

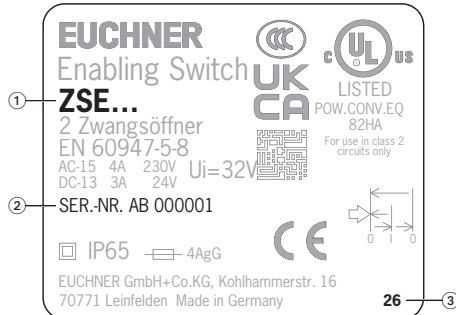
Scope

These operating instructions are valid for all ZSE... 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. Please contact the EUCHNER service team if you have any questions.

Enabling switch type label



- ① Item designation
- ② Serial number
- ③ Year of manufacture

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 (2092780)	(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

The enabling switches described are manually operated command switches that make it possible to work in the danger area of machines and installations.

Enabling switches represent part of a safety-related control system according to EN ISO 13849-1 or EN IEC 62061 and fulfill a safety function. In conjunction with other safety functions, e.g. SLS = *Safely Limited Speed according to EN 61800-5-2*, the enabling switches can be used as part of an enabling system according to EN ISO 12100 for working with open guards or switched-off guards. The various safeguards must be activated via a control and operating mode selector that can be locked in every position or via an equivalent device.

The device possesses a three-position enabling switch according to EN IEC 60947-5-8 or is a device for enabling control with three positions according to EN 60204-1. A dangerous movement is only allowed to be enabled in position 2 (center position). Authorized operating personnel can then enter the danger area, e.g.:

- ▶ for setting up
- ▶ for observing work sequences
- ▶ for maintenance.

Before the device is used, a risk assessment must be performed on the machine, e.g. in accordance with the following standards:

- ▶ EN ISO 13849-1
- ▶ EN ISO 12100
- ▶ EN IEC 62061

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

- ▶ EN ISO 13849-1
- ▶ EN IEC 60204-1

Important!

- ▶ The user is responsible for the integration of the device in a safe overall system. For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-1.
- ▶ The enabling switch user must assess and document remaining risks.
- ▶ If a data sheet is included with the product, the information on the data sheet applies in case of discrepancies with the operating instructions.

Description of the safety function

If 2-channel evaluation of the enabling switch is used with monitoring for same contact state or antivalent contact state, category 3 as per EN ISO 13849-1 can be achieved.

Devices from this series feature the following safety function:

Enable control (manually activated interlocking function in a control system according to EN 60204-1)

Safety function:

- ▶ If the enabling switch is not pressed (position 1), at least one of the contacts is open.
- ▶ If the enabling switch is pressed all the way down (position 3), at least one of the contacts is open.

Safety characteristic:

- ▶ B_{10D} (see section *Technical data*).

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.

General safety precautions

Enabling switches fulfill personnel protection functions. Incorrect installation or tampering can lead to fatal injuries to personnel.

Check the safe function of the guard particularly

- ▶ after any setup work
- ▶ after the replacement of a system component
- ▶ after an extended period without use
- ▶ after every fault.

Independent of these checks, the safe function of the guard should be checked at suitable intervals as part of the maintenance schedule.

- ▶ No commands for potentially hazardous conditions are allowed to be initiated with the enabling switch alone.
- ▶ The safety function of enabling switches must not be bypassed (bridging of contacts), tampered with or otherwise rendered ineffective.
- ▶ The enabling switch must be protected against tampering by the operator.
- ▶ Enabling switches may be used only by authorized persons who can recognize hazards in time and who are able to take appropriate action immediately.
- ▶ Every person present in the danger area must carry their own enabling switch on their person.
- ▶ Mounting, electrical connection and setup only by authorized personnel.

In the event of malfunctions or damage, the enabling switch must be replaced. The device may be repaired only by the manufacturer.

Important!

Prior to use, read the operating instructions and keep these in a safe place. Ensure the operating instructions are always available during mounting, setup and servicing. You should archive a printed copy of the operating instructions. You can download the operating instructions from www.euchner.com.

Function

Enabling switches are used as a manual interlocking device for a control system (enable control). In position 2, the enabling switch permits machine operation with separate start control. In position 1 and in position 3, a stop function must be initiated by the machine control and machine operation prevented.

