TetraTec Instruments GmbH
Gewerbestrasse 8
71144 Steinenbronn
Deutschland
Email: info@tetratec.de
Tel.: 07157/5387-0
Fax: 07157/5387-10

OPERATION MANUAL

EWS

3/3 Way Servo Valve

*** VERSION 2.0 ***
Stand: 01.10.2016

Extent of supply

- Servo valve cartridge EWS 3/x
- SVE1/x
- Cable between cartridge and controller
- Installation and operating manual

General Description

The servo-valves EWS 3/4 and EWS 3/6 are direct driven 3/3-way-valves with patented rotary slide principle and electronic closed loop slide position control. They are designed as cartridge to provide space- and cost-saving solutions especially in serial products. The corresponding electronic controller is available in 3 different versions.

Important: The valve controllers are adjusted to the corresponding cartridges. A correct function needs a cartridge and a controller with identical serial numbers.

PLEASE READ THIS OPERATING MANUAL COMPLETLY BEFORE INSTALLATION
PLEASE PAY ATTENTION TO THE FOLLOWING IN ANY CASE!!!!

1.) Use only 5 µm – **fine filtered, oil-free compressed air** for flow measurements, pressure controls or leak tests.

2.) Before connection of pneumatic pipes:
Clean fittings, hoses etc. !
(leave **no** cuttings, dust, corrosion products, sealing particles etc.)

3.) Use only **flat sealing fittings** with cylindrical G1/4“ threads.
If flat sealings are not possible or if it’s very difficult to get them tight, make the sealing with surface or thread adhesives.
Do **never** seal the inlet pipes to valves, controls or flow meters with **teflon-band**, **hemp** etc.

4.) Make sure that the connected **load is clean**!
(**no** cuttings, dust, corrosion products, sealing particles etc.)

Installation Hints:

The fitting blocks, fittings and tubes must be absolutely clean, no cuttings, dust, rust, sealing particles, etc.
Fitting blocks from aluminium have to be anodised.
Use only fittings with non-tapered cylindrical threads and axial flat sealing; never use liquid sealing (e.g. Loctite), teflon-band, hemp etc.

Technical data, part numbers and accessory

Electrical data

Power supply	SVE1/x		24 VDC +/- 10%, stabilized, max. 0,8 A
Input specified value		../B	+/- 10 V vs. 100 kΩ
		../U	0...10 V vs. 100 kΩ
		../I	0...20 mA vs. 500 Ω
Hysteresis			approx. 1% FS
Linearity			approx. 1% FS related to slide position
Frequency limit (-3dB, -90°)			at ± 100% spec. value: approx. 70 Hz at ± 50% spec. value: approx. 110 Hz
Switching time			0 ↔ 100%: approx. 5 ms ± 100%: approx. 7ms

Pneumatic data

Maximum flow rate		**EWS 3/4**	**EWS 3/6**
	6 bar → 0 bar	700 Nl/min	1100 Nl/min
	6 bar → 5 bar	450 Nl/min	690 Nl/min
Medium		clean air, 5 µm filtered, not oiled	
Supply pressure		vacuum to 10 bar	
Leakage		< 1% of maximum flow rate	

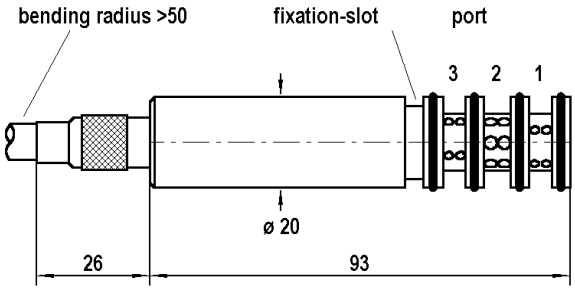
General conditions

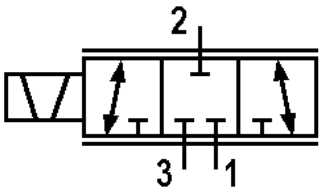
Temperature range	0 to 50 °C
Rel. humidity of air	max. 90%
Direction of assembling	any
Weight cartridge	approx. 0,14 kg without cable

Controller SVE1/x:

Controller as SMD-PCB fitted into a metallic 25-pin SUB-D-plug with the dimensions 56 x 54 x 15 mm³; supply voltage 24 VDC; cable to the valve cartridge pluggable at the valves end, cable length standard 0,5 m, max. 2 m.

