

Soft Stop SPC11

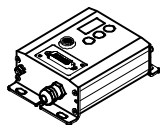
US patent no. 6,085,632

FESTO

Quick reference

Soft Stop
type SPC11-...

– English



8103866
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[8103868]

Translation of the original instructions

Documentation on the product



For all available product documentation
→ www.festo.com/pk

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English 3

1 User instructions

The Soft Stop type SPC11-... is intended for fitting into a machine or an automation system. In conjunction with permitted drives and measuring systems, as well as with a proportional directional control valve type MPYE-5-..., the SPC11 permits fast movement into two end positions set with fixed stops as well as into one or two mid-positions.



Note

This brief summary is intended only for users who are familiar with the SPC11. Please observe the safety instructions as well as the information on the permitted combinations of valves, drives and measuring systems. These can be found in the System manual for the SPC11 (type P.BE-SPC11-SYS-...) and in the associated “Drive-specific supplement”.



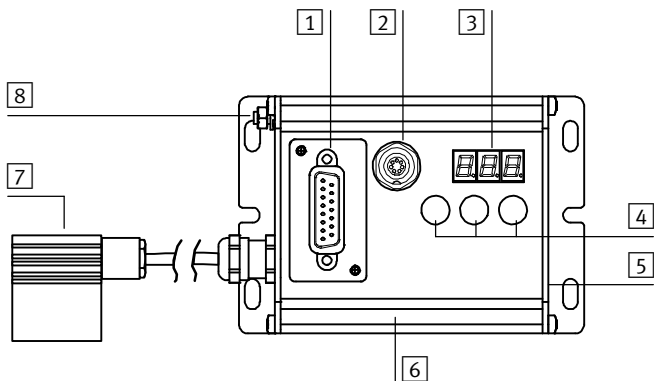
Caution

Always switch on the operating voltage supply first and then the compressed air supply.

Before carrying out installation and/or maintenance work, switch off the following power supplies either simultaneously or in the following sequence:

1. compressed air supply
2. operating voltage for the SPC11.

2 Connecting and display elements



- | | | | |
|---|--|---|---|
| 1 | Control: operating voltage connection and I/O coupling | 5 | Type plate |
| 2 | Valve: Valve connection | 6 | Groove for identification signs (type IBS 6x10) |
| 3 | Display | 7 | Measuring system connection (here type SPC11-POT-TLF) |
| 4 | Operating buttons | 8 | Earth (ground) connection |

3 Fitting and pneumatic installation

Mount the SPC11 on a flat surface. Use at least 3 screws (M4) to fasten it.

Compressed air / service unit

- 5 to 7 bar, dry, non-lubricated, 5 µm filter cartridge.
- For good positioning behaviour, the compressed air on the MPYE-5-...: must not fluctuate more than ± 1 bar.
- Sufficient standard flow (reference value: twice the standard flow of the valve).
- Use a microfilter if slight oil mist cannot be avoided.

Proportional directional control valve (type MPYE-5-...)

- This should be fitted and connected up symmetrically to the centre of the drive. If fitted to moving parts, the MPYE-5-... must be mounted at right angles to the direction of movement.
- Fit silencers with large rated flow (e.g. U-1/8), length of tubing max. 1 m.

Compressed air tubing and screw connectors

- The tubing for the valve drive must be symmetrical.
With linear drives: tubing length = drive length

- The dimensions refer to the standard sizes of service units, proportional directional control valves and drives.
- If angled connectors cannot be avoided, use plug connectors from the Quick Star series.
- Do not use any restrictors in the supply lines.

Drive and measuring system

- Use only the permitted combinations of valves, drives and measuring systems approved of by Festo for the SPC11.
- Observe the permitted fitting positions.
- Mount the measuring system symmetrical to the drive stroke.
- Mount the drive, the guide and the measuring system free of play and flush in the direction of movement.