- ▶ Position 1: Off function, pushbutton not pressed
- ▶ Position 2: Enabling function (ON), pushbutton pressed to center position (actuating point)
- ▶ Position 3: Off function, pushbutton pressed to end stop

The enabling function is canceled by releasing the pushbutton or pressing it beyond the actuating point. The enabling function does not become effective when position 2 is passed during the return from position 3 to position 1.

Mounting

Important!

The enabling switch must be fitted in a suitable housing.

- ▶ Slide enabling switch without protective cap through the control panel cut-out from the rear.
- ▶ Screw protective cap onto the front of the enabling switch to the end stop.
- ▶ During installation it must be ensured that all three switch positions can be reached unhindered.
- ▶ The control element must be safely fastened, but must not be placed under stress by the fastening.
- ▶ The device must be installed so that tampering is not possible by simple mechanical measures (clamping, adhesive tape, etc.).

Electrical connection

⚠ WARNING

There will be no safety function if the device is installed or connected incorrectly. This situation can result in serious accidents and injuries or even death.

- ▶ Installation and electrical connection must be performed only by qualified personnel.
- ▶ All electrical outputs must have an adequate protective circuit for inductive loads. The outputs must be protected with a free-wheeling diode for this purpose. RC interference suppression units must not be used.

Setup

Check the enabling switch (enabling function at stage 2, and positively driven at stage 3) by performing a functional check.

Functional check

⚠ WARNING

Danger of fatal injury as a result of faults in installation and the functional check.

- Before carrying out the functional check, make sure that there are no persons in the danger area.
- Observe the valid accident prevention regulations.

Check the enabling switch by means of a functional check (enabling function only in position 2). Check that there is no enabling function in position 2 after reaching position 3 and releasing again.

Inspection and service

⚠ WARNING

Danger of severe injuries due to the loss of the safety function.

- If damage or wear is found, the complete device must be replaced. Replacement of individual parts or assemblies is not permitted. The device may be repaired only by the manufacturer.
- Check the device for proper function at regular intervals and after every fault.

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

- Correct switching function
- Damage, heavy contamination, dirt and wear
- Sealing of cable entry
- Loose cable connections or plug connectors.

Information: The year of manufacture can be seen in the bottom, right corner of the type label.

Disposal

Pay attention to the applicable national regulations and laws during disposal.

Declaration of conformity

The product complies with the requirements according to Machinery Directive 2006/42/EC.

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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Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Germany

Service telephone:
+49 711 7597-500

E-mail:
support@euchner.de

Internet:
www.euchner.com

Technical data

Parameter	Value
Housing material	Plastic, color black
Protective cap material	CR, color: black
Degree of protection	Front panel IP65 Connections IP00
Mechanical life, min.	
Position 1-2-1	1x10 ⁵ cycles
Position 1-2-3-1	1x10 ⁵ cycles
Ambient temperature	-5 ... +60 °C
Degree of contamination (external, acc. to EN IEC 60947-1)	3 (industrial)
Installation position	Any
Impact strength	> 100 N
Switching elements	See Figure 1
Switching principle	Slow-action contact element
Connection	Tab connector 2.8 x 0.8 mm acc. to IEC 760
ZSE2-3 and ZSE2-4	Switching element E3 soldered connection
Rated impulse withstand voltage	U _{imp} = 2.5 kV
Rated insulation voltage	U _i = 250 V
Conditional short-circuit current	100 A
Utilization category acc. to EN IEC 60947-5-2	AC-15 4 A 230 V DC-13 3 A 24 V
Switching current, min., at 24 V	1 mA
Switching voltage, min., at 10 mA	12 V
Short circuit protection	4 A gG
Reliability values acc. to EN ISO 13849-1	
B ₁₀₀ at DC13 170 mA/24 V	0.39 x 10 ⁶

