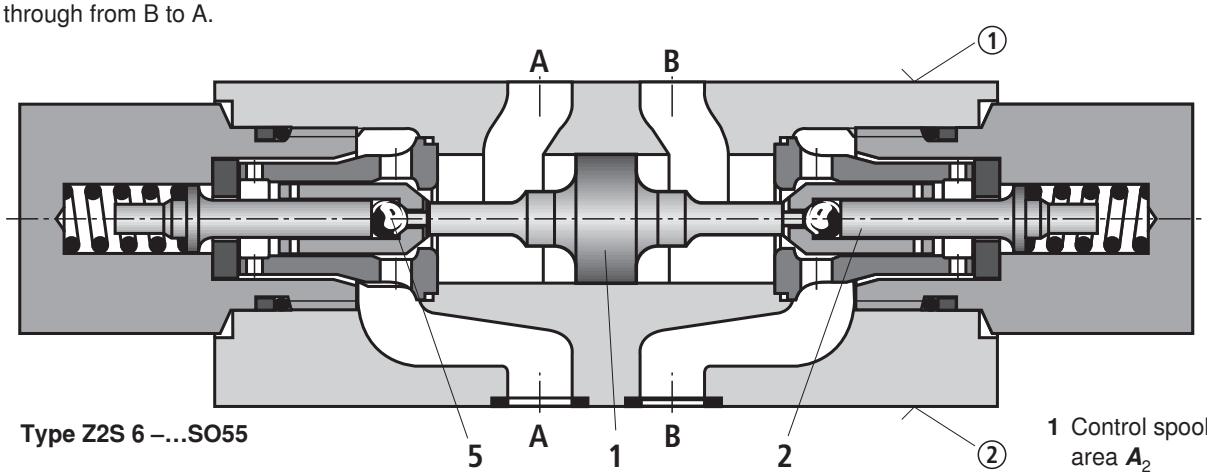
Type Z2S 6 A…SO60

① = component side
② = plate side

1 Control spool, area A_2
2 Poppet, area A_1
3 Positive stop
4 Control spool, area A_4

"SO55" version (with pre-opening)

This valve is provided with an additional pre-opening. By pressurization at the X port, the control spool (1) is moved to the right. By doing so, you firstly push the ball (5) off the seat and then the poppet (2). Now, the valve can also be flown through from B to A.



Type Z2S 6 –…SO55

1 Control spool, area A_2
2 Poppet, area A_1
5 Pre-opening, area A_3

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

general

Weight	kg *[lbs]*	Approx. 0.8 *[1.76]*
Installation position		Any
Ambient temperature range	°C *[°F]*	–30 to +80 *[–22 to +176]* (NBR seals) –20 to +80 *[–4 to +176]* (FKM seals)

hydraulic

Maximum operating pressure	bar *[psi]*	315 *[4568]*
Cracking pressure in free direction		See characteristic curves page 6
Maximum flow	l/min *[US gpm]*	60 *[15.8]*
Direction of flow		See symbols page 3
Hydraulic fluid		– On mineral oil basis and related hydrocarbons (HL, HLP, HVLP, HVLPD, etc.) according to DIN 51524 – Flame-resistant (HFC, HFDU, HFDR) according to ISO 12922 [1)] – Environmentally compatible (HETG, HEES, HEPG, HEPR) according to ISO 15380 [1)] Other hydraulic fluids upon request
Hydraulic fluid temperature range (at the valve working ports)	°C *[°F]*	–30 to +80 *[–22 to +176]* (NBR seals) –20 to +80 *[–4 to +176]* (FKM seals)
Viscosity range	mm^2/s *[SUS]*	2.8 to 500 *[35 to 2320]*
Maximum permitted degree of contamination of the hydraulic fluid - cleanliness class according to ISO 4406 (c)		Class 20/18/15 [2)]
Area ratio	– without pre-opening	A_1/A_2 ~ 1/3.5 (see sectional drawing page 4)
	– with pre-opening	A_3/A_2 ~ 1/12.5 (see sectional drawing page 4)
	– Version "SO60"	A_1/A_4 ~ 1/7 (see sectional drawing page 5)

1) When using flame-resistant or environmentally compatible hydraulic fluids, restrictions with regard to the technical data may be applicable (temperature, pressure range, life time, maintenance intervals, etc.).