Specially for drives type DGP(I)(L)-...-...-KF or DGP-... with suitable guide):

- With bilateral air supply, open up completely the adjusting screws for the internal end position cushioning.
- Use a measuring system with the same stroke length.

Specially for measuring systems type MLO-POT-...-TLF:

- Mount the measuring system so that it is electrically isolated.
- If the measuring system is to be used in a dusty or dirty environment, mount it so that the actuator slide faces downwards.

Specially for measuring systems type MLO-POT-...-LWG:

- In order to earth the system, connect the earth/ground cable on the flat plug of the measuring system to the earth connection on the SPC11.

Specially for DNCI-...

- In order to earth the earth connection of the SPC11 and the earth connection of the drive, connect them with the same earth potential.

Fixed stops

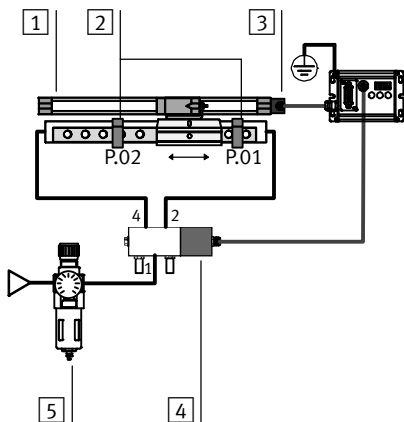
- Use fixed stops to limit the working stroke. With drives of type DGP(I)(L)-..., the working stroke should not project into the range of the end position cushioning.

Mass load

- Fasten the permitted mass load to the slide without play.

3.1 Overview of fitting and pneumatic installation (example DGPL-... and MLO-POT-...-TLF)

- 1 Measuring system
- 2 Fixed stops
- 3 Measuring system connection
- 4 Proportional directional control valve
- 5 Service unit (without lubricator, with 5 μm filter)



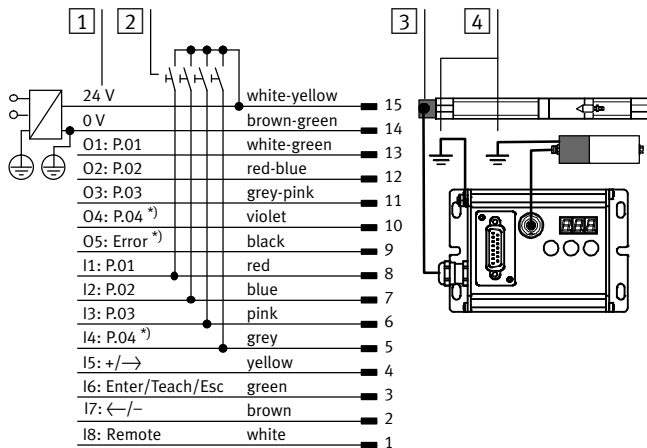
Special instructions on the components used can be found in the manuals for the SPC11.

Connections to the proportional directional control valve

When compressed air is applied to work connection 4, movement is made in the direction of the zero point of the measuring system. When compressed air is applied to work connection 2, movement is made in the opposite direction. With linear drives: the zero point of the measuring system lies on the side of the measuring system connection.

4 Fitting the electric components

Example of fitting electric drive type DGP(L)-... and measuring system type MLO-POT-...-TLF. Use only the original cables specified.



*) The function of this input/output can be configured (see system manual P.BE-SPC11-SYS-...)

- 1 Pin assignment for Control connection with core colours for cable KMPV-SUB-D-15-...
O...: output, I...: Input
- 2 Button for moving to the positions
- 3 With linear drives, end position 1 lies on the side with the electrical connections to the measuring system.
- 4 Earth/ground

Connect an earth cable with sufficient cross-sectional area to the drive if the drive is not fitted on an earthed machine stand. Special earthing measures for components other than those shown here can be found in the System manual for the SPC11.

Pin assignment on the Control connection

The function of the input I4 and outputs O4 and O5 can be configured (see system manual for SPC11). The following tables describe the factory settings.