EWS Cartridge Housing:





Pneumatic Installation

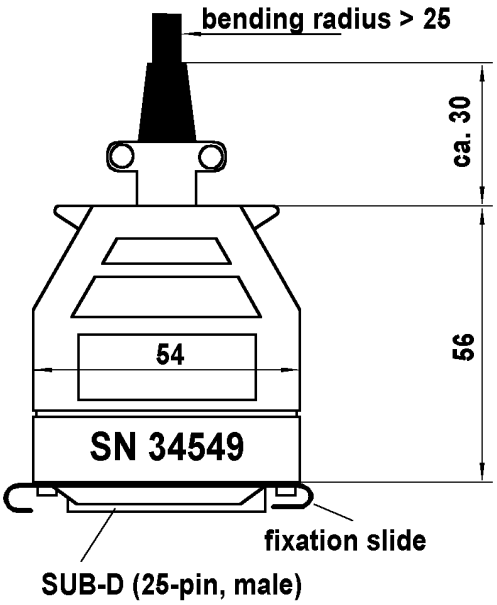
There are no restrictions for pneumatic installation.

The typical modes of installation to control a pneumatic load are the modes I and II (see table below); the only difference is the relation between directions of flow and specified value. Low specified values connect always ports 1 and 2, high specified values ports 2 and 3. The modes III and IV allow flow control of two pneumatic loads with only one servo valve.
The inner diameters of connected fittings and tubes should correspond to the nominal size of the valves, at least 4 mm for EWS 3/4 and 6 mm for EWS 3/6.
The length of the leads should be as short as possible, between valve-outlet and load normally not more than 2 m.

Option .../B	-10 V ··· 0 V ··· +10 V		
Option .../U	0 V ··· +5 V ··· +10 V		
Option .../I	0 mA ··· 10 mA ··· 20 mA		
Port	1 ··· 2 ··· 3		
I	P	A	R
II	R	A	P
III	A	P	B
IV	A	R	B

