

5/3 Directional Servo Valves



Direct actuated by torque motor
Piston slide valve
Max. operating pressure 10 bar
Nominal flow rate 400, 680 and 1100 l/min.
Connection to DIN ISO 5599, Size 3

Catalog Register
P16

Publication 7502269.06.11.91

**OBSOLETE
DOCUMENT**
Technical
Reference
Only

Description

The pneumatic servo valve is direct actuated by means of a torque motor and has a high dynamic response. Thanks to the precision-machined piston and the perfect geometries of its edges, a quasi-proportionality is reached between the electric input signal at the torque motor and the air flow through the valve.

Features

- High dynamic response
- Input signal proportional to flow rate
- Characteristic curve of flow rate at choice
- Easy to service
- Compact design

Application

- Position and power control of cylinders
- Speed control of pneumatic motors
- Position control of rotary drives
- Remote adjustment of air flow

Symbol



For information on subplates to DIN ISO 5599, please see our Publication 7501636

Parameters

General parameters

| | |
|--------------------------|----------------------------------|
| Designation | 5/3 directional servo valve |
| Symbol | |
| Design | Piston slide valve |
| Mounting position | Optional |
| Flow direction | Fixed |
| Actuation | Direct |
| Ambient temperature [°C] | +50 max. |
| Material of valve body | Aluminium |
| Seal | Metal |
| Electrical connection | Connector MS 3102 E 10 SL-3 P |
| Total weight [kg] | 1.5 |

Pneumatic parameters

| | |
|--------------------------|---|
| Fluid | Filtered, dry, lubricated or nonlubricated compressed air ¹⁾ |
| Filtration [µm] | ≤ 10 |
| Operating pressure [bar] | 0 to 10 |
| Zero flow | < 5% nom. flow Q_N |
| Hysteresis | 2% with dither ²⁾ |

Electrical parameters

| | |
|------------------------------|----------------------------|
| Rated current I_N [mA] | ± 800 |
| Coil resistance R_{20} [Ω] | 7 |
| Recommended dither | 50 Hz, 40 mA _{SS} |

Static/dynamic parameters

| | |
|--------------------------|---------------------------|
| Nominal flow rate | See characteristic curves |
| Pressure intensification | See characteristic curves |
| Frequency response | See characteristic curves |

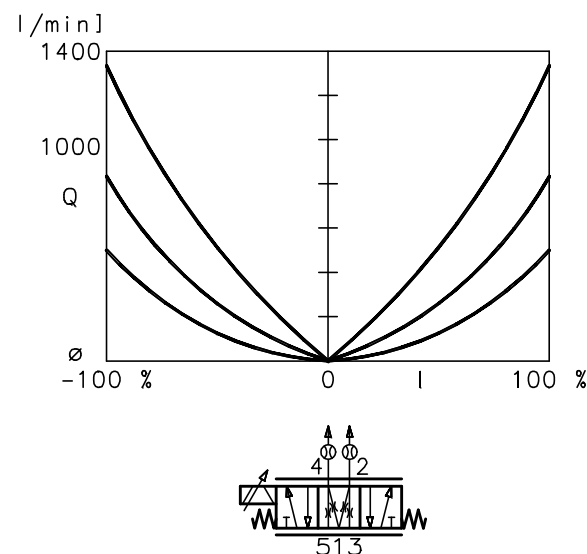
Equipment survey

Valves without ISO-subplate

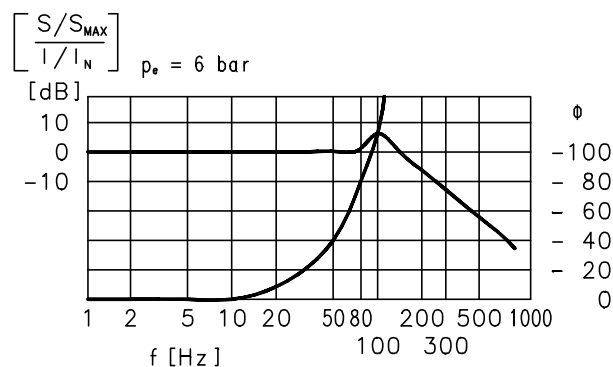
| Nominal flow rate ³⁾ [l/min.] | Item ⁴⁾ | Cat. No. |
|---|--------------------|----------------|
| 400 | 1 | 4090450 |
| 680 | 2 | 4090451 |
| 1100 | 3 | 4090452 |