Output	Pin	Description
O1: P.01	13	Supplies a 1-signal when the drive is in the appropriate position. Supplies a 1-signal for 50 ms when the drive moves past the appropriate position.
O2: P.02	12	
O3: P.03	11	
O4: P.04 ¹⁾	10	
O5: Error ²⁾	9	Supplies a 1-signal if there is an error.
O...: Output ¹⁾ Can be configured; P.04 (factory setting) or Stop ²⁾ Can be configured; Error (factory setting) or Ready		

Input	Pin	Description
I1: P.01	8	1-signal (min. 20 ms) issues order to move to appropriate position (when there is a POS...0-signal at the other inputs P...)
I2: P.02	7	
I3: P.03	6	
I4: P.04 ¹⁾	5	
I5: +/→	4	Controls drive when there is a 1-signal at Remote input (see System manual for SPC11)
I6: - Reset Error ²⁾ - Enter/Teach/Esc	3	
I7: ←/-	2	
E8: Remote	1	1-signal deactivates operating buttons and activates the relevant inputs (pins 2...4)
I...: Input ¹⁾ Can be configured; P.04 (factory setting) or Stop ²⁾ 0-signal at input E8 (Remote) required		

Connection	Pin	Description
24 V	15	Power supply
0 V	14	

5 Start-up



Caution

In order to avoid damage caused by uncushioned movement into the end positions, make sure in the following cases that you observe the safety instructions as well as the information on how to proceed in the manuals for the SPC11.

- when first commissioning
- after adjusting the fixed stops
- after replacing components.

Instructions on commissioning the SPC11 as supplied from the factory (without pre-parametrizing) can be found in the System manual for the SPC11.

If the SPC11 is already pre-parametrized, carry out commissioning as follows:

1. Before commissioning:
 - Switch off the compressed air and the power supply.
 - Apply a 0-signal to all P... inputs. start 0-signal
 - Mount the maximum permitted mass load and the fixed stops.
2. Switch on the operating voltage supply.
3. Check the parameters shown after switching on.
4. Finally, switch on the compressed air supply. The valve slide assumes the mid-position. The drive can move slowly into one of the end positions.



Caution

During commissioning and during operation the moveable mass is moved at the highest possible acceleration and speed. Make sure that the complete positioning range is free.

5. When the display “t..” flashes, hold the Enter/Teach button down at least 2 seconds (Remote: input I6), until the Teach procedure starts. During the teach procedure, the SPC11 moves the drive automatically and thereby ascertains the positions of the fixed stops, as well as individual features of the drive, and carries out reference travel if necessary (only for SPC11-INC). When the teach procedure is completed, the drive stands in end position 1 (display “P.01”).
6. If necessary, teach the mid-position. To do this move the drive with the buttons ←/– or +/→ (Remote: I5, I7) and transfer the position with Enter/Teach.

The positioning behaviour improves automatically after approx. 20 to 30 strokes (adaption).



Caution

In order to avoid damage due to uncushioned movement into the end positions:

- ❑ Carry out commissioning again if the fixed stops have been adjusted or if components have been replaced.
- ❑ Observe the maximum permitted mass load.

6 Instructions on operation



Note

For incremental path measuring systems: After switching on the SPC11 again (POWER OFF/ON), the first thing you have to do is trigger an order to move to the end position P.01 or P.02, thus starting reference travel. Other positioning tasks are not permitted and result in the error E18 (reference travel).

Control the drive with the inputs P.01 to P.04 (see section 4). When the position is reached, a 1-signal will be displayed at the relevant output. If a mid-position is exceeded, the relevant output will supply a 1-signal for 50 ms.

Change of direction is possible at any time during positioning.

Optimizing the positioning behaviour (if necessary).

- Check the system structure and the compressed air reservoir when there are fluctuations in pressure or when the supply pressure has been modified.
- Adapt the amplification or cushioning stage.
- If necessary, fit restrictors in the exhaust tubing of the MPYE-5-... in order to reduce speed.