2) The cleanliness classes specified for the components must be adhered to in hydraulic systems. Effective filtration prevents faults and at the same time increases the service life of the components.

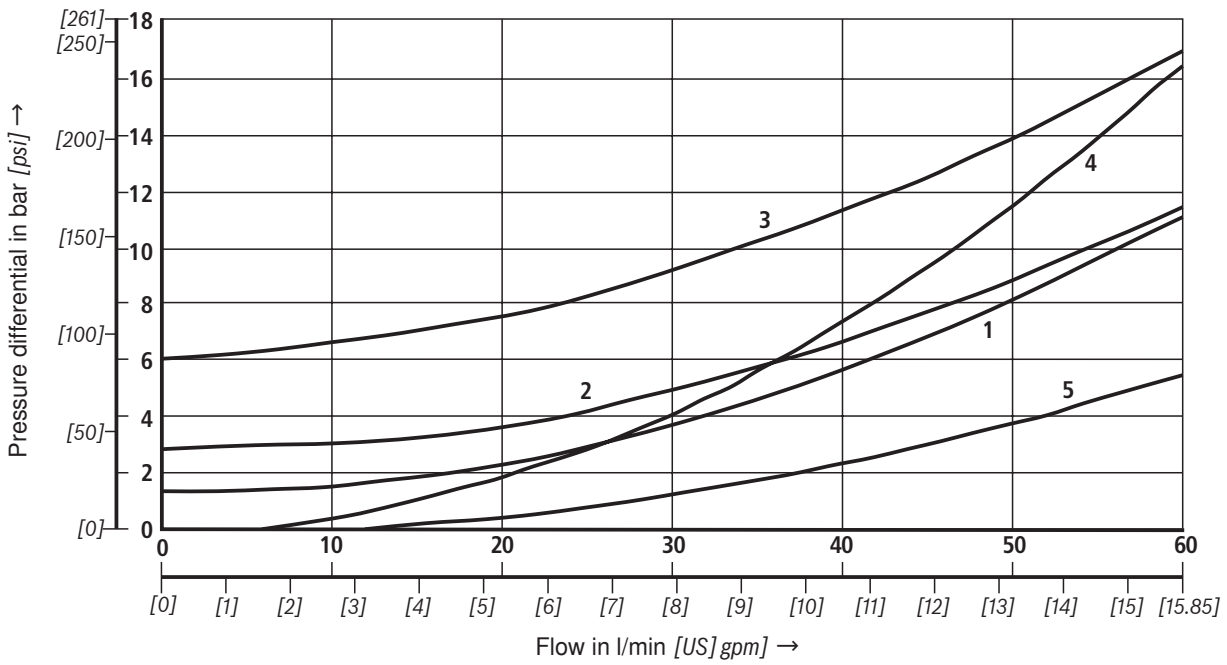
For the selection of the filters see www.boschrexroth.com/filter.

☞ **Note!**

Selection of the perfect sealing material (see ordering code page 2) also depends on the hydraulic fluid used.

Characteristic curves (measured with HLP46, ϑ_{Oil} = 40 °C ± 5 °C *[104 °F ± 9 °F]*)

Δp-q_V characteristic curves



Cracking pressure:

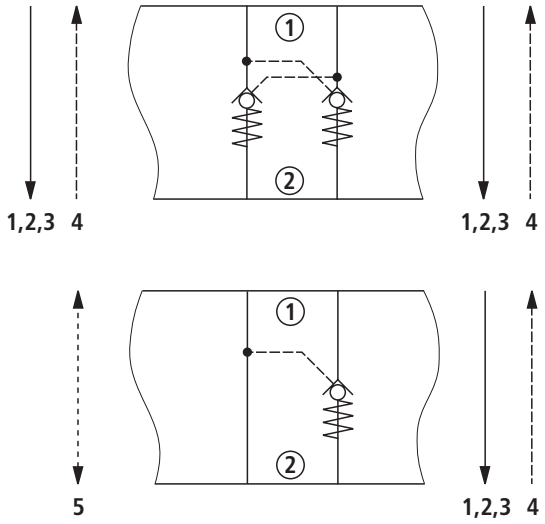
1 1.5 bar *[21.7 psi]*

2 3 bar *[43.5 psi]*

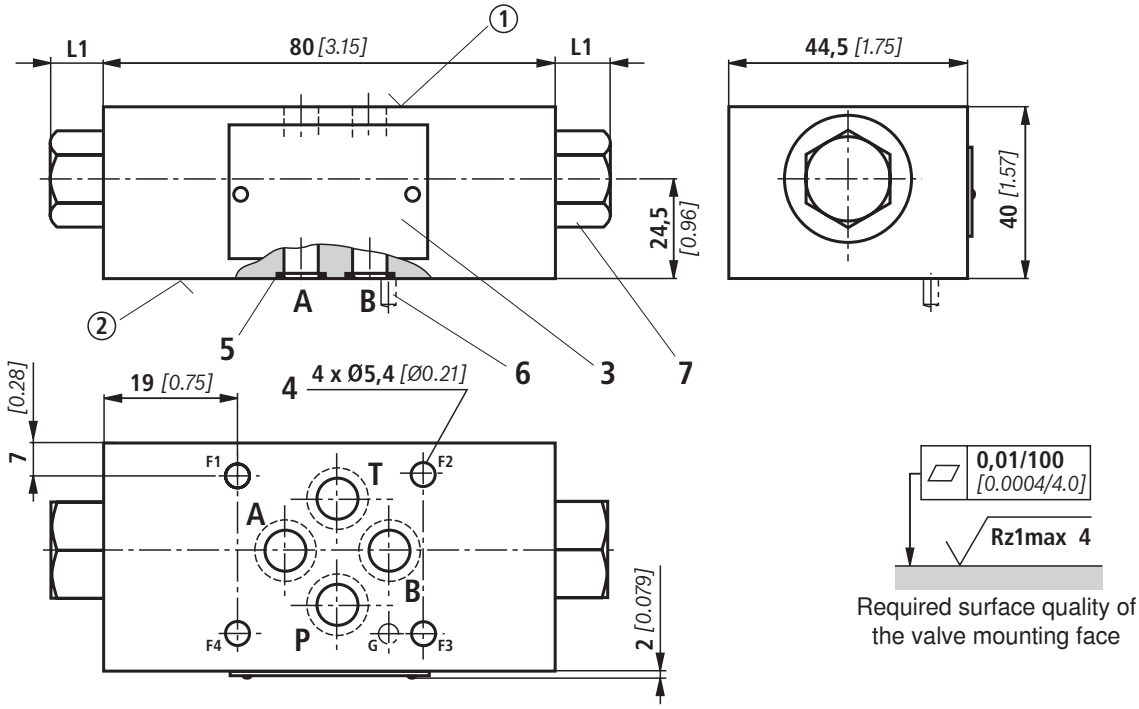
3 6 bar *[87.0 psi]*

4 Check valve controlled open via control spool

5 Free flow (without check valve use), version "A" or "B"



Unit dimensions (dimensions in mm *[inch]*)



Required surface quality of the valve mounting face

L1 in mm *[inch]*					
"no code"	**"SO40"**	**"SO55"**		**"SO60"**	**"SO150"**
11 *[0.43]*	11 *[0.43]*	11 *[0.43]*	21.5 [1] *[0.85]*	11 *[0.43]*	21.5 *[0.85]*

[1] Maximum dimension on the side of the check valve use

① Component side – Porting pattern according to DIN 24340 form A (**without** locating hole), or ISO 4401-03-02-0-05 (**with** locating hole Ø4 x 4 mm deep) and NFPA T3.5.1 R2-2002 D03

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 locating pin ISO 8752-3x8-St; version "/60" and "/62") and NFPA T3.5.1 R2-2002 D03

3 Name plate

4 Through hole for valve mounting

5 Identical seal rings for ports A, B, P, T

6 Locating pin ISO 8752-3x8-St (only version "/62")

7 Plug screw SW22, tightening torque M_A = 25 Nm *[18.4 ft-lbs]*

Valve mounting screws (separate order)

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

4 Hexagon socket head cap screws N10-24 UNC

☞ **Note!**

The length of the valve mounting screws of the sandwich plate valve must be selected according to the components mounted under and over the isolator valve.

Depending on the application, screw type and tightening torque must be adjusted to the circumstances.

Please ask Rexroth for screws with the required length.

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