Characteristic curves

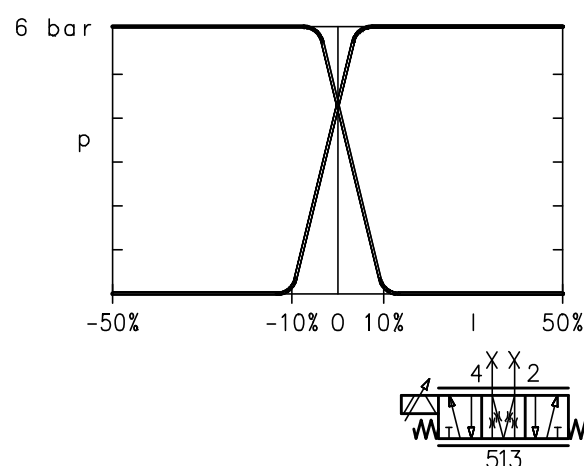
Nominal flow rate [l/min.]



Frequency response



Pressure intensification



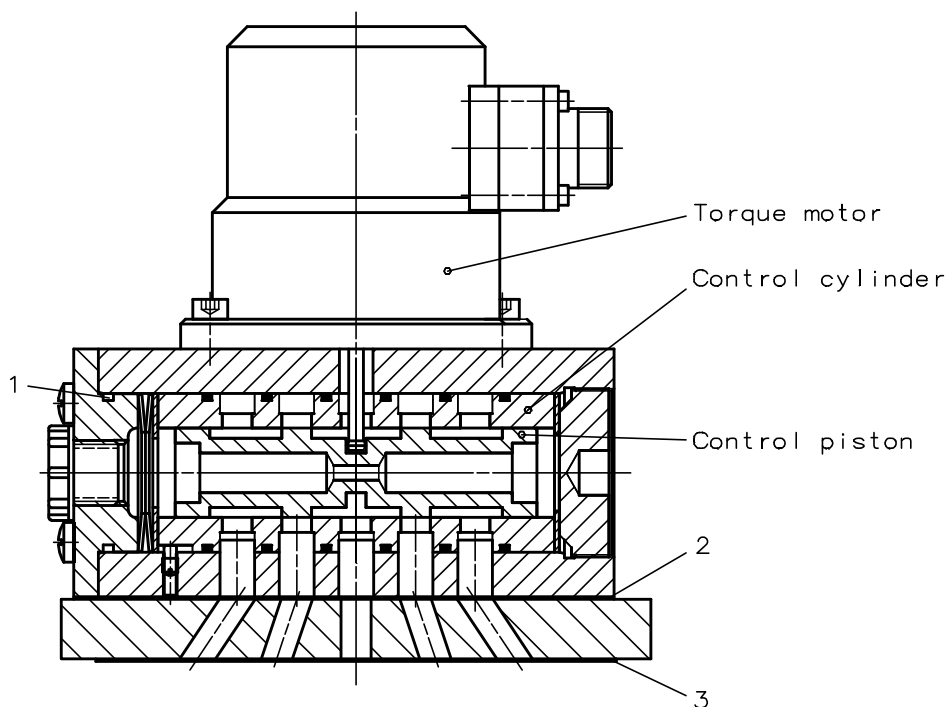
¹⁾ Oil recommendation: Shell Hydrol DO 32, ESSO Febis K 32 (as of July 1992) or comparable oils with DVI values < 8 (DIN 53521) and ISO viscosity class 32-46 (DIN 51519).