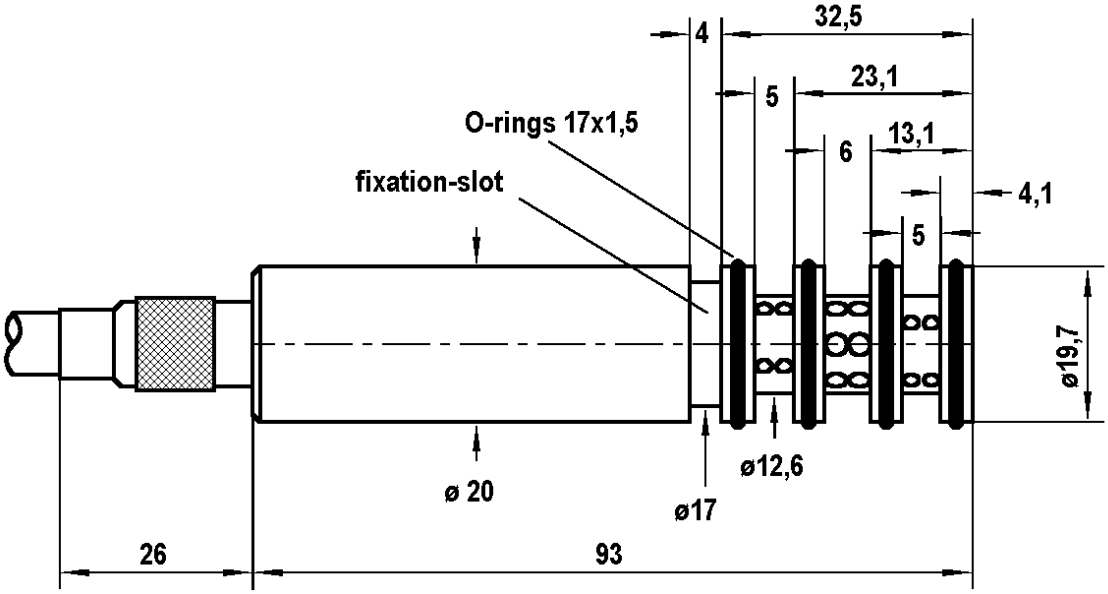
Electrical Installation

Controller SVE1/x

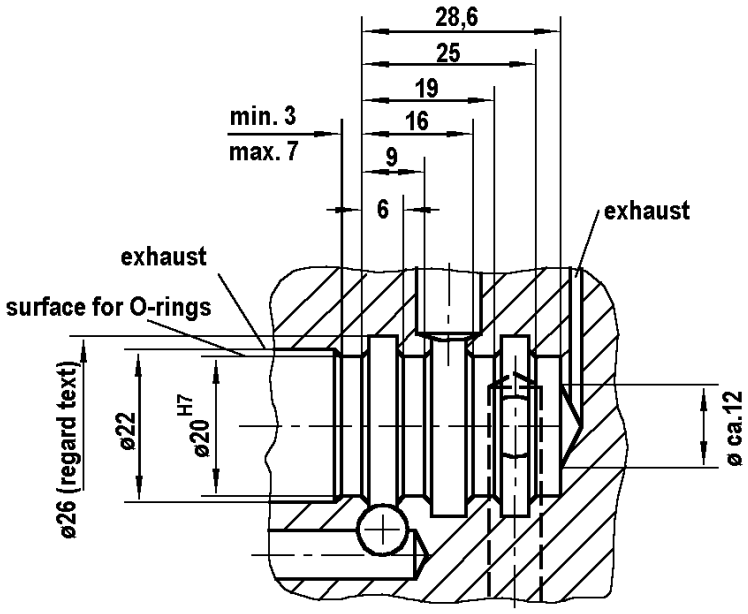


Pin	Function
7	power supply: +24 VDC
13	power supply: GND
14	input specified value - floating GND, max. voltage vs. power supply GND +/- 30 V
15	input specified value + vs. pin 14: SVE1/B: +/- 10 V SVE1/U: 0...10 V SVE1/I: 0...20 mA
25	input Inhibit: 24 VDC vs. pin 13 (disables valve action)
6, 8	internal reference potential **never connect to other GNDs!**
1	test point motor voltage +/- 10 V vs. pin 6
24	test point slide position +/- 1 V vs. pin 6

Dimensions of EWS Cartridge Housing

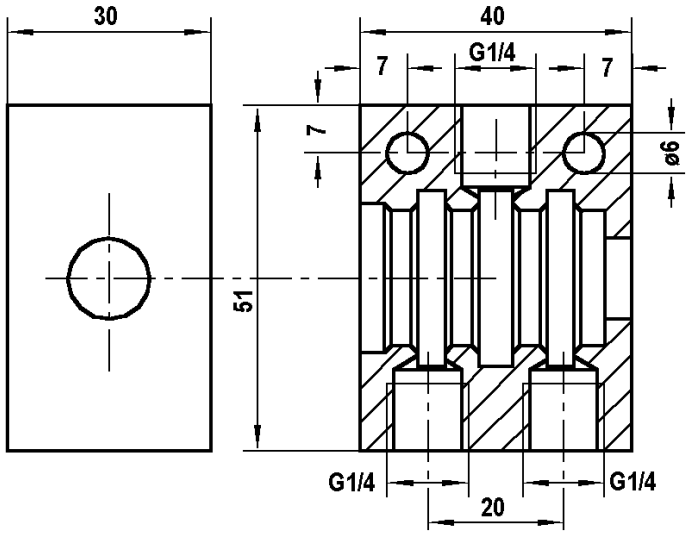


Dimensions of EWS Counter Housings



Dimensions of EWS Valve Housing VG6

Fitting block with G1/4”-bores, material: aluminium, black anodised



The dimensions of the EWS-cartridge and for corresponding fitting blocks are given in the above sketches. Additionally three possibilities for the design of the pneumatic connection are shown; it is very important, that the minimal flow areas are not smaller than the nominal size of the valves: for EWS 3/6 at least approx. 30 mm², for EWS 3/4 at least approx. 15 mm².
There must be recesses (ø26 in the sketch) in the fitting block to prevent damages of the O-rings while fitting the cartridge into the block, the inner edges must be chamfered.
Because of the valves leakage the fitting block must be exhausted at both axial ends.
Axial torques must be prevented from the fitted cartridge. When assembling or disassembling cartridge and block the cartridge has to be moved exactly axial to prevent damages at cartridge, O-rings or fitting block.