# Operating Instructions
# Precision Multiple Limit Switches GS...C1806 12 mm

EUCHNER

## Scope

These operating instructions are valid for all GS...C1806 12 mm. These operating instructions, the document *Safety information* and any available data sheet form the complete user information for your device.

**Important!**

Make sure to use the operating instructions valid for your product version. The version numbers can be found on the type label of your product. Please contact the EUCHNER service team if you have any questions.

**Safety switch type label**


① Item designation
② Production code

## Supplementary documents

The overall documentation for this device consists of the following documents:

| Document title (document number) | Contents | |
|---|---|---|
| Safety information (2525460) | Basic safety information | |
| Operating instructions (2076850) | (this document) | |
| Declaration of conformity | Declaration of conformity | |
| Any additions to the operating instructions | Take any associated additions to the operating instructions or data sheets into account. | |

**Important!**

Always read all documents to gain a complete overview of safe installation, setup and use of the device. The documents can be downloaded from www.euchner.com. For this purpose, enter the doc. no. or the order number for the device in the search box.

## Correct use

Precision multiple limit switches are used for positioning and controlling machines and in industrial installations.

Correct use includes observing the relevant requirements for installation and operation, particularly based on the following standards:

- EN IEC 60204-1
- EN ISO 12100

## Incorrect use

Precision multiple limit switches with switching element ES502E (snap-action switching contacts not positively driven) must not be used in safety circuits.

## Function

Precision multiple limit switches are used for positioning and control applications in mechanical and systems engineering.

The switching elements are actuated by means of plungers. Different plungers and trip dogs are used depending on the application (operating point accuracy and approach speed) (see Fig. 3).

In general applications, the plungers are actuated by trip dogs according to DIN 69639 that are mounted with an interference fit in trip rails according to DIN 69638.

## Switching states

The detailed switching states for your switch can be found in Fig. 1. All available switching elements are described there.

## Mounting

**NOTICE**

Device damage due to improper mounting and unsuitable ambient conditions.

- Mounting must be performed only by authorized personnel.
- Precision multiple limit switches and actuators must not be used as an end stop.
- Protect the precision multiple limit switch against damage.
- The specified IP degree of protection is applicable only if the housing screws, cable entries and plug connectors are properly tightened. Observe the tightening torques.

## Protection against environmental effects

Safety venting valves are used to equalize the pressure to protect against the pumping action of the plunger. They must not be sealed with paint.

- Mask plunger, plunger guide, safety venting valves and type label during painting work!

## Electrical connection

**NOTICE**

- Electrical connection must be performed only by authorized personnel.
- When choosing the insulation material and wire for the connections, pay attention to the over-temperature in the housing (depending on the operating conditions)!
- Strip the insulation from the ends of the individual wires over a length of $6^{\pm 1}$ mm to ensure a safe contact.

**The following information applies to devices with cable entry:**

1. Use a suitable tool to open the desired insertion opening.
2. Mount the cable gland with the appropriate degree of protection.
3. Connect and tighten the terminals (for terminal assignment, see Fig. 1; for tightening torque values, see technical data).
4. Check that the cable entry is sealed.
5. Close the switch cover and screw in place (tightening torque 1.5 Nm).

## Function test

Check the device for correct function after installation and after every fault.

Proceed as follows:

**Mechanical function test**

The actuating element must move easily. Close the guard several times to check the function.

**Electrical function test**

- Check correct function sequence.

## Inspection and service

Inspection of the following is necessary to ensure trouble-free long-term operation:

- Correct switching function
- Secure mounting of all components
- Precise adjustment of trip dogs in relation to multiple limit switch
- Damage, heavy contamination, dirt and wear
- Sealing of cable entry
- Loose cable connections or plug connectors.

## Exclusion of liability and warranty

In case of failure to comply with the conditions for correct use stated above, or if the safety regulations are not followed, or if any servicing is not performed as required, liability will be excluded and the warranty void.

## Notes about UL requirements

**The following information applies to devices with cable entry:**

This device is intended to be used and applied in accordance with the UL requirements with copper wire for the temperature range 60/75 °C.

## Declaration of conformity

The product complies with the requirements according to

- Machinery Directive 2006/42/EC (until January 19, 2027)
- Machinery Regulation (EU) 2023/1230 (from January 20, 2027)

The EU declaration of conformity can be found at www.euchner.com. Enter the order number of your device in the search box. The document is available under *Downloads*.