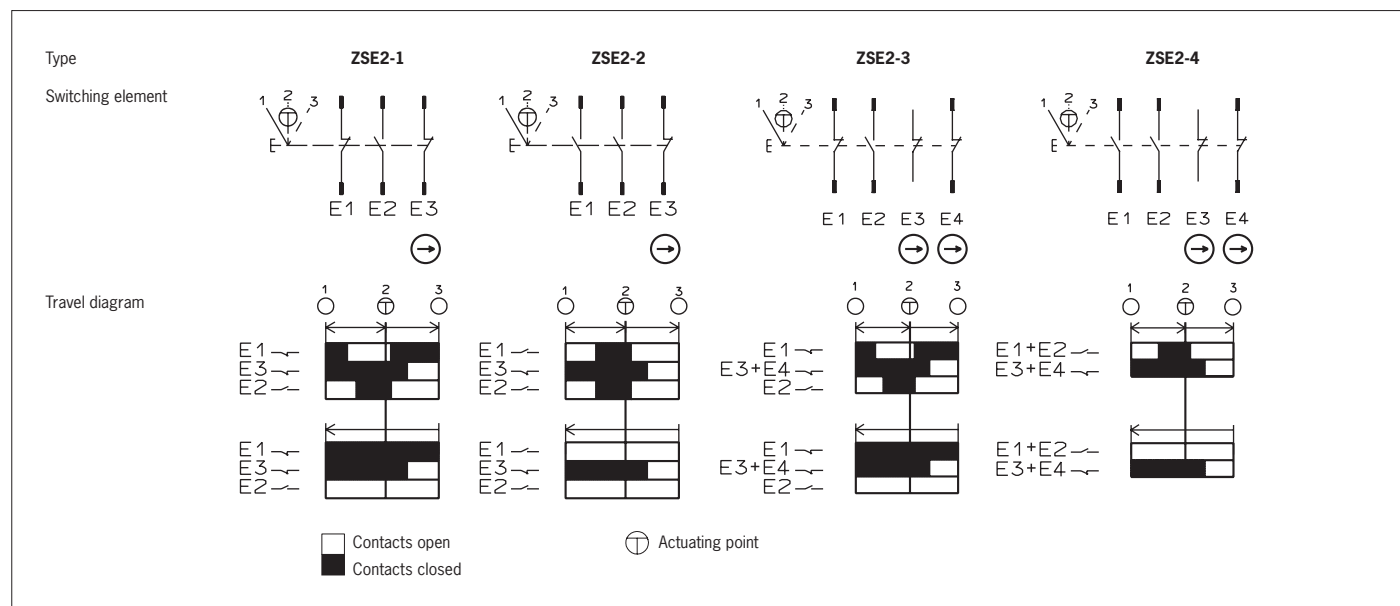


Fig. 1: Function of the switching elements

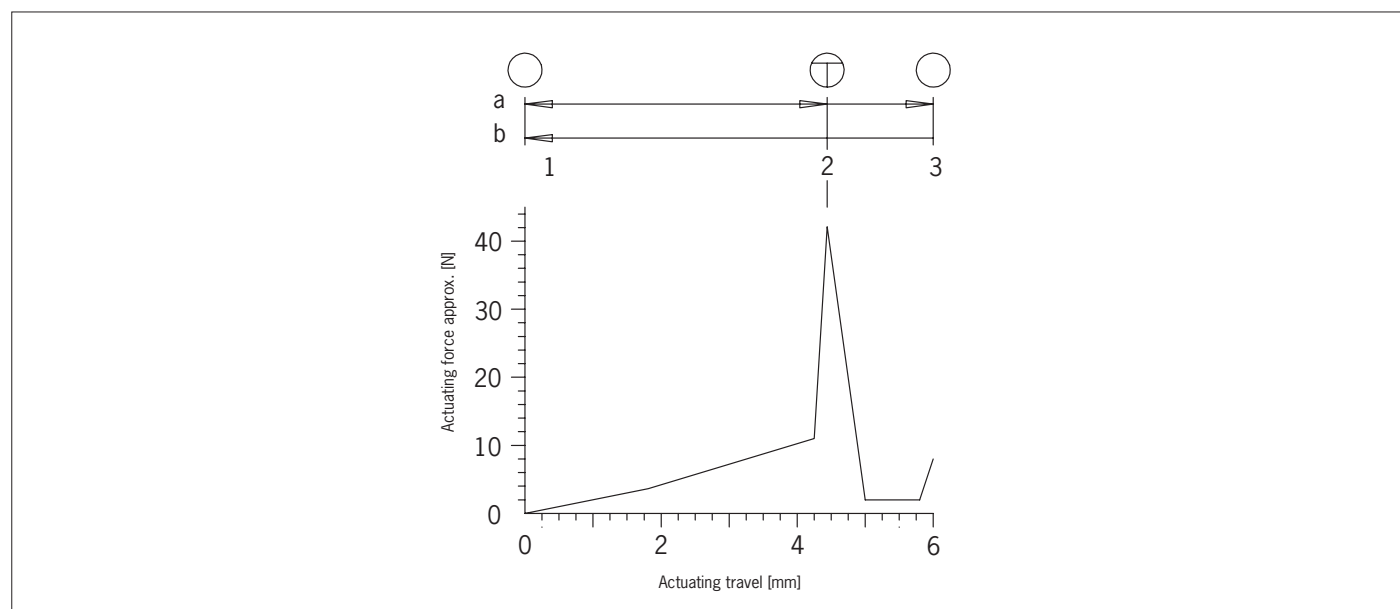