²⁾ recommended dither: 50Hz, 40 mA_{SS}

³⁾ at inlet pressure $p_e = 6$ bar, $\Delta p = 1$ bar

⁴⁾ see characteristic curve: Nominal flow rate

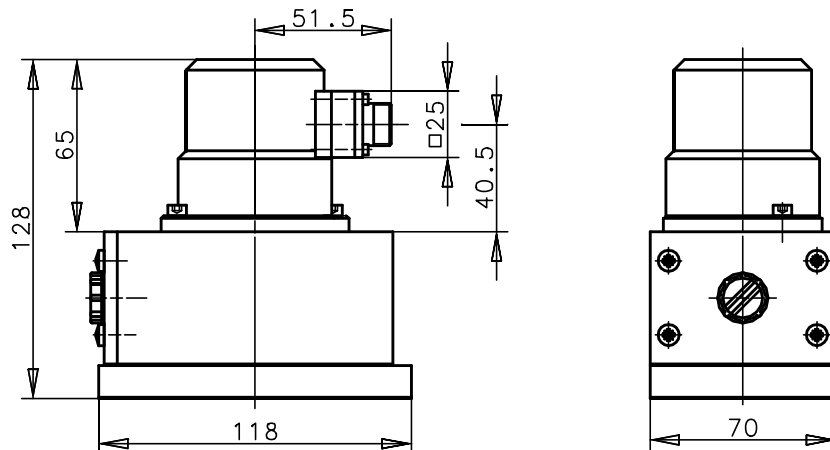
Sectional drawing



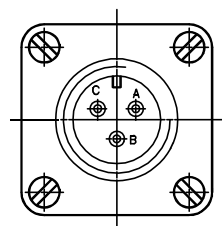
Spare parts

| Item | Designation | Cat. No. |
|------|-------------|----------------|
| 1 | O-ring | 0701264 |
| 2 | Seal | 0541577 |
| 3 | Seal | 0557655 |

Dimensional drawing [mm]



Pin allocation



Coil connection between connection pins A and B:

Flow direction A → B: Connection of ports 1 and 4 of the valve
Flow direction B → A: Connection of ports 1 and 2 of the valve

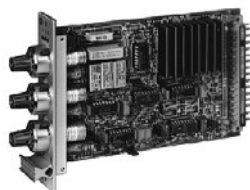
Accessories

| Designation | Specification | Publication No. | Cat. No. |
|--------------------------------------|------------------------------------|-----------------|----------------|
| Subplate to DIN ISO 5599, ISO Size 3 | Threaded connection G 1/2, lateral | 7501636 | 2538315 |
| | Threaded connection G 1/2, below | | 2538320 |
| Connector | 3-pin | — | 0770065 |

Control and drive electronics for servo valves

Servo amplifier RV 41/42

Controller with PID dynamic system behaviour, with output module for control of servo valves.
 Ambient temperature ϑ_U : 0 to 70 °C.
 Weight: 0.2 kg
 Mounting position: Upright, free air circulation must be ensured
 Space requirement for installation of 19" module: 30 mm
 Euroformat 100 x 160 mm



| Controller | | | | Output module for drive of servo valve | | Accuracy degree | Front panel | Setting of controller | Type | Cat. No. | Publication containing further information |
|--|-------------------|-------------------|--------------------------------------|--|--------------------------|-----------------|-------------|-----------------------|-------------|----------------|--|
| Inputs | | Output controller | Dynamic system behaviour Servo valve | Rated current | Solenoid coil resistance | | | | | | |
| Setpoints ¹⁾ W2 W1 | Actual value X | | P I D | [mA] | | | | | | | |
| With output module for drive of servo valve 31-pin plug-in connection to DIN 41617 | | | | | | | | | | | HERION 7502107 |
| 0...±10V | 0...±10V | 0...±10V 10 mA | ● ● ● | 800 | 7 | 1 | ○ | T | RV41 | 5998794 | |
| 0...±10V | 0...±10V | 0...±10V 10 mA | ● ● ● | 800 | 7 | 1 | ● | M | RV42 | 5998796 | |
| T – Trimming potentiometer on controller PCB M – Multiturn potentiometer with scale on front panel (Fig.) | | | | | | | | | | | |

1) Setpoints W1 and W2 accumulative (W1 + W2)