## Service

If servicing is required, please contact:

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**E-mail**:
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**Internet**:
www.euchner.com

## Technical data

| Parameter | | Value |
|---|---|---|
| Housing material | | Die-cast aluminum, anodized |
| Plunger material | | Stainless steel |
| Degree of protection | | IP67 |
| Mech. operating cycles | | 30 x $10^6$ |
| Electrical life at DC13 24 V/100 mA | | 30 x $10^6$ |
| Switching frequency | | 300 $min^{-1}$ |
| Ambient temperature | | -5 ... +80 °C |
| Installation position | | any |
| Approach speed, max. | | |
| Plunger | Roller R (slide bearing) | 80 m/min |
| | Roller B (ball bearing) | 120 m/min |
| | Dome W/ball K | 10 m/min |
| Approach speed, min. | | 0.01 m/min |
| Actuating force | | ≥ 20 N |
| Switching element | | 1 NO + 1 NC contacts |
| Switching principle | | Snap-action switching contact |
| Hysteresis | | 0.8 mm |
| Contact material | | Silver alloy, gold flashed |
| Connection | | Screw terminals |
| Screw terminal tightening torque (cross-head screw) | | 0.6 Nm |
| Conductor cross-section (rigid/flexible) | | 0.34 ... 1.5 $mm^2$ |
| Rated insulation voltage | | $U_i$ = 250 V |
| Rated impulse withstand voltage | | $U_{imp}$ = 2.5 kV |
| Utilization category of switching element | | AC-12 250 V 8 A<br>AC-15 230 V 6 A<br>DC-13 24 V 6 A |
| Switching current, min., at DC 12 V | | 10 mA |
| Convent. thermal current $I_{th}$ | | 8 A |
| Short circuit protection (control circuit fuse) | | 8 A gG |
| Conditional short-circuit current | | 100 A |

**ES502E**

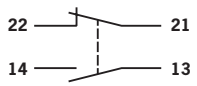


Illustration: switching element not actuated

*Fig. 1: Switching elements and terminal assignment*

Illustration with chisel plunger, plunger type depending on version

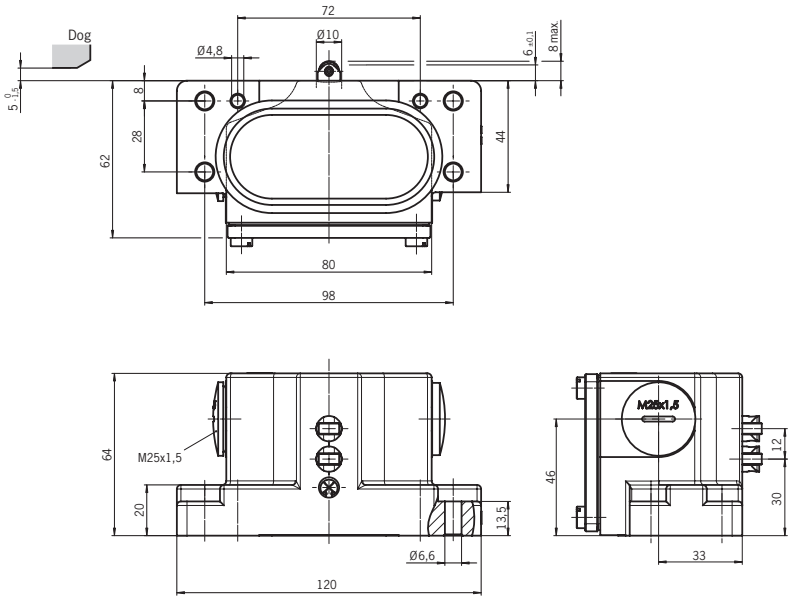


*Fig. 2: Dimension drawing for GS...-502-MC1806*

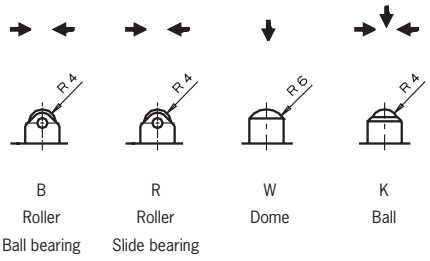


*Fig. 3: Plungers and approach directions*