Fig. 2: Diagram of actuating force as a function of actuating travel

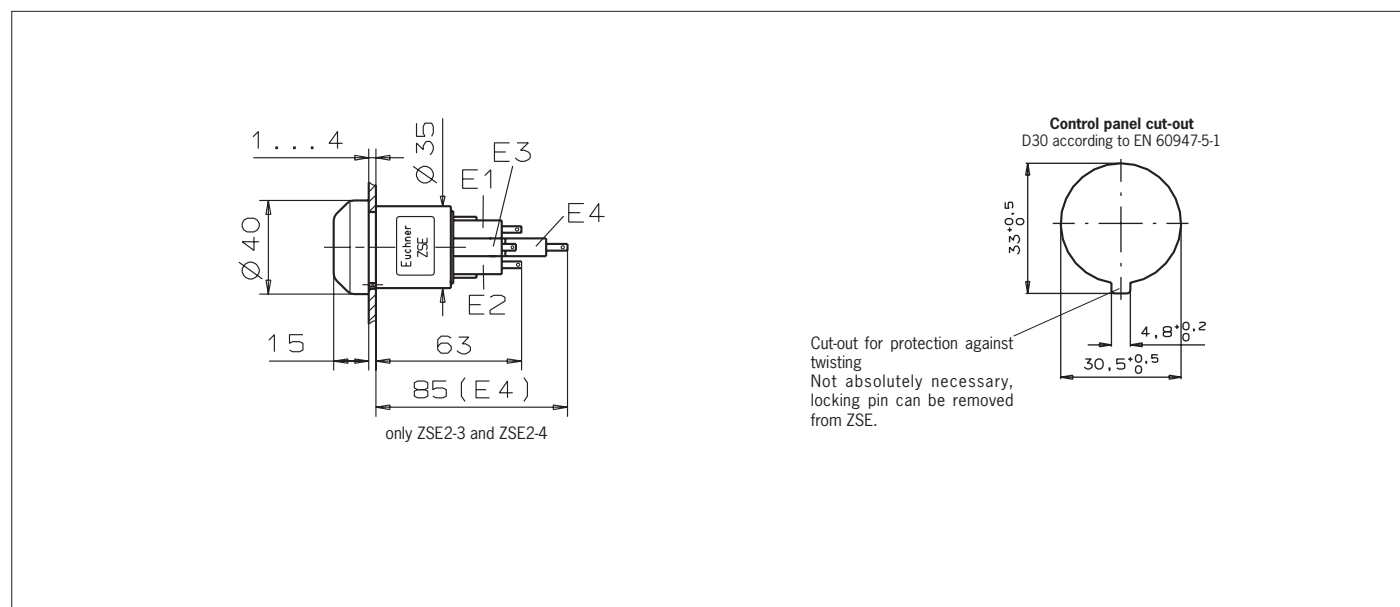


Fig. 3: Dimension drawing for enabling switch ZSE